

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**



**BUDGET  
ESTIMATES  
FISCAL YEAR 2013**

**CONGRESSIONAL SUBMISSION**

**PRIVILEGED**

**The information contained herein must not be disclosed  
outside the Agency until made public by the President or by  
the Congress.**

**Budget Estimates, Fiscal Year 2013  
Congressional Justification**

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U.S. DEPARTMENT OF COMMERCE  
**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**

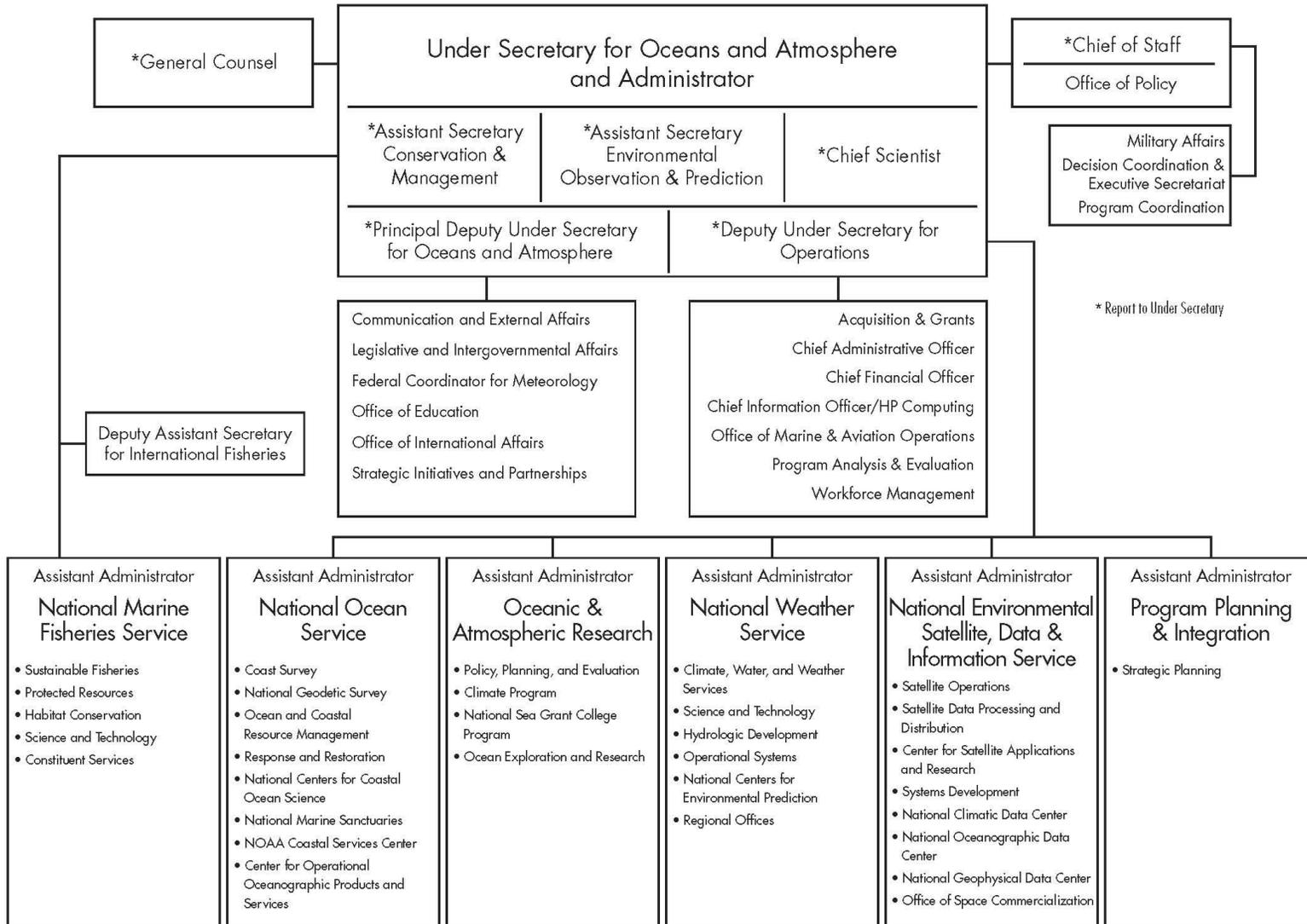


Exhibit 10  
**Department of Commerce**  
National Oceanic and Atmospheric Administration  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>NATIONAL OCEAN SERVICE (NOS)</b>											
Navigation Services											
Mapping & Charting	Pos/BA	314	91,526	288	91,712	288	92,754	271	91,306	(17)	(1,448)
	FTE/OBL	299	92,072	272	92,289	272	92,754	255	91,306	(17)	(1,448)
Geodesy	Pos/BA	151	33,109	163	28,803	163	29,136	163	29,228	0	92
	FTE/OBL	144	29,307	154	32,855	154	29,136	154	29,228	0	92
Tide & Current Data	Pos/BA	130	29,412	129	27,443	129	27,829	129	29,055	0	1,226
	FTE/OBL	124	29,781	124	27,677	124	27,829	124	29,055	0	1,226
Total: Navigation Services	Pos/BA	595	154,047	580	147,958	580	149,719	563	149,589	(17)	(130)
	FTE/OBL	567	151,160	550	152,821	550	149,719	533	149,589	(17)	(130)
Ocean Resources Conservation and Assessment											
Ocean Assessment Program (OAP)	Pos/BA	144	89,112	117	91,763	117	92,371	117	94,754	0	2,383
	FTE/OBL	137	88,926	113	93,249	113	92,371	113	94,754	0	2,383
Response and Restoration	Pos/BA	88	24,497	120	26,579	116	21,752	122	24,288	6	2,536
	FTE/OBL	84	24,537	114	26,644	110	21,752	114	24,288	4	2,536
National Centers for Coastal Ocean Science	Pos/BA	203	55,162	212	44,918	212	45,411	212	47,035	0	1,624
	FTE/OBL	193	55,259	199	45,006	199	45,411	199	47,035	0	1,624

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Total: Ocean Resources	Pos/BA	435	168,771	449	163,260	445	159,534	451	166,077	6	6,543
Conservation and Assessment	FTE/OBL	414	168,722	426	164,899	422	159,534	426	166,077	4	6,543
Ocean and Coastal Management											
Coastal Management	Pos/BA	63	106,804	70	101,094	60	99,276	60	96,209	0	(3,067)
	FTE/OBL	61	100,826	67	107,483	58	99,276	58	96,209	0	(3,067)
Ocean Management (Marine Sanctuary Program)	Pos/BA	198	45,379	190	47,060	200	49,634	200	46,591	0	(3,043)
	FTE/OBL	189	44,887	182	48,135	191	49,634	191	46,591	0	(3,043)
Total: Ocean & Coastal Management	Pos/BA	261	152,183	260	148,154	260	148,910	260	142,800	0	(6,110)
	FTE/OBL	250	145,713	249	155,618	249	148,910	249	142,800	0	(6,110)
<b>TOTAL NOS - ORF</b>	<b>Pos/BA</b>	<b>1,291</b>	<b>475,001</b>	<b>1,289</b>	<b>459,372</b>	<b>1,285</b>	<b>458,163</b>	<b>1,274</b>	<b>458,466</b>	<b>(11)</b>	<b>303</b>
	<b>FTE/OBL</b>	<b>1,231</b>	<b>465,595</b>	<b>1,225</b>	<b>473,338</b>	<b>1,221</b>	<b>458,163</b>	<b>1,208</b>	<b>458,466</b>	<b>(13)</b>	<b>303</b>
<b>TOTAL NOS - PAC</b>	<b>Pos/BA</b>	<b>15</b>	<b>19,347</b>	<b>1</b>	<b>8,000</b>	<b>1</b>	<b>8,000</b>	<b>0</b>	<b>0</b>	<b>(1)</b>	<b>(8,000)</b>
	<b>FTE/OBL</b>	<b>15</b>	<b>21,983</b>	<b>1</b>	<b>9,376</b>	<b>1</b>	<b>8,000</b>	<b>0</b>	<b>0</b>	<b>(1)</b>	<b>(8,000)</b>
Damage Assessment and Restoration Revolving Fund	Pos/BA	29	7,071	16	6,000	16	6,000	16	6,000	0	0
	FTE/OBL	28	78,358	16	72,899	16	18,600	16	18,600	0	0
Coastal Zone Management Fund	Pos/BA	0	(409)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>Coastal Impact Assistance</b>	Pos/BA	0	0	0	0	0	0	0	0	0	0
<b>Fund</b>	FTE/OBL	0	68	0	0	0	0	0	0	0	0
<b>Sanctuaries Asset Forfeiture</b>	Pos/BA	0	0	0	1,000	0	1,000	0	1,000	0	0
<b>Fund</b>	FTE/OBL	0	0	0	1,000	0	1,000	0	1,000	0	0
<b>TOTAL NOS</b>	Pos/BA	1,335	501,010	1,306	474,372	1,302	473,163	1,290	465,466	(12)	(7,697)
	FTE/OBL	1,274	566,004	1,242	556,613	1,238	485,763	1,224	478,066	(14)	(7,697)
<b>National Marine Fisheries Service (NMFS)</b>											
Protected Species Research and Management											
Protected Species	Pos/BA	845	187,913	851	174,159	851	176,648	830	170,041	(21)	(6,607)
	FTE/OBL	805	190,507	812	175,269	812	176,648	791	170,041	(21)	(6,607)
Total: Protected Species Research & Management	Pos/BA	845	187,913	851	174,159	851	176,648	830	170,041	(21)	(6,607)
	FTE/OBL	805	190,507	812	175,269	812	176,648	791	170,041	(21)	(6,607)
Fisheries Research and Management											
Fisheries Research and Management	Pos/BA	1,459	438,158	1,469	426,075	1,469	431,374	1,464	430,077	(5)	(1,297)
	FTE/OBL	1,391	441,929	1,384	442,383	1,387	431,374	1,382	430,077	(5)	(1,297)
Total: Fisheries Research and Management	Pos/BA	1,459	438,158	1,469	426,075	1,469	431,374	1,464	430,077	(5)	(1,297)
	FTE/OBL	1,391	441,929	1,384	442,383	1,387	431,374	1,382	430,077	(5)	(1,297)

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>Enforcement and Observers/Training</b>											
Enforcement	Pos/BA	232	66,758	259	65,617	259	66,532	259	67,123	0	591
	FTE/OBL	221	67,899	248	65,852	248	66,532	248	67,123	0	591
Observers & Training	Pos/BA	119	38,883	141	39,744	141	40,258	141	43,166	0	2,908
	FTE/OBL	113	39,505	137	39,966	137	40,258	137	43,166	0	2,908
Total: Enforcement and Observers/Training	Pos/BA	351	105,641	400	105,361	400	106,790	400	110,289	0	3,499
	FTE/OBL	334	107,404	385	105,818	385	106,790	385	110,289	0	3,499
<b>Habitat Conservation &amp; Restoration</b>											
Habitat Management & Restoration	Pos/BA	139	41,747	158	41,657	162	47,261	162	35,987	0	(11,274)
	FTE/OBL	132	42,861	149	42,005	153	47,261	153	35,987	0	(11,274)
Total: Habitat Conservation & Restoration	Pos/BA	139	41,747	158	41,657	162	47,261	162	35,987	0	(11,274)
	FTE/OBL	132	42,861	149	42,005	153	47,261	153	35,987	0	(11,274)
<b>Other Activities Supporting Fisheries</b>											
Other Activities Supporting Fisheries	Pos/BA	237	71,023	144	57,466	144	58,439	134	61,414	(10)	2,975
	FTE/OBL	226	74,490	134	57,923	134	58,439	124	61,414	(10)	2,975
Total: Other Activities Supporting Fisheries	Pos/BA	237	71,023	144	57,466	144	58,439	134	61,414	(10)	2,975
	FTE/OBL	226	74,490	134	57,923	134	58,439	124	61,414	(10)	2,975

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>TOTAL NMFS - ORF</b>	Pos/BA	3,031	844,482	3,022	804,718	3,026	820,512	2,990	807,808	(36)	(12,704)
	FTE/OBL	2,888	857,191	2,864	823,398	2,871	820,512	2,835	807,808	(36)	(12,704)
<b>TOTAL NMFS - PAC</b>	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	1,509	0	62	0	0	0	0	0	0
<b>Pacific Coastal Salmon Recovery Fund</b>	Pos/BA	1	79,760	0	65,000	0	65,000	0	50,000	0	(15,000)
	FTE/OBL	1	79,760	0	65,000	0	65,000	0	50,000	0	(15,000)
<b>Fishermen's Contingency Fund</b>	Pos/BA	0	0	1	350	1	350	1	350	0	0
	FTE/OBL	0	0	1	360	1	350	1	350	0	0
<b>Foreign Fishing Observer Fund</b>	Pos/BA	0	0	0	(350)	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
<b>Fisheries Finance Program Account</b>	Pos/BA	0	9,910	0	5,771	0	0	0	0	0	0
	FTE/OBL	0	9,910	0	6,091	0	0	0	0	0	0
<b>Promote and Develop Fishery Products</b>	Pos/BA	1	0	0	0	0	5,000	0	5,000	0	0
	FTE/OBL	1	0	0	0	0	5,000	0	5,000	0	0
<b>Federal Ship Financing Fund</b>	Pos/BA	0	(204)	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>Environmental Improvement</b>	Pos/BA	0	9,896	0	290	0	194	0	194	0	0
<b>and Restoration Fund</b>	FTE/OBL	0	9,870	0	9,915	0	194	0	194	0	0
<b>Limited Access System</b>	Pos/BA	42	12,113	0	9,675	0	10,934	0	10,934	0	0
<b>Administration Fund</b>	FTE/OBL	40	10,181	0	23,781	0	10,934	0	10,934	0	0
<b>Marine Mammal Unusual</b>	Pos/BA	0	0	0	0	0	0	0	0	0	0
<b>Mortality Event Fund</b>	FTE/OBL	0	184	0	223	0	0	0	0	0	0
<b>Western Pacific Sustainable</b>	Pos/BA	0	1,030	0	1,000	0	1,000	0	1,000	0	0
<b>Fisheries Fund</b>	FTE/OBL	0	1,001	0	2,030	0	1,000	0	1,000	0	0
<b>Asset Forfeiture Fund</b>	Pos/BA	0	0	0	8,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	0	0	8,000	0	5,000	0	5,000	0	0
<b>TOTAL NMFS</b>	Pos/BA	3,075	956,987	3,023	894,454	3,027	907,990	2,991	880,286	(36)	(27,704)
	FTE/OBL	2,930	969,606	2,865	938,860	2,872	907,990	2,836	880,286	(36)	(27,704)
<b>Oceanic and Atmospheric Research (OAR)</b>											
Climate Research											
Laboratories & Cooperative	Pos/BA	217	53,430	261	52,045	261	53,184	261	53,350	0	166
Institutes	FTE/OBL	207	53,344	249	52,270	249	53,184	249	53,350	0	166
Climate Data & Information	Pos/BA	14	13,036	5	10,406	5	11,314	8	13,003	3	1,689
	FTE/OBL	13	12,994	5	10,506	5	11,314	7	13,003	2	1,689

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		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Climate Competitive Research, Sustained Observations and Regional Information	Pos/BA	155	151,339	119	119,619	119	120,019	134	146,330	15	26,311
	FTE/OBL	148	152,445	112	119,654	112	120,019	124	146,330	12	26,311
Climate Operations	Pos/BA	0	910	0	908	0	0	0	0	0	0
	FTE/OBL	0	909	0	909	0	0	0	0	0	0
Other Partnership Programs	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total: Climate Research	Pos/BA	386	218,715	385	182,978	385	184,517	403	212,683	18	28,166
	FTE/OBL	368	219,692	366	183,339	366	184,517	380	212,683	14	28,166
Weather & Air Chemistry Research											
Laboratories & Cooperative Institutes	Pos/BA	224	56,380	198	53,593	210	54,285	210	55,311	0	1,026
	FTE/OBL	213	56,689	189	53,599	201	54,285	201	55,311	0	1,026
Weather & Air Chemistry Research Programs	Pos/BA	9	12,961	22	14,186	10	14,186	10	14,231	0	45
	FTE/OBL	9	12,941	21	14,233	9	14,186	9	14,231	0	45
Other Partnership Programs	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	312	0	0	0	0	0	0	0	0
Total: Weather & Air Chemistry Research	Pos/BA	233	69,341	220	67,779	220	68,471	220	69,542	0	1,071
	FTE/OBL	222	69,942	210	67,832	210	68,471	210	69,542	0	1,071

Exhibit 10  
**Department of Commerce**  
National Oceanic and Atmospheric Administration  
**PROGRAM AND PERFORMANCE: DIRECT OBLIGATIONS**  
(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>Ocean, Coastal, and Great Lakes Research</b>											
Laboratories & Cooperative	Pos/BA	104	21,934	126	22,799	126	23,490	124	21,125	(2)	(2,365)
Institutes	FTE/OBL	99	22,008	119	22,799	119	23,490	117	21,125	(2)	(2,365)
National Sea Grant College	Pos/BA	18	61,295	28	62,169	28	62,219	25	61,648	(3)	(571)
Program	FTE/OBL	17	61,386	27	62,170	27	62,219	24	61,648	(3)	(571)
Ocean Exploration and	Pos/BA	25	25,566	18	23,545	18	23,575	12	19,665	(6)	(3,910)
Research	FTE/OBL	24	25,614	17	23,574	17	23,575	11	19,665	(6)	(3,910)
Other Ecosystems Programs	Pos/BA	5	6,352	4	6,206	4	6,380	4	6,400	0	20
	FTE/OBL	5	6,352	3	6,206	3	6,380	3	6,400	0	20
Other Partnership Programs	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	26	0	3	0	0	0	0	0	0
Total: Ocean, Coastal, and	Pos/BA	152	115,147	176	114,719	176	115,664	165	108,838	(11)	(6,826)
Great Lakes Research	FTE/OBL	145	115,386	166	114,752	166	115,664	155	108,838	(11)	(6,826)
<b>Information Technology R&amp;D</b>											
Information Technology R&D	Pos/BA	18	13,018	14	8,946	14	8,946	14	12,378	0	3,432
	FTE/OBL	17	12,842	13	9,212	13	8,946	13	12,378	0	3,432
Total: Information Technology	Pos/BA	18	13,018	14	8,946	14	8,946	14	12,378	0	3,432
R&D	FTE/OBL	17	12,842	13	9,212	13	8,946	13	12,378	0	3,432

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>TOTAL OAR - ORF</b>	<b>Pos/BA</b>	<b>789</b>	<b>416,221</b>	<b>795</b>	<b>374,422</b>	<b>795</b>	<b>377,598</b>	<b>802</b>	<b>403,441</b>	<b>7</b>	<b>25,843</b>
	<b>FTE/OBL</b>	<b>752</b>	<b>417,862</b>	<b>755</b>	<b>375,135</b>	<b>755</b>	<b>377,598</b>	<b>758</b>	<b>403,441</b>	<b>3</b>	<b>25,843</b>
<b>TOTAL OAR - PAC</b>	<b>Pos/BA</b>	<b>0</b>	<b>10,348</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>10,379</b>	<b>0</b>	<b>83</b>
	<b>FTE/OBL</b>	<b>0</b>	<b>10,507</b>	<b>0</b>	<b>10,297</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>10,379</b>	<b>0</b>	<b>83</b>
<b>TOTAL OAR</b>	<b>Pos/BA</b>	<b>789</b>	<b>426,569</b>	<b>795</b>	<b>384,718</b>	<b>795</b>	<b>387,894</b>	<b>802</b>	<b>413,820</b>	<b>7</b>	<b>25,926</b>
	<b>FTE/OBL</b>	<b>752</b>	<b>428,369</b>	<b>755</b>	<b>385,432</b>	<b>755</b>	<b>387,894</b>	<b>758</b>	<b>413,820</b>	<b>3</b>	<b>25,926</b>
<b>National Weather Service (NWS)</b>											
Operations and Research											
Local Warnings and Forecasts	Pos/BA	4,368	697,572	4,330	720,415	4,335	729,212	4,234	693,154	(101)	(36,058)
	FTE/OBL	4,160	690,419	4,123	728,322	4,128	729,212	4,027	693,154	(101)	(36,058)
Central Forecast Guidance	Pos/BA	314	79,129	323	78,845	323	79,595	323	79,224	0	(371)
	FTE/OBL	299	79,143	307	78,852	307	79,595	307	79,224	0	(371)
Total: Operations and Research	Pos/BA	4,682	776,701	4,653	799,260	4,658	808,807	4,557	772,378	(101)	(36,429)
	FTE/OBL	4,459	769,562	4,430	807,174	4,435	808,807	4,334	772,378	(101)	(36,429)
Systems Operation & Maintenance (O&M)											
Systems Operation & Maintenance	Pos/BA	214	102,002	197	101,504	197	102,052	197	102,376	0	324
	FTE/OBL	203	102,144	188	101,504	188	102,052	188	102,376	0	324

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Total: Systems Operation & Maintenance (O&M)	Pos/BA	214	102,002	197	101,504	197	102,052	197	102,376	0	324
	FTE/OBL	203	102,144	188	101,504	188	102,052	188	102,376	0	324
<b>TOTAL NWS - ORF</b>	<b>Pos/BA</b>	<b>4,896</b>	<b>878,703</b>	<b>4,850</b>	<b>900,764</b>	<b>4,855</b>	<b>910,859</b>	<b>4,754</b>	<b>874,754</b>	<b>(101)</b>	<b>(36,105)</b>
	<b>FTE/OBL</b>	<b>4,662</b>	<b>871,706</b>	<b>4,618</b>	<b>908,678</b>	<b>4,623</b>	<b>910,859</b>	<b>4,522</b>	<b>874,754</b>	<b>(101)</b>	<b>(36,105)</b>
<b>TOTAL NWS - PAC</b>	<b>Pos/BA</b>	<b>52</b>	<b>96,801</b>	<b>32</b>	<b>91,110</b>	<b>27</b>	<b>91,110</b>	<b>27</b>	<b>97,439</b>	<b>0</b>	<b>6,329</b>
	<b>FTE/OBL</b>	<b>50</b>	<b>116,736</b>	<b>31</b>	<b>95,345</b>	<b>26</b>	<b>91,110</b>	<b>26</b>	<b>97,439</b>	<b>0</b>	<b>6,329</b>
<b>TOTAL NWS</b>	<b>Pos/BA</b>	<b>4,948</b>	<b>975,504</b>	<b>4,882</b>	<b>991,874</b>	<b>4,882</b>	<b>1,001,969</b>	<b>4,781</b>	<b>972,193</b>	<b>(101)</b>	<b>(29,776)</b>
	<b>FTE/OBL</b>	<b>4,712</b>	<b>988,442</b>	<b>4,649</b>	<b>1,004,023</b>	<b>4,649</b>	<b>1,001,969</b>	<b>4,548</b>	<b>972,193</b>	<b>(101)</b>	<b>(29,776)</b>
<b>NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE (NESDIS)</b>											
Environmental Satellite Observing System											
Office of Satellite and Product Operations	Pos/BA	284	83,871	312	83,553	312	84,343	312	93,929	0	9,586
	FTE/OBL	270	83,938	297	83,956	297	84,343	297	93,929	0	9,586
Product Development, Readiness & Application	Pos/BA	99	28,124	107	26,667	107	26,902	107	26,987	0	85
	FTE/OBL	94	28,352	102	26,790	102	26,902	102	26,987	0	85
Commercial Remote Sensing Licensing & Enforcement	Pos/BA	6	1,307	5	1,104	5	1,115	5	1,119	0	4
	FTE/OBL	6	1,150	5	1,264	5	1,115	5	1,119	0	4
Office of Space Commercialization	Pos/BA	3	652	5	651	5	657	5	659	0	2
	FTE/OBL	3	644	5	660	5	657	5	659	0	2

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
Group on Earth Observations	Pos/BA	0	504	0	503	0	503	0	505	0	2
(GEO)	FTE/OBL	0	504	0	503	0	503	0	505	0	2
Total: Environmental Satellite	Pos/BA	392	114,458	429	112,478	429	113,520	429	123,199	0	9,679
Observing Systems	FTE/OBL	373	114,588	409	113,173	409	113,520	409	123,199	0	9,679
NOAA's Data Centers & Information Services											
Archive, Access & Assessment	Pos/BA	206	51,418	243	48,510	243	48,986	234	48,434	(9)	(552)
	FTE/OBL	196	51,649	230	48,710	230	48,986	221	48,434	(9)	(552)
Coastal Data Development	Pos/BA	14	4,624	16	4,500	16	4,500	16	4,000	0	(500)
	FTE/OBL	13	4,603	16	4,528	16	4,500	16	4,000	0	(500)
Regional Climate Services	Pos/BA	0	3,490	0	6,800	0	6,800	0	5,752	0	(1,048)
	FTE/OBL	0	3,490	0	6,800	0	6,800	0	5,752	0	(1,048)
Environmental Data Systems	Pos/BA	42	9,482	24	8,912	24	8,912	24	9,712	0	800
Modernization	FTE/OBL	40	9,470	23	8,945	23	8,912	23	9,712	0	800
Other Data and Information	Pos/BA	0	0	0	0	0	0	0	0	0	0
Services	FTE/OBL	0	8	0	0	0	0	0	0	0	0
Total: NOAA's Data Centers &	Pos/BA	262	69,014	283	68,722	283	69,198	274	67,898	(9)	(1,300)
Information Services	FTE/OBL	249	69,220	269	68,983	269	69,198	260	67,898	(9)	(1,300)

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>Total NESDIS - ORF</b>	Pos/BA	654	183,472	712	181,200	712	182,718	703	191,097	(9)	8,379
	FTE/OBL	622	183,808	678	182,156	678	182,718	669	191,097	(9)	8,379
<b>Total NESDIS - PAC</b>	Pos/BA	176	1,259,232	158	1,696,645	158	1,696,645	158	1,850,309	0	153,664
	FTE/OBL	168	1,267,928	149	1,698,894	149	1,696,645	149	1,850,309	0	153,664
<b>Total NESDIS</b>	Pos/BA	830	1,442,704	870	1,877,845	870	1,879,363	861	2,041,406	(9)	162,043
	FTE/OBL	790	1,451,736	827	1,881,050	827	1,879,363	818	2,041,406	(9)	162,043
<b>Program Support</b>											
Corporate Services											
Under Secretary and	Pos/BA	164	29,678	177	27,420	177	27,535	177	27,429	0	(106)
Associate Offices	FTE/OBL	156	29,818	154	27,481	154	27,535	154	27,429	0	(106)
NOAA Wide Corporate Services	Pos/BA	713	169,836	836	165,357	836	164,520	836	164,041	0	(479)
& Agency Management	FTE/OBL	679	175,880	795	167,723	795	164,520	795	164,041	0	(479)
Office of Chief Information	Pos/BA	0	6,800	0	9,255	0	9,686	0	8,431	0	(1,255)
Officer (CIO)	FTE/OBL	0	7,880	0	9,593	0	9,686	0	8,431	0	(1,255)
<b>Total: Corporate Services</b>	Pos/BA	877	206,314	1,013	202,032	1,013	201,741	1,013	199,901	0	(1,840)
	FTE/OBL	835	213,578	949	204,797	949	201,741	949	199,901	0	(1,840)

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>NOAA Education Program</b>											
NOAA Education Program	Pos/BA	34	29,518	22	25,090	22	25,090	10	11,266	(12)	(13,824)
	FTE/OBL	32	29,652	21	25,123	21	25,090	9	11,266	(12)	(13,824)
Total: NOAA Education Program	Pos/BA	34	29,518	22	25,090	22	25,090	10	11,266	(12)	(13,824)
	FTE/OBL	32	29,652	21	25,123	21	25,090	9	11,266	(12)	(13,824)
<b>Facilities</b>											
NOAA Facilities Management,	Pos/BA	54	29,000	45	24,422	45	24,457	45	24,535	0	78
Construction and Maintenance	FTE/OBL	51	29,045	45	24,422	45	24,457	45	24,535	0	78
Total: Facilities	Pos/BA	54	29,000	45	24,422	45	24,457	45	24,535	0	78
	FTE/OBL	51	29,045	45	24,422	45	24,457	45	24,535	0	78
<b>Total Program Support ORF without OMAO</b>	Pos/BA	<b>965</b>	<b>264,832</b>	<b>1,080</b>	<b>251,544</b>	<b>1,080</b>	<b>251,288</b>	<b>1,068</b>	<b>235,702</b>	<b>(12)</b>	<b>(15,586)</b>
	FTE/OBL	<b>918</b>	<b>272,275</b>	<b>1,015</b>	<b>254,342</b>	<b>1,015</b>	<b>251,288</b>	<b>1,003</b>	<b>235,702</b>	<b>(12)</b>	<b>(15,586)</b>
<b>Total Program Support PAC without OMAO</b>	Pos/BA	<b>5</b>	<b>13,958</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
	FTE/OBL	<b>5</b>	<b>15,156</b>	<b>0</b>	<b>1,037</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL Program Support</b>	Pos/BA	<b>970</b>	<b>278,790</b>	<b>1,080</b>	<b>251,544</b>	<b>1,080</b>	<b>251,288</b>	<b>1,068</b>	<b>235,702</b>	<b>(12)</b>	<b>(15,586)</b>
	FTE/OBL	<b>923</b>	<b>287,431</b>	<b>1,015</b>	<b>255,379</b>	<b>1,015</b>	<b>251,288</b>	<b>1,003</b>	<b>235,702</b>	<b>(12)</b>	<b>(15,586)</b>

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Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount		
<b>OFFICE OF MARINE AND AVIATION OPERATIONS (OMAO)</b>											
Marine Operations & Maintenance											
Marine Operations	Pos/BA	797	129,610	950	128,327	953	165,198	953	166,015	0	817
& Maintenance	FTE/OBL	759	130,097	923	128,405	926	165,198	926	166,015	0	817
Fleet Planning and Maintenance	Pos/BA	1	23,329	3	26,949	0	0	0	0	0	0
	FTE/OBL	1	23,604	3	26,983	0	0	0	0	0	0
Total: Marine Operations & Maintenance	Pos/BA	798	152,939	953	155,276	953	165,198	953	166,015	0	817
	FTE/OBL	760	153,701	926	155,388	926	165,198	926	166,015	0	817
Aviation Operations											
Aviation Operations	Pos/BA	134	30,085	109	27,684	109	28,249	109	30,241	0	1,992
	FTE/OBL	128	30,134	104	27,756	104	28,249	104	30,241	0	1,992
Total: Aviation Operations	Pos/BA	134	30,085	109	27,684	109	28,249	109	30,241	0	1,992
	FTE/OBL	128	30,134	104	27,756	104	28,249	104	30,241	0	1,992
<b>Total OMAO - ORF</b>	<b>Pos/BA</b>	<b>932</b>	<b>183,024</b>	<b>1,062</b>	<b>182,960</b>	<b>1,062</b>	<b>193,447</b>	<b>1,062</b>	<b>196,256</b>	<b>0</b>	<b>2,809</b>
	<b>FTE/OBL</b>	<b>888</b>	<b>183,835</b>	<b>1,030</b>	<b>183,144</b>	<b>1,030</b>	<b>193,447</b>	<b>1,030</b>	<b>196,256</b>	<b>0</b>	<b>2,809</b>
<b>Total OMAO - PAC</b>	<b>Pos/BA</b>	<b>1</b>	<b>2,393</b>	<b>5</b>	<b>2,392</b>	<b>5</b>	<b>2,392</b>	<b>5</b>	<b>14,609</b>	<b>0</b>	<b>12,217</b>
	<b>FTE/OBL</b>	<b>1</b>	<b>2,205</b>	<b>5</b>	<b>2,828</b>	<b>5</b>	<b>2,392</b>	<b>5</b>	<b>14,609</b>	<b>0</b>	<b>12,217</b>

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(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
<b>Medicare Eligible Retiree</b>	Pos/BA	0	1,832	0	1,936	0	1,936	0	1,936	0	0
<b>Health Care Fund</b>	FTE/OBL	0	1,832	0	1,936	0	1,936	0	1,936	0	0
<b>NOAA Corp Commissioned Officers Retirement</b>	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
	FTE/OBL	0	24,286	0	28,269	0	28,269	0	28,269	0	0
<b>TOTAL OMAO</b>	Pos/BA	933	215,518	1,067	215,557	1,067	226,044	1,067	241,070	0	15,026
	FTE/OBL	889	212,158	1,035	216,177	1,035	226,044	1,035	241,070	0	15,026
<b>NOAA ORF</b>	Pos/BA	12,558	3,245,224	12,810	3,146,980	12,815	3,188,585	12,653	3,161,524	(162)	(27,061)
	FTE/OBL	11,961	3,252,272	12,185	3,200,191	12,193	3,194,585	12,025	3,167,524	(168)	(27,061)
<b>NOAA PAC</b>	Pos/BA	249	1,400,050	196	1,800,443	191	1,801,443	190	1,965,736	(1)	164,293
	FTE/OBL	239	1,436,024	186	1,817,839	181	1,808,443	180	1,972,736	(1)	164,293
<b>NOAA OTHER</b>	Pos/BA	73	149,268	17	126,941	17	124,683	17	109,683	0	(15,000)
	FTE/OBL	70	215,450	17	219,504	17	137,283	17	122,283	0	(15,000)

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**NATIONAL OCEAN SERVICE**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011						FY 2013	FY 2013			FY 2013			Program			FY 2013
	Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	Base	POS	FTE	Changes	POS	FTE	President's Budget
<b>Navigation Services</b>																	
<b>Mapping and Charting</b>																	
Mapping & Charting Base	49,401	277	262	49,542	0	0	1,042	0	277	262	50,584	(17)	(17)	(1,240)	260	245	49,344
Hydrographic Research & Technology Development	7,186	0	0	7,282	0	0	0	0	0	0	7,282	0	0	(318)	0	0	6,964
Electronic Navigational Charts	5,888	0	0	5,762	0	0	0	0	0	0	5,762	0	0	18	0	0	5,780
Shoreline Mapping	2,196	0	0	2,265	0	0	0	0	0	0	2,265	0	0	7	0	0	2,272
Address Survey Backlog/Contracts	26,946	11	10	26,861	0	0	0	0	11	10	26,861	0	0	85	11	10	26,946
<b>Subtotal, Mapping and Charting</b>	<b>91,617</b>	<b>288</b>	<b>272</b>	<b>91,712</b>	<b>0</b>	<b>0</b>	<b>1,042</b>	<b>0</b>	<b>288</b>	<b>272</b>	<b>92,754</b>	<b>(17)</b>	<b>(17)</b>	<b>(1,448)</b>	<b>271</b>	<b>255</b>	<b>91,306</b>
<b>Geodesy</b>																	
Geodesy Base	26,647	158	149	26,405	0	0	333	0	158	149	26,738	0	0	84	158	149	26,822
National Height Modernization	2,495	5	5	2,398	0	0	0	0	5	5	2,398	0	0	8	5	5	2,406
Regional Geospatial Modeling Grants	4,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, Geodesy</b>	<b>33,142</b>	<b>163</b>	<b>154</b>	<b>28,803</b>	<b>0</b>	<b>0</b>	<b>333</b>	<b>0</b>	<b>163</b>	<b>154</b>	<b>29,136</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>163</b>	<b>154</b>	<b>29,228</b>
<b>Tide &amp; Current Data</b>																	
Tide & Current Data Base	29,441	129	124	27,443	0	0	386	0	129	124	27,829	0	0	1,226	129	124	29,055
<b>Subtotal, Tide &amp; Current Data</b>	<b>29,441</b>	<b>129</b>	<b>124</b>	<b>27,443</b>	<b>0</b>	<b>0</b>	<b>386</b>	<b>0</b>	<b>129</b>	<b>124</b>	<b>27,829</b>	<b>0</b>	<b>0</b>	<b>1,226</b>	<b>129</b>	<b>124</b>	<b>29,055</b>
<b>Total, Navigation Services</b>	<b>154,200</b>	<b>580</b>	<b>550</b>	<b>147,958</b>	<b>0</b>	<b>0</b>	<b>1,761</b>	<b>0</b>	<b>580</b>	<b>550</b>	<b>149,719</b>	<b>(17)</b>	<b>(17)</b>	<b>(130)</b>	<b>563</b>	<b>533</b>	<b>149,589</b>
<b>Ocean Resources Conservation and Assessment</b>																	
<b>Ocean Assessment Program (OAP)</b>																	
Coastal and Marine Spatial Planning	1,493	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IOOS Regional Observations	21,956	5	5	22,956	0	0	0	0	5	5	22,956	0	0	6,564	5	5	29,520
NOAA IOOS	6,595	20	20	6,432	0	0	81	0	20	20	6,513	0	0	20	20	20	6,533
Coastal Storms	2,794	0	0	2,765	0	0	0	0	0	0	2,765	0	0	9	0	0	2,774
Coastal Services Center (CSC)	27,622	88	84	33,081	0	0	365	0	88	84	33,446	0	0	(4,294)	88	84	29,152
Ocean Health Initiative	1,996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coral Reef Program	26,746	4	4	26,529	0	0	162	0	4	4	26,691	0	0	84	4	4	26,775
<b>Subtotal, Ocean Assessment Program (OAP)</b>	<b>89,202</b>	<b>117</b>	<b>113</b>	<b>91,763</b>	<b>0</b>	<b>0</b>	<b>608</b>	<b>0</b>	<b>117</b>	<b>113</b>	<b>92,371</b>	<b>0</b>	<b>0</b>	<b>2,383</b>	<b>117</b>	<b>113</b>	<b>94,754</b>
<b>Response and Restoration</b>																	
Response and Restoration Base	19,343	116	110	21,463	0	0	289	0	116	110	21,752	6	4	2,536	122	114	24,288
Estuary Restoration Program	1,186	1	1	498	(1)	(1)	0	(498)	0	0	0	0	0	0	0	0	0
Marine Debris	3,992	3	3	4,618	(3)	(3)	0	(4,618)	0	0	0	0	0	0	0	0	0
<b>Subtotal, Response and Restoration</b>	<b>24,521</b>	<b>120</b>	<b>114</b>	<b>26,579</b>	<b>(4)</b>	<b>(4)</b>	<b>289</b>	<b>(5,116)</b>	<b>116</b>	<b>110</b>	<b>21,752</b>	<b>6</b>	<b>4</b>	<b>2,536</b>	<b>122</b>	<b>114</b>	<b>24,288</b>

**NATIONAL OCEAN SERVICE**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011			FY 2012			FY 2013		FY 2013		FY 2013			FY 2013			
	Spend Plan (Final)	POS	FTE	Estimate	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	Base	POS	FTE	Program Changes	POS	FTE	President's Budget
<b>National Centers for Coastal Ocean Science (NCCOS)</b>																	
National Centers for Coastal Ocean Science (NCCOS)	0	212	199	35,886	0	0	493	0	212	199	36,379	0	0	(344)	212	199	36,035
Competitive Research	15,968	0	0	9,032	0	0	0	0	0	0	9,032	0	0	1,968	0	0	11,000
Center for Coastal Environmental Health & Biomolecular Research Oxford, MD	11,277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Center for Coastal Fisheries Habitat Research	4,491	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Center for Coastal Monitoring & Assessment	4,990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Center for Sponsored Coastal Ocean Research	7,754	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NCCOS Headquarters	2,754	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Center for Human Health Risk (Marine Env Health Research Lab - MEHRL)	3,992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, NCCOS</b>	<b>55,218</b>	<b>212</b>	<b>199</b>	<b>44,918</b>	<b>0</b>	<b>0</b>	<b>493</b>	<b>0</b>	<b>212</b>	<b>199</b>	<b>45,411</b>	<b>0</b>	<b>0</b>	<b>1,624</b>	<b>212</b>	<b>199</b>	<b>47,035</b>
<b>Total, Ocean Resources Conservation &amp; Assessment</b>	<b>168,941</b>	<b>449</b>	<b>426</b>	<b>163,260</b>	<b>(4)</b>	<b>(4)</b>	<b>1,390</b>	<b>(5,116)</b>	<b>445</b>	<b>422</b>	<b>159,534</b>	<b>6</b>	<b>4</b>	<b>6,543</b>	<b>451</b>	<b>426</b>	<b>166,077</b>
<b>Ocean and Coastal Management</b>																	
<b>Coastal Management</b>																	
CZM Grants	66,020	0	0	65,936	0	0	0	0	0	0	65,936	0	0	210	0	0	66,146
CZM and Stewardship	8,710	59	57	7,975	0	0	164	0	59	57	8,139	0	0	(1,055)	59	57	7,084
Regional Ocean Partnership Grants	7,027	1	1	3,489	0	0	0	0	1	1	3,489	0	0	511	1	1	4,000
National Estuarine Research Reserve System - NERRS	22,281	0	0	21,712	0	0	0	0	0	0	21,712	0	0	(2,733)	0	0	18,979
Marine Protected Areas	2,124	10	9	1,982	(10)	(9)	0	(1,982)	0	0	0	0	0	0	0	0	0
Energy Licensing and Appeals	749	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, Coastal Management</b>	<b>106,911</b>	<b>70</b>	<b>67</b>	<b>101,094</b>	<b>(10)</b>	<b>(9)</b>	<b>164</b>	<b>(1,982)</b>	<b>60</b>	<b>58</b>	<b>99,276</b>	<b>0</b>	<b>0</b>	<b>(3,067)</b>	<b>60</b>	<b>58</b>	<b>96,209</b>
<b>Ocean Management</b>																	
<b>Marine Sanctuary Program</b>																	
Marine Sanctuary Program Base (Nancy Foster Scholarship 1% of base)	45,424	190	182	47,060	10	9	592	1,982	200	191	49,634	0	0	(3,043)	200	191	46,591
<b>Subtotal, Ocean Management</b>	<b>45,424</b>	<b>190</b>	<b>182</b>	<b>47,060</b>	<b>10</b>	<b>9</b>	<b>592</b>	<b>1,982</b>	<b>200</b>	<b>191</b>	<b>49,634</b>	<b>0</b>	<b>0</b>	<b>(3,043)</b>	<b>200</b>	<b>191</b>	<b>46,591</b>
<b>Total, Ocean and Coastal Management</b>	<b>152,335</b>	<b>260</b>	<b>249</b>	<b>148,154</b>	<b>0</b>	<b>0</b>	<b>756</b>	<b>0</b>	<b>260</b>	<b>249</b>	<b>148,910</b>	<b>0</b>	<b>0</b>	<b>(6,110)</b>	<b>260</b>	<b>249</b>	<b>142,800</b>
<b>Total, National Ocean Service - ORF</b>	<b>475,476</b>	<b>1,289</b>	<b>1,225</b>	<b>459,372</b>	<b>(4)</b>	<b>(4)</b>	<b>3,907</b>	<b>(5,116)</b>	<b>1,285</b>	<b>1,221</b>	<b>458,163</b>	<b>(11)</b>	<b>(13)</b>	<b>303</b>	<b>1,274</b>	<b>1,208</b>	<b>458,466</b>
<b>Other National Ocean Service Accounts</b>																	
Total, National Ocean Service - PAC	19,366	1	1	8,000	0	0	0	0	1	1	8,000	(1)	(1)	(8,000)	0	0	0
Total, National Ocean Service - Other	55,326	16	16	22,600	0	0	0	(3,000)	16	16	19,600	0	0	0	16	16	19,600
<b>GRAND TOTAL NOS</b>	<b>550,168</b>	<b>1,306</b>	<b>1,242</b>	<b>489,972</b>	<b>(4)</b>	<b>(4)</b>	<b>3,907</b>	<b>(8,116)</b>	<b>1,302</b>	<b>1,238</b>	<b>485,763</b>	<b>(12)</b>	<b>(14)</b>	<b>(7,697)</b>	<b>1,290</b>	<b>1,224</b>	<b>478,066</b>

**NATIONAL MARINE FISHERIES SERVICE**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)			FY 2012 Estimate			FY 2013 Calculated ATBs			FY 2013 Technical ATBs			FY 2013 Base			Program Changes			FY 2013 President's Budget			
	POS	FTE		POS	FTE		POS	FTE		POS	FTE		POS	FTE		POS	FTE		POS	FTE		
<b>Protected Species Research and Management</b>																						
Protected Species Research and Management Programs Base	40,418	183	174	39,350	0	0	610	0	183	174	39,960	(17)	(17)	(988)	166	157	38,972					
Species Recovery Grants	7,990	1	1	2,788	0	0	23	0	1	1	2,811	0	0	1,986	1	1	4,797					
Marine Mammals	47,904	170	163	49,153	0	0	561	0	170	163	49,714	(2)	(2)	(5,304)	168	161	44,410					
Marine Turtles	10,452	59	55	12,387	0	0	166	0	59	55	12,553	0	0	(1,921)	59	55	10,632					
Other Protected Species (Marine Fish, Plants, and Invertebrates)	7,984	35	33	6,538	0	0	110	0	35	33	6,648	0	0	500	35	33	7,148					
Atlantic Salmon	7,485	29	27	5,563	0	0	90	0	29	27	5,653	0	0	347	29	27	6,000					
Pacific Salmon (for Salmon Management Activities, see FRM)	65,868	374	359	58,380	0	0	929	0	374	359	59,309	(2)	(2)	(1,227)	372	357	58,082					
<b>Total, Protected Species Research and Management</b>	<b>188,101</b>	<b>851</b>	<b>812</b>	<b>174,159</b>	<b>0</b>	<b>0</b>	<b>2,489</b>	<b>0</b>	<b>851</b>	<b>812</b>	<b>176,648</b>	<b>(21)</b>	<b>(21)</b>	<b>(6,607)</b>	<b>830</b>	<b>791</b>	<b>170,041</b>					
<b>Fisheries Research and Management</b>																						
Fisheries Research and Management Programs	174,428	871	825	178,432	0	0	2,613	0	871	825	181,045	(5)	(5)	(3,485)	866	820	177,560					
National Catch Share Program	41,912	22	17	27,911	0	0	0	0	22	17	27,911	0	0	89	22	17	28,000					
Expand Annual Stock Assessments - Improve Data Collection	53,393	154	145	63,562	0	2	771	0	154	147	64,333	0	0	4,312	154	147	68,645					
Economics & Social Sciences Research	10,939	24	24	7,633	0	0	116	0	24	24	7,749	0	0	24	24	24	7,773					
Salmon Management Activities	34,930	14	13	33,341	0	0	96	0	14	13	33,437	0	0	(6,519)	14	13	26,918					
Regional Councils and Fisheries Commissions	31,855	6	6	31,754	0	0	734	0	6	6	32,488	0	0	(5,139)	6	6	27,349					
Fisheries Statistics	22,243	116	108	23,150	0	1	307	0	116	109	23,457	0	0	74	116	109	23,531					
Fish Information Networks	22,087	14	13	21,996	0	0	86	0	14	13	22,082	0	0	70	14	13	22,152					
Survey and Monitoring Projects	23,970	137	128	21,710	0	0	304	0	137	128	22,014	0	0	2,322	137	128	24,336					
Fisheries Oceanography	3,067	4	4	2,140	0	0	18	0	4	4	2,158	0	0	4,989	4	4	7,147					
American Fisheries Act	5,554	37	35	3,876	0	0	82	0	37	35	3,958	0	0	1,662	37	35	5,620					
Interjurisdictional Fisheries Grants	1,653	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
National Standard 8	1,071	5	5	997	0	0	17	0	5	5	1,014	0	0	3	5	5	1,017					
Reduce Fishing Impacts on Essential Fish Habitat (EFH)	534	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Reducing Bycatch	3,426	10	9	3,381	0	0	48	0	10	9	3,429	0	0	11	10	9	3,440					
Product Quality and Safety	7,445	55	52	6,192	0	0	107	0	55	52	6,299	0	0	290	55	52	6,589					
<b>Total, Fisheries Research and Management</b>	<b>438,507</b>	<b>1,469</b>	<b>1,384</b>	<b>426,075</b>	<b>0</b>	<b>3</b>	<b>5,299</b>	<b>0</b>	<b>1,469</b>	<b>1,387</b>	<b>431,374</b>	<b>(5)</b>	<b>(5)</b>	<b>(1,297)</b>	<b>1,464</b>	<b>1,382</b>	<b>430,077</b>					
<b>Enforcement &amp; Observers/Training</b>																						
Enforcement	66,825	259	248	65,617	0	0	915	0	259	248	66,532	0	0	591	259	248	67,123					
Observers/Training	38,922	141	137	39,744	0	0	514	0	141	137	40,258	0	0	2,908	141	137	43,166					
<b>Total, Enforcement &amp; Observers/Training</b>	<b>105,747</b>	<b>400</b>	<b>385</b>	<b>105,361</b>	<b>0</b>	<b>0</b>	<b>1,429</b>	<b>0</b>	<b>400</b>	<b>385</b>	<b>106,790</b>	<b>0</b>	<b>0</b>	<b>3,499</b>	<b>400</b>	<b>385</b>	<b>110,289</b>					
<b>Habitat Conservation &amp; Restoration</b>																						
Habitat Management & Restoration	20,958	100	95	20,892	62	58	488	25,881	162	153	47,261	0	0	(11,274)	162	153	35,987					
Fisheries Habitat Restoration	20,831	58	54	20,765	(58)	(54)	0	(20,765)	0	0	0	0	0	0	0	0	0					
<b>Subtotal, Habitat Conservation &amp; Restoration</b>	<b>41,789</b>	<b>158</b>	<b>149</b>	<b>41,657</b>	<b>4</b>	<b>4</b>	<b>488</b>	<b>5,116</b>	<b>162</b>	<b>153</b>	<b>47,261</b>	<b>0</b>	<b>0</b>	<b>(11,274)</b>	<b>162</b>	<b>153</b>	<b>35,987</b>					

**NATIONAL MARINE FISHERIES SERVICE**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011			FY 2012			FY 2013			FY 2013			Program			FY 2013		
	Spend Plan (Final)	POS	FTE	Estimate	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	Base	POS	FTE	Changes	POS	FTE	President's Budget	
<b>Other Activities Supporting Fisheries</b>																		
Antarctic Research	2,741	10	9	1,640	0	0	40	0	10	9	1,680	0	0	1,085	10	9	2,765	
Aquaculture	5,988	16	15	5,575	0	0	89	0	16	15	5,664	0	0	18	16	15	5,682	
Climate Regimes & Ecosystem Productivity	3,383	14	14	1,741	0	0	60	0	14	14	1,801	0	0	6	14	14	1,807	
Computer Hardware and Software - FY 2004 Omnibus Funded in PAC	2,994	0	0	1,790	0	0	46	0	0	0	1,836	0	0	6	0	0	1,842	
Cooperative Research	10,050	19	17	10,965	0	0	167	0	19	17	11,132	0	0	868	19	17	12,000	
Information Analyses & Dissemination	18,962	67	63	15,328	0	0	280	0	67	63	15,608	(3)	(3)	2,351	64	60	17,959	
Marine Resources Monitoring, Assessment & Prediction Program (MarMap)	840	0	0	502	0	0	0	0	0	0	502	0	0	340	0	0	842	
National Environmental Policy Act (NEPA)	8,418	0	0	6,446	0	0	100	0	0	0	6,546	0	0	21	0	0	6,567	
NMFS Facilities Maintenance	5,489	0	0	3,283	0	0	98	0	0	0	3,381	0	0	10	0	0	3,391	
Regional Studies	12,228	18	16	10,196	0	0	93	0	18	16	10,289	(7)	(7)	(1,730)	11	9	8,559	
<b>Total, Other Activities Supporting Fisheries</b>	<b>71,093</b>	<b>144</b>	<b>134</b>	<b>57,466</b>	<b>0</b>	<b>0</b>	<b>973</b>	<b>0</b>	<b>144</b>	<b>134</b>	<b>58,439</b>	<b>(10)</b>	<b>(10)</b>	<b>2,975</b>	<b>134</b>	<b>124</b>	<b>61,414</b>	
<b>Total, National Marine Fisheries Service - ORF</b>	<b>845,237</b>	<b>3,022</b>	<b>2,864</b>	<b>804,718</b>	<b>4</b>	<b>7</b>	<b>10,678</b>	<b>5,116</b>	<b>3,026</b>	<b>2,871</b>	<b>820,512</b>	<b>(36)</b>	<b>(36)</b>	<b>(12,704)</b>	<b>2,990</b>	<b>2,835</b>	<b>807,808</b>	
<b>Other National Marine Fisheries Service Accounts</b>																		
National Marine Fisheries Service - PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total, National Marine Fisheries Service - Other	122,260	1	1	90,286	0	0	0	(2,808)	1	1	87,478	0	0	(15,000)	1	1	72,478	
<b>GRAND TOTAL NMFS</b>	<b>967,497</b>	<b>3,023</b>	<b>2,865</b>	<b>895,004</b>	<b>4</b>	<b>7</b>	<b>10,678</b>	<b>2,308</b>	<b>3,027</b>	<b>2,872</b>	<b>907,990</b>	<b>(36)</b>	<b>(36)</b>	<b>(27,704)</b>	<b>2,991</b>	<b>2,836</b>	<b>880,286</b>	

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Climate Research</b>																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	53,483	261	249	52,045	0	0	1,139	0	261	249	53,184	0	0	166	261	249	53,350
<b>Subtotal, Laboratories &amp; Cooperative Institutes</b>	<b>53,483</b>	<b>261</b>	<b>249</b>	<b>52,045</b>	<b>0</b>	<b>0</b>	<b>1,139</b>	<b>0</b>	<b>261</b>	<b>249</b>	<b>53,184</b>	<b>0</b>	<b>0</b>	<b>166</b>	<b>261</b>	<b>249</b>	<b>53,350</b>
<b>Climate Data &amp; Information</b>																	
Climate Data & Information	13,049	5	5	10,406	0	0	0	908	5	5	11,314	3	2	1,689	8	7	13,003
<b>Subtotal, Climate Data &amp; Information</b>	<b>13,049</b>	<b>5</b>	<b>5</b>	<b>10,406</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>908</b>	<b>5</b>	<b>5</b>	<b>11,314</b>	<b>3</b>	<b>2</b>	<b>1,689</b>	<b>8</b>	<b>7</b>	<b>13,003</b>
<b>Climate Competitive Research, Sustained Observations and Regional Info</b>																	
Climate Competitive Research, Sustained Observations and Regional Info	151,491	119	112	119,619	0	0	400	0	119	112	120,019	15	12	26,311	134	124	146,330
<b>Subtotal, Climate Competitive Research, Sustained Obs and Regional Info</b>	<b>151,491</b>	<b>119</b>	<b>112</b>	<b>119,619</b>	<b>0</b>	<b>0</b>	<b>400</b>	<b>0</b>	<b>119</b>	<b>112</b>	<b>120,019</b>	<b>15</b>	<b>12</b>	<b>26,311</b>	<b>134</b>	<b>124</b>	<b>146,330</b>
<b>Climate Operations</b>																	
Climate Operations	911	0	0	908	0	0	0	(908)	0	0	0	0	0	0	0	0	0
<b>Subtotal, Climate Operations</b>	<b>911</b>	<b>0</b>	<b>0</b>	<b>908</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(908)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, Other Partnership Programs</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Climate Research</b>	<b>218,934</b>	<b>385</b>	<b>366</b>	<b>182,978</b>	<b>0</b>	<b>0</b>	<b>1,539</b>	<b>0</b>	<b>385</b>	<b>366</b>	<b>184,517</b>	<b>18</b>	<b>14</b>	<b>28,166</b>	<b>403</b>	<b>380</b>	<b>212,683</b>
<b>Weather &amp; Air Chemistry Research</b>																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	56,436	198	189	53,593	12	12	692	0	210	201	54,285	0	0	1,026	210	201	55,311
<b>Subtotal, Laboratories &amp; Cooperative Institutes</b>	<b>56,436</b>	<b>198</b>	<b>189</b>	<b>53,593</b>	<b>12</b>	<b>12</b>	<b>692</b>	<b>0</b>	<b>210</b>	<b>201</b>	<b>54,285</b>	<b>0</b>	<b>0</b>	<b>1,026</b>	<b>210</b>	<b>201</b>	<b>55,311</b>
<b>Weather &amp; Air Chemistry Research Programs</b>																	
U.S. Weather Research Program (USWRP)	4,990	18	17	4,210	(12)	(12)	0	0	6	5	4,210	0	0	13	6	5	4,223
Tornado Severe Storm Research / Phased Array Radar	7,984	4	4	9,976	0	0	0	0	4	4	9,976	0	0	32	4	4	10,008
<b>Subtotal, Weather &amp; Air Chemistry Research Programs</b>	<b>12,974</b>	<b>22</b>	<b>21</b>	<b>14,186</b>	<b>(12)</b>	<b>(12)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>9</b>	<b>14,186</b>	<b>0</b>	<b>0</b>	<b>45</b>	<b>10</b>	<b>9</b>	<b>14,231</b>
<b>Subtotal, Other Partnership Programs</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Weather &amp; Air Chemistry Research</b>	<b>69,410</b>	<b>220</b>	<b>210</b>	<b>67,779</b>	<b>0</b>	<b>0</b>	<b>692</b>	<b>0</b>	<b>220</b>	<b>210</b>	<b>68,471</b>	<b>0</b>	<b>0</b>	<b>1,071</b>	<b>220</b>	<b>210</b>	<b>69,542</b>
<b>Ocean, Coastal, and Great Lakes Research</b>																	
Laboratories & Cooperative Institutes																	
Laboratories & Cooperative Institutes	21,956	126	119	22,799	0	0	691	0	126	119	23,490	(2)	(2)	(2,365)	124	117	21,125
<b>Subtotal, Laboratories &amp; Cooperative Institutes</b>	<b>21,956</b>	<b>126</b>	<b>119</b>	<b>22,799</b>	<b>0</b>	<b>0</b>	<b>691</b>	<b>0</b>	<b>126</b>	<b>119</b>	<b>23,490</b>	<b>(2)</b>	<b>(2)</b>	<b>(2,365)</b>	<b>124</b>	<b>117</b>	<b>21,125</b>

OFFICE of OCEANIC AND ATMOSPHERIC RESEARCH  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>National Sea Grant College Program</b>																	
National Sea Grant College Program Base	56,039	24	23	56,861	0	0	50	0	24	23	56,911	0	0	181	24	23	57,092
Aquatic Invasive Species Program	1,000	3	3	999	0	0	0	0	3	3	999	(3)	(3)	(999)	0	0	0
Marine Aquaculture Program	4,317	1	1	4,309	0	0	0	0	1	1	4,309	0	0	247	1	1	4,556
<b>Subtotal, National Sea Grant College Program</b>	<b>61,356</b>	<b>28</b>	<b>27</b>	<b>62,169</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>28</b>	<b>27</b>	<b>62,219</b>	<b>(3)</b>	<b>(3)</b>	<b>(571)</b>	<b>25</b>	<b>24</b>	<b>61,648</b>
<b>Ocean Exploration and Research</b>																	
Ocean Exploration and Research (NURP moved in FY08)	25,592	18	17	23,545	0	0	30	0	18	17	23,575	(6)	(6)	(3,910)	12	11	19,665
<b>Subtotal, Ocean Exploration and Research</b>	<b>25,592</b>	<b>18</b>	<b>17</b>	<b>23,545</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>0</b>	<b>18</b>	<b>17</b>	<b>23,575</b>	<b>(6)</b>	<b>(6)</b>	<b>(3,910)</b>	<b>12</b>	<b>11</b>	<b>19,665</b>
<b>Other Ecosystems Programs</b>																	
Integrated Ocean Acidification	6,358	4	3	6,206	0	0	174	0	4	3	6,380	0	0	20	4	3	6,400
<b>Subtotal, Other Ecosystems Programs</b>	<b>6,358</b>	<b>4</b>	<b>3</b>	<b>6,206</b>	<b>0</b>	<b>0</b>	<b>174</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>6,380</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>4</b>	<b>3</b>	<b>6,400</b>
<b>Subtotal, Other Partnership Programs</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Ocean, Coastal, &amp; Great Lakes Research</b>	<b>115,262</b>	<b>176</b>	<b>166</b>	<b>114,719</b>	<b>0</b>	<b>0</b>	<b>945</b>	<b>0</b>	<b>176</b>	<b>166</b>	<b>115,664</b>	<b>(11)</b>	<b>(11)</b>	<b>(6,826)</b>	<b>165</b>	<b>155</b>	<b>108,838</b>
<b>Information Technology Research &amp; Development</b>																	
High Performance Computing Initiatives	13,031	14	13	8,946	0	0	0	0	14	13	8,946	0	0	3,432	14	13	12,378
<b>Total, Information Technology Research &amp; Development</b>	<b>13,031</b>	<b>14</b>	<b>13</b>	<b>8,946</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>8,946</b>	<b>0</b>	<b>0</b>	<b>3,432</b>	<b>14</b>	<b>13</b>	<b>12,378</b>
<b>Total, Office of Oceanic and Atmospheric Research - ORF</b>	<b>416,637</b>	<b>795</b>	<b>755</b>	<b>374,422</b>	<b>0</b>	<b>0</b>	<b>3,176</b>	<b>0</b>	<b>795</b>	<b>755</b>	<b>377,598</b>	<b>7</b>	<b>3</b>	<b>25,843</b>	<b>802</b>	<b>758</b>	<b>403,441</b>
<b>Other Office of Oceanic and Atmospheric Research Accounts</b>																	
Total, Office of Ocean and Atmospheric Research - PAC	10,358	0	0	10,296	0	0	0	0	0	0	10,296	0	0	83	0	0	10,379
Total, Office of Oceanic and Atmospheric Research - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>GRAND TOTAL OAR</b>	<b>426,995</b>	<b>795</b>	<b>755</b>	<b>384,718</b>	<b>0</b>	<b>0</b>	<b>3,176</b>	<b>0</b>	<b>795</b>	<b>755</b>	<b>387,894</b>	<b>7</b>	<b>3</b>	<b>25,926</b>	<b>802</b>	<b>758</b>	<b>413,820</b>

NATIONAL WEATHER SERVICE  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011			FY 2012			FY 2013			FY 2013			Program			FY 2013		
	Spnd Plan	POS	FTE	Estimate	POS	FTE	Calculated	Technical	POS	FTE	Base	POS	FTE	Changes	POS	FTE	President's	
	(Final)						ATBs	ATBs									Budget	
<b>Operations and Research</b>																		
<b>Local Warnings and Forecasts</b>																		
Local Warnings and Forecasts Base	628,121	4,293	4,088	631,168	5	5	8,737	0	4,298	4,093	639,905	(98)	(98)	(11,341)	4,200	3,995	628,564	
Air Quality Forecasting	2,994	0	0	3,987	0	0	0	0	0	0	3,987	0	0	(3,122)	0	0	865	
Alaska Data Buoys	1,680	0	0	1,678	0	0	0	0	0	0	1,678	0	0	5	0	0	1,683	
Sustain Cooperative Observer Network	998	0	0	1,865	0	0	0	0	0	0	1,865	0	0	(867)	0	0	998	
NOAA Profiler Network	2,768	7	7	4,228	0	0	0	0	7	7	4,228	(3)	(3)	(2,417)	4	4	1,811	
Strengthen U.S. Tsunami Warning Network	23,233	20	19	23,466	0	0	0	0	20	19	23,466	0	0	(4,554)	20	19	18,912	
Pacific Island Compact	3,308	0	0	3,703	0	0	60	0	0	0	3,763	0	0	12	0	0	3,775	
National Mesonet Network	8,000	0	0	10,965	0	0	0	0	0	0	10,965	0	0	(10,965)	0	0	0	
<b>Subtotal, Local Warnings and Forecasts</b>	<b>671,102</b>	<b>4,320</b>	<b>4,114</b>	<b>681,060</b>	<b>5</b>	<b>5</b>	<b>8,797</b>	<b>0</b>	<b>4,325</b>	<b>4,119</b>	<b>689,857</b>	<b>(101)</b>	<b>(101)</b>	<b>(33,249)</b>	<b>4,224</b>	<b>4,018</b>	<b>656,608</b>	
Advanced Hydrological Prediction Services	6,037	0	0	8,173	0	0	0	0	0	0	8,173	0	0	(1,964)	0	0	6,209	
Aviation Weather	11,538	10	9	21,470	0	0	0	0	10	9	21,470	0	0	(18)	10	9	21,452	
WFO Maintenance	7,301	0	0	7,422	0	0	0	0	0	0	7,422	0	0	(834)	0	0	6,588	
<b>Weather Radio Transmitters</b>																		
Weather Radio Transmitters Base	2,292	0	0	2,290	0	0	0	0	0	0	2,290	0	0	7	0	0	2,297	
<b>Subtotal, Weather Radio Transmitters</b>	<b>2,292</b>	<b>0</b>	<b>0</b>	<b>2,290</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,290</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>2,297</b>	
<b>Subtotal, Local Warnings and Forecasts</b>	<b>698,270</b>	<b>4,330</b>	<b>4,123</b>	<b>720,415</b>	<b>5</b>	<b>5</b>	<b>8,797</b>	<b>0</b>	<b>4,335</b>	<b>4,128</b>	<b>729,212</b>	<b>(101)</b>	<b>(101)</b>	<b>(36,058)</b>	<b>4,234</b>	<b>4,027</b>	<b>693,154</b>	
<b>Central Forecast Guidance</b>																		
Central Forecast Guidance	79,208	323	307	78,845	0	0	750	0	323	307	79,595	0	0	(371)	323	307	79,224	
<b>Subtotal, Central Forecast Guidance</b>	<b>79,208</b>	<b>323</b>	<b>307</b>	<b>78,845</b>	<b>0</b>	<b>0</b>	<b>750</b>	<b>0</b>	<b>323</b>	<b>307</b>	<b>79,595</b>	<b>0</b>	<b>0</b>	<b>(371)</b>	<b>323</b>	<b>307</b>	<b>79,224</b>	
<b>Total, Operations and Research</b>	<b>777,478</b>	<b>4,653</b>	<b>4,430</b>	<b>799,260</b>	<b>5</b>	<b>5</b>	<b>9,547</b>	<b>0</b>	<b>4,658</b>	<b>4,435</b>	<b>808,807</b>	<b>(101)</b>	<b>(101)</b>	<b>(36,429)</b>	<b>4,557</b>	<b>4,334</b>	<b>772,378</b>	
<b>Systems Operation &amp; Maintenance (O&amp;M)</b>																		
NEXRAD	46,145	108	103	45,852	0	0	249	0	108	103	46,101	0	0	146	108	103	46,247	
ASOS	11,186	46	44	11,266	0	0	50	0	46	44	11,316	0	0	36	46	44	11,352	
AWIPS	39,273	43	41	39,121	0	0	249	0	43	41	39,370	0	0	125	43	41	39,495	
NWSTG Backup - CIP	5,500	0	0	5,265	0	0	0	0	0	0	5,265	0	0	17	0	0	5,282	
<b>Total, Systems Operation &amp; Maintenance (O&amp;M)</b>	<b>102,104</b>	<b>197</b>	<b>188</b>	<b>101,504</b>	<b>0</b>	<b>0</b>	<b>548</b>	<b>0</b>	<b>197</b>	<b>188</b>	<b>102,052</b>	<b>0</b>	<b>0</b>	<b>324</b>	<b>197</b>	<b>188</b>	<b>102,376</b>	
<b>Total, National Weather Service - ORF</b>	<b>879,582</b>	<b>4,850</b>	<b>4,618</b>	<b>900,764</b>	<b>5</b>	<b>5</b>	<b>10,095</b>	<b>0</b>	<b>4,855</b>	<b>4,623</b>	<b>910,859</b>	<b>(101)</b>	<b>(101)</b>	<b>(36,105)</b>	<b>4,754</b>	<b>4,522</b>	<b>874,754</b>	
<b>Other National Weather Service Accounts</b>																		
Total, National Weather Service - PAC	96,899	32	31	91,110	(5)	(5)	0	0	27	26	91,110	0	0	6,329	27	26	97,439	
Total, National Weather Service - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>GRAND TOTAL NWS</b>	<b>976,481</b>	<b>4,882</b>	<b>4,649</b>	<b>991,874</b>	<b>0</b>	<b>0</b>	<b>10,095</b>	<b>0</b>	<b>4,882</b>	<b>4,649</b>	<b>1,001,969</b>	<b>(101)</b>	<b>(101)</b>	<b>(29,776)</b>	<b>4,781</b>	<b>4,548</b>	<b>972,193</b>	

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Environmental Satellite Observing Systems</b>																	
<b>Office of Satellite and Product Operations (OSPO)</b>																	
Satellite Command and Control	39,970	183	174	39,707	0	0	405	0	183	174	40,112	0	0	126	183	174	40,238
NSOF Operations	7,944	0	0	7,919	0	0	65	0	0	0	7,984	0	0	25	0	0	8,009
Product, Processing and Distribution	36,041	129	123	35,927	0	0	320	0	129	123	36,247	0	0	9,435	129	123	45,682
<b>Subtotal, Office of Satellite and Product Operations</b>	<b>83,955</b>	<b>312</b>	<b>297</b>	<b>83,553</b>	<b>0</b>	<b>0</b>	<b>790</b>	<b>0</b>	<b>312</b>	<b>297</b>	<b>84,343</b>	<b>0</b>	<b>0</b>	<b>9,586</b>	<b>312</b>	<b>297</b>	<b>93,929</b>
<b>Product Development, Readiness &amp; Application</b>																	
Product Development, Readiness & Application	20,771	107	102	19,310	0	0	174	0	107	102	19,484	0	0	61	107	102	19,545
Product Development, Readiness & Application (Ocean Remote Sensing)	4,023	0	0	4,010	0	0	35	0	0	0	4,045	0	0	13	0	0	4,058
Joint Center for Satellite Data Assimilation	3,358	0	0	3,347	0	0	26	0	0	0	3,373	0	0	11	0	0	3,384
<b>Subtotal, Product Development, Readiness &amp; Application</b>	<b>28,152</b>	<b>107</b>	<b>102</b>	<b>26,667</b>	<b>0</b>	<b>0</b>	<b>235</b>	<b>0</b>	<b>107</b>	<b>102</b>	<b>26,902</b>	<b>0</b>	<b>0</b>	<b>85</b>	<b>107</b>	<b>102</b>	<b>26,987</b>
Commercial Remote Sensing Regulatory Affairs	1,308	5	5	1,104	0	0	11	0	5	5	1,115	0	0	4	5	5	1,119
Office of Space Commercialization	653	5	5	651	0	0	6	0	5	5	657	0	0	2	5	5	659
Group on Earth Observations (GEO)	505	0	0	503	0	0	0	0	0	0	503	0	0	2	0	0	505
<b>Total, Environmental Satellite Observing Systems</b>	<b>114,573</b>	<b>429</b>	<b>409</b>	<b>112,478</b>	<b>0</b>	<b>0</b>	<b>1,042</b>	<b>0</b>	<b>429</b>	<b>409</b>	<b>113,520</b>	<b>0</b>	<b>0</b>	<b>9,679</b>	<b>429</b>	<b>409</b>	<b>123,199</b>
<b>Data Centers &amp; Information Services</b>																	
Archive, Access & Assessment	47,415	243	230	48,510	0	0	476	0	243	230	48,986	(9)	(9)	(552)	234	221	48,434
KY	1,358	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NC - Quality Assurance/Quality Control	274	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WV	1,431	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, Archive, Access &amp; Assessment</b>	<b>51,469</b>	<b>243</b>	<b>230</b>	<b>48,510</b>	<b>0</b>	<b>0</b>	<b>476</b>	<b>0</b>	<b>243</b>	<b>230</b>	<b>48,986</b>	<b>(9)</b>	<b>(9)</b>	<b>(552)</b>	<b>234</b>	<b>221</b>	<b>48,434</b>
Coastal Data Development	4,629	16	16	4,500	0	0	0	0	16	16	4,500	0	0	(500)	16	16	4,000
Regional Climate Services	3,493	0	0	6,800	0	0	0	0	0	0	6,800	0	0	(1,048)	0	0	5,752
Environmental Data Systems Modernization	9,492	24	23	8,912	0	0	0	0	24	23	8,912	0	0	800	24	23	9,712
<b>Total, Data Centers &amp; Information Services</b>	<b>69,083</b>	<b>283</b>	<b>269</b>	<b>68,722</b>	<b>0</b>	<b>0</b>	<b>476</b>	<b>0</b>	<b>283</b>	<b>269</b>	<b>69,198</b>	<b>(9)</b>	<b>(9)</b>	<b>(1,300)</b>	<b>274</b>	<b>260</b>	<b>67,898</b>
<b>Total, NESDIS - ORF</b>	<b>183,656</b>	<b>712</b>	<b>678</b>	<b>181,200</b>	<b>0</b>	<b>0</b>	<b>1,518</b>	<b>0</b>	<b>712</b>	<b>678</b>	<b>182,718</b>	<b>(9)</b>	<b>(9)</b>	<b>8,379</b>	<b>703</b>	<b>669</b>	<b>191,097</b>
<b>Other NESDIS Accounts</b>																	
Total, NESDIS - PAC	1,260,422	158	149	1,696,645	0	0	0	0	158	149	1,696,645	0	0	153,664	158	149	1,850,309
Total, NESDIS - Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>GRAND TOTAL NESDIS</b>	<b>1,444,078</b>	<b>870</b>	<b>827</b>	<b>1,877,845</b>	<b>0</b>	<b>0</b>	<b>1,518</b>	<b>0</b>	<b>870</b>	<b>827</b>	<b>1,879,363</b>	<b>(9)</b>	<b>(9)</b>	<b>162,043</b>	<b>861</b>	<b>818</b>	<b>2,041,406</b>

**PROGRAM SUPPORT**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Corporate Services</b>																	
Under Secretary and Associate Offices																	
Under Secretary and Associate Offices Base	29,707	177	154	27,420	0	0	115	0	177	154	27,535	0	0	(106)	177	154	27,429
<b>Subtotal, Under Secretary and Associate Offices</b>	<b>29,707</b>	<b>177</b>	<b>154</b>	<b>27,420</b>	<b>0</b>	<b>0</b>	<b>115</b>	<b>0</b>	<b>177</b>	<b>154</b>	<b>27,535</b>	<b>0</b>	<b>0</b>	<b>(106)</b>	<b>177</b>	<b>154</b>	<b>27,429</b>
<b>NOAA Wide Corporate Services &amp; Agency Management</b>																	
NOAA Wide Corporate Services & Agency Management Base	119,808	797	756	114,944	0	0	2,334	0	797	756	117,278	0	0	(44)	797	756	117,234
DOC Accounting System	10,298	39	39	10,168	0	0	0	0	39	39	10,168	0	0	(435)	39	39	9,733
Payment to the DOC Working Capital Fund	39,900	0	0	40,245	0	0	(3,171)	0	0	0	37,074	0	0	0	0	0	37,074
<b>Subtotal, NOAA Wide Corporate Services &amp; Agency Mgmt</b>	<b>170,006</b>	<b>836</b>	<b>795</b>	<b>165,357</b>	<b>0</b>	<b>0</b>	<b>(837)</b>	<b>0</b>	<b>836</b>	<b>795</b>	<b>164,520</b>	<b>0</b>	<b>0</b>	<b>(479)</b>	<b>836</b>	<b>795</b>	<b>164,041</b>
<b>Office of Chief Information Officer</b>																	
IT Security	6,807	0	0	9,255	0	0	431	0	0	0	9,686	0	0	(1,255)	0	0	8,431
<b>Subtotal, Office of Chief Information Officer</b>	<b>6,807</b>	<b>0</b>	<b>0</b>	<b>9,255</b>	<b>0</b>	<b>0</b>	<b>431</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,686</b>	<b>0</b>	<b>0</b>	<b>(1,255)</b>	<b>0</b>	<b>0</b>	<b>8,431</b>
<b>Total, Corporate Services</b>	<b>206,520</b>	<b>1,013</b>	<b>949</b>	<b>202,032</b>	<b>0</b>	<b>0</b>	<b>(291)</b>	<b>0</b>	<b>1,013</b>	<b>949</b>	<b>201,741</b>	<b>0</b>	<b>0</b>	<b>(1,840)</b>	<b>1,013</b>	<b>949</b>	<b>199,901</b>
<b>NOAA Education Program</b>																	
BWET Regional Programs	0	0	0	5,500	0	0	0	0	0	0	5,500	0	0	(5,500)	0	0	0
Education Partnership Program/Minority Serving Institutions (EPP/MSI)	0	0	0	12,561	0	0	0	(12,561)	0	0	0	0	0	0	0	0	0
NOAA Education Program Base	24,950	22	21	5,029	0	0	0	12,561	22	21	17,590	(12)	(12)	(6,324)	10	9	11,266
Ocean Education Partnerships	0	0	0	1,000	0	0	0	0	0	0	1,000	0	0	(1,000)	0	0	0
Geographic Literacy	0	0	0	1,000	0	0	0	0	0	0	1,000	0	0	(1,000)	0	0	0
<b>Total, NOAA Education Program</b>	<b>24,950</b>	<b>22</b>	<b>21</b>	<b>25,090</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>21</b>	<b>25,090</b>	<b>(12)</b>	<b>(12)</b>	<b>(13,824)</b>	<b>10</b>	<b>9</b>	<b>11,266</b>
<b>Facilities</b>																	
NOAA Facilities Management & Construction and Safety	29,029	45	45	24,422	0	0	35	0	45	45	24,457	0	0	78	45	45	24,535
<b>Subtotal, NOAA Facilities Management, Construction &amp; Maintenance</b>	<b>29,029</b>	<b>45</b>	<b>45</b>	<b>24,422</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>45</b>	<b>45</b>	<b>24,457</b>	<b>0</b>	<b>0</b>	<b>78</b>	<b>45</b>	<b>45</b>	<b>24,535</b>
<b>Total, Facilities</b>	<b>29,029</b>	<b>45</b>	<b>45</b>	<b>24,422</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>45</b>	<b>45</b>	<b>24,457</b>	<b>0</b>	<b>0</b>	<b>78</b>	<b>45</b>	<b>45</b>	<b>24,535</b>
<b>Total, Program Support - ORF</b>	<b>260,499</b>	<b>1,080</b>	<b>1,015</b>	<b>251,544</b>	<b>0</b>	<b>0</b>	<b>(256)</b>	<b>0</b>	<b>1,080</b>	<b>1,015</b>	<b>251,288</b>	<b>(12)</b>	<b>(12)</b>	<b>(15,586)</b>	<b>1,068</b>	<b>1,003</b>	<b>235,702</b>
<b>Total, Program Support - PAC</b>	<b>13,972</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Program Support - ORF and PAC</b>	<b>274,471</b>	<b>1,080</b>	<b>1,015</b>	<b>251,544</b>	<b>0</b>	<b>0</b>	<b>(256)</b>	<b>0</b>	<b>1,080</b>	<b>1,015</b>	<b>251,288</b>	<b>(12)</b>	<b>(12)</b>	<b>(15,586)</b>	<b>1,068</b>	<b>1,003</b>	<b>235,702</b>

PROGRAM SUPPORT  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Marine Operations &amp; Maintenance</b>																	
Marine Operations & Maintenance	129,740	950	923	128,327	3	3	9,922	26,949	953	926	165,198	0	0	817	953	926	166,015
<b>Subtotal, Marine Operations &amp; Maintenance</b>	<b>129,740</b>	<b>950</b>	<b>923</b>	<b>128,327</b>	<b>3</b>	<b>3</b>	<b>9,922</b>	<b>26,949</b>	<b>953</b>	<b>926</b>	<b>165,198</b>	<b>0</b>	<b>0</b>	<b>817</b>	<b>953</b>	<b>926</b>	<b>166,015</b>
<b>Fleet Planning and Maintenance</b>																	
Fleet Planning and Maintenance	23,352	3	3	26,949	(3)	(3)	0	(26,949)	0	0	0	0	0	0	0	0	0
<b>Subtotal, Fleet Planning and Maintenance</b>	<b>23,352</b>	<b>3</b>	<b>3</b>	<b>26,949</b>	<b>(3)</b>	<b>(3)</b>	<b>0</b>	<b>(26,949)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Marine Operations &amp; Maintenance</b>	<b>153,092</b>	<b>953</b>	<b>926</b>	<b>155,276</b>	<b>0</b>	<b>0</b>	<b>9,922</b>	<b>0</b>	<b>953</b>	<b>926</b>	<b>165,198</b>	<b>0</b>	<b>0</b>	<b>817</b>	<b>953</b>	<b>926</b>	<b>166,015</b>
<b>Aviation Operations</b>																	
Aircraft Services	30,115	109	104	27,684	0	0	565	0	109	104	28,249	0	0	1,992	109	104	30,241
<b>Subtotal, Aviation Operations</b>	<b>30,115</b>	<b>109</b>	<b>104</b>	<b>27,684</b>	<b>0</b>	<b>0</b>	<b>565</b>	<b>0</b>	<b>109</b>	<b>104</b>	<b>28,249</b>	<b>0</b>	<b>0</b>	<b>1,992</b>	<b>109</b>	<b>104</b>	<b>30,241</b>
<b>Total, OMAO - ORF</b>	<b>183,207</b>	<b>1,062</b>	<b>1,030</b>	<b>182,960</b>	<b>0</b>	<b>0</b>	<b>10,487</b>	<b>0</b>	<b>1,062</b>	<b>1,030</b>	<b>193,447</b>	<b>0</b>	<b>0</b>	<b>2,809</b>	<b>1,062</b>	<b>1,030</b>	<b>196,256</b>
<b>Total, OMAO - PAC</b>	<b>2,395</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>12,217</b>	<b>5</b>	<b>5</b>	<b>14,609</b>
<b>Total, OMAO - Other</b>	<b>30,087</b>	<b>0</b>	<b>0</b>	<b>30,205</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30,205</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>30,205</b>
<b>Total OMAO - ORF, PAC and Other</b>	<b>215,689</b>	<b>1,067</b>	<b>1,035</b>	<b>215,557</b>	<b>0</b>	<b>0</b>	<b>10,487</b>	<b>0</b>	<b>1,067</b>	<b>1,035</b>	<b>226,044</b>	<b>0</b>	<b>0</b>	<b>15,026</b>	<b>1,067</b>	<b>1,035</b>	<b>241,070</b>
<b>Total, Program Support and OMAO - ORF</b>	<b>443,706</b>	<b>2,142</b>	<b>2,045</b>	<b>434,504</b>	<b>0</b>	<b>0</b>	<b>10,231</b>	<b>0</b>	<b>2,142</b>	<b>2,045</b>	<b>444,735</b>	<b>(12)</b>	<b>(12)</b>	<b>(12,777)</b>	<b>2,130</b>	<b>2,033</b>	<b>431,958</b>
<b>Other Program Support and OMAO Accounts</b>																	
Total, Program Support - PAC	16,367	5	5	2,392	0	0	0	0	5	5	2,392	0	0	12,217	5	5	14,609
Total, Program Support - Other	30,087	0	0	30,205	0	0	0	0	0	0	30,205	0	0	0	0	0	30,205
<b>GRAND TOTAL PS</b>	<b>490,160</b>	<b>2,147</b>	<b>2,050</b>	<b>467,101</b>	<b>0</b>	<b>0</b>	<b>10,231</b>	<b>0</b>	<b>2,147</b>	<b>2,050</b>	<b>477,332</b>	<b>(12)</b>	<b>(12)</b>	<b>(560)</b>	<b>2,135</b>	<b>2,038</b>	<b>476,772</b>

**ORF SUMMARY**  
**LINE OFFICE DIRECT OBLIGATIONS**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
National Ocean Service	475,476	1,289	1,225	459,372	(4)	(4)	3,907	(5,116)	1,285	1,221	458,163	(11)	(13)	303	1,274	1,208	458,466
National Marine Fisheries Service	845,237	3,022	2,864	804,718	4	7	10,678	5,116	3,026	2,871	820,512	(36)	(36)	(12,704)	2,990	2,835	807,808
Office of Oceanic and Atmospheric Research	416,637	795	755	374,422	0	0	3,176	0	795	755	377,598	7	3	25,843	802	758	403,441
National Weather Service	879,582	4,850	4,618	900,764	5	5	10,095	0	4,855	4,623	910,859	(101)	(101)	(36,105)	4,754	4,522	874,754
National Environmental Satellite, Data and Information Service	183,656	712	678	181,200	0	0	1,518	0	712	678	182,718	(9)	(9)	8,379	703	669	191,097
Program Support	443,706	2,142	2,045	434,504	0	0	10,231	0	2,142	2,045	444,735	(12)	(12)	(12,777)	2,130	2,033	431,958
<b>SUBTOTAL LO DIRECT OBLIGATIONS</b>	<b>3,244,294</b>	<b>12,810</b>	<b>12,185</b>	<b>3,154,980</b>	<b>5</b>	<b>8</b>	<b>39,605</b>	<b>0</b>	<b>12,815</b>	<b>12,193</b>	<b>3,194,585</b>	<b>(162)</b>	<b>(168)</b>	<b>(27,061)</b>	<b>12,653</b>	<b>12,025</b>	<b>3,167,524</b>

ORF ADJUSTMENTS  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>SUBTOTAL LO DIRECT OBLIGATIONS</b>	<b>3,244,294</b>	<b>12,810</b>	<b>12,185</b>	<b>3,154,980</b>	<b>5</b>	<b>8</b>	<b>39,605</b>	<b>0</b>	<b>12,815</b>	<b>12,193</b>	<b>3,194,585</b>	<b>(162)</b>	<b>(168)</b>	<b>(27,061)</b>	<b>12,653</b>	<b>12,025</b>	<b>3,167,524</b>
<b>FINANCING</b>																	
Cash Refunds/Prior Year Recoveries	(200)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
De-Obligations	0	0	0	(8,000)	0	0	0	2,000	0	0	(6,000)	0	0	0	0	0	(6,000)
Unobligated Balance, EOY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance, Expiring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY (start of year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer of Unobligated P&D Balance	(312)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total ORF Financing</b>	<b>(512)</b>	<b>0</b>	<b>0</b>	<b>(8,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,000</b>	<b>0</b>	<b>0</b>	<b>(6,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(6,000)</b>
<b>SUBTOTAL BUDGET AUTHORITY</b>	<b>3,243,782</b>	<b>12,810</b>	<b>12,185</b>	<b>3,146,980</b>	<b>5</b>	<b>8</b>	<b>39,605</b>	<b>2,000</b>	<b>12,815</b>	<b>12,193</b>	<b>3,188,585</b>	<b>(162)</b>	<b>(168)</b>	<b>(27,061)</b>	<b>12,653</b>	<b>12,025</b>	<b>3,161,524</b>
<b>TRANSFERS</b>																	
Transfer from ORF to PAC	28,968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	0	0	(15,651)	0	0	0	15,651	0	0	0	0	0	0	0	0	0
Transfer from FFPA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer from P&D to ORF	(90,239)	0	0	(109,098)	0	0	0	(9,966)	0	0	(119,064)	0	0	0	0	0	(119,064)
Transfer from CZMF to ORF	(3,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer from PCSRF to ORF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total ORF Transfers</b>	<b>(64,271)</b>	<b>0</b>	<b>0</b>	<b>(124,749)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,685</b>	<b>0</b>	<b>0</b>	<b>(119,064)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(119,064)</b>
<b>SUBTOTAL APPROPRIATION</b>	<b>3,179,511</b>	<b>12,810</b>	<b>12,185</b>	<b>3,022,231</b>	<b>5</b>	<b>8</b>	<b>39,605</b>	<b>7,685</b>	<b>12,815</b>	<b>12,193</b>	<b>3,069,521</b>	<b>(162)</b>	<b>(168)</b>	<b>(27,061)</b>	<b>12,653</b>	<b>12,025</b>	<b>3,042,460</b>

PROCUREMENT, ACQUISITION, and CONSTRUCTION  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>NOS</b>																	
<b>CELCP Acquisition</b>																	
Coastal and Estuarine Land Conservation Program	10,000	1	1	3,000	0	0	0	0	1	1	3,000	(1)	(1)	(3,000)	0	0	0
<b>Subtotal, NOS Acquisition</b>	<b>10,000</b>	<b>1</b>	<b>1</b>	<b>3,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3,000</b>	<b>(1)</b>	<b>(1)</b>	<b>(3,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>NERRS Construction:</b>																	
National Estuarine Rsrch Reserve Construction (NERRS)	3,882	0	0	1,000	0	0	0	0	0	0	1,000	0	0	(1,000)	0	0	0
<b>Subtotal, NERRS Construction</b>	<b>3,882</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>(1,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Marine Sanctuaries Construction:</b>																	
Marine Sanctuaries Base (Nancy Foster Scholarship 1% of base)	5,484	0	0	4,000	0	0	0	0	0	0	4,000	0	0	(4,000)	0	0	0
<b>Subtotal, Marine Sanctuary Construction</b>	<b>5,484</b>	<b>0</b>	<b>0</b>	<b>4,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4,000</b>	<b>0</b>	<b>0</b>	<b>(4,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, NOS Construction</b>	<b>9,366</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,000</b>	<b>0</b>	<b>0</b>	<b>(5,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, NOS - PAC</b>	<b>19,366</b>	<b>1</b>	<b>1</b>	<b>8,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>8,000</b>	<b>(1)</b>	<b>(1)</b>	<b>(8,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, NMFS - PAC</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OAR</b>																	
<b>Systems Acquisition</b>																	
Research Supercomputing/ CCRI	10,358	0	0	10,296	0	0	0	0	0	0	10,296	0	0	83	0	0	10,379
<b>Subtotal, OAR Systems Acquisition</b>	<b>10,358</b>	<b>0</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>0</b>	<b>83</b>	<b>0</b>	<b>0</b>	<b>10,379</b>
<b>Total, OAR - PAC</b>	<b>10,358</b>	<b>0</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10,296</b>	<b>0</b>	<b>0</b>	<b>83</b>	<b>0</b>	<b>0</b>	<b>10,379</b>
<b>NWS</b>																	
<b>Systems Acquisition</b>																	
ASOS	1,632	9	9	1,635	0	0	0	0	9	9	1,635	0	0	0	9	9	1,635
AWIPS	23,952	16	15	24,134	0	0	0	0	16	15	24,134	0	0	(3,542)	16	15	20,592
NEXRAD	11,104	5	5	5,819	(5)	(5)	0	0	0	0	5,819	0	0	(5,819)	0	0	0
NWSTRG Legacy Replacement	5,185	0	0	1,195	0	0	0	0	0	0	1,195	0	0	6,990	0	0	8,185
Radiosonde Network Replacement	4,006	0	0	4,014	0	0	0	0	0	0	4,014	0	0	0	0	0	4,014
Weather and Climate Supercomputing	29,111	0	0	40,169	0	0	0	0	0	0	40,169	0	0	(2,000)	0	0	38,169
Cooperative Observer Network Modernization (NERON)	3,727	2	2	3,700	0	0	0	0	2	2	3,700	0	0	0	2	2	3,700
Complete and Sustain NOAA Weather Radio	12,589	0	0	5,594	0	0	0	0	0	0	5,594	0	0	0	0	0	5,594
NOAA Profiler Conversion	0	0	0	1,700	0	0	0	0	0	0	1,700	0	0	(1,700)	0	0	0
Ground Readiness Project	0	0	0	0	0	0	0	0	0	0	0	0	0	12,400	0	0	12,400
<b>Subtotal, NWS Systems Acquisition</b>	<b>91,306</b>	<b>32</b>	<b>31</b>	<b>87,960</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>26</b>	<b>87,960</b>	<b>0</b>	<b>0</b>	<b>6,329</b>	<b>27</b>	<b>26</b>	<b>94,289</b>

PROCUREMENT, ACQUISITION, and CONSTRUCTION  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Construction</b>																	
WFO Construction	5,593	0	0	3,150	0	0	0	0	0	0	3,150	0	0	0	0	0	3,150
<b>Subtotal, NWS Construction</b>	<b>5,593</b>	<b>0</b>	<b>0</b>	<b>3,150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,150</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,150</b>
<b>Total, NWS - PAC</b>	<b>96,899</b>	<b>32</b>	<b>31</b>	<b>91,110</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>26</b>	<b>91,110</b>	<b>0</b>	<b>0</b>	<b>6,329</b>	<b>27</b>	<b>26</b>	<b>97,439</b>
<b>NESDIS</b>																	
<b>Systems Acquisition</b>																	
NOAA Satellite and Climate Sensors																	
Geostationary Systems - N	40,520	22	20	32,467	0	0	0	0	22	20	32,467	0	0	(2,567)	22	20	29,900
Geostationary Systems - R	662,373	48	46	615,622	0	0	0	0	48	46	615,622	0	0	186,378	48	46	802,000
Polar Orbiting Systems - POES	40,796	24	22	32,241	0	0	0	0	24	22	32,241	0	0	0	24	22	32,241
Jason-3	19,960	0	0	19,700	0	0	0	0	0	0	19,700	0	0	10,300	0	0	30,000
Joint Polar Satellite System (JPSS)	471,900	64	61	924,014	0	0	0	25,880	64	61	949,894	0	0	(33,530)	64	61	916,364
DSCOVN	2,000	0	0	29,800	0	0	0	0	0	0	29,800	0	0	(6,917)	0	0	22,883
EOS & Advanced Polar Data Processing, Distribution & Archiving Systems	988	0	0	990	0	0	0	0	0	0	990	0	0	0	0	0	990
CIP - single point of failure	2,766	0	0	2,772	0	0	0	0	0	0	2,772	0	0	0	0	0	2,772
Comprehensive Large Array Data Stewardship Sys (CLASS)	5,463	0	0	6,476	0	0	0	0	0	0	6,476	0	0	0	0	0	6,476
NPOESS Preparatory Data Exploitation	4,446	0	0	4,455	0	0	0	0	0	0	4,455	0	0	0	0	0	4,455
Restoration of Climate Sensors	6,986	0	0	25,880	0	0	0	(25,880)	0	0	0	0	0	0	0	0	0
<b>Subtotal, NESDIS Systems Acquisition</b>	<b>1,258,198</b>	<b>158</b>	<b>149</b>	<b>1,694,417</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>158</b>	<b>149</b>	<b>1,694,417</b>	<b>0</b>	<b>0</b>	<b>153,664</b>	<b>158</b>	<b>149</b>	<b>1,848,081</b>
<b>Construction</b>																	
Satellite CDA Facility	2,224	0	0	2,228	0	0	0	0	0	0	2,228	0	0	0	0	0	2,228
<b>Subtotal, NESDIS Construction</b>	<b>2,224</b>	<b>0</b>	<b>0</b>	<b>2,228</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,228</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,228</b>
<b>Total, NESDIS - PAC</b>	<b>1,260,422</b>	<b>158</b>	<b>149</b>	<b>1,696,645</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>158</b>	<b>149</b>	<b>1,696,645</b>	<b>0</b>	<b>0</b>	<b>153,664</b>	<b>158</b>	<b>149</b>	<b>1,850,309</b>
<b>Program Support</b>																	
<b>Construction</b>																	
NOAA Construction	13,972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, Construction</b>	<b>13,972</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total, Program Support - PAC</b>	<b>13,972</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OMAO</b>																	
<b>OMAO - Fleet Replacement</b>																	
Fleet Capital Improvements & Tech Infusion (Vessel Equip & Tech Refresh)	998	0	0	1,000	0	0	0	0	0	0	1,000	0	0	10,712	0	0	11,712
New Vessel Construction	1,397	5	5	1,392	0	0	0	0	5	5	1,392	0	0	1,505	5	5	2,897
<b>Subtotal, OMAO Fleet Replacement</b>	<b>2,395</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>12,217</b>	<b>5</b>	<b>5</b>	<b>14,609</b>
<b>Total, OMAO - PAC</b>	<b>2,395</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2,392</b>	<b>0</b>	<b>0</b>	<b>12,217</b>	<b>5</b>	<b>5</b>	<b>14,609</b>
<b>GRAND TOTAL PAC</b>	<b>1,403,412</b>	<b>196</b>	<b>186</b>	<b>1,808,443</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>0</b>	<b>191</b>	<b>181</b>	<b>1,808,443</b>	<b>(1)</b>	<b>(1)</b>	<b>164,293</b>	<b>190</b>	<b>180</b>	<b>1,972,736</b>

**PAC ADJUSTMENTS**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>SUBTOTAL DIRECT OBLIGATIONS</b>	<b>1,403,412</b>	<b>196</b>	<b>186</b>	<b>1,808,443</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>0</b>	<b>191</b>	<b>181</b>	<b>1,808,443</b>	<b>(1)</b>	<b>(1)</b>	<b>164,293</b>	<b>190</b>	<b>180</b>	<b>1,972,736</b>
<b>FINANCING</b>																	
Cash Refunds/Recoveries from Prior Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
De-Obligations	(2,000)	0	0	(8,000)	0	0	0	1,000	0	0	(7,000)	0	0	0	0	0	(7,000)
Unobligated balance, Expiring end of year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance Adj. SOY (start of year)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unobligated Balance End of Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer to ORF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total PAC Financing</b>	<b>(2,000)</b>	<b>0</b>	<b>0</b>	<b>(8,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>(7,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(7,000)</b>
<b>SUBTOTAL BUDGET AUTHORITY</b>	<b>1,401,412</b>	<b>196</b>	<b>186</b>	<b>1,800,443</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>1,000</b>	<b>191</b>	<b>181</b>	<b>1,801,443</b>	<b>(1)</b>	<b>(1)</b>	<b>164,293</b>	<b>190</b>	<b>180</b>	<b>1,965,736</b>
<b>TRANSFERS/RESCISSIONS</b>																	
Transfer from ORF to PAC	(28,968)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	0	0	15,651	0	0	0	(15,651)	0	0	0	0	0	0	0	0	0
Transfer from PCSRF to PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer from Census to PAC	(39,761)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfer to OIG	0	0	0	1,000	0	0	0	(1,000)	0	0	0	0	0	0	0	0	0
Unobligated balance, Rescission	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total PAC Transfers/Rescissions</b>	<b>(68,729)</b>	<b>0</b>	<b>0</b>	<b>16,651</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(16,651)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>SUBTOTAL APPROPRIATION</b>	<b>1,332,683</b>	<b>196</b>	<b>186</b>	<b>1,817,094</b>	<b>(5)</b>	<b>(5)</b>	<b>0</b>	<b>(15,651)</b>	<b>191</b>	<b>181</b>	<b>1,801,443</b>	<b>(1)</b>	<b>(1)</b>	<b>164,293</b>	<b>190</b>	<b>180</b>	<b>1,965,736</b>

**GRAND TOTAL SUMMARY**  
**Discretionary Appropriations**  
(\$ in Thousands)

<b>FY 2013 PROPOSED OPERATING PLAN ORF, PAC, and Other Discretionary Appropriations</b>	<b>FY 2011 Spend Plan (Final)</b>	<b>POS</b>	<b>FTE</b>	<b>FY 2012 Estimate</b>	<b>POS</b>	<b>FTE</b>	<b>FY 2013 Calculated ATBs</b>	<b>FY 2013 Technical ATBs</b>	<b>POS</b>	<b>FTE</b>	<b>FY 2013 Base</b>	<b>POS</b>	<b>FTE</b>	<b>Program Changes</b>	<b>POS</b>	<b>FTE</b>	<b>FY 2013 President's Budget</b>
Operations, Research and Facilities	3,179,511	12,810	12,185	3,022,231	5	8	39,605	7,685	12,815	12,193	3,069,521	(162)	(168)	(27,061)	12,653	12,025	3,042,460
Procurement, Acquisition and Construction	1,332,683	196	186	1,817,094	(5)	(5)	0	(15,651)	191	181	1,801,443	(1)	(1)	164,293	190	180	1,965,736
Coastal Zone Management Fund	3,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisherman's Contingency Fund	0	1	1	350	0	0	0	0	1	1	350	0	0	0	1	1	350
Foreign Fishing Observer Fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Financing Program Account	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Fund	79,840	0	0	65,000	0	0	0	0	0	0	65,000	0	0	(15,000)	0	0	50,000
Marine Mammal Unusual Mortality Event Fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Medicare Eligible Retiree Health Care Fund	1,818	0	0	1,936	0	0	0	0	0	0	1,936	0	0	0	0	0	1,936
<b>GRAND TOTAL DISCRETIONARY APPROPRIATION</b>	<b>4,596,852</b>	<b>13,007</b>	<b>12,372</b>	<b>4,906,611</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(7,966)</b>	<b>13,007</b>	<b>12,375</b>	<b>4,938,250</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,844</b>	<b>12,206</b>	<b>5,060,482</b>

**OTHER ACCOUNTS (DISCRETIONARY)**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>NOS</b>																	
Coastal Zone Management Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Zone Management Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Zone Management Fund Appropriation	3,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, NOS Other Discretionary Direct Obligation</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, NOS Other Discretionary Budget Authority</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Subtotal, NOS Other Discretionary Appropriation</b>	<b>3,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>NMFS</b>																	
Fishermen's Contingency Fund Obligations	10	1	1	350	0	0	0	0	1	1	350	0	0	0	1	1	350
Fishermen's Contingency Fund Budget Authority	0	1	1	350	0	0	0	0	1	1	350	0	0	0	1	1	350
Fishermen's Contingency Fund Appropriations	0	1	1	350	0	0	0	0	1	1	350	0	0	0	1	1	350
Foreign Fishing Observer Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Fishing Observer Fund Budget Authority	0	0	0	(350)	0	0	0	350	0	0	0	0	0	0	0	0	0
Foreign Fishing Observer Fund Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Promote and Develop Fisheries Budget Authority	(90,239)	0	0	(109,098)	0	0	0	(9,966)	0	0	(119,064)	0	0	0	0	0	(119,064)
Promote and Develop Fisheries Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pacific Coastal Salmon Fund Obligations	79,840	0	0	65,000	0	0	0	0	0	0	65,000	0	0	(15,000)	0	0	50,000
Pacific Coastal Salmon Fund Budget Authority	79,840	0	0	65,000	0	0	0	0	0	0	65,000	0	0	(15,000)	0	0	50,000
Pacific Coastal Salmon Fund Appropriation	79,840	0	0	65,000	0	0	0	0	0	0	65,000	0	0	(15,000)	0	0	50,000
Marine Mammal Unusual Mortality Event Fund Obligations	206	0	0	200	0	0	0	(200)	0	0	0	0	0	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marine Mammal Unusual Mortality Event Fund Appropriations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Subtotal, NMFS Other Discretionary Direct Obligation</b>	<b>80,056</b>	<b>1</b>	<b>1</b>	<b>65,550</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(200)</b>	<b>1</b>	<b>1</b>	<b>65,350</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>50,350</b>
<b>Subtotal, NMFS Other Discretionary Budget Authority</b>	<b>(10,399)</b>	<b>1</b>	<b>1</b>	<b>(44,098)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(9,616)</b>	<b>1</b>	<b>1</b>	<b>(53,714)</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>(68,714)</b>
<b>Subtotal, NMFS Other Discretionary Appropriation</b>	<b>79,840</b>	<b>1</b>	<b>1</b>	<b>65,350</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>65,350</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>50,350</b>

**OTHER ACCOUNTS (DISCRETIONARY)**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>OMAO</b>																	
Medicare Eligible Retiree Healthcare Fund Acct Obligations	1,818	0	0	1,936	0	0	0	0	0	0	1,936	0	0	0	0	0	1,936
Medicare Eligible Retiree Healthcare Fund Acct Budget Authority	1,818	0	0	1,936	0	0	0	0	0	0	1,936	0	0	0	0	0	1,936
Medicare Eligible Retiree Healthcare Fund Acct Appropriations	1,818	0	0	1,936	0	0	0	0	0	0	1,936	0	0	0	0	0	1,936
<b>Subtotal, OMAO Other Discretionary Direct Obligations</b>	<b>1,818</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>
<b>Subtotal, OMAO Other Discretionary Budget Authority</b>	<b>1,818</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>
<b>Subtotal, OMAO Other Discretionary Appropriation</b>	<b>1,818</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,936</b>
<b>TOTAL, OTHER DISCRETIONARY DIRECT OBLIGATIONS</b>	<b>81,874</b>	<b>1</b>	<b>1</b>	<b>67,486</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(200)</b>	<b>1</b>	<b>1</b>	<b>67,286</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>52,286</b>
<b>TOTAL, OTHER DISCRETIONARY BUDGET AUTHORITY</b>	<b>(8,581)</b>	<b>1</b>	<b>1</b>	<b>(42,162)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(9,616)</b>	<b>1</b>	<b>1</b>	<b>(51,778)</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>(66,778)</b>
<b>TOTAL, OTHER DISCRETIONARY APPROPRIATION</b>	<b>84,658</b>	<b>1</b>	<b>1</b>	<b>67,286</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>67,286</b>	<b>0</b>	<b>0</b>	<b>(15,000)</b>	<b>1</b>	<b>1</b>	<b>52,286</b>

**SUMMARY OF DISCRETIONARY RESOURCES**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011			FY 2012			FY 2013			FY 2013			Program			FY 2013		
	Spend Plan (Final)	POS	FTE	Estimate	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	Base	POS	FTE	Changes	POS	FTE	President's Budget	
<b>Discretionary Direct Obligations</b>																		
ORF Direct Obligations	3,244,294	12,810	12,185	3,154,980	5	8	39,605	0	12,815	12,193	3,194,585	(162)	(168)	(27,061)	12,653	12,025	3,167,524	
PAC Direct Obligations	1,403,412	196	186	1,808,443	(5)	(5)	0	0	191	181	1,808,443	(1)	(1)	164,293	190	180	1,972,736	
OTHER Direct Obligations	81,874	1	1	67,486	0	0	0	(200)	1	1	67,286	0	0	(15,000)	1	1	52,286	
<b>TOTAL Discretionary Direct Obligations</b>	<b>4,729,580</b>	<b>13,007</b>	<b>12,372</b>	<b>5,030,909</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(200)</b>	<b>13,007</b>	<b>12,375</b>	<b>5,070,314</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,844</b>	<b>12,206</b>	<b>5,192,546</b>	
<b>Discretionary Budget Authority</b>																		
ORF Budget Authority	3,243,782	12,810	12,185	3,146,980	5	8	39,605	2,000	12,815	12,193	3,188,585	(162)	(168)	(27,061)	12,653	12,025	3,161,524	
PAC Budget Authority	1,401,412	196	186	1,800,443	(5)	(5)	0	1,000	191	181	1,801,443	(1)	(1)	164,293	190	180	1,965,736	
OTHER Budget Authority	(8,581)	1	1	(42,162)	0	0	0	(9,616)	1	1	(51,778)	0	0	(15,000)	1	1	(66,778)	
<b>TOTAL Discretionary Budget Authority</b>	<b>4,636,613</b>	<b>13,007</b>	<b>12,372</b>	<b>4,905,261</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(6,616)</b>	<b>13,007</b>	<b>12,375</b>	<b>4,938,250</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,844</b>	<b>12,206</b>	<b>5,060,482</b>	
<b>Discretionary Appropriations</b>																		
ORF Appropriations	3,179,511	12,810	12,185	3,022,231	5	8	39,605	7,685	12,815	12,193	3,069,521	(162)	(168)	(27,061)	12,653	12,025	3,042,460	
PAC Appropriations	1,332,683	196	186	1,817,094	(5)	(5)	0	(15,651)	191	181	1,801,443	(1)	(1)	164,293	190	180	1,965,736	
OTHER Appropriations	84,658	1	1	67,286	0	0	0	0	1	1	67,286	0	0	(15,000)	1	1	52,286	
<b>TOTAL Discretionary Appropriation</b>	<b>4,596,852</b>	<b>13,007</b>	<b>12,372</b>	<b>4,906,611</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(7,966)</b>	<b>13,007</b>	<b>12,375</b>	<b>4,938,250</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,844</b>	<b>12,206</b>	<b>5,060,482</b>	

**OTHER ACCOUNTS (MANDATORY)**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011						FY 2013	FY 2013			FY 2013			Program			FY 2013
	Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	Calculated ATBs	Technical ATBs	POS	FTE	Base	POS	FTE	Changes	POS	FTE	President's Budget
<b>NOS</b>																	
Coastal Zone Management Fund Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Zone Management Fund Budget Authority	(1,500)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Zone Management Fund Appropriation	(3,000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Damage Assessment & Restoration Revolving Fund Obligations	55,326	16	16	21,600	0	0	0	(3,000)	16	16	18,600	0	0	0	16	16	18,600
Damage Assessment & Restoration Revolving Fund Budget Authority	3,300	16	16	6,000	0	0	0	0	16	16	6,000	0	0	0	16	16	6,000
Damage Assessment & Restoration Revolving Fund Appropriation	0	16	16	0	0	0	0	0	16	16	0	0	0	0	16	16	0
Sanctuaries Enforcement Asset Forfeiture Fund Obligations	0	0	0	0	0	0	0	1,000	0	0	1,000	0	0	0	0	0	1,000
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	0	0	0	0	0	0	0	1,000	0	0	1,000	0	0	0	0	0	1,000
Sanctuaries Enforcement Asset Forfeiture Fund Appropriations	0	0	0	0	0	0	0	1,000	0	0	1,000	0	0	0	0	0	1,000
<b>Subtotal, NOS Other Mandatory Direct Obligations</b>	<b>55,326</b>	<b>16</b>	<b>16</b>	<b>21,600</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(2,000)</b>	<b>16</b>	<b>16</b>	<b>19,600</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>19,600</b>
<b>Subtotal, NOS Other Mandatory Budget Authority</b>	<b>1,800</b>	<b>16</b>	<b>16</b>	<b>6,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>16</b>	<b>16</b>	<b>7,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>7,000</b>
<b>Subtotal, NOS Other Mandatory Appropriation</b>	<b>(3,000)</b>	<b>16</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>16</b>	<b>16</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>1,000</b>
<b>NMFS</b>																	
Promote and Develop Fisheries Obligations	0	0	0	0	0	0	0	5,000	0	0	5,000	0	0	0	0	0	5,000
Promote and Develop Fisheries Budget Authority	90,239	0	0	109,098	0	0	0	14,966	0	0	124,064	0	0	0	0	0	124,064
Promote and Develop Fisheries Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Obligations	9,910	0	0	5,771	0	0	0	(5,771)	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Budget Authority	9,910	0	0	5,771	0	0	0	(5,771)	0	0	0	0	0	0	0	0	0
Fisheries Finance Program Account Appropriation	9,910	0	0	5,771	0	0	0	(5,771)	0	0	0	0	0	0	0	0	0
Federal Ship Financing Obligations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Ship Financing Budget Authority	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal Ship Financing Appropriation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Improve & Restoration Fund Obligations	10,248	0	0	290	0	0	0	(96)	0	0	194	0	0	0	0	0	194
Environmental Improve & Restoration Fund Budget Authority	378	0	0	290	0	0	0	(96)	0	0	194	0	0	0	0	0	194
Environmental Improve & Restoration Fund Appropriation	378	0	0	290	0	0	0	(96)	0	0	194	0	0	0	0	0	194
Limited Access System Administration Fund Obligations	20,046	0	0	9,675	0	0	0	1,259	0	0	10,934	0	0	0	0	0	10,934
Limited Access System Administration Fund Budget Authority	8,576	0	0	9,675	0	0	0	1,259	0	0	10,934	0	0	0	0	0	10,934
Limited Access System Administration Fund Appropriation	8,576	0	0	9,675	0	0	0	1,259	0	0	10,934	0	0	0	0	0	10,934

**OTHER ACCOUNTS (MANDATORY)**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
Western Pacific Sustainable Fisheries Fund Obligations	2,000	0	0	1,000	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Western Pacific Sustainable Fisheries Fund Budget Authority	1,000	0	0	1,000	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Western Pacific Sustainable Fisheries Fund Appropriation	1,000	0	0	1,000	0	0	0	0	0	0	1,000	0	0	0	0	0	1,000
Fisheries Enforcement Asset Forfeiture Fund Obligations	0	0	0	0	0	0	0	5,000	0	0	5,000	0	0	0	0	0	5,000
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	0	0	0	0	0	0	0	5,000	0	0	5,000	0	0	0	0	0	5,000
Fisheries Enforcement Asset Forfeiture Fund Appropriations	0	0	0	0	0	0	0	5,000	0	0	5,000	0	0	0	0	0	5,000
<b>Subtotal, NMFS Other Mandatory Direct Obligations</b>	<b>42,204</b>	<b>0</b>	<b>0</b>	<b>16,736</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,392</b>	<b>0</b>	<b>0</b>	<b>22,128</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22,128</b>
<b>Subtotal, NMFS Other Mandatory Budget Authority</b>	<b>110,103</b>	<b>0</b>	<b>0</b>	<b>125,834</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15,358</b>	<b>0</b>	<b>0</b>	<b>141,192</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>141,192</b>
<b>Subtotal, NMFS Other Mandatory Appropriation</b>	<b>19,864</b>	<b>0</b>	<b>0</b>	<b>16,736</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>392</b>	<b>0</b>	<b>0</b>	<b>17,128</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17,128</b>
<b>OMAO</b>																	
NOAA Corp Commissioned Officers Retirement Obligations	28,269	0	0	28,269	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
NOAA Corp Commissioned Officers Retirement Budget Authority	28,269	0	0	28,269	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
NOAA Corp Commissioned Officers Retirement Budget Appropriation	28,269	0	0	28,269	0	0	0	0	0	0	28,269	0	0	0	0	0	28,269
<b>Subtotal, OMAO Other Mandatory Direct Obligations</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>Subtotal, OMAO Other Mandatory Budget Authority</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>Subtotal, OMAO Other Mandatory Appropriation</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28,269</b>
<b>TOTAL, OTHER MANDATORY DIRECT OBLIGATIONS</b>	<b>125,799</b>	<b>16</b>	<b>16</b>	<b>66,605</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3,392</b>	<b>16</b>	<b>16</b>	<b>69,997</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>69,997</b>
<b>TOTAL, OTHER MANDATORY BUDGET AUTHORITY</b>	<b>140,172</b>	<b>16</b>	<b>16</b>	<b>160,103</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16,358</b>	<b>16</b>	<b>16</b>	<b>176,461</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>176,461</b>
<b>TOTAL, OTHER MANDATORY APPROPRIATION</b>	<b>45,133</b>	<b>16</b>	<b>16</b>	<b>45,005</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,392</b>	<b>16</b>	<b>16</b>	<b>46,397</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>16</b>	<b>46,397</b>

**OTHER ACCOUNTS (DISCRETIONARY REIMBURSABLE)**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b><u>NOS</u></b>																	
Sanctuaries Enforcement Asset Forfeiture Fund Obligations	0	0	0	1,000	0	0	0	(1,000)	0	0	0	0	0	0	0	0	0
Sanctuaries Enforcement Asset Forfeiture Fund Budget Authority	0	0	0	1,000	0	0	0	(1,000)	0	0	0	0	0	0	0	0	0
Sanctuaries Enforcement Asset Forfeiture Fund Appropriations	0	0	0	1,000	0	0	0	(1,000)	0	0	0	0	0	0	0	0	0
<b><u>NMFS</u></b>																	
Fisheries Enforcement Asset Forfeiture Fund Obligations	0	0	0	8,000	0	0	0	(8,000)	0	0	0	0	0	0	0	0	0
Fisheries Enforcement Asset Forfeiture Fund Budget Authority	0	0	0	8,000	0	0	0	(8,000)	0	0	0	0	0	0	0	0	0
Fisheries Enforcement Asset Forfeiture Fund Appropriations	0	0	0	5,000	0	0	0	(5,000)	0	0	0	0	0	0	0	0	0
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE DIRECT OBLIGATIONS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(9,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE BUDGET AUTHORITY</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(9,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL, OTHER DISCRETIONARY REIMBURSABLE APPROPRIATION</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>(6,000)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\*Both Asset Forfeiture Funds transferred to OTHER Mandatory in FY13

NOAA SUMMARY  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
TOTAL Direct Obligations (Discretionary & Mandatory)	4,855,379	13,023	12,388	5,106,514	0	3	39,605	3,192	13,023	12,391	5,140,311	(163)	(169)	122,232	12,860	12,222	5,262,543
TOTAL Budget Authority (Discretionary & Mandatory)	4,776,785	13,023	12,388	5,074,364	0	3	39,605	9,742	13,023	12,391	5,114,711	(163)	(169)	122,232	12,860	12,222	5,236,943
TOTAL Appropriation (Discretionary & Mandatory)	4,641,985	13,023	12,388	4,957,616	0	3	39,605	(6,574)	13,023	12,391	4,984,647	(163)	(169)	122,232	12,860	12,222	5,106,879
Reimbursable Financing	242,000	706	706	239,000	0	0	0	3,000	706	706	242,000	0	0	0	706	706	242,000
TOTAL OBLIGATIONS (Direct & Reimbursable)	5,097,379	13,729	13,094	5,345,514	0	3	39,605	6,192	13,729	13,097	5,382,311	(163)	(169)	122,232	13,566	12,928	5,504,543
Offsetting Receipts	(8,000)	0	0	(11,000)	0	0	0	1,169	0	0	(9,831)	0	0	0	0	0	(9,831)
TOTAL OBLIGATIONS (Direct, Reimbursable & Offsetting Receipts )	5,089,379	13,729	13,094	5,334,514	0	3	39,605	7,361	13,729	13,097	5,372,480	(163)	(169)	122,232	13,566	12,928	5,494,712

**LINE OFFICE SUMMARY**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>National Ocean Service</b>																	
ORF	475,476	1,289	1,225	459,372	(4)	(4)	3,907	(5,116)	1,285	1,221	458,163	(11)	(13)	303	1,274	1,208	458,466
PAC	19,366	1	1	8,000	0	0	0	0	1	1	8,000	(1)	(1)	(8,000)	0	0	0
OTHER	55,326	16	16	22,600	0	0	0	(3,000)	16	16	19,600	0	0	0	16	16	19,600
<b>TOTAL, NOS</b>	<b>550,168</b>	<b>1,306</b>	<b>1,242</b>	<b>489,972</b>	<b>(4)</b>	<b>(4)</b>	<b>3,907</b>	<b>(8,116)</b>	<b>1,302</b>	<b>1,238</b>	<b>485,763</b>	<b>(12)</b>	<b>(14)</b>	<b>(7,697)</b>	<b>1,290</b>	<b>1,224</b>	<b>478,066</b>
<b>National Marine Fisheries Service</b>																	
ORF	845,237	3,022	2,864	804,718	4	7	10,678	5,116	3,026	2,871	820,512	(36)	(36)	(12,704)	2,990	2,835	807,808
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	122,260	1	1	90,286	0	0	0	(2,808)	1	1	87,478	0	0	(15,000)	1	1	72,478
<b>TOTAL, NMFS</b>	<b>967,497</b>	<b>3,023</b>	<b>2,865</b>	<b>895,004</b>	<b>4</b>	<b>7</b>	<b>10,678</b>	<b>2,308</b>	<b>3,027</b>	<b>2,872</b>	<b>907,990</b>	<b>(36)</b>	<b>(36)</b>	<b>(27,704)</b>	<b>2,991</b>	<b>2,836</b>	<b>880,286</b>
<b>Oceanic and Atmospheric Research</b>																	
ORF	416,637	795	755	374,422	0	0	3,176	0	795	755	377,598	7	3	25,843	802	758	403,441
PAC	10,358	0	0	10,296	0	0	0	0	0	0	10,296	0	0	83	0	0	10,379
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL, OAR</b>	<b>426,995</b>	<b>795</b>	<b>755</b>	<b>384,718</b>	<b>0</b>	<b>0</b>	<b>3,176</b>	<b>0</b>	<b>795</b>	<b>755</b>	<b>387,894</b>	<b>7</b>	<b>3</b>	<b>25,926</b>	<b>802</b>	<b>758</b>	<b>413,820</b>
<b>National Weather Service</b>																	
ORF	879,582	4,850	4,618	900,764	5	5	10,095	0	4,855	4,623	910,859	(101)	(101)	(36,105)	4,754	4,522	874,754
PAC	96,899	32	31	91,110	(5)	(5)	0	0	27	26	91,110	0	0	6,329	27	26	97,439
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL, NWS</b>	<b>976,481</b>	<b>4,882</b>	<b>4,649</b>	<b>991,874</b>	<b>0</b>	<b>0</b>	<b>10,095</b>	<b>0</b>	<b>4,882</b>	<b>4,649</b>	<b>1,001,969</b>	<b>(101)</b>	<b>(101)</b>	<b>(29,776)</b>	<b>4,781</b>	<b>4,548</b>	<b>972,193</b>
<b>National Environmental Satellite, Data and Information Service</b>																	
ORF	183,656	712	678	181,200	0	0	1,518	0	712	678	182,718	(9)	(9)	8,379	703	669	191,097
PAC	1,260,422	158	149	1,696,645	0	0	0	0	158	149	1,696,645	0	0	153,664	158	149	1,850,309
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL, NESDIS</b>	<b>1,444,078</b>	<b>870</b>	<b>827</b>	<b>1,877,845</b>	<b>0</b>	<b>0</b>	<b>1,518</b>	<b>0</b>	<b>870</b>	<b>827</b>	<b>1,879,363</b>	<b>(9)</b>	<b>(9)</b>	<b>162,043</b>	<b>861</b>	<b>818</b>	<b>2,041,406</b>
<b>Program Support / Corporate Services</b>																	
ORF	206,520	1,013	949	202,032	0	0	(291)	0	1,013	949	201,741	0	0	(1,840)	1,013	949	199,901
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL, PS / Corporate Services</b>	<b>206,520</b>	<b>1,013</b>	<b>949</b>	<b>202,032</b>	<b>0</b>	<b>0</b>	<b>(291)</b>	<b>0</b>	<b>1,013</b>	<b>949</b>	<b>201,741</b>	<b>0</b>	<b>0</b>	<b>(1,840)</b>	<b>1,013</b>	<b>949</b>	<b>199,901</b>

**LINE OFFICE SUMMARY**  
(\$ in Thousands)

FY 2013 PROPOSED OPERATING PLAN	FY 2011 Spend Plan (Final)	POS	FTE	FY 2012 Estimate	POS	FTE	FY 2013 Calculated ATBs	FY 2013 Technical ATBs	POS	FTE	FY 2013 Base	POS	FTE	Program Changes	POS	FTE	FY 2013 President's Budget
<b>Program Support / NOAA Education Program</b>																	
ORF	24,950	22	21	25,090	0	0	0	0	22	21	25,090	(12)	(12)	(13,824)	10	9	11,266
PAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL, PS / NOAA Education Program</b>	<b>24,950</b>	<b>22</b>	<b>21</b>	<b>25,090</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>21</b>	<b>25,090</b>	<b>(12)</b>	<b>(12)</b>	<b>(13,824)</b>	<b>10</b>	<b>9</b>	<b>11,266</b>
<b>Program Support / Facilities</b>																	
ORF	29,029	45	45	24,422	0	0	35	0	45	45	24,457	0	0	78	45	45	24,535
PAC	13,972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SUBTOTAL, PS / Facilities</b>	<b>43,001</b>	<b>45</b>	<b>45</b>	<b>24,422</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>0</b>	<b>45</b>	<b>45</b>	<b>24,457</b>	<b>0</b>	<b>0</b>	<b>78</b>	<b>45</b>	<b>45</b>	<b>24,535</b>
<b>Program Support / Corp Srv, Edu, Fac</b>																	
ORF	260,499	1,080	1,015	251,544	0	0	(256)	0	1,080	1,015	251,288	(12)	(12)	(15,586)	1,068	1,003	235,702
PAC	13,972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL, PS / Corp Srv, Edu, Fac</b>	<b>274,471</b>	<b>1,080</b>	<b>1,015</b>	<b>251,544</b>	<b>0</b>	<b>0</b>	<b>(256)</b>	<b>0</b>	<b>1,080</b>	<b>1,015</b>	<b>251,288</b>	<b>(12)</b>	<b>(12)</b>	<b>(15,586)</b>	<b>1,068</b>	<b>1,003</b>	<b>235,702</b>
<b>Program Support / Office of Marine and Aviation Operations</b>																	
ORF	183,207	1,062	1,030	182,960	0	0	10,487	0	1,062	1,030	193,447	0	0	2,809	1,062	1,030	196,256
PAC	2,395	5	5	2,392	0	0	0	0	5	5	2,392	0	0	12,217	5	5	14,609
OTHER	30,087	0	0	30,205	0	0	0	0	0	0	30,205	0	0	0	0	0	30,205
<b>TOTAL, PS / OMAO</b>	<b>215,689</b>	<b>1,067</b>	<b>1,035</b>	<b>215,557</b>	<b>0</b>	<b>0</b>	<b>10,487</b>	<b>0</b>	<b>1,067</b>	<b>1,035</b>	<b>226,044</b>	<b>0</b>	<b>0</b>	<b>15,026</b>	<b>1,067</b>	<b>1,035</b>	<b>241,070</b>
Total PS ORF	443,706	2,142	2,045	434,504	0	0	10,231	0	2,142	2,045	444,735	(12)	(12)	(12,777)	2,130	2,033	431,958
Total PS PAC	16,367	5	5	2,392	0	0	0	0	5	5	2,392	0	0	12,217	5	5	14,609
Total PS Other	30,087	0	0	30,205	0	0	0	0	0	0	30,205	0	0	0	0	0	30,205
<b>TOTAL, PS</b>	<b>490,160</b>	<b>2,147</b>	<b>2,050</b>	<b>467,101</b>	<b>0</b>	<b>0</b>	<b>10,231</b>	<b>0</b>	<b>2,147</b>	<b>2,050</b>	<b>477,332</b>	<b>(12)</b>	<b>(12)</b>	<b>(560)</b>	<b>2,135</b>	<b>2,038</b>	<b>476,772</b>
<b>DIRECT OBLIGATIONS</b>																	
ORF	3,244,294	12,810	12,185	3,154,980	5	8	39,605	0	12,815	12,193	3,194,585	(162)	(168)	(27,061)	12,653	12,025	3,167,524
PAC	1,403,412	196	186	1,808,443	(5)	(5)	0	0	191	181	1,808,443	(1)	(1)	164,293	190	180	1,972,736
OTHER	207,673	17	17	143,091	0	0	0	(5,808)	17	17	137,283	0	0	(15,000)	17	17	122,283
<b>TOTAL, DIRECT OBLIGATIONS</b>	<b>4,855,379</b>	<b>13,023</b>	<b>12,388</b>	<b>5,106,514</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(5,808)</b>	<b>13,023</b>	<b>12,391</b>	<b>5,140,311</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,860</b>	<b>12,222</b>	<b>5,262,543</b>
<b>ORF Adjustments (Deobligations / Rescissions)</b>	(512)	0	0	(8,000)	0	0	0	2,000	0	0	(6,000)	0	0	0	0	0	(6,000)
<b>ORF Transfers</b>	(64,271)	0	0	(124,749)	0	0	0	5,685	0	0	(119,064)	0	0	0	0	0	(119,064)
<b>PAC Adjustments (Deobligations / Rescissions)</b>	(2,000)	0	0	(8,000)	0	0	0	1,000	0	0	(7,000)	0	0	0	0	0	(7,000)
<b>PAC Transfers</b>	(68,729)	0	0	16,651	0	0	0	(16,651)	0	0	0	0	0	0	0	0	0
<b>OTHER Discretionary Adjustments</b>	2,784	0	0	(200)	0	0	0	200	0	0	0	0	0	0	0	0	0
<b>Mandatory Accounts Excluded</b>	(125,799)	(16)	(16)	(66,605)	0	0	0	(3,392)	(16)	(16)	(69,997)	0	0	0	(16)	(16)	(69,997)
<b>Discretionary Reimbursable Accounts Excluded</b>	0	0	0	(9,000)	0	0	0	9,000	0	0	0	0	0	0	0	0	0
<b>TOTAL, DISCRETIONARY APPROPRIATIONS</b>	<b>4,596,852</b>	<b>13,007</b>	<b>12,372</b>	<b>4,906,611</b>	<b>0</b>	<b>3</b>	<b>39,605</b>	<b>(7,966)</b>	<b>13,007</b>	<b>12,375</b>	<b>4,938,250</b>	<b>(163)</b>	<b>(169)</b>	<b>122,232</b>	<b>12,844</b>	<b>12,206</b>	<b>5,060,482</b>

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**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar Amounts in Thousands)

	Positions	FTE	Appropriation	Budget Authority	Direct Obligations
FY 2012 Currently Available	12,810	12,185	3,022,231	3,146,980	3,154,980
less: Carryover	0	0	0	0	0
plus: 2013 Other Adjustments to Base	5	8	47,290	41,605	39,605
FY 2013 Base	12,815	12,193	3,069,521	3,188,585	3,194,585
Admin Savings: Actual reductions	(98)	(98)	(15,149)	(15,149)	(15,149)
plus(or less): 2013 Program Changes	(64)	(70)	(11,912)	(11,912)	(11,912)
FY 2013 Estimate	12,653	12,025	3,042,460	3,161,524	3,167,524

Comparison by activity/subactivity		FY 2011 Actual		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	1,291	475,001	1,289	459,372	1,285	458,163	1,274	458,466	(11)	303
	FTE/OBL	1,231	465,595	1,225	473,338	1,221	458,163	1,208	458,466	(13)	303
National Marine Fisheries Service	Pos/BA	3,031	844,482	3,022	804,718	3,026	820,512	2,990	807,808	(36)	(12,704)
	FTE/OBL	2,888	857,191	2,864	823,398	2,871	820,512	2,835	807,808	(36)	(12,704)
Oceanic and Atmospheric Research	Pos/BA	789	416,221	795	374,422	795	377,598	802	403,441	7	25,843
	FTE/OBL	752	417,862	755	375,135	755	377,598	758	403,441	3	25,843

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actual		Currently Available		Base Program		Estimate		Personnel	Amount
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Weather Service	Pos/BA	4,896	878,703	4,850	900,764	4,855	910,859	4,754	874,754	(101)	(36,105)
	FTE/OBL	4,662	871,706	4,618	908,678	4,623	910,859	4,522	874,754	(101)	(36,105)
National Environmental Satellite Service	Pos/BA	654	183,472	712	181,200	712	182,718	703	191,097	(9)	8,379
	FTE/OBL	622	183,808	678	182,156	678	182,718	669	191,097	(9)	8,379
Program Support	Pos/BA	965	264,832	1,080	251,544	1,080	251,288	1,068	235,702	(12)	(15,586)
	FTE/OBL	918	272,275	1,015	254,342	1,015	251,288	1,003	235,702	(12)	(15,586)
Office of Marine Aviation & Ops	Pos/BA	932	183,024	1,062	182,960	1,062	193,447	1,062	196,256	0	2,809
	FTE/OBL	888	183,835	1,030	183,144	1,030	193,447	1,030	196,256	0	2,809
Less Deobligations/Other	Pos/BA	0	(511)	0	(8,000)	0	(6,000)	0	(6,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	12,558	3,245,222	12,810	3,146,980	12,815	3,188,585	12,653	3,161,524	(162)	(27,061)
	FTE/OBL	11,961	3,252,272	12,185	3,200,191	12,193	3,194,585	12,025	3,167,524	(168)	(27,061)

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar Amounts in Thousands)

	FTE	Actual Amount	Currently Available FTE	Currently Available Amount	Base Program FTE	Base Program Amount	Estimate FTE	Estimate Amount	Decrease FTE	Decrease Amount
Direct Discretionary Obligation	11,961	3,252,272	12,185	3,200,191	12,193	3,194,585	12,025	3,167,524	(168)	(27,061)
<b>Total Obligations</b>	<b>11,961</b>	<b>3,252,272</b>	<b>12,185</b>	<b>3,200,191</b>	<b>12,193</b>	<b>3,194,585</b>	<b>12,025</b>	<b>3,167,524</b>	<b>(168)</b>	<b>(27,061)</b>
<b>Adjustments to Obligations:</b>										
Cash Refunds/Prior Year Recoveries	0	-593	0	0	0	0	0	0	0	0
Deobligations	0	-7,893	0	(8,000)	0	(6,000)	0	(6,000)	0	0
Unobligated Balance Expired	0	3,034	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	-46,255	0	(45,211)	0	0	0	0	0	0
Unobligated balance, Adj EOY	0	45,211	0	0	0	0	0	0	0	0
Transfer to NOAA ORF	0	-552	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>11,961</b>	<b>3,245,224</b>	<b>12,185</b>	<b>3,146,980</b>	<b>12,193</b>	<b>3,188,585</b>	<b>12,025</b>	<b>3,161,524</b>	<b>(168)</b>	<b>(27,061)</b>
<b>Financing from Transfers and Other:</b>										
Transfer from P&D to ORF	0	-90,240	0	(109,098)	0	(119,064)	0	(119,064)	0	0
Transfer from CZMF to ORF	0	-3,000	0	0	0	0	0	0	0	0
Transfer from Pacific Salmon	0	-80	0	0	0	0	0	0	0	0
Transfer from PAC	0	-1,333	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	28,940	0	(15,651)	0	0	0	0	0	0
<b>Net Appropriation</b>	<b>11,961</b>	<b>3,179,511</b>	<b>12,185</b>	<b>3,022,231</b>	<b>12,193</b>	<b>3,069,521</b>	<b>12,025</b>	<b>3,042,460</b>	<b>(168)</b>	<b>(27,061)</b>

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**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Operations Research and Facilities  
**PROGRAM and PERFORMANCE: REMIBURSABLE OBLIGATIONS**  
 (Dollar Amounts in Thousands)

	Positions	FTE	Approp.	Budget Authority	Obligations
FY 2012 Currently Available	706	706	0	239,000	239,000
less: obligations from prior year balances	0	0	0	3,000	3,000
FY 2013 Base	706	706	0	242,000	242,000
less: 2013 Program Changes	0	0	0	0	0
FY 2013 Estimate	706	706	0	242,000	242,000

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently Available		Base Program		Estimate			
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	85	29,000	85	29,000	85	29,000	85	29,000	0	0
	FTE/OBL	85	162,791	85	29,000	85	29,000	85	29,000	0	0
National Marine Fisheries Service	Pos/BA	311	69,000	311	66,000	311	69,000	311	69,000	0	0
	FTE/OBL	311	137,032	311	66,000	311	69,000	311	69,000	0	0
Oceanic and Atmospheric Research	Pos/BA	53	31,000	53	31,000	53	31,000	53	31,000	0	0
	FTE/OBL	53	42,484	53	31,000	53	31,000	53	31,000	0	0
National Weather Service	Pos/BA	174	75,000	174	75,000	174	75,000	174	75,000	0	0
	FTE/OBL	174	61,338	174	75,000	174	75,000	174	75,000	0	0
National Environmental Satellite Service	Pos/BA	45	23,000	45	23,000	45	23,000	45	23,000	0	0
	FTE/OBL	45	31,699	45	23,000	45	23,000	45	23,000	0	0
Program Support	Pos/BA	38	15,000	38	15,000	38	15,000	38	15,000	0	0
	FTE/OBL	38	15,695	38	15,000	38	15,000	38	15,000	0	0
Total	Pos/BA	706	242,000	706	239,000	706	242,000	706	242,000	0	0
	FTE/OBL	706	451,040	706	239,000	706	242,000	706	242,000	0	0

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar Amounts in Thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Reimbursable Obligations	706	451,040	706	325,575	706	242,000	706	242,000	0	0
<b>Total Obligations</b>	<b>706</b>	<b>451,040</b>	<b>706</b>	<b>325,575</b>	<b>706</b>	<b>242,000</b>	<b>706</b>	<b>242,000</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
Deobligations	0	0	0	0	0	0	0	0	0	0
Unobligated balance, SOY Reimbursable	0	(124,899)	0	(89,575)	0	(3,000)	0	(3,000)	0	0
Unobligated balance, EOY Reimbursable	0	89,575	0	3,000	0	3,000	0	3,000	0	0
Unobligated balance, Expiring	0	0	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>706</b>	<b>415,716</b>	<b>706</b>	<b>239,000</b>	<b>706</b>	<b>242,000</b>	<b>706</b>	<b>242,000</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
Transfer of unobligated balance to Asset Forfeiture Fund	0	0	0	0	0	0	0	0	0	0
<b>Net Budget Authority</b>	<b>706</b>	<b>415,716</b>	<b>706</b>	<b>239,000</b>	<b>706</b>	<b>242,000</b>	<b>706</b>	<b>242,000</b>	<b>0</b>	<b>0</b>

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF FINANCING**  
(Dollar Amounts in Thousands)

	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
Direct Discretionary Obligation	3,252,272	3,200,191	3,194,585	3,167,524	(27,061)
Direct Mandatory Obligation	24,286	28,269	28,269	28,269	0
Reimbursable Obligation	451,040	239,000	242,000	242,000	0
<b>Total Obligations</b>	<b>3,727,598</b>	<b>3,467,460</b>	<b>3,464,854</b>	<b>3,437,793</b>	<b>(27,061)</b>
<b>Adjustments and Obligations:</b>					
Federal funds	(178,231)	(186,000)	(186,000)	(186,000)	0
Non-Federal Sources	(103,909)	(53,000)	(56,000)	(56,000)	0
Cash Refund	(593)	0	0	0	0
Recoveries	0	0	0	0	0
Uncollected Cust Payments from Fed. Sources	(134,579)	0	0	0	0
Enacted Rescissions	0	0	0	0	0
Deobligations, direct	(7,893)	(8,000)	(6,000)	(6,000)	0
Deobligations, reimbursable	0	0	0	0	0
Transfer of Unobligated P&D Balance	(552)	0	0	0	0
Unobligated balance, adj. SOY	(46,255)	(45,211)	0	0	0
Unobligated balance, EOY	45,211	0	0	0	0
Unobligated balance, SOY Reimbursable	(124,899)		0	0	0
Unobligated balance, EOY Reimbursable	89,575	0	0	0	0
Unobligated balance, Expiring Discretionary	3,034	0	0	0	0
Unobligated balance, not apportioned	1,003	0	0	0	0
Unobligated balance, Expiring Mandatory	0	0	0	0	0
<b>Total Budget Authority</b>	<b>3,269,510</b>	<b>3,175,249</b>	<b>3,216,854</b>	<b>3,189,793</b>	<b>(27,061)</b>

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities

**SUMMARY OF FINANCING**

(Dollar Amounts in Thousands)

	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
<b>Financing from Transfers and Other:</b>					
Transfer from P&D	(90,240)	(109,098)	(119,064)	(119,064)	0
Transfer from CZMF	(3,000)	0	0	0	0
Transfer from USDA	0	0	0	0	0
Transfer from PCSRF to ORF	(80)	0	0	0	0
Transfer to other accounts	0	0	0	0	0
Transfer to FFPA	0	0	0	0	0
Transfer to/from Dept of Interior	0	0	0	0	0
NOAA Corps Retirement Pay (Mandatory)	(24,286)	(28,269)	(28,269)	(28,269)	0
Transfer from ORF to Pacific Salmon	0	0	0	0	0
Transfer to PAC	28,940	0	0	0	0
Transfer from PAC	(1,333)	(15,651)	0	0	0
Transfer - CCSP (USDA Farm Bill)	0	0	0	0	0
Net Appropriation	3,179,511	3,022,231	3,069,521	3,042,460	(27,061)

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
(Dollar Amounts in Thousands)

	<u>FTE</u>	<u>Amount</u>
<u>Financing:</u>		
In 2012, NOAA expects to realize recoveries of prior year obligations of \$6,000,000. This amount will be used to offset the budget authority in 2013.	0	(6,000)
<u>Pay Raises</u>		
Full-year cost of 2012 pay increase and related costs: The 2012 President's Budget assumes a civilian pay raise of 0% and NOAA Corp pay raise of 1.4% to be effective January 1, 2012.	0	5,494
Total cost of 2012 pay raise		796,000
Less amount funded in 2012		<u>(597,000)</u>
Adjustment for FY 2013 of 2012 pay increase		199,000
2013 pay increase and related costs:		
A general civilian pay raise of 0.5% and NOAA Corp pay raise of 1.7% is assumed to be effective January 1, 2013.		
Total cost in 2013 of pay increase		7,059,787
Less amount not funded in 2013		<u>(1,764,947)</u>
Total cost of January 2013 pay increase		5,294,840
Payment to Working Capital Fund		<u>-</u>
Total, adjustment for 2013 pay increase		5,294,840
<u>Full-year cost in 2013 of positions financed for part-year in 2012</u>	3	321
An increase of \$320,805 is required to fund the full-year cost in 2013 of positions financed for part-year in 2012. The computation follows:		
Annual salary of new positions in 2012	17	1,231,630
Less 5 percent lapse	<u>(1)</u>	<u>(61,582)</u>

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
(Dollar Amounts in Thousands)

	FTE	Amount
Full-year cost of personnel compensation	16	1,170,048
Less personnel compensation included in the 2012 budget	(13)	(923,723)
Cost of personnel compensation in 2012	3	246,325
Adjustment for 2013 pay raise (.005 x .75 x 246,325)		923
Add'l amount required for personnel compensation	3	247,248
Benefits		73,557
Total adjustments-to-base	3	320,805
<u>OMAO Wage Marine overtime on NOAA ships</u>	0	23
An increase of \$22,647 is required to cover the cost of overtime for OMAO's Wage Mariners in 2013.		
Total cost in 2013 of Wage Marine overtime		30,196
Less amount not funded in 2013		(7,549)
Total cost of January 2013 pay increase		22,647
<u>Civil Service Retirement System (CSRS)</u>	0	(1,946)
The number of employees covered by the Civil Service Retirement System (CSRS) continues to drop as positions become vacant and are filled by employees who are covered by Federal Employees Retirement System (FERS). The estimated percentage covered by CSRS will drop from 14.1% in 2012 to 11.4% in 2013 for regular employees and remain at 0% in 2013 for law enforcement employees. Contribution rates will remain the same.		
Regular:		
2013 \$1,029,610,000 x 0.114 x .07		8,216,288
2012 \$1,029,610,000 x 0.141 x .07		10,162,251
Subtotal		(1,945,963)

Law Enforcement:

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
 (Dollar Amounts in Thousands)

		FTE	Amount
2013 \$5,830,000 x .000 x .075	0		
2012 \$5,830,000 x .000 x .075	0		
Subtotal	-		
 Total adjustment to base	 (1,945,963)		
 <u>Federal Employees Retirement System (FERS)</u>		 0	 3,253
<p>The number of employees covered by the FERS continues to rise as employees covered by CSRS leave and are replaced by employees covered by FERS. The estimated percentage of payroll for regular employees covered by FERS will rise from 85.9% in 2012 to 88.6% in 2013 for regular employees. The estimated percentage of payroll for law enforcement employees covered by FERS will remain at 100% in 2013. The contribution rates will remain the same.</p>			
Regular:			
2013 \$1,029,610,000 x 0.886 x 0.117	106,731,432		
2012 \$1,029,610,000 x 0.859 x 0.117	103,478,894		
Subtotal	3,252,538		
Law Enforcement:			
2013 \$5,830,000 x 1.00 x 0.257	1,498,310		
2012 \$5,830,000 x 1.00 x 0.257	1,498,310		
Subtotal	-		
 Total adjustment to base	 3,252,538		

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
 (Dollar Amounts in Thousands)

	FTE	Amount
<u>Thrift Savings Plan</u>	0	556
<p>The cost of agency contributions to the Thrift Savings Plan will also rise as FERS participation increases. The contribution rate is expected to remain at 2%.</p>		
Regular:		
2013 \$1,029,610,000 x 0.8860 x 0.02		18,244,689
2012 \$1,029,610,000 x 0.8590 x 0.02		17,688,700
Subtotal		555,989
Law Enforcement:		
2013 \$5,830,000 x 1.00 x 0.02		116,600
2012 \$5,830,000 x 1.00 x 0.02		116,600
Subtotal		-
Total adjustment to base		555,989
<u>Federal Insurance Contribution Act (FICA)</u>	0	1,781
<p>As the percentage of payroll covered by FERS rises, the cost of OASDI contributions will increase. In addition, the maximum salary subject to OASDI tax will decrease from \$110,100 in 2012 to \$113,100 in 2013. The OASDI tax rate will remain 6.2% in 2013.</p>		
Regular:		
2013 \$1,029,610,000 x .8860 x .947 x .062		53,560,934
2012 \$1,029,610,000 x .8590 x .947 x .062		51,928,716
Subtotal		1,632,218
Law Enforcement:		
2013 \$5,830,000 x 1.0 x .9470 x .062		342,303

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
(Dollar Amounts in Thousands)

		<u>FTE</u>	<u>Amount</u>
2012 \$5,830,000 x 1.0 x .9470 x .062	342,303		
Subtotal	-		
Other			
2013 \$93,994,000 x .8860 x .947 x .062	4,889,625		
2012 \$93,994,000 x .8590 x .947 x .062	4,740,618		
Subtotal	149,007		
 Total adjustment to base	 1,781,225		
 <u>Health insurance premiums</u>		0	6,764
Effective January 2011, NOAA's contribution to Federal employees' health insurance premiums increased by 8.8%. Applied against the 2012 estimate of \$76,863,000, the additional amount required is \$6,763,944.			
 <u>Mileage rate increase</u>		0	61
Effective January 2011, the General Services Administration increased the mileage rate from 50 cents to 51 cents per mile, a 2.0% rate increase. This percentage was applied to the 2012 estimate of \$3,044,907 to arrive at an increase of \$60,898.			
 <u>Per diem increase</u>		0	2,765
Effective October 1, 2009, the General Services Administration raised per diem rates. This increase resulted in a 6.0% increase to this bureau. This percentage was applied to the 2012 estimate of \$46,083,093 to arrive at an increase of \$2,764,986.			

**Department of Commerce**  
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**JUSTIFICATION OF CHANGES TO BASE**  
(Dollar Amounts in Thousands)

	<u>FTE</u>	<u>Amount</u>
<u>Rental payments to GSA</u>	0	1,297
<p>GSA rates are projected to increase 1.7% in 2013. This percentage was applied to the 2012 estimate of \$76,317,000 to arrive at an increase of \$1,297,389.</p>		
<u>Postage</u>	0	0
<p>The U.S. Postal Service has not announced any postage rates increases for first-class mail. The percentage increase of 0% will be applied to the 2012 estimate of \$33,000 to arrive at an increase of \$0.</p>		
<u>GPO Printing</u>	0	83
<p>GPO has provided an estimated rate of 1.5%. This percentage was applied to the 2012 estimate of \$5,502,000 to arrive at an increase of \$82,530.</p>		
<u>PEPCO Electricity</u>	0	(148)
<p>A decrease of \$147,750 is requested for PEPCO Electricity.</p>		
<u>NARA Storage &amp; maintenance costs</u>	0	74
<p>The estimated cost of NARA storage and maintenance for 2013 is projected to increase by \$73,643.</p>		
<u>Employee Compensation Fund</u>		(224)
<p>NOAA requests a decrease of \$224,187 for the Employee Compensation Fund.</p>		
<u>Working Capital Fund</u>	0	(3,171)
<p>A decrease of \$3,171,000 is requested for the Working Capital Fund.</p>		
<u>CBS</u>	0	0
<p>NOAA requests no change for the Commerce Business System.</p>		

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**JUSTIFICATION OF CHANGES TO BASE**  
(Dollar Amounts in Thousands)

	<u>FTE</u>	<u>Amount</u>
<u>General Pricing Level Adjustment</u>	0	13,276
<p>This request applies OMB economic assumptions for FY 2013 to object classes where the prices the government pays are established through the market system. Factors are applied to transportation of things (\$228,480); rental payment payments to others (\$384,435; communications, utilities and miscellaneous charges (excluding postage) (\$977,550); other contractual services (\$10,036,679); supplies and materials (\$1,141,095) and equipment (\$507,930).</p>		
<u>Grants</u>	0	1,015
<p>Grants are projected to increase 3.2% in 2013. This percentage was applied to the 2012 estimate of \$31,709,000 to arrive at an increase of \$1,014,688.</p>		
<u>Ship and Aircraft Fuel Costs</u>	0	8,333
<p>This request applies OMB economic assumptions for FY 2013 to fuel prices where the prices the government pays are established through the market system. It is assumed that ship fuel costs will increase from an average of \$3.33 per gallon in FY 2011 to \$3.35 per gallon in FY 2013. Aircraft fuel costs are estimated to also increase by \$0.02 per gallon to \$3.67 per gallon.</p>		
Subtotal, Other Changes	3	39,605
Other Adjustments	0	
Less: Absorption	<u>0</u>	0
Total Adjustments to Base	3 8	39,605

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**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar Amounts in Thousands)

Object Class	FY 2012		FY 2013 Base	FY 2013 Estimate	Increase / (Decrease)
	FY 2011 Actuals	Currently Available			
11 Personnel compensation					
11.1 Full-time permanent	1,084,810	1,052,924	1,058,268	1,044,397	(13,871)
11.3 Other than full-time permanent	11,436	11,100	11,100	11,100	0
11.5 Other personnel compensation	69,418	67,378	67,401	67,320	(81)
11.6 Leave Surcharge	(10,567)	(10,256)	(10,256)	(10,256)	0
11.7 Military personnel	28,572	27,732	28,204	28,204	0
11.8 Special personnel services payments	869	843	843	843	0
11.9 Total Personnel Compensation	1,184,538	1,149,720	1,155,558	1,141,606	(13,952)
12 Civilian personnel benefits	346,695	336,505	346,689	343,186	(3,503)
13 Benefits for former personnel	22,234	21,581	21,581	21,581	0
21 Travel and transportation of persons	51,217	49,712	52,538	52,875	337
22 Transportation of things	15,880	15,413	15,641	15,841	200
23.1 Rental payments to GSA	71,780	78,018	80,593	80,419	(174)
23.2 Rental payments to others	26,719	25,934	26,318	26,008	(310)
23.3 Communications, utilities and miscellaneous charges	76,440	74,193	75,096	77,735	2,639
24 Printing and reproduction	5,736	5,567	5,649	5,815	166
25.1 Advisory and assistance services	149,224	144,838	144,838	143,212	(1,626)
25.2 Other services	434,469	441,677	425,110	424,643	(467)
25.3 Purchases of goods and services from Govt accounts	131,703	127,832	124,661	122,890	(1,771)
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	7,830	7,600	7,600	15,584	7,984
26 Supplies and materials	100,746	101,465	107,259	109,726	2,467
31 Equipment	35,303	34,265	34,773	33,905	(868)
32 Lands and structures	2,926	2,840	2,840	2,840	0

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Operations Research and Facilities  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar Amounts in Thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase / (Decrease)
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	612,897	611,087	595,897	577,714	(18,183)
42 Insurance claims and indemnities	33	32	32	32	0
43 Interest and dividends	188	182	182	182	0
44 Refunds	0	0	0	0	0
99 Total Obligations	3,276,558	3,228,460	3,222,854	3,195,793	(27,061)
Unobligated Balance Lapse					
Cash Refund	(593)	0	0	0	0
Deobligations	(7,893)	(8,000)	(6,000)	(6,000)	0
Prior Year Recoveries	0	0	0	0	0
Unobligated Balance, Start of Year	(46,255)	(45,211)			
Transfer of Unobligated P&D Balance	(552)	0	0	0	0
Unobligated Balance, End of Year	45,211	0	0	0	0
Unobligated Balance, Expiring	3,034	0			
Subtotal Budget Authority	3,269,510	3,175,249	3,216,854	3,189,793	(27,061)
Less: NOAA Corps	(24,286)	(28,269)	(28,269)	(28,269)	0
Total Discretionary ORF Budget Authority	3,245,224	3,146,980	3,188,585	3,161,524	(27,061)
Positions	12,558	12,810	12,815	12,653	(162)
FTE	11,961	12,185	12,193	12,025	(168)

**DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**

**JUSTIFICATION OF PROPOSED LANGUAGE CHANGES**

1. Fishermen's Contingency Fund

*For carrying out the provisions of Title IV of Public Law 95-372, not to exceed \$350,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.*

**Justification**

The funds used to provide this compensation are derived from fees collected on an annual basis by the Secretary of the Interior from the holders of leases, exploration permits, easements, or rights-of-way in areas of the Outer Continental Shelf. This activity is funded totally through user fees. Disbursements can be made only to the extent authorized in appropriation acts.

2. Fisheries Finance Program

*Subject to section 502 of the Congressional Budget Act of 1974, during fiscal year 2013, obligations of direct loans may not exceed \$24,000,000 for Individual Fishing Quota loans and not to exceed \$59,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936: Provided, That none of the funds made available under this heading may be used for direct loans for any new fishing vessel that will increase the harvesting capacity in any United States fishery.*

**Justification**

The Fishermen's Finance Program (FFP) will see three major benefits as a result of this action. First, the Individual Fishing Quota (IFQ) loan program is part of the Northwest Halibut and Sablefish and Bering Sea and Aleutian Islands Crab limited entry fisheries management program that continues to stabilize these fisheries. The increase will support the implementation of the crab IFQ loan required by the management plan approved by the North Pacific Fisheries Management Council. Second, FFP traditional lending is harvesting-capacity-neutral and supports qualified established U.S. seafood companies operating in a sustainable fisheries environment. Last, FFP lending to marine aquaculture facilities contributes to the development of a promising avenue of seafood production and greater economic sustainability from U.S. ocean resources.

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1. For necessary expenses of activities authorized by law for the National Oceanic and Atmospheric Administration,

5 USC 5348	15 USC 1511 b-e	16 USC 4101 et seq.	33 USC 2801 et seq.	PL 111-11, Sec 12202
5 USC 4703	15 USC 1514	16 USC 4701 et seq.	33 USC 3001 et seq.	PL 111-11, Sec 12304
7 USC 1622	15 USC 1517	16 USC 5001 et seq.	33 USC 3044 et seq.	PL 111-11, Sec 12404
10 USC 1072	15 USC 1537-40	31 USC 1105	33 USC 3045	PL 111-11, Sec 12502
10 USC 1111-1115	16 USC 661 et seq.	33 USC 706 et seq.	33 USC 3046	PL 111-348
10 USC 2311	16 USC 757a et seq.	33 USC 883 a-i et seq.	PL 111-281, Sec 708	PL 111-358, Sec 301-303
12 USC 1715m	16 USC 1361	33 USC 891 et seq.	42 USC 8902-05	
15 USC 313	16 USC 1431 et seq.	33 USC 893 a-b	42 USC 9601 et seq.	
15 USC 313a	16 USC 1447a et seq.	33 USC 1121-1131	43 USC 1347e	
15 USC 313b	16 USC 1451 et seq.	33 USC 1251	44 USC 1307	
15 USC 313nt	16 USC 1456a	33 USC 1321	49 USC 44720	
15 USC 325	16 USC 1531 et seq.	33 USC 1441-44	97 Stat. 1409	
15 USC 330b	16 USC 1801 et seq.	33 USC 2706	PL 111-11, Sec 12002	
15 USC 330e	16 USC 3645		PL 111-11, Sec 12102	

**Organizations and Employees**

5 USC 5348 - Crews of Vessels.

“...the pay of officers and members of crews of vessels excepted from chapter 51 of this title by section 5102(c)(8) of this title shall be fixed and adjusted from time to time as nearly as is consistent with the public interest in accordance with prevailing rates and practices in the maritime industry.”

5 USC 4703- Demonstration Projects

“...the Office of Personnel Management may, directly or through agreement or contract with one or more agencies and other public and private organizations, conduct and evaluate demonstration projects.”

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**Agriculture**

7 USC 1622 - Distribution and Marketing of Agricultural Products

“The Secretary ... is directed and authorized: ...

- (a) to determine the needs and develop or assist in the development of plans for the proper assembly, processing, transportation, storage, distribution, and handling of agricultural (fish) products.
- (f) to conduct and cooperate in consumer education for the more effective utilization and greater consumption of agricultural products (fish)...
- (g) to collect and disseminate marketing information... for the purpose of ... bringing about a balance between production and utilization of agricultural (fish) products.
- (h) to inspect, certify, and identify the class, quality, quantity and condition of agricultural (fish) products ...
- (m) to conduct ... research ... to determine the most efficient ... processes for the handling, storing, preserving, protecting...of agricultural (fish) commodities ...”

(h) - Duties of Secretary relating to agricultural products; penalties

“Whoever knowingly shall falsely make, issue, alter, forge, or counterfeit any official certificate, memorandum, or other identification, with respect to inspection, class, grade, quality, size, quantity, or condition, issued or authorized under this section or knowingly cause or procure, or aid, assist in, or be a party to, such false making, issuing, altering, forging, or counterfeiting, or whoever knowingly shall possess, without promptly notifying the Secretary (of Commerce) or his representative, utter, published, or used as true, any such falsely made, altered forged, or counterfeited official certificate, memorandum, mark, identification, or device, or whoever knowingly represents that an agricultural product has been officially inspected or graded...when in fact such commodity has not been so graded or inspected shall be fined not more than \$1,000 or imprisoned not more than one year, or both.”

**Armed Forces**

10 USC 1072 Medical and Dental Care

“...The term “uniformed services” means the armed forces and the Commissioned Corps of the National Oceanic and Atmospheric Administration and of the Public Health Service.”

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10 USC 1111-1115 Determinations of Contributions to the Fund

PL 108-375, Sec. 725 Revised funding methodology for military retiree health care benefits states: "At the beginning of each fiscal year after September 30, 2005, the Secretary of the Treasury shall promptly pay into the Fund from the General Fund of the Treasury--(1) the amount certified to the Secretary by the Secretary of Defense under subsection (c), which shall be the contribution to the Fund for that fiscal year required by section 1115; and (2) the amount determined by each administering Secretary under section 1111(c) as the contribution to the Fund on behalf of the members of the uniformed services under the jurisdiction of that Secretary."

10 USC 2311 Assignment and Delegation of Procurement Functions and Responsibilities

(a) In General.--Except to the extent expressly prohibited by another provision of law, the head of an agency may delegate, subject to his direction, to any other officer or official of that agency, any power under this chapter.

(b) Procurements For or With Other Agencies.--Subject to subsection (a), to facilitate the procurement of property and services covered by this chapter by each agency named in section 2303 of this title for any other agency, and to facilitate joint procurement by those agencies--

(1) the head of an agency may delegate functions and assign responsibilities relating to procurement to any officer or employee within such agency;

(2) the heads of two or more agencies may by agreement delegate procurement functions and assign procurement responsibilities from one agency to another of those agencies or to an officer or civilian employee of another of those agencies; and

(3) the heads of two or more agencies may create joint or combined offices to exercise procurement functions and responsibilities.

**Banks and Banking**

12 USC 1715m - Mortgage Insurance for Servicemen [NOAA Corps].

This section authorizes payment of Federal Housing Administration (FHA) home mortgage insurance premiums to NOAA Corps Officers.

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**Commerce and Trade**

15 USC 313 - Duties of Secretary of Commerce [National Weather Service].

“The Secretary of Commerce...shall have charge of the forecasting of weather,...issue of storm warnings,...weather and flood signals,... gauging and reporting of rivers,...collection and transmission of marine intelligence...,...reporting of temperature and rainfall conditions..., the display of frost and cold-wave signals, the distribution of meteorological information..., and the taking of such meteorological observations as may be necessary to establish and record the climatic conditions of the United States, or as are essential for the proper execution of the foregoing duties.”

15 USC 313a - Establishment of Meteorological Observation Stations in the Arctic Region.

“... The Secretary of Commerce shall ... take such actions as may be necessary in the development of an international basic meteorological reporting network in the Arctic region of the Western Hemisphere...”

15 USC 313b - Institute for Aviation Weather Prediction

“The Administrator of the National Oceanic and Atmospheric Administration shall establish an Institute for Aviation Weather Prediction. The Institute shall provide forecasts, weather warnings, and other weather services to the United States aviation community...”

15 USC 313 note - Weather Service Modernization Act

“(a) As part of the budget justification documents submitted to Congress in support of the annual budget request for the department of Commerce, the Secretary shall include a National Implementation Plan for modernization of the National Weather Service for each fiscal year following fiscal year 1993 until such modernization is complete. The Plan shall set forth the actions, during the 2-year period beginning with the fiscal year for which the budget request is made, that will be necessary to accomplish the objectives described in the Strategic Plan.

15 USC 325 - Spending Authority for the National Weather Service

“...Appropriations now or hereafter provided for the National Weather Service shall be available for: (a) furnishing food and shelter...to employees of the Government assigned to Arctic stations; (b) equipment and maintenance of meteorological offices and

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stations, and maintenance and operation of meteorological facilities outside the United States... (c) repairing, altering, and improving of buildings occupied by the National Weather Service, and care and preservation of grounds...(d) arranging for communication services... and  
(e) purchasing tabulating cards and continuous form tabulating paper .

15 USC 330b - Duties of Secretary relating to Weather Modification Activities or Attempts - Reporting Requirement.

- (a) "The Secretary shall maintain a record of weather modification activities, including attempts, which take place in the United States and shall publish summaries thereof from time to time as he determines."
- (b) "All reports, documents, and other information received by the Secretary under the provisions of this chapter shall be made available to the public to the fullest practicable extent."

15 USC 330e - Authorization of Appropriations relating to Weather Modification Activities or Attempts - Reporting Requirement.

This section provides funding authority to support the reporting requirements specified in this chapter.

15 USC 1511b - United States Fishery Trade Officers

"For purposes of carrying out export promotion and other fishery development responsibilities, the Secretary of Commerce...shall appoint not fewer than six officers who shall serve abroad to promote United States fishing interests. These officers shall be knowledgeable about the United States fishing industry, preferably with experience derived from the harvesting, processing, or marketing sectors of the industry or from the administration of fisheries programs. Such officers, who shall be employees of the Department of Commerce, shall have the designation of fishery trade officers."

15 USC 1511c - NOAA Estuarine Programs Office.

"... The Estuarine Programs Office shall develop, coordinate, and implement the estuarine activities of the administration with the activities of other Federal and State agencies. There are authorized to be appropriated to the Administration not to exceed \$560,000 for fiscal year 1989, and \$600,000 for fiscal year 1990."

15 USC 1511d - Chesapeake Bay Office

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The Secretary of Commerce shall establish, within the National Oceanic and Atmospheric Administration, an office to be known as the Chesapeake Bay Office...which shall provide technical assistance on processes impacting the Chesapeake Bay system, its restoration and habitat protection; develop a strategy to meet the commitments of the Chesapeake Bay Agreement; and coordinate programs and activities impacting the Chesapeake Bay, including research and grants.

15 USC 1511e - Office of Space Commercialization

“There is established with the Department of Commerce an Office of Space Commercialization” which shall “promote commercial provider investment in space activities...assist United States commercial providers in [their efforts to] conduct business with the United States Government, [act] as an industry advocate within the executive branch..., ensure that the United States Government does not compete with United States commercial providers..., [promote] the export of space-related goods and services, [represent] the Department of Commerce in the development of United States policies...and [seek] the removal of legal, policy, and institutional impediments to space commerce.”

15 USC 1514 - Basic Authority for Performance of Certain Functions and Activities of Department.

“Appropriations are authorized for the following activities of the Department of Commerce:

- (a) furnishing to employees...and their dependents, in Alaska and other points outside the continental United States, free emergency medical services...and supplies;
- (b) purchasing, transporting, storing, and distributing food and other subsistence supplies for resale to employees...and their dependents, in Alaska and other points outside the continental United States at a reasonable value...; the proceeds from such resales to be credited to the appropriation from which the expenditure was made;
- (c) ...establishment, maintenance, and operation of messing facilities, by contract or otherwise, in Alaska and other points outside the continental United States..., such service to be furnished to employees...and their dependents,...
- (d) reimbursement...of officers or employees in or under the Department...for food, clothing, medicines, and other supplies furnished by them in emergencies for the temporary relief of dislocated persons in remote localities;
- (e) providing motion-picture equipment and film for recreation of crews of vessels..., for recreation for employees in remote localities..., and for training purposes;
- (f) erecting, altering, repairing, equipping, furnishing, and maintaining...such living and working quarters and facilities as may be necessary to carry out its authorized work at remote localities not on foreign soil where such living and working accommodations are not otherwise available.”

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15 USC 1517 - Transfer of Statistical or Scientific Work.

“The President is authorized, by order in writing, to transfer at any time the whole or any part of any office, bureau, division, or other branch of the public service engaged in statistical or scientific work, from the Department of State, the Department of the Treasury, the Department of Defense, the Department of Justice, the United States Postal Service, or the Department of the Interior, to the Department of Commerce; and in every such case the duties and authority performed by and conferred by law upon such office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall be thereby transferred with such office, bureau, division, or other branch of the public service, or the part thereof which is so transferred. All power and authority conferred by law, both supervisory and appellate, upon the department from which such transfer is made, or the Secretary thereof, in relation to the said office, bureau, division, or other branch of the public service, or the part thereof so transferred, shall immediately, when such transfer is so ordered by the President, be fully conferred upon and vested in the Department of Commerce, or the Secretary thereof, as the case may be, as to the whole or part of such office, bureau, division, or other branch of the public service so transferred.”

15 USC 1537 - 1539 Needs Assessment for Data Management.

“Not later than 12 months after October 29, 1992, and at least biennially thereafter, the Secretary of Commerce shall complete an assessment of the adequacy of the environmental data and information systems of NOAA.”

15 USC 1540 – Cooperative Agreements

“The Secretary of Commerce, acting through the Under Secretary of Commerce for Oceans and Atmosphere, may enter into cooperative agreements and other financial agreements with any nonprofit organization to (1) aid and promote scientific and educational activities to foster public understanding of the National Oceanic and Atmospheric Administration or its programs; and (2) solicit private donations for the support of such activities.”

**Conservation**

16 USC 661 et seq.- Declaration of Purpose; Cooperation of Agencies; Surveys and Investigations; Donations.

“...the Secretary of the Interior is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes, in minimizing damages from overabundant species, in

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providing public shooting and fishing areas, including easements across public lands for access thereto, and in carrying out other measures necessary to effectuate the purposes of said sections; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and (3) to accept donations of land and contributions of funds in furtherance of the purposes of said sections.”

16 USC 757a et seq.- Anadromous, Great Lakes, and Lake Champlain Fisheries

The Act authorizes cooperative agreements with States “that are concerned with the development, conservation, and enhancement of [anadromous] fish” (section 757a(a)).

16 USC 1361 - Congressional Findings.

“The Congress finds that - (1) certain species and population stocks of marine mammals are, or may be, in danger of extinction or depletion as a result of man's activities;”

“The Secretary is authorized to make grants, or to provide financial assistance in such other form as he deems appropriate, to any Federal or State agency, public or private institution, or other person for the purpose of assisting such agency, institution, or person to undertake research in subjects which are relevant to the protection and conservation of marine mammals, and shall provide financial assistance for, research into new methods of locating and catching yellow-fin tuna without the incidental taking of marine mammals.”

16 USC 1431 et seq. - Findings, Purposes, and Policies [The National Marine Sanctuaries Act, as amended].

(b) Purposes and Policies

“The purposes and policies of this title are -

- (1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance;

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- (2) to provide authority for ... conservation and management of these marine areas ...
- (3) to support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas...
- (4) to enhance public awareness, understanding, appreciation, and wise use of the marine environment;
- (5) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;
- (6) to develop and implement coordinated plans for the protection and management of these areas...;
- (7) to create models of, and incentives for, ways to conserve and manage these areas..."
- (8) to cooperate with global programs ...; and
- (9) to maintain, restore, and enhance living resources ..."

16 USC 1447a et seq. - Regional Marine Research Programs

Authorizes NOAA/EPA and Governors of certain states to appoint members to a number of regional marine research boards. Each board is to develop a comprehensive four year marine research plan and "the Administrator of the National Oceanic and Atmospheric Administration shall administer a grant program to support the administrative functions of each Board."

Authorization for the Boards expires on October 1, 1999. The authorization for appropriations expired at the end of fiscal year 1996.

16 USC 1451 et seq. - Findings, Purposes, and Policies [Coastal Zone Management Act]

Establishes a voluntary partnership between the Federal Government and coastal States. It also establishes the National Estuarine Reserve Research program, in which the Secretary of Commerce may designate an estuarine area as a national estuarine research reserve in consultation with governor of affected state.

16 USC 1456a – Coastal Zone Management Fund

"(b) (1) The Secretary shall establish and maintain a fund, to be known as the 'Coastal Zone Management Fund', which shall consist of amounts retained and deposited into the Fund under subsection (a) of this section and fees deposited into the Fund under section 1456 (i) (3) of this title"

16 USC 1531 et seq. – Congressional Findings and Declaration of Purposes and Policy

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The purposes of the Act are “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in [the statute]” (section 1531(b)).

16 USC 1801 et seq. - Magnuson-Stevens Fishery Conservation and Management Act.

The primary purpose of the Act is “to take immediate action to conserve and manage the fishery resources found off the coasts of the United States (section 1801(b)(1)).

16 USC 3645 - Pacific Coastal Salmon Recovery

“(A) For salmon habitat restoration, salmon stock enhancement, and salmon research, including the construction of salmon research and related facilities, there is authorized to be appropriated for each of fiscal years 2000, 2001, 2002, and 2003, \$90,000,000 to the States of Alaska, Washington, Oregon, and California. Amounts appropriated pursuant to this subparagraph shall be made available as direct payments. The State of Alaska may allocate a portion of any funds it receives under this subsection to eligible activities outside Alaska.”

Amended in PL108-447 (FY 2005 Omnibus Appropriations Act) as follows: *Provided*, That section 628(2)(A) of the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Act, 2001 (16 U.S.C. 3645) is amended—

- (1) by striking “2000, 2001, 2002, and 2003” and inserting “2005”, and
- (2) by inserting “Idaho,” after “Oregon,”.

16 USC 4101 et seq. – Interjurisdictional Fisheries

“The purposes of this chapter are - (1) to promote and encourage State activities in support of the management of interjurisdictional fishery resources, and (2) to promote and encourage management of interjurisdictional fishery resources through their range” (section 4101).

16 USC 4701 et seq. - Aquatic Nuisance Prevention and Control

Establishes an interagency Aquatic Nuisance species Task Force, of which the Administrator of NOAA is a co-chair. The task force’s responsibilities include developing and implementing “a program for waters of the United States to prevent introduction and dispersal of aquatic nuisance species; to monitor, control and study such species; and to disseminate related information.”

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16 USC 5001 et seq. - Purpose of Convention

“It is the purpose ... to implement the Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, signed in Moscow, February 11, 1992.”

**Money and Finance**

31 USC 1105 - Budget Contents and Submission to Congress

(a) On or after the first Monday in January but not later than the first Monday in February of each year, the President shall submit a budget of the United States Government for the following fiscal year. Each budget shall include a budget message and summary and supporting information.

Amended in PL108-447 (FY 2005 Omnibus Appropriations Act) as follows: “*Provided further*, That beginning in fiscal year 2006 and for each fiscal year thereafter, the Secretary of Commerce shall include in the budget justification materials that the Secretary submits to Congress in support of the Department of Commerce budget (as submitted with the budget of the President under section 1105(a) of title 31, 10 United States Code) an estimate for each National Oceanic and Atmospheric Administration procurement, acquisition and construction program having a total multiyear program cost of more than \$5,000,000 and simultaneously the budget justification materials shall include an estimate of the budgetary requirements for each such program for each of the 5 subsequent fiscal years.”

**Navigation and Navigable Waters**

33 USC 706 et seq. - Department of Commerce; Current Precipitation Information; Appropriation.

“There is authorized an expenditure as required,..., for the establishment, operation, and maintenance by the Secretary of Commerce of a network of recording and non-recording precipitation stations, known as the Hydroclimatic Network, whenever...such service is advisable...”

33 USC 883a et seq. - Surveys and Other Activities.

“...the Secretary...is authorized to conduct the following activities:

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- (1) Hydrographic and topographic surveys;
- (2) Tide and current observations;
- (3) Geodetic-control surveys;
- (4) Field surveys for aeronautical charts;
- (5) Geomagnetic, seismological, gravity, and related geophysical measurements and investigations, and observations ...”

33 USC 883b - Dissemination of Data; Further Activities.

“...the Secretary is authorized to conduct the following activities:

- (1) Analysis and prediction of tide and current data;
- (2) Processing and publication of data...;
- (3) Compilation and printing of nautical charts...;
- (4) Distribution of nautical charts...”

33 USC 883c - Geomagnetic Data; Collection; Correlation, and Dissemination.

“To provide for the orderly collection of geomagnetic data...the Secretary ... is authorized to collect, correlate, and disseminate such data.”

33 USC 883d - Improvement of Methods, Instruments, and Equipments; Investigations and Research.

“...the Secretary ... is authorized to conduct developmental work for the improvement of surveying and cartographic methods, instruments, and equipments; and to conduct investigations and research in geophysical sciences...”

33 USC 883e - Cooperative Agreements for Surveys and Investigations; Contribution of Costs Incurred by National Oceanic and Atmospheric Administration.

“(1) The Secretary of Commerce is authorized to enter into cooperative agreements with, and to receive and expand funds made available by... for surveys or investigations... or for performing related surveying and mapping activities... and for the preparation and publication of the results thereof.”

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“(2) The Secretary of Commerce is authorized to establish the terms of any cooperative agreement entered into ... including the amount of funds to be received ... which the Secretary determines represents the amount of benefits derived ... from the cooperative agreement.”

33 USC 883f - Contracts with Qualified Organizations.

“The Secretary is authorized to contract with qualified organizations for the performance of any part of the authorized functions of the National Ocean Survey...”

33 USC 883h - Employment of Public Vessels.

“The President is authorized to cause to be employed such of the public vessels as he deems it expedient to employ, and to give such instructions for regulating their conduct as he deems proper in order to carry out the provisions of this subchapter.”

33 USC 883i - Authorization of Appropriations.

“There are hereby authorized to be appropriated such funds as may be necessary to acquire, construct, maintain, and operate ships, stations, equipment, and facilities and for such other expenditures, including personal services at the seat of government and elsewhere and including the erection of temporary observatory buildings and lease of sites therefore as may be necessary...”

33 USC 891 et seq. - Fleet Replacement and Modernization Program

“The Secretary is authorized to implement... a 15-year program to replace and modernize the NOAA fleet.”

33 USC 893 a-b. - Research, Development, and Education

(a) The Administrator of the National Oceanic and Atmospheric Administration shall conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal, Great Lakes, and atmospheric science and stewardship by the general public and other coastal stakeholders, including underrepresented groups in ocean and atmospheric science and policy careers. In conducting those activities, the Administrator shall build upon the educational programs and activities of the agency.

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- (b) NOAA science education plan - The Administrator, appropriate National Oceanic and Atmospheric Administration programs, ocean atmospheric science and education experts, and interested members of the public shall develop a science education plan setting forth education goals and strategies for the Administration, as well as programmatic actions to carry out such goals and priorities over the next 20 years, and evaluate and update such plan every 5 years.

33 USC 1121-1124, 1126-1129, 1131 - National Sea Grant College Program Act.

The Sea Grant Act authorizes the awarding of grants and contracts to initiate and support programs at Sea Grant colleges and other institutions for research, education, and advisory services in any field related to the conservation and development of marine resources.

In 2008, PL 110-394 (National Sea Grant College Program Amendments Act of 2008) amended 33 USC 1124 as follows –

- (1) by striking “204(c)(4)(F).” in subsection (a) and inserting “204(c)(4)(F) or that are appropriated under section 208(b).”; and (2) by striking the matter following paragraph (3) in subsection (b) and inserting the following -

“The total amount that may be provided for grants under this subsection during any fiscal year shall not exceed an amount equal to 5 percent of the total funds appropriated for such year under section 212.”.

PL 110-394 amended 33 USC 1127 as follows –

- (1) by striking “Not later than 1 year after the date of the enactment of the National Sea Grant College Program Act Amendments of 2002, and every 2 years thereafter,” in subsection (a) and inserting “Every 2 years,”; and (2) by adding at the end the following:

“(c) Restriction on Use of Funds.--Amounts available for fellowships under this section, including amounts accepted under section 204(c)(4)(F) or appropriated under section 212 to implement this section, shall be used only for award of such fellowships and administrative costs of implementing this section.”

PL 110-394 amended 33 USC 1131 as follows –

- (1) by striking subsection (a)(1) and inserting the following: “(1) In general.--There are authorized to be appropriated to the Secretary to carry out this title—

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“(A) \$72,000,000 for fiscal year 2009;  
“(B) \$75,600,000 for fiscal year 2010;  
“(C) \$79,380,000 for fiscal year 2011;  
“(D) \$83,350,000 for fiscal year 2012;  
“(E) \$87,520,000 for fiscal year 2013; and  
“(F) \$91,900,000 for fiscal year 2014.”.

(2) in subsection (a)(2)—

(A) by striking “fiscal years 2003 through 2008—“ and inserting “fiscal years 2009 through 2014—“;

(B) by striking “biology and control of zebra mussels and other important aquatic” in subparagraph (A) and inserting “biology, prevention, and control of aquatic”; and (C) by striking “blooms, including Pfiesteria piscicida; and” in subparagraph (C) and inserting “blooms; and”;

(3) in subsection (c)(1) by striking “rating under section 204(d)(3)(A)” and inserting “performance assessments”; and

(4) by striking subsection (c)(2) and inserting the following: “(2) regional or national strategic investments authorized under section 204(b)(4);”.

33 USC 1251- Water Pollution Prevention and Control

Through the National Shellfish Indicator Program, authorizes the Secretary of Commerce, in cooperation with the Secretary of Health and Human Services and the Administrator of EPA, to establish and administer a 5-year national shellfish research program for the purpose of improving existing classification systems for shellfish growing waters using the latest technological advancements in microbiology and epidemiological methods.

33 USC 1321 - Oil and Hazardous Substances [Clean Water Act]

Authorizes the recovery of damages to natural resources in the event of an oil spill in waters of the United States. This authority has been delegated to several Federal agencies, including the Department, pursuant to an Executive Order.

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33 USC 1441 - Monitoring and Research Program [Marine Protection, Research and Sanctuaries Act]

Authorizes the Secretary of Commerce, in coordination with other agencies, to initiate a comprehensive and continuing program of monitoring and research regarding the effects of the dumping of material into ocean waters or other coastal waters where the tide ebbs and flows or into the Great Lakes or their connecting waters.

33 USC 1442 - Research Program Respecting Possible Long-range Effects of Pollution, Overfishing, and Man-induced Changes of Ocean Ecosystems

Authorizes the Secretary of Commerce, in consultation with other agencies, to ... "initiate a comprehensive and continuing program of research with respect to the possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems."

33 USC 1443 - Regional Management Plans for Waste Disposal in Coastal Areas.

Authorizes the Secretary of Commerce to assist the Environmental Protection Agency in assessing "the feasibility in coastal areas of regional management plans for the disposal of waste materials."

33 USC 1444 - Annual Report

Requires the Secretary of Commerce to provide Congress with an annual report on the Department's activities to monitor ocean dumping and research the long-range effects of pollution on ocean ecosystems.

33 USC 2706 - Natural Resources [NOAA Oil and Hazardous Substance Spill Cost Reimbursement].

"...the National Oceanic and Atmospheric Administration acts as trustee of said marine environment and/or resources, shall be deposited in the Damage Assessment and Restoration Revolving Fund ... for purposes of obligation and expenditure in fiscal year 1991 and thereafter, sums available in the Damage Assessment and Restoration Revolving Fund may be transferred, upon the approval of the Secretary ..., to the Operations, Research, and Facilities appropriation of the National Oceanic and Atmospheric Administration."

33 USC 2801 et seq. - National Coastal Monitoring Act.

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“The purposes of this chapter are to -

- (1) establish a comprehensive national program for consistent monitoring of the Nation's coastal ecosystems;
- (2) establish long-term water quality assessment and monitoring programs for high priority coastal waters that will enhance the ability of Federal, State, and local authorities to develop and implement effective remedial programs for those waters;
- (3) establish a system for reviewing and evaluating the scientific, analytical, and technological means that are available for monitoring the environmental quality of coastal ecosystems;
- (4) establish methods for identifying uniform indicators of coastal ecosystem quality;
- (5) provide for periodic, comprehensive reports to Congress concerning the quality of the Nation's coastal ecosystems;
- (6) establish a coastal environment information program to distribute coastal monitoring information;
- (7) provide state programs authorized under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.) with information necessary to design land use plans and coastal zone regulations that will contribute to the protection of coastal ecosystems; and
- (8) provide certain water pollution control programs authorized under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.) with information necessary to design and implement effective coastal water pollution controls.”

33 USC 3001 et seq.- NOAA Corps Officers

PL 108-219 states: “All action in the line of duty by, and all Federal agency actions in relation to (including with respect to pay, benefits, and retirement) a de facto officer of the commissioned corps of the National Oceanic and Atmospheric Administration who was appointed or promoted to that office without Presidential action, and without the advice and consent of the Senate, during such time as the officer was not properly appointed in or promoted to that office, are hereby ratified and approved if otherwise in accord with the law, and the President alone may, without regard to any other law relating to appointments or promotions in such corps, appoint or promote such a de facto officer temporarily, without change in the grade currently occupied in a de facto capacity, as an officer in such corps for a period ending not later than 180 days from the date of enactment of this Act.”

33 USC 3044 et seq. -Retirement for Length of Service

PL 107-372 states: “An officer who has completed 20 years of service, of which at least 10 years was service as a commissioned officer, may at any time thereafter, upon application by such officer and in the discretion of the President, be placed on the retired list.

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33 USC 3045 - Computation of Retired Pay

PL 107-372 states: “ (a) Officers first becoming members before September 8, 1980: Each officer on the retired list who first became a member of a uniformed service before September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1406(g) of title 10; by (2) 2 1/2 percent of the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. The retired pay so computed may not exceed 75 percent of the retired pay base. (b) Officers first becoming members on or after September 8, 1980. Each officer on the retired list who first became a member of a uniformed service on or after September 8, 1980, shall receive retired pay at the rate determined by multiplying (1) the retired pay base determined under section 1407 of title 10; by (2) the retired pay multiplier determined under section 1409 of such title for the number of years of service that may be credited to the officer under section 1405 of such title as if the officer's service were service as a member of the Armed Forces. (c) Treatment of full and fractional parts of months in computing years of service (1) In general, in computing the number of years of service of an officer for the purposes of subsection (a) of this section - (A) each full month of service that is in addition to the number of full years of service creditable to the officer shall be credited as 1/12 of a year; and (B) any remaining fractional part of a month shall be disregarded. (2) Rounding Retired pay computed under this section, if not a multiple of \$1, shall be rounded to the next lower multiple of \$1.”

33 USC 3046 - Retired Grade and Retired Pay

PL 107-372 states: “Each officer retired pursuant to law shall be placed on the retired list with the highest grade satisfactorily held by that officer while on active duty including active duty pursuant to recall, under permanent or temporary appointment, and shall receive retired pay based on such highest grade, if - (1) the officer's performance of duty in such highest grade has been satisfactory, as determined by the Secretary of the department or departments under whose jurisdiction the officer served; and (2) unless retired for disability, the officer's length of service in such highest grade is no less than that required by the Secretary of officers retiring under permanent appointment in that grade.

Use of Oil Spill Liability Trust Fund

PL 111-281, Sec. 708 amends Section 1012(a)(5) of the Oil Spill Liability Trust Fund Act by: “(2) by inserting after subparagraph (A) the following:“(B) not more than \$15,000,000 in each fiscal year shall be available to the Under Secretary of Commerce for Oceans and Atmosphere for expenses incurred by, and activities related to, response and damage assessment capabilities of the National Oceanic and Atmospheric Administration.”

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**The Public Health and Welfare**

42 USC 8902-8905 - Acid Precipitation Program

Authorized the Administrator of NOAA to serve as co-chair of a task force to prepare a comprehensive research plan for a program to study the causes and effects of acid precipitation. Also authorizes the Administrator of NOAA to serve as the director of a related research program.

42 USC 9601 et seq. (CERCLA)

Through associated regulations and delegations, authorizes the Administrator to provide technical assistance to the Administrator, EPA, for hazardous waste response under CERCLA and the National Contingency Plan and authorizes the Administrator to act as a natural resource trustee with authority to bring a cause of action for damages resulting from an injury to, destruction of or loss of resources under NOAA's jurisdiction.

**Public Lands**

43 USC 1347e - Safety and Health Regulations

Authorizes the Secretary of Commerce in cooperation with other Federal entities, to conduct studies of underwater diving techniques and equipment "suitable for protection of human safety and improvement of diver performance...."

**Public Printing and Documents**

44 USC 1307 - Sale and Distribution of NOAA Nautical and Aeronautical Products.

"All nautical and aeronautical products created or published ... shall be sold at ... prices ... the Secretary of Commerce shall establish annually ... so as to recover all costs attributable to data base management, compilation, printing, and distribution of such products."

**Transportation**

49 USC 44720 - Meteorological services

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The Administrator of the Federal Aviation Administration shall make recommendations to the Secretary of Commerce on providing meteorological services necessary for the safe and efficient movement of aircraft in air commerce. In providing the services, the Secretary shall cooperate with the Administrator and give complete consideration to those recommendations.

“To promote safety and efficiency in air navigation to the highest possible degree, the Secretary shall -(1)observe, measure, investigate, and study atmospheric phenomena, and maintain meteorological stations and offices...(2) provide reports to the Administrator (3)cooperate with persons engaged in air commerce in meteorological services...(4)maintain and coordinate international exchanges of meteorological information... (5) participate in developing an international basic meteorological reporting network...(6)coordinate meteorological requirements in the United States to maintain standard observations...;(7)promote and develop meteorological science....

**Interjurisdictional Fisheries Act**

97 Stat. 1409

This Act authorizes NMFS fisheries programs not otherwise authorized by law, including research to reduce entanglement of marine mammals in fishing gear, development of habitat restoration techniques, restoration of Chesapeake Bay, and conservation of Antarctic living marine resources.

**Omnibus Public Land Management Act of 2009**

PL 111-11, Sec 12002

Establishes a national ocean exploration program within the National Oceanic and Atmospheric Administration (NOAA) that promotes collaboration with other federal ocean and undersea research and exploration programs. Requires convening an ocean exploration and undersea research technology and infrastructure task force. Establishes the Ocean Exploration Advisory Board. Authorizes appropriations.

PL 111-11, Sec 12102

NOAA Undersea Research Program Act of 2009 - Establishes a NOAA undersea research program for the purpose of increasing scientific knowledge essential for the informed management, use, and preservation of oceanic, marine, and coastal areas and the Great Lakes. Requires specified research, exploration, education, and technology programs to be conducted through a network of

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extramural network regional undersea research centers and the National Institute for Undersea Science and Technology. Authorizes appropriations.

PL 111-11, Sec 12202

Ocean and Coastal Mapping Integration Act - Directs the President to establish a coordinated federal program to develop an ocean and coastal mapping plan for the Great Lakes and coastal state waters, the territorial sea, the exclusive economic zone, and the continental shelf of the United States that enhances ecosystem approaches in decision-making for conservation and management of marine resources and habitats, establishes research and mapping priorities, supports the siting of research and other platforms, and advances ocean and coastal science. Requires a plan for an integrated ocean and coastal mapping initiative within NOAA. Authorizes appropriations.

PL 111-11, Sec 12304

Integrated Coastal and Ocean Observation System Act of 2009 - Directs the President to establish a National Integrated Coastal and Ocean Observation System that is designed to address regional and national needs for ocean information, to gather specific data on key coastal, ocean, and Great Lakes variables, and to ensure timely and sustained dissemination and availability of such data. Requires an advisory committee. Authorizes appropriations.

PL 111-11, Sec 12404

Federal Ocean Acidification Research And Monitoring Act of 2009 or the FOARAM Act - Directs the Joint Subcommittee on Ocean Science and Technology of the National Science and Technology Council to: (1) coordinate federal activities on ocean acidification and establish an interagency working group; and (2) develop a strategic plan for federal research and monitoring on ocean acidification. Requires specified ocean acidification programs in NOAA, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA). Authorizes appropriations.

PL 111-11, Sec 12502

Coastal and Estuarine Land Conservation Program Act - (Sec. 12502) Amends the Coastal Zone Management Act of 1972 to authorize the Secretary of Commerce to conduct a Coastal and Estuarine Land Conservation Program to protect important coastal

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and estuarine areas. Requires related property acquisition grants to coastal states with approved coastal zone management plans or National Estuarine Research Reserve units. Authorizes appropriations.

PL 111-348

An act to amend the High Seas Driftnet Fishing Moratorium Protection Act and the Magnuson-Stevens Fishery Conservation and Management Act to improve the conservation of sharks.

PL 111-358 Sec 301-303

SEC. 302. OCEANIC AND ATMOSPHERIC RESEARCH AND DEVELOPMENT PROGRAMS.

Section 4001 of the America COMPETES Act (33 U.S.C. 893) is amended—

- (1) by inserting “(a) IN GENERAL.—” before “The Administrator”; and
- (2) by adding at the end the following:

“(b) OCEANIC AND ATMOSPHERIC RESEARCH AND DEVELOPMENT PROGRAM.—The Administrator shall implement programs and activities—

“(1) to identify emerging and innovative research and development priorities to enhance United States competitiveness, support development of new economic opportunities based on NOAA research, observations, monitoring modeling, and predictions that sustain ecosystem services;

“(2) to promote United States leadership in oceanic and atmospheric science and competitiveness in the applied uses of such knowledge, including for the development and expansion of economic opportunities; and

“(3) to advance ocean, coastal, Great Lakes, and atmospheric research and development, including potentially transformational research, in collaboration with other relevant Federal agencies, academic institutions, the private sector, and nongovernmental programs, consistent with NOAA’s mission to understand, observe, and model the Earth’s atmosphere and biosphere, including the oceans, in an integrated manner.

...

SEC. 302. OCEANIC AND ATMOSPHERIC SCIENCE EDUCATION PROGRAMS.

Section 4002 of the America COMPETES Act (33 U.S.C. 893a) is amended—

- (1) by striking “the agency.” in subsection (a) and inserting “agency, with consideration given to the goal of promoting the participation of individuals from underrepresented groups in STEM fields and in promoting the acquisition and retention of highly qualified and motivated young scientists to complement and supplement workforce needs.”;

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(2) by redesignating subsections (b) and (c) as subsections (c) and (d), respectively;

(3) by inserting after subsection (a) the following:

“(b) EDUCATIONAL PROGRAM GOALS.—The education programs developed by NOAA shall, to the extent applicable—

“(1) carry out and support research based programs and activities designed to increase student interest and participation in STEM;

“(2) improve public literacy in STEM;

“(3) employ proven strategies and methods for improving student learning and teaching in STEM;

“(4) provide curriculum support materials and other resources that—

“(A) are designed to be integrated with comprehensive STEM education;

“(B) are aligned with national science education standards; and

“(C) promote the adoption and implementation of high quality education practices that build toward college and career-readiness; and

“(5) create and support opportunities for enhanced and ongoing professional development for teachers using best practices that improves the STEM content and knowledge of the teachers, including through programs linking STEM teachers with STEM educators at the higher education level.”;

(4) by striking “develop” in subsection (c), as redesignated, and inserting “maintain”; and

(5) by adding at the end thereof the following:

“(e) STEM DEFINED.—In this section, the term ‘STEM’ means the academic and professional disciplines of science, technology, engineering, and mathematics.”.

**SEC. 303. WORKFORCE STUDY.**

(a) IN GENERAL.—The Secretary of Commerce, in cooperation with the Secretary of Education, shall request the National Academy of Sciences to conduct a study on the scientific workforce in the areas of oceanic and atmospheric research and development. The study shall investigate—

(1) whether there is a shortage in the number of individuals with advanced degrees in oceanic and atmospheric sciences who have the ability to conduct high quality scientific research in physical and chemical oceanography, meteorology, and atmospheric modeling, and related fields, for government, nonprofit, and private sector entities;

(2) what Federal programs are available to help facilitate the education of students hoping to pursue these degrees;

(3) barriers to transitioning highly qualified oceanic and atmospheric scientists into Federal civil service scientist career tracks;

(4) what institutions of higher education, the private sector, and the Congress could do to increase the number of individuals with such post baccalaureate degrees;

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- (5) the impact of an aging Federal scientist workforce on the ability of Federal agencies to conduct high quality scientific research; and
  - (6) what actions the Federal government can take to assist the transition of highly qualified scientists into Federal career scientist positions and ensure that the experiences of retiring Federal scientists are adequately documented and transferred prior to retirement from Federal service.
- (b) COORDINATION.—The Secretary of Commerce and the Secretary of Education shall consult with the heads of other Federal agencies and departments with oceanic and atmospheric expertise or authority in preparing the specifications for the study...

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**CONSULTING AND RELATED SERVICES**  
(Dollars in Thousands)

	<u>2011 Actual</u>	<u>2012 Estimate</u>	<u>2013 Estimate</u>
Management and Professional Support Services	\$58,197	\$56,487	\$55,852
Studies, Analysis and Evaluations	\$23,876	\$23,174	\$22,914
Engineering and Technical Services	\$67,151	\$65,177	\$64,445
Total	\$149,224	\$144,838	\$143,211

Consulting Services are those services of a pure nature relating to the governmental functions of agency administration and management and agency problem management. These services are normally provided by persons or organizations generally considered to have knowledge and special abilities that are not usually available within the agency. Such services can be obtained through personnel appointments, procurement contracts, or advisory committees.

Management and professional services deal with management data collection, policy review or development, program development, review or evaluation, systems engineering and other management support services. Special studies and analyses deal with the highly specialized areas of agency activity, e.g., air quality, chemical, environmental, geophysical, oceanographic, technological, and etc. Management and support services for research and development are procurement actions that meet the description of management and professional services or special studies and analyses but are funded under research and development.

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**PERIODICAL, PAMPHLETS, AND AUDIOVISUAL PRODUCTS**  
(Dollars in Thousands)

	2011 <u>Actual</u>	2012 <u>Estimate</u>	2013 <u>Estimate</u>
Periodicals	1,008	968	1,010
Pamphlets	726	697	727
Audiovisuals	<u>344</u>	<u>330</u>	<u>344</u>
Total	2,078	1,995	2,081

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**AVERAGE GRADE AND SALARY**  
(Dollars in Thousands)

	2011 <u>Actual</u>	2012 <u>Estimate</u>	2013 <u>Estimate</u>
Average executive and SES level pay plans	\$161,055	\$161,055	\$161,860
Average GS/GM grade	13	13	13
Average GS/GM salary	\$86,659	\$86,659	\$87,092
Average Pay Band salary	\$93,005	\$93,005	\$93,470
Average Commissioned Officers salary	\$97,436	\$101,333	\$103,360
Average salary for other positions (FWS/Wage Marine)	\$51,609	\$51,609	\$51,867

On December 22, 2010, President Obama signed legislation to prohibit statutory pay adjustments for most Federal civilian employees. For NOAA, this includes employees under the General Schedule, Executive Schedule, and Senior Executive Service (SES), but does not include members of the NOAA Corps. The average salaries provided here reflect the pay freeze for FY 2012.

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**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar Amounts in Thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	196	186	1,800,443	1,817,839
Less: Carryover	0	0	0	(9,396)
Plus: 2013 Adjustments to Base	(5)	(5)	1,000	0
<b>FY 2013 Base</b>	<b>191</b>	<b>181</b>	<b>1,801,443</b>	<b>1,808,443</b>
Administrative Savings(real reductions)	0	0	(621)	(621)
Plus (or less): 2013 Program Changes	(1)	(1)	164,914	164,914
<b>FY 2013 Estimate</b>	<b>190</b>	<b>180</b>	<b>1,965,736</b>	<b>1,972,736</b>

Comparison by activity/subactivity		FY 2011 Actuals		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Ocean Service	Pos/BA	15	19,347	1	8,000	1	8,000	0	0	(1)	(8,000)
	FTE/OBL	15	21,983	1	9,376	1	8,000	0	0	(1)	(8,000)
National Marine Fisheries Service	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	1,509	0	62	0	0	0	0	0	0
Oceanic and Atmospheric Research	Pos/BA	0	10,348	0	10,296	0	10,296	0	10,379	0	83
	FTE/OBL	0	10,507	0	10,297	0	10,296	0	10,379	0	83

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 (Dollar Amounts in Thousands)

Comparison by activity/subactivity		FY 2011 Actual		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
National Weather Service	Pos/BA	52	96,801	32	91,110	27	91,110	27	97,439	0	6,329
	FTE/OBL	50	116,736	31	95,345	26	91,110	26	97,439	0	6,329
National Environmental Satellite Data & Information Service	Pos/BA	176	1,259,232	158	1,696,645	158	1,696,645	158	1,850,309	0	153,664
	FTE/OBL	168	1,267,928	149	1,698,894	149	1,696,645	149	1,850,309	0	153,664
Program Support	Pos/BA	5	13,958	0	0	0	0	0	0	0	0
	FTE/OBL	5	15,156	0	1,037	0	0	0	0	0	0
Office of Marine Aviation & Ops	Pos/BA	1	2,393	5	2,392	5	2,392	5	14,609	0	12,217
	FTE/OBL	1	2,205	5	2,828	5	2,392	5	14,609	0	12,217
Less Deobligations	Pos/BA	0	(2,000)	0	(8,000)	0	(7,000)	0	(7,000)	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total	Pos/BA	249	1,400,079	196	1,800,443	191	1,801,443	190	1,965,736	(1)	164,293
	FTE/OBL	239	1,436,024	186	1,817,839	181	1,808,443	180	1,972,736	(1)	164,293

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**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar Amounts in Thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	239	1,436,024	186	1,817,839	181	1,808,443	180	1,972,736	(1)	164,293
<b>Total Obligations</b>	<b>239</b>	<b>1,436,024</b>	<b>186</b>	<b>1,817,839</b>	<b>181</b>	<b>1,808,443</b>	<b>180</b>	<b>1,972,736</b>	<b>(1)</b>	<b>164,293</b>
<b>Adjustments to Obligations:</b>										
Recoveries	0	0	0	0	0	0	0	0	0	0
Cash Refunds/Prior Year Recoveries	0	(104)	0	0	0	0	0	0	0	0
Deobligations	0	(12,928)	0	(8,000)	0	(7,000)	0	(7,000)	0	0
Unobligated Balance Expired	0	63	0	0	0	0	0	0	0	0
Unobligated Balance Adj SOY	0	(32,401)	0	(9,396)	0	0	0	0	0	0
Unobligated balance, Adj EOY	0	9,396	0	0	0	0	0	0	0	0
Transfer to NOAA ORF	0	0	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>239</b>	<b>1,400,050</b>	<b>186</b>	<b>1,800,443</b>	<b>181</b>	<b>1,801,443</b>	<b>180</b>	<b>1,965,736</b>	<b>(1)</b>	<b>164,293</b>
<b>Financing from Transfers and Other:</b>										
Transfer to OIG	0	0	0	1,000	0	0	0	0	0	0
Unoblig Balance Rescission Adj Appn	0	0	0	0	0	0	0	0	0	0
Transfer from Census to PAC	0	(39,760)	0	0	0	0	0	0	0	0
Transfer from ORF to PAC	0	(28,940)	0	0	0	0	0	0	0	0
Transfer from PAC to ORF	0	1,333	0	15,651	0	0	0	0	0	0
<b>Net Appropriation</b>	<b>239</b>	<b>1,332,683</b>	<b>186</b>	<b>1,817,094</b>	<b>181</b>	<b>1,801,443</b>	<b>180</b>	<b>1,965,736</b>	<b>(1)</b>	<b>164,293</b>

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**SUMMARY OF FINANCING**  
 (Dollar Amounts in Thousands)

	FY 2011	FY 2012	FY 2013	FY 2013	Increase/(Decrease)
	Actuals	Currently Available	Base Program	Estimate	over FY 2013 Base
Direct Discretionary Obligation	1,436,024	1,817,839	1,808,443	1,972,736	164,293
Total Obligations	1,436,024	1,817,839	1,808,443	1,972,736	164,293
<b>Adjustments and Obligations:</b>					
Cash Refund	(104)	0	0	0	0
Recoveries	0	0	0	0	0
Deobligations	(12,928)	(8,000)	(7,000)	(7,000)	0
Unobligated balance, adj. SOY	(32,401)	(9,396)	0	0	0
Unobligated balance, EOY	9,396	0	0	0	0
Unobligated balance, expiring EOY	63	0	0	0	0
Unobligated Balance, rescission	0	0	0	0	0
Total Budget Authority	1,400,050	1,800,443	1,801,443	1,965,736	164,293
<b>Financing from Transfers and Other:</b>					
Transfer to ORF	1,333	15,651	0	0	0
Transfer from GSA	0	0	0	0	0
Transfer from ORF	(28,940)	0	0	0	0
Transfer to OIG	0	1,000	0	0	0
Transfer from Census to PAC	(39,760)				
Unobligated Balance, Rescission	0	0	0	0	0
Net Appropriation	1,332,683	1,817,094	1,801,443	1,965,736	164,293

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**ADJUSTMENTS TO CHANGES TO BASE**  
 (Dollars in thousands)

	FTE	Amount
<u>Adjustments:</u>		
Restoration of FY 2012 deobligations	0	8,000
Subtotal Adjustments	0	8,000
 <u>Financing:</u>		
NOAA expects to realize recoveries of prior year obligations of \$7,000,000. This amount will be used to offset the budget authority in 2013.	0	
		(7,000)
	0	(7,000)
 <u>Other Changes:</u>		
Subtotal, Other Changes	0	0
Total Adjustments to Base	0	1,000

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**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar Amounts in Thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase / (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	30,205	37,705	37,705	37,616	(89)
11.3 Other than full-time permanent	275	347	347	347	0
11.5 Other personnel compensation	1,356	1,712	1,710	1,710	0
11.6 Leave Surcharge	0	0	0	0	0
11.7 Military personnel	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total Personnel Compensation	31,836	39,765	39,763	39,674	(89)
12 Civilian personnel benefits	8,319	10,494	10,494	10,468	(26)
13 Benefits for former personnel	9	11	11	11	0
21 Travel and transportation of persons	3,054	3,852	3,852	3,852	0
22 Transportation of things	133	168	168	168	0
23.1 Rental payments to GSA	5,442	5,823	6,231	6,231	0
23.2 Rental payments to others	2,617	3,301	3,301	3,301	0
23.3 Communications, utilities and miscellaneous charges	5,741	7,242	7,242	7,242	0
24 Printing and reproduction	21	25	26	26	0
25.1 Advisory and assistance services	54,185	68,351	68,351	91,057	22,706
25.2 Other services	111,824	148,890	139,088	215,977	76,889
25.3 Purchases of goods and services from Govt accounts	1,011,526	1,275,969	1,275,969	1,275,969	0
25.4 Operation and maintenance of facilities	0	0	0	0	0
25.5 Research and development contracts	19,522	24,626	24,626	24,626	0
26 Supplies and materials	7,140	9,007	9,007	9,007	0
31 Equipment	125,561	158,386	158,386	227,084	68,698

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Procurement, Acquisition, and Construction  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
 (Dollar Amounts in Thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase / (Decrease)
32 Lands and structures	1,864	2,351	2,351	2,351	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	47,204	59,545	59,545	55,660	(3,885)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	26	33	33	33	0
44 Refunds	0	0	0	0	0
99 Total Obligations	1,436,024	1,817,839	1,808,443	1,972,736	164,293
Cash Refund	(104)	0	0	0	0
Prior Year Recoveries	0	0	0	0	0
Deobligations	(12,928)	(8,000)	(7,000)	(7,000)	0
Unobligated Balance, expiring	63	0	0	0	0
Unobligated Balance, Start of Year	(32,401)	(9,396)	0	0	0
Unobligated Balance, End of Year	9,396	0	0	0	0
Subtotal Budget Authority	1,400,050	1,800,443	1,801,443	1,965,736	164,293
Total Discretionary PAC Budget Authority	1,400,050	1,800,443	1,801,443	1,965,736	164,293
Positions	249	196	191	190	(1)
FTE	239	186	181	180	(1)

## **BUDGET ACTIVITY: NATIONAL OCEAN SERVICE**

For FY 2013, NOAA requests a net decrease of \$7,697,000 and 14 FTE below the FY 2013 base level for a total of \$478,066,000 and 1,224 FTE for the National Ocean Service after a technical transfer of \$5,116,000 and 4 FTE to the National Marine Fisheries Service. This includes \$3,907,000 and 0 FTE in inflationary adjustments.

### **BASE JUSTIFICATION FOR FY 2013:**

The National Ocean Service (NOS) has three subactivities under the Operations, Research and Facilities (ORF) account (\$458,163,000 and 1,221 FTE):

- Navigation Services (\$149,719,000 and 550 FTE) includes the Office of Coast Survey (OCS), the National Geodetic Survey (NGS), and the Center for Operational Oceanographic Products and Services (CO-OPS). The activities of these offices are conducted under the authority of the Coast and Geodetic Survey Act of 1947, the Hydrographic Services Improvement Act (as amended in 2008), and the Ocean and Coastal Mapping Integration Act of 2009.
- Ocean Resources Conservation and Assessment (\$159,534,000 and 422 FTE) includes programs managed by the National Centers for Coastal Ocean Science (NCCOS), the Office of Response and Restoration (ORR), the Coastal Services Center (CSC), the Office of Ocean and Coastal Resource Management (OCRM), and the NOAA Integrated Ocean Observing System (IOOS) Program. These activities are implemented primarily under the authorities established in the Harmful Algal Bloom and Hypoxia Research and Control Act; National Coastal Monitoring Act; Oceans and Human Health Act; Oil Pollution Act; Coastal Zone Management Act; Coral Reef Conservation Act; and the Integrated Coastal and Ocean Observation Systems Act.
- Ocean and Coastal Management (\$148,910,000 and 249 FTE) includes programs managed by the Office of Ocean and Coastal Resource Management (OCRM) and the Office of National Marine Sanctuaries (ONMS). These activities are conducted under the authority of the Coastal Zone Management Act and the National Marine Sanctuaries Act.

Procurement, Acquisition, and Construction (PAC) activities (\$8,000,000 and 1 FTE) include: the Coastal Estuarine Land Conservation Program (CELCP), the National Estuarine Research Reserve System (NERRS) Construction and Land Acquisition Program and the National Marine Sanctuaries Construction Program. These activities are implemented by OCRM and ONMS.

NOS manages two mandatory accounts, the NOAA Damage Assessment and Restoration Revolving Fund (\$18,600,000 and 16 FTE) and the Sanctuaries Enforcement Asset Forfeiture Fund (\$1,000,000 and 0 FTE).

- The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats, for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.
- The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil

penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year (technically reimbursable), as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

To implement these efforts, NOS staff and facilities are located around the country with concentrations in Silver Spring, MD; Charleston, SC; Seattle, WA; Norfolk, VA; Beaufort, NC; and Honolulu, HI.

The National Ocean Service is the primary Federal agency that observes, measures, assesses, and manages the Nation's coastal, ocean and Great Lakes areas, provides critical navigation products and services, and conducts response and restoration activities to protect vital coastal resources. These activities support sound decision-making for human, ecological, and economic health. An estimated 165 million people (over 50 percent of the United States population) lived in coastal counties in 2011. These coastal counties make up only 17 percent of the Nation's land area (excluding Alaska). Although coastal population growth reflects the same rate of growth as that of the entire Nation, the limited land area of coastal counties is increasingly strained by the density of population growth. This increasing density, coupled with the important economies of coastal areas, makes the task of managing coastal resources increasingly difficult, especially with the Nation's coastal population expected to increase by more than 13.6 million by 2020 (*NOAA's State of the Coast*, <http://stateofthecoast.noaa.gov>). In addition, over half of the U.S. Gross Domestic Product (GDP) is generated in coastal counties (*State of the U.S. Ocean and Coastal Economies*, NOEP 2009), highlighting the importance of coastal resources to the Nation's economy and emphasizing the need for access to data and sound science to inform decision making.

As a national leader for coastal and ocean stewardship and a trustee of coastal natural resources, NOS promotes a wide range of research and operational activities to better understand and manage ocean, coastal, and Great Lakes ecosystems. NOS research provides a strong science foundation to advance the sustainable use of our coastal and ocean systems, improve ecosystem and human health, and support economic vitality. NOS is improving the quality and quantity of ocean and coastal observations through innovative research and technology development. Observations by NOS assets and partners are critical components of the Nation's Integrated Ocean Observing System (IOOS<sup>®</sup>) and the Global Earth Observation System of Systems (GEOSS). NOS mapping, charting, geodetic, and oceanographic activities build on marine and coastal observations to increase the efficiency and safety of maritime commerce, support coastal resource management, implement integrated planning for multiple uses of coastal areas, and address coastal flooding and water quality concerns.

NOS leverages its scientific expertise into actionable knowledge, tools, and technical services needed to address issues such as climate change, coastal hazards, population growth, ecosystem management, port congestion, and contaminants in the environment. NOS is the Nation's leading expert on restoring coastal resources damaged by releases of oil and other hazardous materials. In collaboration with international, Federal, state, and local managers, NOS also serves as the steward of marine protected areas, the National Marine Sanctuaries system, the Papahānaumokuākea Marine National Monument, and nationally significant estuarine reserves. NOS helps its Federal and non-Federal partners build capacity to protect and sustainably use coastal ecosystems through financial and technical assistance, applied research, and other capacity-building resources.

In working towards vibrant, healthy coasts and coastal economies, NOS's organizational strength lies in its ethos of collaboration, which facilitates synergies between National and regional interests. These synergies result both from vertically integrating actions—NOS brings together applied research, observations, mapping, assessment, planning, management, restoration, and conservation—and from horizontally coordinating activities of Federal, State, local, and non-governmental stakeholders in any given coastal zone. NOS work on responding to sea level rise is a prominent demonstration of the benefits of integrated and coordinated action; as natural and human-induced hazards threaten our Nation's coasts, NOS products and services are directly improving resiliency and addressing emerging threats to the health and well-being of coastal communities.

**Research and Development Investments:**

The NOAA FY 2013 Budget request for research and development programs is the result of an organization-wide strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing benefits of finite investments in science. NOS requests \$80,033,000 for investments in R&D and infrastructure to support R&D in the FY 2013 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY 2013-2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests an increase \$3,907,000 and 0 FTE to fund adjustments to current programs for NOS activities. This increase will fund the estimated 2013 Federal pay raise of 0.5 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA also requests the following transfers for a net change of \$0 and 0 FTE to the agency:

From Office	PPA	To Office	PPA	Amount/FTE
NOS	Estuary Restoration Program	NMFS	Habitat Management & Restoration	\$498,000/1 FTE
NOS	Marine Debris	NMFS	Habitat Management & Restoration	\$4,618,000/3 FTE
NOS	Marine Protected Areas	NOS	Marine Sanctuary Program Base	\$1,982,000/9 FTE

NOAA requests a technical adjustment to move \$498,000 and 1 FTE from NOS Estuary Restoration Program to NMFS Habitat Management & Restoration. This transfer will consolidate NOAA's Estuary Restoration Program within the Office of Habitat Conservation.

NOAA requests a technical adjustment to move \$4,618,000 and 3 FTE from NOS Marine Debris to NMFS Habitat Management & Restoration. This transfer will consolidate NOAA's Marine Debris Program within the Office of Habitat Conservation.

NOAA requests a technical adjustment to move \$1,982,000 and 9 FTE from NOS Marine Protected Areas to NOS Marine Sanctuary Program Base to consolidate the Marine Protected Areas Program with the Office of National Marine Sanctuaries.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on NOS's administrative savings planned for FY 2012 (\$9.3 million), an additional \$0.4 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$9.7 million.

**Headquarters Administrative Costs:**

In FY 2013, NOS headquarters will use \$25,017,100 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NOS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2013 Amount	FY 2013 FTE associated with NOS HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$13,338,200	51.7
Budget & Finance	Includes Budget, Finance and Accounting	\$3,184,900	15.3
Facilities/Other Administrative Functions (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$429,200	2.8
Human Resources	All HR services, including EEO	\$994,100	6.8
Acquisitions and Grants		\$219,300	1.3
Information Technology	Includes IT-related expenses and other CIO related activities	6,851,400	12.0
<b>Total</b>		<b>\$25,017,100</b>	<b>89.9</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: NAVIGATION SERVICES**

The objectives of the Navigation Services subactivity are to:

- Survey and chart the Nation's oceans and coasts
- Define the national shoreline
- Define, develop and maintain the National Spatial Reference System
- Provide real-time observations and forecasts of water levels, tides, and currents

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Coast Survey (OCS), the National Geodetic Survey (NGS), and the Center for Operational Oceanographic Products and Services (CO-OPS). These activities are conducted under the authority of the Coast and Geodetic Survey Act of 1947, the Hydrographic Services Improvement Act (as amended in 2008), and the Ocean and Coastal Mapping Integration Act of 2009. NOAA also represents these programs for the Department of Commerce on the interagency Committee for the Marine Transportation System.

The Navigation Services subactivity contains three line items: Mapping and Charting, Geodesy, and Tides and Currents.

**MAPPING AND CHARTING (<http://nauticalcharts.noaa.gov/>)**

NOAA's Mapping and Charting Program is carried out by the Office of Coast Survey (with support from the National Geodetic Survey and the Center for Operational Oceanographic Products and Services). Established by President Thomas Jefferson in 1807, the Coast Survey is the oldest scientific organization in the U.S., with a long history of supporting maritime commerce and the Nation's economic growth. Authorized to survey and chart the 3.4 million square nautical miles of U.S. Exclusive Economic Zone (EEZ) waters by the Coast and Geodetic Survey Act of 1947 and the Hydrographic Services Improvement Act of 1998 (as amended), the program today continues to support safe, efficient, environmentally sound transportation in U.S. waters by delivering nautical charts and navigation products to meet the needs of increasingly larger ships carrying people, cargo and hazardous materials. Through this program, NOAA supports commercial shipping, the fishing industry, U.S. Navy and U.S. Coast Guard Homeland Security operations, state and local governments, and recreational boaters throughout U.S. waters. Coast Survey serves as the Nation's Hydrographer in international fora such as the International Hydrographic Organization to set standards for surveying and charting, and to build hydrographic capacity in other nations for safe navigation globally. The Mapping and Charting Program also conducts modeling and research and development activities to improve the tools, accuracy, and productivity of its data collection and chart compilation efforts.

In addition to navigation, the hydrographic and shoreline data that this program collects are essential for coastal zone and emergency management, climate assessments, coastal research, and many other uses. The work of the Mapping and Charting Program provides a foundation for the nine priorities identified in the National Ocean Policy, adopted on July 19, 2010 by Executive Order 13547. This program is also the primary focus for Integrated Ocean and Coastal Mapping (IOCM) activities which, as mandated by the Ocean and Coastal Mapping Integration Act, aim to realize maximum benefit from multi-purpose mapping data. NOAA's Hydrographic Services Review Panel (HSRP), a Federal Advisory Committee, plays an oversight role. Mapping and Charting services fall under four of the HSRP's top priority recommendations for action in surveying and mapping U.S. waters, integrating those mapping efforts across Federal agencies charged with maintaining the U.S. Marine

Transportation System, strengthening capacity for emergency response, and improving dissemination of information to users of all kinds.

The Mapping and Charting Program consists of five primary elements:

- **Marine Charts** – Cartographers compile data from many sources to analyze and produce over 1,000 nautical charts and products for safe maritime commerce in the Exclusive Economic Zone (EEZ). Nautical charts and updates are generated in both vector and raster formats to produce Electronic Navigational Charts, traditional paper charts and Raster Nautical Charts.
- **Hydrographic Surveys** – This unit acquires hydrographic data through the NOAA hydrographic fleet and contract surveyors, primarily in the 500,000 square nautical miles of navigationally significant U.S. waters. These hydrographic surveys provide the most basic depth and hazardous obstruction data for the production of nautical charts and for other applications such as storm surge, circulation/forecast and tsunami modeling, fisheries management, coastal zone land use, and spatial planning. Concurrent with data collection, the program ensures that physical scientists maintain the hydrographic expertise necessary to oversee contracts, conduct quality control over data, develop more efficient survey technologies, interact with the International Hydrographic Organization and other nations, and conduct all hydrographic survey work mandated by Congress.
- **Research and Development** – Coast Survey continually tests and evaluates new cartographic, hydrographic, and oceanographic systems in order to advance the science and processes used by NOAA for safe, efficient navigation and the utilization and protection of the coast. The program develops techniques and methods for the modeling, analysis, simulation and accurate real-time prediction of oceanographic, atmospheric and water quality parameters. Specific projects include the National Vertical Datum Transformation tool, or VDatum; Autonomous Underwater Vehicle survey technology; and coastal/ocean forecast models. NOAA's Joint Hydrographic Center (JHC) evaluates sonar technologies and processes to improve efficiencies in hydrographic data acquisition. JHC is also supporting the data collection and analysis necessary to support delimitation of the U.S. Extended Continental Shelf for a claim under the United Nations Convention on the Law of the Sea (UNCLOS).
- **Navigation Services** - The program has built in an outreach mechanism to interact directly with customers and stakeholders via Regional Navigation Managers on charting issues and Marine Transportation System infrastructure improvements. This feedback loop improves NOAA's response to charting and navigation questions and serves as a means to educate constituents on emerging charting technologies and their uses.
- **Coastal Mapping** – The Mapping and Charting program defines the official 95,000 miles of U.S. shoreline that serve as the critical baseline for defining America's marine territorial limits, including its EEZ. The national shoreline is an essential data layer for nautical charts, and for the geographic reference needed to manage coastal resources, conduct marine spatial planning, mitigate and adapt to climate change, support Homeland Security, and many other uses. Shoreline is delineated by processing stereo aerial photographs and high resolution satellite imagery. In addition, the program conducts research into new technologies including Light Detection and Ranging (LiDAR) and Hyperspectral imaging. The program uses both contractors and in-house resources to collect and process shoreline data.

**Schedule and Milestones:**

<b>Performance Schedule</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Build and maintain VDatum for contiguous United States	X	X	X	X	X	X
Nautical Charting System II operational – one central station available for all formats of charts (paper, raster, ENCs)	X	X	X	X	X	X
Build and maintain Electronic Navigational Charts (ENCs) for a total of 1,025 available to public	850	875	900	1,000	1,025	1,025
Schedule, prepare and maintain 150 new editions of Raster Navigational Charts each year (RNCs)	X	X	X	X	X	X
New Editions of Coast Pilot published (eight per year)	X	X	X	X	X	X
Evaluate and approve 175 hydrographic surveys conducted by NOAA survey units, contractors, and other sources for nautical charting	X	X	X	X	X	X
Reduce the survey backlog within navigationally significant areas (SNM)	2,200	3,400	2,500	2,500	2,500	2,500
Enhance the nowCOAST model	X	X	X	X	X	X
Survey on the Ellipsoid	X	X	X	X	X	X
Develop and maintain IOCM standards/specs/metadata for mapping data	X	X	X	X	X	X
Accept/process data, deliver products to OCM programs, archive data at NGDC	X	X	X	X	X	X
Provide custom and standard products that would otherwise be unavailable (gridded multibeam data in Bathymetry Attributed Grid (BAG) format and side-scan sonar mosaics	X	X	X	X	X	X
Implement data archive capability for NOAA charter mapping data from University-National Oceanographic Laboratory System (UNOLS) projects	N/A	X	X	X	X	X

**Deliverables:**

- VDatum models implemented along the entire contiguous U.S. coastline, enabling seamless integration of land and water information
- Complete suite of Electronic Navigational Charts (ENCs) available to the public along with paper/raster chart options made possible by the programs single chart production system

- Production and maintenance of a wide variety of products and services such as nautical chart updates and nowcast/forecast models
- Hydrographic survey backlog reduced by 13,400 snm FY 2013 to FY 2017 within navigationally significant areas
- 750 (150/year) new editions of Raster Navigational Charts
- New editions of Coast Pilot published at a rate of eight per year
- nowCOAST GIS web mapping portal enhanced to meet requirements of partners in several collaborative projects and other nowCOAST users, and data dissemination improved to address regional needs for data access
- Improved efficiency and accuracy of hydrographic surveys by surveying on the ellipsoid, eliminating the need for time-consuming activities such as tide gauge installations, vessel settlement and squat corrections, and inefficient post-survey-processing
- Data standards, tools and expertise for Integrated Ocean and Coastal Mapping and guidance on acquisition, processing and archives in support of the OCM community and ocean.data.gov
- Acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetric data

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of top US Seaports with access to suite of NOAA Navigation Products and Services (ENCs, access to VDatum across Nation excl AK/HI)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	77%	74%	74%	74%	74%	75%	75%
<b>Description:</b> The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the approximately 300 ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By tracking how many seaports to which NOAA is providing a full suite of its products and services, one can determine what percentage of cargo is benefitting from NOAA navigational products and services. The percentage of seaports can then be correlated with these statistics.							

<b>Performance Measure:</b>	<b>FY</b>						
Reduce the hydrographic survey backlog within navigationally significant areas ( Measure 18f)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2,278	2,200	3,400	2,500	2,500	2,500	2,500
<b>Description:</b> NOAA conducts hydrographic surveys to determine the bathymetry of primarily in U.S. waters significant for navigation. This activity includes the detection, location, and identification of wrecks and obstructions with side scan and multi-beam sonar technology. NOAA uses the data to produce nautical charts in a variety of formats for safe and efficient navigation, in addition to the commercial shipping industry; other user communities that benefit include recreational boaters, the commercial fishing industry, port authorities, coastal zone managers, and marine spatial and emergency planners.							

\*Reduced targets in FY 2014 – FY 2017 reflect the *Thomas Jefferson* coming offline.

<b>Performance Measure:</b>	<b>FY</b>						
Update National Shoreline and Priority Ports (Percentage of total per year)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	4.6% / 17%*	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%	3.2% / 12%
<b>Description:</b> Updating the National Shoreline and Priority Ports is a measure NOAA typically uses to capture annual performance of NOAA in-house and contract assets for acquiring shoreline data for navigation safety and other programs.							
*Please note increased outputs for FY 2011 were due to ARRA funded projects in FY 2009.							

<b>Performance Measure:</b>	<b>FY</b>						
Multibeam sonar data reprocessed for use in fisheries management (SNM)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	0	500	750	750	750	750
<b>Description:</b> This measure tracks the re-processing of data collected by NOS for nautical charting for use in NMFS ecosystem assessments and habitat characterizations. The IOCM Center reprocesses multi-beam data, data that will contribute geospatial information on the physical and geological structures of the ocean environment, and is, therefore, a necessary component of habitat characterization and assessment.							

<b>Performance Measure:</b>	<b>FY</b>						
Initial datasets processed for IOCM seafloor/water column mapping data products (annual snm)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	226	6,190	17,100	22,800	37,000	47,950	47,950
<b>Description:</b> This measure highlights existing datasets that the IOCM center will focus on re-processing. The metric illustrates the large quantities of data available but not accessible for multiple uses. These datasets were collected for a single purpose, but can be rendered more useful to other applications such as Marine Geospatial Products, habitat mapping, tsunami and storm surge models, and nautical chart updates in areas less critical for navigation than above.							

### **GEODESY (<http://geodesy.noaa.gov/>)**

NOAA's Geodesy Program has developed from a 200-year old requirement to provide the Nation with geodetic and geographic positioning services. Implemented by NOAA's National Geodetic Survey (NGS) program office, the program provides a common reference framework, the National Spatial Reference System (NSRS), for establishing the coordinate positions of all geographic and geospatial data. The NSRS is the national coordinate system that specifies latitude, longitude, height, scale, gravity, and orientation throughout the Nation. NSRS provides the underlying positioning framework for transportation, mapping and charting, and a multitude of scientific and engineering applications. It is also an essential component of all national observing systems. The NSRS must continually evolve to meet the growing demand for more accurate, timely, and consistent positioning services. To meet this demand, the Geodesy program is continually improving the quality and accessibility of the NSRS to meet our Nation's economic, social, and environmental needs. NGS conducts geodesy activities in all 50 states and many U.S. territories.

The Geodesy Program can be grouped into five major overlapping elements:

- **Passive Network Infrastructure Support** - A major component of NSRS is a network of over one million permanently marked passive reference points. These monuments form a crucial foundation for all geographically referenced activities conducted in the United States.
- **Continuously Operating Reference Stations (CORS) support** - NGS manages a National CORS Network of permanent GPS receivers that includes a highly accurate receiver that continuously collects radio signals broadcast by Global Navigation Satellite System (GNSS) satellites. NGS provides access to GPS data from this network free of charge via the Internet. The CORS system enables positioning accuracies that approach a few centimeters relative to the NSRS.
- **Modernization of the Vertical Datum** – NGS leads the Nation’s efforts to enhance the vertical aspect of the NSRS through the establishment of accurate and consistent height measurements. To meet this goal, NGS is conducting a long term multi-year effort to collect airborne gravity data and build the Nation’s gravity-based geoid model through its Gravity for the Re-Definition of the American Vertical Datum (GRAV-D) initiative. This initiative will ultimately lead to new, highly accurate national vertical datum allowing GPS to efficiently establish accurate elevations for all types of positioning and navigational needs. Because GRAV-D will take a number of years to complete, ongoing height modernization efforts are also focusing on integrating GPS technology with existing survey techniques in areas of the country that have critical need for updated height data in response to changing land elevations.
- **Data Access and Capacity Building** - NGS archives and provides access to geodetic control, shoreline, and aeronautical survey data from its own surveys and from cooperating organizations. These data are made available via the Internet. As part of its technology transfer efforts, NGS conducts a series of workshops and constituent forums around the country. NGS also manages the State Geodetic Advisor Program, a cost-shared program that provides a liaison to states to assist the state’s geodetic and surveying programs. Thirty-one states, the District of Columbia, and Puerto Rico are currently covered under the advisor program.
- **Research, Tool and Model Development** - NGS develops standards, specifications, guidelines, and best practices for the surveying and positioning industry, as well as a variety of models and programs describing geophysical and atmospheric phenomena that affect spatial measurements. These tools and models are crucial to scientific and commercial positioning activities. To improve the collection, distribution, and use of spatial data, NGS also conducts cutting-edge research and development in geophysics, including geodynamics and geodesy. Current research interests include improving accuracies and precision of geodetic positions/velocities, automated processing of GPS data for static and/or kinematic positioning, orbital dynamics, sea level rise, crustal motion, GPS antenna characteristics, meteorological effects, and tidal effects.

A 2009 study estimated that the NSRS provides more than \$2.4 billion in potential annual benefits to the U.S. economy. The study found that the NOAA CORS network alone provides an estimated \$758 million per year in benefits. The study estimated that an additional \$522 million in annual economic benefits could be generated by the implementation of a new vertical reference system through GRAV-D, with approximately \$240 million saved from improved floodplain management alone (*Socio-Economic Benefits Study: Scoping the Value of CORS and GRAV-D*, Levenson 2009).

**Schedule and Milestones:**

- Establish and publish the geoid theory necessary to achieve < 1 cm absolute accuracy, for all non-mountainous regions of the United States, allowing for rock density unknowns in the mountains, and with unknowns not exceeding 1cm at the coast (FY 2012)
- Install foundation CORS sites for the improvement of the International Terrestrial Reference Frame (ITRF) (FY 2013)
- Compute North American Gravimetric Geoid (FY 2013)
- Develop and test standards, specifications, and workflows for new coastal geospatial products, including orthomosaics and lidar data (FY 2013)
- Achieve target of ninety percent of U.S. counties rated as fully enabled or substantially enabled with accurate positioning capacity (FY 2014)
- Complete term as International GNSS Service (IGS) Analysis Center Coordinator (FY 2016)
- Complete two-thirds of all GRAV-D (Gravity for the Redefinition of the American Vertical Datum) areas (FY 2017)

**Deliverables:**

- Management, maintenance, interpretation, certification, and dissemination of geodetic information
- Federal geodetic control theme lead
- Access to the National Spatial Reference System as the fundamental geodetic control for the United States
- Federal geodetic standards, specifications, and guidelines
- Participation in the development of international geodetic policy, standards, and guidelines and in the development of GPS and other global navigation satellite system policy to the extent it relates to the NSRS
- Positioning instrument testing and calibration services to ensure accurate implementation of NSRS
- Publicly accessible models and tools relating spatial datums and describing geophysical, atmospheric, equipment, and GPS orbit phenomena impacting accurate spatial measurement
- Enhanced GPS augmentation by managing, monitoring, and providing access to the CORS Networks, in support of civil positioning and the U.S. transportation infrastructure
- Geodetic control surveys
- GPS satellite orbit analysis and act as the International GNSS Service (IGS) Analysis Center Coordinator to pinpoint the locations of more than 40 GPS and GNSS satellites to ensure the accuracy of satellite-delivered positioning information
- “Foundation” CORS sites tied to the International Terrestrial Reference Frame (ITRF) in order to improve forecasting absolute global sea level rise on the order of millimeters per year and necessary to inform coastal management and construction project planning

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
<b>Percent Progress toward a New National Vertical Datum (Measure 18g)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	14.7%	20%	28%	36%	44%	52%	60%

**Description:** This measure tracks progress of NOAA's National Geodetic Survey toward completing the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum for a wide variety of applications including improved inundation management. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights and is a key component of the enhanced geospatial framework required for success in achieving NOAA's strategic priorities. It is of particular importance for community resilience by determining where water flows in order to make accurate inundation models and assessments as well as better management and planning decisions with improved water level predictions based on accurate elevations. "Enabled" is technically defined as having GRAV-D data necessary to support a 1 cm geoid supporting 2 cm orthometric heights (heights relative to sea-level) necessary to define a new national vertical datum. NGS will calculate the percentage of area enabled with regards to a pre-defined total area that includes U.S. territorial land and adjacent land and water areas necessary for final determination of a national vertical reference system. As progress is made, each survey area will be represented by a polygon that will define the completed areas. The performance measure will be tracked as a percent of the total area that is identified as complete.

### **TIDE AND CURRENTS (<http://tidesandcurrents.noaa.gov/>)**

The Tide and Current Data Program (TCDP) is an essential component of the integrated, comprehensive suite of NOAA information products required by the maritime community for safe and efficient navigation. The TCDP provides the foundational reference framework for water coastal (tidal datums) and Great Lakes (International Great Lakes Datum) water levels as well as tide and tidal current predictions. This reference framework enables the production of nautical charts and delineation of shoreline, the demarcation of marine boundaries ranging from international to private property, the monitoring of local sea level trends for long term climate records, and effective coastal and marine spatial planning. The Coast and Geodetic Survey Act of 1947 authorizes collection and dissemination of water level data, analysis, and predictions. The Hydrographic Services Improvement Act provided updated authorities for the collection of real time information and the use of information for coastal resource management. Other relevant legislation includes the Tsunami Warning and Education Act, which directs the use of real time tide data for tsunami warnings.

The TCDP is managed end-to-end by the NOS Center for Operational Oceanographic Products and Services (CO-OPS). CO-OPS adheres to international standards used by other countries and entities seeking to provide similar geospatial reference systems and data. Observations, forecasts and other water level and current products and services are generated and distributed to the marine transportation community and other users. The TCDP managers interact regularly with stakeholders and partners to identify new requirements, product improvements, and training needs. The TCDP further extends the reach of its interactions by leveraging regional networks such as the Office of Coast Survey Navigation Managers, the National Geodetic Survey State Advisors, the Coastal Services Center Regional Representatives, the NOAA Regional Coordination Teams, and others. In a customer satisfaction survey performed in 2009, CO-OPS scored significantly higher on the American Customer Satisfaction Index (ACSI) metric (score of 82) than other Federal government agencies.

The Tide and Current Data Program is composed of four primary program elements:

**National Water Level Program** – CO-OPS operates and maintains the National Water Level Observation Network (NWLON), a system of over 200 observation stations located in U.S. coastal areas, the Great Lakes, and U.S. Territories and possessions. Information from the NWLON ranges from the high frequency (real time) content in the record (e.g., tsunamis and storm surge) to long-

term content (e.g., sea level and lake level trends). NWLON provides vertical reference datums for all marine boundary applications; national shoreline and nautical chart products; coastal project planning and construction; dredging; habitat restoration projects; and hurricane evacuation route planning. The program also defines and provides local mean sea level trends essential to coastal community and project planning that must incorporate sea level rise guidance. The multi-mission NWLON also provides real time data for safe and efficient navigation, improved hazmat and emergency response, storm surge and tsunami warnings, and other applications. CO-OPS conducts a collaborative program across several NOS offices known as Coastal Oceanographic Applications and Services of Tides And Lakes (COASTAL) that focuses on non-navigation applications of CO-OPS, NGS and OCS data for applications such as beneficial uses of dredged material, coastal planning projects, marsh restoration projects, long-term sea-level assessments, storm-surge monitoring, emergency preparedness, and HAZMAT response. In 2011, CO-OPS completed the hardening of nine NWLON stations against extreme events and the upgrades of 28 additional stations with meteorological sensors. The new suite of meteorological sensors allows NOS to better serve navigation customers as well as local National Weather Service Forecast Offices. CO-OPS enhanced its Sea Levels Online website by updating linear sea level trends for 128 NOAA/CO-OPS long-term water level stations along with 95 percent confidence intervals. Sea level trends were also calculated for 194 global stations.

**National Current Program** – CO-OPS conducts tidal current surveys primarily to update NOAA’s annual tidal current prediction tables. NOAA’s tidal current prediction tables are used by the largest ship operators, as well as the fishing industry and recreational users. U.S. Coast Guard carriage regulations require large commercial vessels to carry NOAA’s annual Tide and Tidal Current Prediction tables along with Nautical Charts for safety. Updated, accurate predictions are essential for these users to support safe and efficient navigation and for fishers to determine best catch times. Accurate measurements of the currents are essential to test oil spill response strategies and provide onsite response to an emergency spill. The data are used to fine tune strategies and verify current trajectories for models. Tidal currents are also used to assess and help site alternative renewable energy projects tapping into hydrokinetic energy sources such as currents, tides and waves. In FY 2011, CO-OPS conducted tidal current surveys in Hawaii, Boston Harbor, and Mobile Bay, AL.

**Physical Oceanographic Real Time Systems (PORTS®)** - PORTS® is a decision support tool that integrates and disseminates real-time environmental observations, forecasts and other geospatial information. In partnership with local port authorities, pilot associations, shippers, the U.S. Coast Guard, the U.S. Army Corps of Engineers, the U.S. Navy, academia, and others, PORTS® has been implemented in various bays and harbors in the U.S. to measure and disseminate water levels, currents, salinity, winds, and atmospheric pressure to various users. PORTS® is a cost-shared program requiring local partners to provide funding for the cost of installation, operation and maintenance of the sensor systems. NOAA’s responsibility is to provide the technical expertise required for systems design, 24 x 7 quality control of the data, data collection and dissemination infrastructure and ongoing management of the data. PORTS® builds on CO-OPS water levels and currents program expertise as well as the NWLON observing system infrastructure. PORTS® observations support many mission requirements within NOAA and other Federal agencies. An economic study published in June 2010 for the Columbia River PORTS® showed a \$7.4 million benefit (annually) from reduced groundings and more efficient operations. In FY 2011, work began on the 21<sup>st</sup> PORTS® installation in New London, Connecticut (expected to be completed in early 2012). A new PORTS® is scheduled for installation in FY 2012 in Humboldt Bay, CA and there is an agreement underway for a new PORTS installation in Jacksonville, FL.

**Operational Forecast Models Program** - CO-OPS operates nowcast and forecast models that provide short term water level and other environmental forecasts accurate out to 48 hours that enable

better planning and decision making, particularly for vessel transits. These are typically operated in conjunction with PORTS® to address needs for real time data. CO-OPS presently operates eleven nowcast/forecast models; eight are currently running on the high performance computers at the National Centers for Environmental Prediction (NCEP) and the remaining three will be transitioned to NCEP when they are upgraded or replaced over the next several years. The change will improve performance by coupling the models with other models and taking advantage of more capable infrastructure. In FY 2011, CO-OPS released a new operational forecast model for Tampa Bay.

**Schedule and Milestones:**

<b>Performance Schedule</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Publish Annual NOAA Tide and Tidal Current Predictions	X	X	X	X	X	X
Maintain NWLON stations	150	150	150	150	150	150
Deliver > 95% water level data availability	X	X	X	X	X	X
Maintain PORTS (# of PORTS)	21	21	21	21	21	21
Conduct tidal current surveys (# of observations)	40	40	40	40	40	40
Support hydrographic survey projects	X	X	X	X	X	X
Support shoreline survey projects	X	X	X	X	X	X
Produce Operational Forecast Models	13	15	18	20	20	20

**Deliverables:**

- National reference framework (tidal and International Great Lake datums) necessary for nautical charting and shoreline surveying, marine boundaries, habitat restoration, dredging and coastal construction projects
- Tidal zoning, tidal correctors, smooth tides and other tidal information required for reduction of hydrographic soundings to nautical chart datum and for tidal control of shoreline surveys
- Legal authority for definition of local mean sea level, long term sea level trends, guidance for consistent incorporation of sea level trends into interagency planning guidance
- Continuous accurate, reliable, and timely quality controlled real time data from over 2,000 oceanographic and meteorological sensors to support safe and efficient navigation, hazmat response, emergency response planning and execution, NWS tsunami and storm surge warnings, and dredging
- Tide and tidal current predictions and nowcast/forecast oceanographic and meteorological parameters for safe and efficient navigation, coastal resource management, and dredging

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percentage of top 175 US Seaports with access to suite of NOAA Navigation Products and Services (CO-OPS contribution by tonnage)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	55%	55%	55%	55%	55%	55%	55%

**Description:** The U.S. Army Corps of Engineers tracks the number of vessel transits and cargo tonnage that pass through the 300 or so ports in the U.S. on an annual basis. Over 95 percent of the annual tonnage passes through the top 175 seaports. By tracking how many seaports to whom

NOAA is providing a full suite of its products and services, one can determine what percentage of cargo is transiting more safely and efficiently. The percentage of seaports can then be correlated with these statistics.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of U.S. coastline with accurate vertical control (tidal and geodetic)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	8%	8%	8%	8%	8%	8%	8%

**Description:** The Coast and Geodetic Survey Act of 1947 authorizes NOAA to conduct tide and current observations and geodetic control surveys. NOAA is the authority for providing vertical reference datums for all marine boundary applications, national shoreline, and nautical chart products. This measure tracks NOAA's ability to provide these datums by measuring the percentage of the U.S. coastline that has accurate vertical control.

<b>Performance Measure:</b>	<b>FY</b>						
Update accuracy of NOAA tidal current predictions (number of locations)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	70	40	40	40	40	40	40

**Description:** The Coast and Geodetic Survey Act of 1947 authorizes NOAA to conduct tide and current observations and to analyze and predict tide and current data and publish data, information, compilations, and reports, including short term tidal current surveys that are used to update the NOAA annual tidal current prediction tables. This measure tracks NOAA's progress in updating the accuracy of these predictions by tracking the number of locations that have been updated.

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## **PROGRAM CHANGES FOR FY 2013:**

**Mapping and Charting Base: Navigation Response Teams (Base Funding: \$2,300,000 and 17 FTE; Program Change: -\$2,300,000 and -17 FTE):** NOAA is requesting a decrease of \$2,300,000 and 17 FTE for a total of \$0 and 0 FTE to terminate the Navigation Response Teams program in FY 2013.

### **Proposed Actions:**

This reduction will terminate the NOAA Office of Coast Survey's Navigation Response Teams (NRT) program. There are alternative, more cost-effective funding sources for emergency hydrographic surveys in the absence of the NRTs, and NOAA will pursue an agreement with FEMA to ensure that technical assistance to assess navigational hazards is available during Presidentially-declared disasters.

### **Base Resource Assessment:**

NRTs were authorized to provide 24/7 emergency hydrographic survey support to the U.S. Coast Guard, port officials, and other first responders in the wake of accidents and natural events that create navigation hazards which impede safe and efficient marine transportation and commerce. These events may range from Presidentially-declared disasters such as major hurricanes to smaller disruptions such as ship groundings. In their routine non-emergency role, the NRTs work with sister maritime agencies and maritime stakeholders to identify local survey requirements and to validate NOAA's nautical charting products.

The U.S. Army Corps of Engineers (USACE) has primary responsibility for the removal of debris from federally maintained navigable channels and waterways. Section 202 of the Water Resources Development Act of 1976 (PL 94-587) authorizes USACE to remove debris from federally maintained commercial harbors, and water areas immediately adjacent thereto. Furthermore, in Presidentially declared disasters when Public Assistance is authorized pursuant to 44 CFR § 206.208, FEMA may provide direct Federal assistance through a mission assignment to another Federal agency to remove eligible debris when the State and local government certifies that they lack the capability to perform or contract for the requested work.

In 2011, the six NRTs spent a total of 25 days responding to emergencies, and the remainder of their time working with maritime agencies and stakeholders to identify local survey requirements and to validate NOAA's nautical charting products. NOAA will pursue an agreement with FEMA to provide needed technical assistance for emergency response.

### **Schedule and Milestones:**

N/A

### **Deliverables:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: National Ocean Service  
 Subactivity: Navigation Services

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Physical Science Technician	Silver Spring, MD	ZT-II	-1	34,075	(34,075)
Physical Science Technician	Silver Spring, MD	ZT-III	-11	51,630	(567,930)
Lead Physical Science Technician	Silver Spring, MD	ZT-IV	-3	62,467	(187,401)
Physical Scientist	Silver Spring, MD	ZP-III	-1	51,630	(51,630)
Physical Scientist	Silver Spring, MD	ZP-IV	-1	62,467	(62,467)
<b>Total</b>			<u>-17</u>		<u>(903,503)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-17		(903,503)
2013 Pay Adjustment (0.5%)					0
TOTAL					(903,503)

**Personnel Data**

	<b>Number</b>
Full-Time Equivalent Employment	
Full-time permanent	-17
Other than full-time permanent	0
Total	<u>-17</u>
Authorized Positions:	
Full-time permanent	-17
Other than full-time permanent	0
Total	<u>-17</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Navigation Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$904)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(904)</u>
12 Civilian personnel benefits	(257)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(102)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,015)
25.3 Purchases of goods & services from Gov't accounts	(22)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,300)</u>

**Mapping and Charting Base: Support Mapping and Charting Activities (Base Funding: \$50,584,000 and 262 FTE; Program Change: +\$1,060,000 and 0 FTE):** NOAA is requesting an increase of \$1,060,000 and 0 FTE for a total of \$51,644,000 to the Mapping and Charting line item to support the accuracy of nautical charts for safe navigation.

**Proposed Actions:**

With this increase, NOAA will acquire expertise needed for the verification and validation of in-house, contract and 3<sup>rd</sup>-party survey data for nautical charts. Hydrographic survey data requires verification and validation before it can be applied to nautical charts. This additional capacity will enable NOAA to increase the number of surveys evaluated and validated by 20 percent in a given year.

**Statement of Need and Economic Benefits:**

NOAA's performance of its charting mandate enables safe navigation of in U.S. territorial waters and the U.S. Exclusive Economic Zone, a combined area of 3.4 million square nautical miles extending 200 nautical miles offshore from the nation's coastline. As cargo ship drafts approach 60 feet below the waterline and import-export container traffic is forecast to double by 2019<sup>1</sup>, reliable navigational charts and related products and services are essential to maritime commerce and, by extension, Nation's economic health and welfare. Maritime commerce—including foreign trade and the shipping of goods, commercial and sport fishing, the cruise industry, recreational boating, and the ferry industry—has a combined effect of \$3 trillion on the U.S economy or nearly 21% of GDP (2008 values).

Additionally, many other users also rely on Coast Survey's coastal and ocean data for diverse purposes, including emergency planning, oil spill response, tsunami inundation mapping/modeling, coastal and marine spatial planning, offshore and renewable energy siting, coastal zone management, and ocean science. This work mainly contributes to the *Resilient Coastal Communities and Economies Goal* explained in NOAA's Next Generation Strategic Plan.

**Base Resource Assessment:**

The base resources for this activity are found in the Mapping and Charting Program base narrative.

**Schedule and Milestones:**

- Evaluate and approve hydrographic surveys conducted by NOAA survey units, contractors, and other sources for nautical charting (FY 2013-2017)

**Deliverables:**

- Hydrographic survey data forwarded for application to nautical charts and made accessible for non-navigation uses

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<sup>1</sup> Socio-economic Study on Value added to Gross Domestic Product from surface transportation of Import and export bulk traffic (1993-2007) – K.Eric Wolfe, Chief Economist, National Ocean Service

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Evaluate and approve hydrographic surveys conducted by NOAA survey units, contractors, and other sources for nautical charting	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	120	120	120	120	120
<b>Without Increase</b>	202	100	100	100	100	100	100

**Description:** This measure tracks the number of hydrographic surveys acquired by NOAA in-house vessels, hydrographic service contractors and other sources to be evaluated and approved for application to NOAA Nautical Charts. In FY 2011, NOAA evaluated and approved a backlog of survey data sitting at the processing branches, in addition to the survey data from the NOAA in-house vessels and contractors coming in (hence the larger number compared to FY 2012). In FY 2013, we expect to still have a small backlog to process with this increase.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Navigation Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,060
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,060</u>

**Hydrographic Research & Technology Development: Hydrographic Research & Technology Development (Base Funding: \$7,282,000 and 0 FTE; Program Change: -\$318,000 and 0 FTE):**

NOAA requests a decrease of \$318,000 and 0 FTE for a total of \$6,964,000 and 0 FTE to reduce grant funding at the Joint Hydrographic Center.

**Proposed Actions:**

At this funding level, NOAA will reduce the amount of grant funding provided to NOAA's Joint Hydrographic Center that supports research personnel, with the anticipation that one fewer position will be funded. NOAA's Joint Hydrographic Center (JHC) evaluates sonar technologies and processes to improve efficiencies in hydrographic data acquisition. The program will continue to develop improved standards and methods for collecting data and creating Integrated Ocean and Coastal Mapping (IOCM) products such as habitat maps from nautical charting data, or nautical charting data from fish survey assessments on an adjusted timetable. NOAA will procure new technologies for hydrographic testing and development as resources allow.

**Base Resource Assessment:**

The base resources for this activity are found in the Mapping and Charting base narrative.

**Schedule and Milestones:**

- Continue to develop technology for IOCM mapping and data processing on an adjusted schedule
- Test and develop new technologies as resources allow
- Provide custom and standard products that would otherwise be unavailable (gridded multibeam data in Bathymetry Attributed Grid (BAG) format and side-scan sonar mosaics)

**Deliverables:**

- Data standards, tools and expertise for Integrated Ocean and Coastal Mapping and guidance on acquisition and processing in support of the OCM community
- Acoustic backscatter collection protocols that will facilitate the acquisition of these valuable data while maintaining the quality of bathymetric data

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Navigation Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(318)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(318)</u>

**Tide & Current Data Base: Tide and Current Data Program (TCDP) (Base Funding: \$27,829,000 and 124 FTE; Program Change: +\$1,226,000 and 0 FTE):** NOAA requests an increase of \$1,226,000 and 0 FTE for a total of \$29,055,000 and 124 FTE to ensure that timely, accurate and reliable oceanographic data and products are available when most needed for navigation safety, maritime commerce, oil spill emergency response, NWS storm surge and tsunami warnings, long term sea level change planning, and other Federal safety of life and property missions.

**Proposed Actions:**

With this increase, NOAA will inspect an additional 60 NWLON stations per year to adequately maintain and operate the full multi-mission National Water Level Observation Network (NWLON) of 210 long term stations to ensure real time oceanographic and meteorological data is available when most needed to support multiple safety of life and property Federal missions. NOAA will also collect current meter level data at an additional 30 locations per year for a total of 70. The NWLON is NOAA's primary coastal observing system for meeting physical oceanographic and meteorological observation requirements across all NOAA line offices. The increase will support both internal and contracted annual and emergency maintenance of NWLON stations distributed along all U.S. coasts, including remote Pacific Island, Arctic Alaskan, and Caribbean locations. Operating automated NWLON stations to provide continuous real time data from often remote locations constantly subjected to harsh, dynamic environmental ocean conditions is extremely challenging.

**Statement of Need and Economic Benefits:**

Safe and efficient movement of manufacturing goods, energy supplies, and other commodities through our Nation's seaports is especially critical to supporting the Nation's ongoing economic recovery and job creation as promoted by the Administration's National Export Initiative. The TCDP is expressly mandated by public law and has several direct, specific statutory mandates. These mandates require CO-OPS to provide the physical oceanographic geospatial foundation to support safe and efficient maritime navigation and authorize CO-OPS to leverage that information for other NOAA mission areas such as hazards (storm surge and tsunami warnings), climate (long-term local sea level trends), ecosystems (habitat restoration and coastal resource management), and others. The Coast and Geodetic Survey Act of 1947 (61 STAT 787, 33 U.S.C. §§ 883 a-f) authorizes collection and dissemination of water level data; Section 883a authorizes NOAA to conduct "Hydrographic ... tide and current observations"; Section 883b authorizes NOAA "to analyze and predict tide and current data, and process and publish data, information, compilations, and reports." The Hydrographic Services Improvement Act (112 STAT 3454, 33 U.S.C. §§ 892 et seq) provides updated authorities for the provision of real time information and the use of information for coastal resource management. Other acts, such as the Tsunami Warning and Education Act (120 STAT 2902, 33U.S.C. Ch. 45) authorize the use of real-time tide data for tsunami warnings. Closing physical oceanographic geospatial gaps supports and provides benefits to multiple NOAA and broader Federal Government mission requirements.

The 1999 Assessment of the Marine Transportation System noted that accurate, reliable and timely marine information was a high priority for safe and efficient maritime commerce and that priority holds true today. In addition to providing real time data directly to maritime users, the NWLON also underpins and is an essential component of NOAA's contribution to the cost shared Physical Oceanographic Real Time Systems (PORTS<sup>®</sup>) program. Real time data from these systems help prevent maritime accidents, increase transit efficiencies, and improve oil spill/hazmat response when accidents do occur. The NWLON provides real time data directly to the National Weather Service for hurricane storm surge forecasts and tsunami warnings, as well as directly informing emergency responders of current conditions to support best decisions. The NWLON has been identified as a high priority observing system within NOAA by a rigorous multiyear process. Data from both the

NWLON and tidal current surveys also help inform and improve the accuracy of NOAA hydrodynamic models that provide accurate nowcasts and forecasts of oceanographic conditions 36-48 hours into the future. The NWLON defines the tidal datum reference framework for the Nation and is also the authoritative source for local sea level change rates along the U.S. coast.

A number of studies have documented the economic benefits provided by the broad suite of products and services supplied by the TCDP. A 2009 benefit cost analysis study conducted by the Department of Transportation Volpe National Transportation Systems Center ([www.volpe.dot.gov/library/pp09.html](http://www.volpe.dot.gov/library/pp09.html)) estimated that the net benefit provided by nautical charts, tide and current information is \$1.2 billion based on gross baseline 2006 data. The ratio of the net benefits from the use of the products to the government costs of producing them is 24-to-1; that is, for each dollar of government outlays, \$24 in user benefits are generated. In addition, a series of more targeted economic benefits studies (<http://tidesandcurrents.noaa.gov/pub.html>) have been conducted for various Physical Oceanographic Real Time Systems (PORTS<sup>®</sup>). The studies all show significant reductions in groundings following the establishment of a PORTS<sup>®</sup> as well as annual economic benefits far exceeding the annual recurring costs. For example, the economic benefits documented for the Port of Houston-Galveston is \$16-\$18 million annually, as opposed to the annual maintenance cost of under \$300K. The critical nature of real-time data for safe navigation as well as improved hazmat response, storm surge and tsunami warnings, and other safety of life and property missions have resulted in this capability being classified as a Mission Essential Function in NOAA's Continuity of Operations Plan.

**Base Resource Assessment:**

The base resources for this activity are described in the Tides and Currents base narrative.

**Schedule and Milestones:**

- Collect current meter data at 70 locations (FY 2013-2017)
- Annually inspect 210 NWLON stations (FY 2013-2017)

**Deliverables:**

- Annual Tidal Current Tables
- Accurate and reliable (>95% reliability) real-time oceanographic and meteorological data

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Conduct Annual Inspections at National Water Level Observation Network Stations	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	210	210	210	210	210
<b>Without Increase</b>	210	150	150	150	150	150	150

**Description:** This measure tracks the number of Annual Inspections conducted each year at the NWLON locations. Annual Inspections are critical to ensuring the NWLON continues to exceed 95% reliability in delivering real time data when most needed to support safe navigation, oil spill response, and NWS issued storm surge and tsunami warnings.

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Update accuracy of NOAA tidal current predictions	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	70	70	70	70	70
<b>Without Increase</b>	70	40	40	40	40	40	40
<b>Description:</b> This measure tracks the number of short term current meter deployments in major U.S. ports and harbors. Data from the current meters is used to update tidal current predictions published on the web and in the U.S. Tidal Current Tables.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service

Subactivity: Navigation Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,087
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	139
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,226</u>

The following exhibit shows the summary object class detail for Navigation Services program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: National Ocean Service  
Subactivity: Navigation Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	194
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	8
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	202

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: OCEAN RESOURCES CONSERVATION AND ASSESSMENT**

The objectives of the Ocean Resources Conservation and Assessment subactivity are to:

- Provide a framework for informing and coordinating actions by Federal and state agencies to protect and restore coastal resources.
- Promote management actions to minimize the cumulative effects of coastal development on natural resources, especially NOAA's public trust resources.
- Define the nature and extent of human activities and conditions that threaten the health and productivity of the Nation's coastal resources.
- Conduct damage assessments to support negotiated settlements and litigation that provide funds for restoration of injuries to public trust resources.
- Apply scientific expertise to mitigate the effects of human activities and facilitate environmental recovery, and undertake actions to restore ecosystem functions and resource values.
- Facilitate and support resource conservation through sound science and management activities.
- Develop a capability to research, monitor, assess, and predict coastal ecosystem structure and function to detect changes, evaluate management strategies, and identify actions to effectively manage threats to ecosystem health.
- Provide continuous, integrated data on our open oceans, coastal waters, and Great Lakes in the formats and at the rates and scales required to support the information needs of government, environmental managers, scientists, business, and the public.
- Develop valuation methods for non-market ecological resources and quantify costs of ecosystem changes.
- Facilitate the development and transfer of tools and technology that provide more effective mechanisms to conserve, protect, restore, and utilize coastal ecosystems.
- Build the capacity of coastal decision makers to minimize environmental, social, and economic impacts from coastal and climate hazards to their communities.
- Improve public understanding of functions and values of coastal ecosystems and enhance public access to information on coastal environmental quality and health risks from pollutants.
- Support NOAA's and the Nation's obligations under international treaties and conventions, and increase effectiveness of international programs for coastal environmental science and technology, integrated coastal zone management, and sustainability of coastal resources.

This subactivity contains programs managed by the National Centers for Coastal Ocean Science (NCCOS), the Office of Response and Restoration (ORR), the Coastal Services Center (CSC), the Office of Ocean and Coastal Resource Management (OCRM), and the NOAA Integrated Ocean Observing System (IOOS) Program. The objectives of this subactivity are implemented under the authorities established in the Integrated Coastal and Ocean Observation Systems Act; Clean Water Act; Coastal Zone Management Act (CZMA); Oil Pollution Act (OPA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA/Superfund); National Coastal Monitoring Act (NCMA); Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA); Estuaries Restoration Act (ERA); Coral Reef Conservation Act (CRCA); Oceans and Human Health Act (OHHA); and other legislation to protect, conserve, and restore natural resources and the environmental quality of the Nation's coastal ecosystems.

The Ocean Resources Conservation and Assessment subactivity contains three items: Ocean Assessment Program, Response and Restoration, and National Centers for Coastal Ocean Science.

## **OCEAN ASSESSMENT PROGRAM**

NOAA's National Ocean Service (NOS) promotes healthy coastal ecosystems by ensuring that economic development in United States coastal areas is managed in ways that maintain biodiversity and long-term productivity necessary for sustained use. Working in partnerships with Federal and state agencies, NOAA provides the coastal resource management community with the scientific understanding, information, products and services needed to balance the environmental, social, and economic goals of coastal communities and NOAA. The Ocean Assessment Program includes six sub-programs that contribute to NOAA's Healthy Oceans, Resilient Coastal Communities and Economies, Climate Adaptation and Mitigation and Weather-Ready Nation Goals.

**INTEGRATED OCEAN OBSERVING SYSTEM (<http://ioos.gov>)** - The goal of U.S. IOOS is to provide continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making. The Integrated Coastal and Ocean Observation System Act of 2009 (ICOOS Act) charges NOAA with leading oversight and administration of the IOOS regional component and coordinating across Federal agencies to maximize the nation's return on investment in IOOS. The IOOS Regional component complements Federal ocean observing assets by providing coastal, Great Lakes, and ocean data to the National Weather Service for use in operational models and forecasts, and by providing data, models, and information tailored to the economic and environmental requirements of local communities. IOOS implementation relies on the contributions of many programs across NOAA, the Federal government and the regions. Increased compatibility of Federal and regional observing system assets will improve our understanding, forecasting, stewardship, and use of coastal and Great Lakes waters. Base resources are allocated between two program components, NOAA IOOS and Regional IOOS. Users of ocean data, including modelers, researchers, and meteorologists, spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. Significant resources are expended on data management activities that might otherwise be used to forecast and research. By improving the accessibility and interoperability of ocean data, IOOS delivers time and cost savings that can be redirected to improving existing and developing new products.

**COASTAL SERVICES CENTER (<http://csc.noaa.gov>)** - The mission of the Coastal Services Center (CSC) is to build regional, state, and local capacity for informed decision making that increases the resiliency of our coasts and coastal communities and economies. Eighty percent of decisions that affect our coasts are made at the local level, and CSC's primary customers are the Nation's coastal managers, including natural resource managers, planners, and emergency officials. Working with other NOAA programs, states, and across Federal agencies, CSC provides geospatial data and tools, training, social science information, and partnership-building at the national, regional and state levels that would otherwise be unavailable. CSC is effectively "buying down" the cost of improving state and local coastal management programs and enabling a more effective and targeted implementation of the Coastal Zone Management Act (CZMA), and other relevant coastal legislation, such as the Ocean and Coastal Mapping Integration Act. Partnerships between CSC, state and local coastal management organizations give rise to numerous projects each year. CSC transfers successful tools and approaches to the coastal management community to ensure that national issues are effectively addressed at regional, state and local levels. CSC's collaborative strategy builds effective working relationships across NOAA and with other Federal agencies.

**COASTAL STORMS (<http://csc.noaa.gov/csp/>)** - The Coastal Storms Program harnesses and leverages NOAA and community resources to reduce the adverse impacts of coastal storms by developing improved and integrated products and services that address specific state/local decision-maker needs. The Coastal Storms Program brings NOAA-wide expertise, products, and services to address the challenges unique to each region and targets tools and outreach to the needs of local stakeholders. The Coastal Storms Program also seeks to integrate existing products and services to

add value and meet unique needs within a target region. The Program is currently working in the Pacific Islands (Hawaii and the U.S. territories) and Great Lakes.

**CORAL REEF PROGRAM (<http://coralreef.noaa.gov>)** - Coral reefs are some of the most biologically diverse ecosystems in the world. They provide a range of benefits, including food, recreation, marine habitat, coastal protection, and medicines and sustain American livelihoods and economic development. Coral reefs provide vital ecosystem services, including food, raw materials, climate regulation, moderation of extreme events, waste treatment / water purification, biological control, and maintenance of genetic diversity. A study in 2009 estimated the average annual value of these ecosystem services at \$130,000 per hectare of reef, reaching \$1,200,000 in some cases. Furthermore, coral reefs are harbingers of change – a modern day “canary in the coal mine.” The health of these productive and valuable coral reef ecosystems in the U.S. and around the world is at serious risk due to a variety of human impacts – including global climate change, unsustainable fishing practices, and pollution. Nineteen percent of the world’s reefs are effectively lost (“Status of Coral Reefs of the World,” Wilkinson 2008). A striking new analysis of threats to the world’s coral reefs shows that 60 percent of reefs are threatened by local activities – fishing, coastal development, watershed-based pollution or marine-based pollution – and when global threats such as thermal stress related to climate change are factored in 75 percent of all coral reefs are currently considered threatened (Reefs at Risk Revisited, 2011). Additionally, the emerging issue of ocean acidification represents another chronic and incompletely understood threat to coral reefs on a global scale.

To address the complex nature of the threats that face coral reef ecosystems, the Coral Reef Conservation Program (CRCP) brings together expertise from across NOAA for a multidisciplinary approach to understanding and managing coral reef ecosystems. This matrix program includes more than 30 offices within NOAA from NOS, NMFS, OAR and NESDIS (funds are requested in NOS and then distributed among the participating offices) to meet its mission to protect, conserve and restore valuable coral reef ecosystems. NOAA has found this approach to be an efficient and effective way to mobilize and focus the specific capabilities of each office on these priorities. Examples of CRCP activities and tools include: climate forecasts developed by Coral Reef Watch (NESDIS), benthic habitat mapping (NOS and NMFS), baseline assessment and monitoring programs (NOS and NMFS), management capacity-building of our jurisdictional partners through training and technical assistance (NOS, NMFS, NESDIS), coral reef ecosystem research (OAR), and socioeconomic studies (NOS), among others.

The CRCP addresses NOAA’s legislative mandates to protect and conserve coral reefs (Coral Reef Conservation Act of 2000 and the Presidential Executive Order 13089 on Coral Reef Protection, which established the NOAA-co-chaired U.S. Coral Reef Task Force), recover threatened corals and other protected species (ESA), manage reef-dependent federal fisheries and protect Essential Fish Habitat including deep coral and sponge communities (Magnuson-Stevens Fishery Conservation and Management Act (MSA)), promote sustainable use of the coastal zone under the Coastal Zone Management Act (CZMA), and improve management capabilities of the National Marine Sanctuaries (NMSA).

#### **Schedule and Milestones:**

- Develop operational version of IOOS Data Catalog and web-based Viewer to allow users to find and access observational data (FY 2012)
- Support regional IOOS data standardization using DMAC standards. Make regional IOOS data holdings discoverable through IOOS Data Catalog (FY 2012)
- Develop operational version of IOOS System Status Dashboard (FY 2013)
- Develop operational versions of Data Visualization and Format Conversion Services (FY 2013-2014)

- Develop initial versions of Data Integration Services (FY 2013-2014)
- Develop initial versions of IOOS Product Generation (FY 2016-2017)
- Sustain observing and modeling capability throughout regional entities (FY 2012-2017)
- Meet ICOOS Act requirements: promulgate guidelines to certify non-Federal assets; identify observing gaps and or needs for capital improvements, for Federal and non-Federal assets; submit annual report to interagency ocean observing committee; prepare annual budget summary; and deliver biennial report to Congress (FY 2012-2017)
- Sustain Regional IOOS operations and maintenance of existing HF Radar network to support U.S. Coast Guard operational search and rescue, oil spill response, water quality and pollutant tracking, harmful algal bloom (HAB) monitoring, and offshore wind energy siting (FY 2012-2017)
- Maintain national HF Radar network servers with quality assurance, control procedures and fail-over redundancy (FY 2012-2017)
- Monitor performance and “up time” of the HF Radar network (FY 2012-2017)
- Develop visualization and decision support tools for regional planning efforts (FY 2012)
- Execute NOAA Internal Data Integration Plan and O&M of ocean.data.gov (FY 2013-2017)
- Develop and deliver state coastal resource and emergency manager decision support tools, such as hazard assessment tools, sea level rise visualizations, and coastal county snapshots (FY 2012-2017)
- Provide regional technical assistance, tools and coordination on priority issues to support managers in state led regional partnerships including the Gulf of Mexico Alliance, the West Coast Governors’ Alliance on Ocean Health, the Northeast Regional Ocean Council, the Hawaii Ocean Partnership, and others (FY 2012-2017)
- Develop, distribute, update, and apply moderate resolution coastal land cover change analysis data (refreshed on five-year basis) for coastal regions (FY 2012-2017)
- Develop integrated models to provide information about storm vulnerability and ecological impacts (FY 2012-2017)
- Complete 19 watershed management plans for watersheds near priority coral reef areas by FY 2017
- Complete coral reef jurisdictional Capacity Assessments (FY 2013)
- Develop a CRCP National Monitoring Plan (FY 2012)
- Conduct reef assessment and monitoring cruises in Pacific and Atlantic/Caribbean (FY 2012-2017)
- Continue to improve coral bleaching forecasts and ocean acidification models (FY 2012-2017)
- Complete the State of Coral Reef Ecosystems Report every four years and distribute to policy makers, resource managers and others who make decisions about coral reef conservation issues (FY 2016)
- Conduct three social marketing campaigns to raise awareness of coral reef conservation and change behavior (FY 2013-2017)
- Conduct surveys in the U.S jurisdictions to monitor social change regarding reef resources (FY 2013-2017)

**Deliverables:**

- Fully functional IOOS Data Catalog with contributions from all participating coastal, Great Lakes and open ocean data providers
- Utility services for visualizing, transforming and integrating oceanographic data
- Formal documentation for implementation and training of IOOS data providers and partners

- Standardized data access services and data formats at key NOAA and regional data providers, thereby simplifying access to new and archived oceanographic data
- Established processes for Regional IOOS partners to engage with stakeholders in their respective regions and provide updated stakeholder input to ensure that IOOS is responsive to local and regional priority needs
- Refined IOOS enterprise metrics for assessing performance and maturity of the system
- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development
- High Frequency Radar trend analysis of system performance and “up time”
- A coordinated NOAA structure that supports targeted regional capacity building for Regional Planning Bodies and geospatial data and decision support tools needed for regional planning efforts
- A NOAA-wide plan for integrating key spatial data for decision-making and making them available through ocean.data.gov
- Data, mapping, tools, and information resources through Digital Coast to address competing using of coastal resources and adaptation to coastal hazards and climate change
- Training and workshops on data, tools, and techniques that address competing using of coastal resources and adaptation to coastal hazards/climate change
- Effective regional ocean partnerships by building capacity through facilitation, training, and workshops addressing completing uses of coastal resources and adaptation to coastal hazards and climate change
- Outreach publications to increase capacities among coastal resource managers, land use planners, emergency managers, floodplain managers, and others
- Development of environmental forecasting and risk and vulnerability decision-support tools to assist with decision making regarding the impacts of storms on natural resources and communities
- Seven reports – one per jurisdiction – on the status of jurisdictional management capacity (organizational, human resources, legal and technical) to determine the capacity gaps that need to be addressed in order for local resource management efforts to be effective
- Increased management capacity and effectiveness in existing MPAs increases the condition of fish assemblages within coral reef MPAs, restores essential ecosystem functions crucial to coral health in priority coral reef areas and increases resilience of these areas to climate change impacts
- Development and implementation of watershed management plans reducing pollutant loading in target watersheds adjacent to coral reefs, thereby decreasing local stressors (sediments, nutrients, etc) that negatively affect coral reefs
- New management strategies to better protect coral reef areas implemented through targeted research to better understand the impacts of stressors to coral reefs
- An engaged public who understands the need for and importance of coral reef ecosystems and who supports action to conserve important coral reef resources

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of Regional IOOS supported coastal, ocean, and Great Lakes observations delivered to the GTS for use by NOAA operationally in daily forecasts (in millions)	<b>Actual</b> 2.1	<b>Target</b> 2.1	<b>Target</b> 2.1	<b>Target</b> 2.1	<b>Target</b> 2.1	<b>Target</b> 2.1	<b>Target</b> 2.1

**Description:** Regional IOOS partners contribute a significant proportion of observations available for use by forecasters via the Global Telecommunications System. IOOS observation platforms are typically located in near shore areas where National Data Buoy Center and National Ocean Service platforms are not present, thereby filling a data gap of critical observations for NOAA.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of U.S. coastal waters with 2/3 reduced search and rescue area (96 hour period)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	19%	19%	19%	19%	19%	19%

**Description:** Percentage of U.S. coastal waters with 2/3 reduced search and rescue area (96 hour period) resulting from USCG SAROPS integrating IOOS surface currents at 80 percent data availability. USCG estimates the search area is reduced by 2/3 in a 96 hour period when the SAROPS system is linked to the IOOS HFR data, thereby leading to greater numbers of lives saved and reduced search costs annually. As a baseline, U.S. coastal waters are defined as the area from the contiguous U.S. shoreline out to 150km, for a total area of 1.5 million km<sup>2</sup>.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of tools, technologies, and information services that are used by NOAA partners/ customers to improve ecosystem-based management (Measure 18c)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	88%	88%	89%	90%	91%	91%	91%

**Description:** This measure tracks NOAA's success in providing tools, technologies, and information services such as those for coastal and marine resource managers that enable progress toward the principles of ecosystem-based management (considering ecological, economic, social, and security concerns) for coastal, marine, and Great Lakes ecosystems. By cataloging and tracking each fiscal year the existing and new tools, technologies, and information services authorized and developed to meet stakeholders' needs (50 to 100), NOAA encourages their completion and use to advance ecosystem-based management. NOAA can also then ensure investments in the most effective programs and products for the Nation. NOAA partners and customers include Federal, state, local and tribal authorities who make decisions affecting resources in the U.S. coastal zone, and other users impacting the condition of coastal ecosystems (e.g., private industry). Actuals are derived by dividing the number of tools/services developed by the end of the year by the number proposed at the beginning of the year. Targets are established based on historical patterns and the amount of funds being requested. Services can include on-line courses for managers, enhanced websites, broadcasts of live events, and workshops and other training techniques. New tools are developed with partners and customers that improve our products and services for ecosystem managers. Benefits of better management of the Nation's coastal, marine, and Great Lakes resources accrue to all citizen's through sustainable ecosystems that provide jobs, products and services that are unique to coastal and ocean areas.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (Measure 18e)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	43%	34%	43%	49%	54%	60%	66%
<p><b>Description:</b> This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA's contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).</p>							

**RESPONSE AND RESTORATION (<http://response.restoration.noaa.gov>)**

NOAA's Office of Response and Restoration (OR&R) protects coastal and marine resources, mitigates threats, reduces harm, and restores ecological function. OR&R provides comprehensive solutions to environmental hazards caused by oil, chemicals, and marine debris. NOAA responds to approximately 180 significant oil or chemical spills each year as scientific advisors to the U.S. Coast Guard and provides solutions to cleanup agencies and organizations that protect and restore coastal resources at more than 200 hazardous waste sites each year along the Nation's ocean and Great Lakes coasts. When oil or hazardous substances threaten or injure coastal and marine resources, NOAA, along with state and other Federal natural resource trustees, is responsible for ensuring that cleanup actions protect those resources from further injury; assessing and recovering natural resource damages to restore the injured resources; and seeking compensation on behalf of the public for the loss of services that the natural resources provided. OR&R delivers scientific expertise on releases of oil, chemicals, and marine debris; protecting and restoring NOAA trust resources; and extending core scientific expertise to promote sound, science-based decision making to address critical local and regional coastal challenges.

**EMERGENCY RESPONSE DIVISION** - The Emergency Response Division (ERD) supports Federal, state, and local agencies across the country that depend on NOAA's science-based guidance during oil and chemical spills, vessel groundings, search and rescue efforts, national security events, and other emergencies. ERD provides scientific expertise, including oil spill trajectory modeling, shoreline cleanup assessment, identification of sensitive resources, information management, and development of cleanup strategies. ERD has extensive experience in the Incident Command System and has developed numerous spill response tools such as: the Environmental Sensitivity Index (ESI) maps used by first responders to depict resources at risk, the Environmental Management Response Application (ERMA), and the CAMEO suite used by fire services across the country to respond to hazardous releases. These tools enable Federal on-scene coordinators to make the best cleanup decisions to minimize the environmental and economic impacts of oil spills. ERD represents NOAA on the National and Regional Response Teams that provide technical assistance, resources and coordination of preparedness, response and recovery activities for emergencies involving oil, hazardous substances, pollutants, and weapons of mass destruction in disasters and other incidents of national significance. ERD enhances national knowledge and readiness by providing training to hundreds of Federal, state and local partners each year. ERD is currently providing critical scientific support to the Coast Guard for the Deepwater Horizon oil spill in the Gulf of Mexico.

**ASSESSMENT AND RESTORATION DIVISION** - The Assessment and Restoration Division (ARD) works closely with other Federal and state trustees and the responsible party to assess and restore

resources injured by oil spills, releases from hazardous waste sites, and vessel groundings on corals and sea grass beds. ARD ensures the public's natural resources are restored. ARD also influences remediation at hazardous waste sites to be protective of NOAA trust resources. ARD is mandated to perform these natural resource trustee roles by the Oil Pollution Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Clean Water Act. ARD is a leader among the state and Federal damage assessment community and supports the protection and restoration of natural resources vital to coastal ecosystems and local economies. ARD and its partners have generated over \$500 million of restoration over the life of its program, all of which has been paid for by the responsible party. ARD is now leading the damage assessment activities for the Deepwater Horizon oil spill in the Gulf of Mexico. In this arena, ARD works with NOAA's Restoration Center to provide assistance for estuary habitat restoration projects and to develop and enhance restoration monitoring and research capabilities. NOAA's efforts contribute to restoring estuaries that support local economies and understanding the efficacy of our restoration efforts.

In FY 2012, NOAA received funding to develop an oil spill research and development program. The goal of this program is to conduct research to provide useful information, methods and tools for planners, oil spill responders, and assessment practitioners. Funds will support external grants that will be coordinated with the Interagency Coordinating Committee for Oil Pollution Research (ICCOPR) as well as the National Oceanographic Partnership Program (NOPP).

**ESTUARY RESTORATION PROGRAM** – In FY 2013, NOAA proposes to consolidate the functions and resources of the Estuary Restoration Program into the Office of Habitat Conservation within the National Marine Fisheries Service.

**MARINE DEBRIS PROGRAM** - In FY 2013, NOAA proposes to consolidate the functions and resources of the Marine Debris Program in the Office of Habitat Conservation within the National Marine Fisheries Service.

**Schedule and Milestones:**

- Respond to approximately 180 oil spills and other pollution events to influence sound, science-based cleanup decisions
- Influence remedial decisions at more than 200 hazardous waste sites to protect NOAA trust resources
- Conduct natural resource damage assessments at priority spill and hazardous waste sites
- Conduct oil spill drills and implement response and damage assessment training for preparedness and capacity building in partners
- Achieve significant progress on regional ecosystem restoration planning, implementation, and monitoring
- Fund 16 multi-year grants per year focused on high priority oil spill research and development

**Deliverables:**

- Technical support to CERCLA lead agencies, investigate potential injury to NOAA trust resources, develop protective remedial strategies, and address contaminated sediments
- Significant progress toward completing natural resource damage assessments or cases settled to recover funds for restoration of coastal resources
- Regional response exercises and drills with NOAA presence (Federal, state, local, private)
- Develop Environmental Response Management Application (ERMA) for the State of Alaska
- Socioeconomic monitoring of Deepwater Horizon restoration projects to estimate restoration project benefits to Gulf Coast economies

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of hazardous waste sites where assessments or cleanup plans address risks to NOAA trust resources	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	15	15	15	15	15	15	15
<b>Description:</b> This measure tracks the number of hazardous waste sites (e.g., Superfund sites) for which NOAA provides scientific expertise to assess and develop cleanup plans, thereby reducing the risk to NOAA's trust resources.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of enhancements to scientific support tools that support US government response to hazardous material releases	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	61	59	75	75	75	75	75
<b>Description:</b> This measure tracks the number of improvements to scientific support tools, e.g., fate and trajectory models, ERMA, environmental sensitivity maps, that will help decision makers make the best cleanup decisions to minimize the environmental and economic impacts of oil and chemical spills and marine debris releases.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of Natural Resource Damage Assessment cases where liability is resolved	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	6	4	4	4	4	4	4
<b>Description:</b> This measure tracks the annual number of natural resource damage cases that are resolved and supply restoration funds. Successful cases reflect NOAA's ability to conduct assessments, provide assistance and work cooperatively with industry and other trustees on natural resource damage cases.							

**NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE (<http://coastalscience.noaa.gov>)**

NOS' National Centers for Coastal Ocean Science (NCCOS) conduct research, monitoring, and assessments to build the scientific foundation essential for sustainable use of coastal resources. NCCOS integrates its expertise and efforts across all levels of government through a variety of interagency task forces and has established partnerships with NIST, EPA, USGS, NPS, and CDC, academic institutions and coastal community resource managers and public health officials. Coordinating activities with partner organizations, NCCOS ensures research activities meet the highest priority science needs, provide a balanced response to local, regional and national issues and are utilized by decision makers to sustain the viability of coastal ecosystems and communities.

Three of NCCOS' centers have on-site research facilities, and two centers conduct research through analyses of field data. Although each center has unique expertise, NCCOS' research, monitoring and assessment capabilities are leveraged and enhanced by partnerships to manage threats of harmful algal blooms (HABs), support coastal and marine spatial planning, advance research on climate change impacts to coastal ecosystems and address impacts of coastal contamination, with a focus on pharmaceuticals, endocrine disrupting compounds, flame retardants and other contaminants of emerging concern (CECs). NCCOS also performs NOAA's activities under the

Oceans and Human Health Act. Brief descriptions of activities conducted at NCCOS centers are provided below.

***Center for Coastal Environmental Health and Biomolecular Research (CCEHBR)*** – Located in Charleston, SC, CCEHBR conducts applied research programs to: develop methods to characterize, detect and measure marine biotoxins, HABs and CECs; and understand the factors linking land use in the coastal zones with the distribution and effects of environmental contaminants on living marine resources and associated habitats. In FY 2012, NOAA will transition away from the activities conducted in the Marine Forensics Program by CCEHBR which no longer align to the priorities in NCCOS' intramural research portfolio.

***Center for Coastal Fisheries and Habitat Research (CCFHR)*** – Located in Beaufort, NC, CCFHR's science and research efforts evaluate the anthropogenic effects on resource productivity and improve delineation, recovery and restoration of injured habitat. It also develops tools for detecting HABs and improving forecasts of bloom conditions and examines shoreline and habitat response to climate change.

***Center for Coastal Monitoring and Assessment (CCMA)*** – Located in Silver Spring, MD, CCMA conducts programs in applied research, monitoring, biogeography and assessment to evaluate the environmental quality and consequences of anthropogenic stresses to U.S. coastal, estuarine, and Great Lakes areas and to monitor toxic contaminants, nutrients, and related properties in biota, water, and sediments at over 300 sites through the National Status and Trends program. It also determines the distribution of anoxia/hypoxia, the occurrences of HABs, and the biodiversity and habitat characteristics of U.S. coastal, estuarine, and Great Lakes areas.

***Center for Human Health Risk (CHHR)*** - Located in Charleston, SC at the Hollings Marine Lab (HML), a NOAA Center of Excellence in Oceans and Human Health, CHHR research is focused on genomics, environmental chemistry and toxicology, and pathogen source tracking, monitoring, and assessment to examine the interrelationships between human health and marine environmental health; and to develop and integrate medical and marine technologies to understand, assess, sustain and protect marine and coastal ecosystems.

***Center for Sponsored Coastal Ocean Research (CSCOR)*** – Located in Silver Spring, MD, CSCOR addresses emerging coastal ocean issues across NOAA's mission responsibilities. CSCOR supports competitive, peer-reviewed, interdisciplinary research investigations with finite life cycles conducted on a regional scale over a 3-5 year period. The program relies upon established processes that reflect the requirements and advice of both the management and science communities in setting its priorities to ensure the utility and credibility of research designed to investigate ecological stressors including HABs, hypoxia and climate change; and to forecast the ecological effects of ecosystem stressors in a regional context for coastal ecosystems of concern to NOAA.

In response to established legislation and NOAA priorities and in concert with scientific expertise and capabilities, NCCOS' internal research efforts deliver quality, timely and relevant science and services to the Agency and partners to respond to harmful algal blooms (30 percent), support coastal and marine spatial planning (25 percent), and assess the impacts of climate change (10 percent) and coastal contamination (35 percent).

#### **Schedule and Milestones:**

- Identify and analyze biological, benthic and oceanographic datasets at appropriate spatial and temporal scales to support New York and North Carolina offshore energy plans

- Research to support National Marine Sanctuary (NMS) rezoning and boundary delineation
- Characterize environmental conditions for HAB species to produce toxins and estimate toxin flux into food chains
- Collect and analyze data to support national baseline assessments of coastal resource health
- Investigate land use and weather modifications on runoff, eutrophication, HABs and pathogens for coastal Southeast, Gulf of Mexico and Chesapeake Bay
- Assess impacts of bulkheads on wave attenuation and marsh vegetation

**Deliverables:**

- Data integration visualization tools
- Baseline ecological assessments in Gulf of Mexico, Chesapeake Bay and selected NMS and NERRs
- Reports on national ecological conditions and stressor impacts in coastal-ocean waters
- Models on marsh response to sea level rise and assessments of impacts of shoreline modification on ecosystem services in Mid-Atlantic region

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of coastal, marine and Great Lakes ecosystem sites adequately characterized for management (Measure 18a: NCCOS contribution only)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	7	15	16	16	12	12	10
<p><b>Description:</b> Ecological characterizations provide the scientific basis for coastal and ocean assessments and forecasts, and the development of plans to manage resources and assess the effectiveness of measures implemented to effectively manage natural resources. Characterizations are conducted on NOAA trust resources, essential fish habitats, Great Lakes habitats and living resources and throughout the Nation’s coastal zone. A subset of these metrics contributes to NOAA’s measure 18a.</p>							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative number of coastal, marine and Great Lakes forecast capabilities developed and used for management (Measure 18b: NCCOS contribution only)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	3	4	5	4	4	3
<p><b>Description:</b> This measure is a subset of measure 18b. NOAA’s discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA’s forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia – all in the Gulf of Mexico).</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts (Measure 18h)	N/A	N/A	11	11	11	11	11
<b>Description:</b> This is a pilot measure in FY 2013 which was developed to track the forecast communities (currently using operational forecasts) within a coastal region vulnerable to harmful algal blooms (HAB) and the utility and accuracy of HAB forecasts as verified through customer feedback responses before and after a forecast HAB event.							

**PROPOSED LEGISLATION:**

The Administration will work with Congress to reauthorize the Coral Reef Conservation Act, the Oceans and Human Health Act, and the Harmful Algal Bloom and Hypoxia Research and Control Act.

## **PROGRAM CHANGES FOR FY 2013:**

**Regional IOOS Observations: Regional IOOS Observations (Base Funding: \$22,956,000 and 5 FTE; Program Change: \$6,564,000 and 0 FTE):** NOAA requests an increase of \$6,564,000 and 0 FTE for a total of \$29,520,000 and 5 FTE for Regional IOOS Observations to develop and improve marine sensors that will monitor changing conditions in the oceans, coasts and Great Lakes.

### **Proposed Actions:**

With this increase NOAA, will establish a \$10,000,000 marine sensor program by reallocating \$3,436,000 within funds currently available to regional associations and other grant recipients to participate in this effort. Through this effort, NOAA will focus on the “Sensors for Marine Ecosystems” near-term priority and the “Opportunities for Progress” for observing systems and models as specified in the Ocean Research Priorities Plan and Implementation Strategy titled, “Charting the Course for Ocean Science in the United States for the Next Decade” U.S. IOOS® will develop and apply a variety of biological, chemical, and physical marine sensing technologies to allow rapid, accurate, and cost effective detection, identification, characterization, and quantification of environmental conditions. The goal will be to incorporate the successful marine sensor technologies into Regional IOOS operations and other monitoring and prediction programs to meet region-specific stakeholder needs as mandated by the Integrated Coastal and Ocean Observation System (ICOOS) Act (2009) and directed by the National Ocean Policy.

NOAA will make competitive, extramural awards to teams of U.S. IOOS Regions, industry, academia, and Federal partners for the development, demonstration, testing, and evaluation of a variety of biological, chemical, and physical marine sensor technologies. Demonstrations will focus on topics with potential to result in significant improvements to meet National Ocean Policy priorities related to informing decisions and improving understanding, water quality, and observations, mapping, and infrastructure. The competitions will be coordinated with the National Oceanographic Partnership Program to leverage other agency investments intended to address the Nation’s needs for ocean information and will focus on transitioning technologies into operations. Partnering will be encouraged between IOOS Regions, academic partners, and Federal operational programs to ensure new technologies and resulting data sources integrate with existing regional and national operational models and forecasts as appropriate. The demonstrations will be staggered and phased to allow new topics to be competed every two years and will include cross-agency prioritization of topics. The goal will be to incorporate the successful marine sensor technologies into Regional IOOS operations and other monitoring and prediction programs to meet region-specific stakeholder needs as mandated by the Integrated Coastal and Ocean Observation System (ICOOS) Act (2009) and directed by the National Ocean Policy. See the Performance Schedule below in the Schedule and Milestones section for specific activities that will be funded with this request.

After a reallocation of \$2,436,000, \$19,520,000 will be provided to Regional IOOS partners in FY 2013. This funding will allow them to continue to provide 80 percent of the level of meteorological and oceanographic data that they delivered in 2011 to the IOOS data assembly center at the National Weather Service’s National Data Buoy Center (NDBC) and will continue to build upon the increase provided in FY 2012 for HF Radar. In addition, \$1,000,000 provided in FY 2012 for the verification and validation of sensors will be reallocated to be a part of the larger more focused marine sensors program requested here.

### **Base Resource Assessment:**

The base resources for U.S. IOOS are described in the Ocean Resources Conservation and Assessment base narrative.

**Statement of Need and Economic Benefits:**

Through recreation, residential and commercial development, and employment, human populations are coming into increasing contact with our oceans and coastal waters. Continued coastal development, changes in land use, a varying climate, and altered ecosystem diversity add a complexity of environmental and human stresses, the consequences of which we do not yet fully understand and are ill prepared to manage. Approximately 100 million Americans use coastal and Great Lakes waters for recreation each year, many of them multiple times, and they are exposed to an increasingly dangerous array of ocean health threats from industrial, urban, and agricultural sources. In 2004, there were nearly 20,000 days of closings and advisories at ocean, bay and Great Lakes beaches, of which 73 percent were attributed to unknown sources and cost millions to local economies. During 2006-2007, beach advisory days due to sewage contamination more than tripled to 4,000 and 35 percent of tested estuaries and 12 percent of ocean shoreline waters were considered unfit for designated uses (*Testing the Waters 2009*, NRDC 2009).

Our ability to rapidly and accurately monitor and assess ocean conditions, biodiversity and other indicators of marine ecosystem health, and biological responses to changes in environmental conditions have lagged far behind our capacity to detect physical changes in the oceans and atmosphere. This capability gap is a target of the Marine Sensor Innovation program described here. This work will enable better development of new marine sensing technologies designed to deliver rapid and cost-effective data to inform our understanding of coastal, ocean, and Great Lakes ecosystems, and to support better decision making to improve public, animal, and ecosystem health.

U.S. IOOS provides continuous data on open oceans, coastal waters, and Great Lakes to inform decision-making. Two studies, *The Business Case for Improving NOAA's Management and Integration of Ocean and Coastal Data* (2009) and *Estimating the Economic Benefits of Regional Ocean Observing Systems* (Kite-Powell et al. 2004), confirmed that investments in ocean observation will generate significant economic benefits to both NOAA and the Nation. Users of ocean data, including modelers and meteorologists, spend an average of 25–50 percent of their time searching for, accessing, formatting, and ingesting data into their products. The Kite-Powell study summarized the magnitude of potential economic benefits of deploying a network of ocean observing systems. Conservative estimates of benefits demonstrate that between \$100 million and \$1 billion in economic growth would be created by an investment in regional ocean observing systems (Kite-Powell et al. 2004). This sustained investment in technology innovation will propel marine sector businesses, job growth, and scientific discovery while supporting science, technology, engineering, and mathematics (STEM) education.

**Schedule and Milestones:**

<b>Performance Schedule</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Prioritize topics with federal agencies and the National Oceanographic Partnership Program (NOPP) for marine sensor innovative technology demonstrations to advance three-dimensional monitoring of coastal, Great Lakes, and ocean conditions		X		X	
Publish proposal solicitation for 3-year marine sensor technology demonstrations for transition to operations within IOOS Regions.		X		X	
Initiate competitively selected demonstration projects	X		X		X

Make awards and conduct technology demonstrations and evaluations in IOOS Regions	X	X	X	X	X
Evaluate and test new data sources for transitioning into operational coastal models				X	X
Transition demonstrated tools or technologies into operations			X	X	X

**Deliverables:**

- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development (FY 2013-2017)
- Expansion of scientific and technical jobs as well as training and education among industry and U.S. IOOS regional partners involved in demonstrations (FY 2013-2017)
- Incorporation of two or more emerging tools or technologies into operations of two or more U.S. IOOS regions every three years (FY 2015-2017)
- Expanded capability of U.S. IOOS, improving mission readiness of Federal agencies and ability of U.S. IOOS regions to meet local and regional stakeholder needs for ecosystems data including new data from marine sensor development (FY 2013-2017)
- Marine Sensor Innovation topic demonstrations for sensor development, platform integration, tool development, and technology transition into operations (FY 2015-2017)
- Expansion of scientific and technical jobs as well as training and education among industry and U.S. IOOS regional partners involved in demonstrations (FY 2013-2017)
- Marine Sensor Innovation topic demonstrations for sensor development, platform integration, tool development, and technology transition into operations (FY 2015-2017)
- Expansion of scientific and technical jobs as well as training and education among industry and U.S. IOOS regional partners involved in demonstrations (FY 2013-2017)
- In 2013, Regional IOOS partners will continue to deliver 80 percent of the 2011 volume of 75 percent of the current volume of Regional IOOS meteorological and oceanographic data to the IOOS data assembly center at the National Weather Service’s National Data Buoy Center.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative number of new marine sensors or ecosystem tools developed to enhance ecosystem based management for fisheries, protected species, public health, and additional topics as defined by the National Oceanographic Partnership Program process	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	0	0	4	4	8
<b>Without Increase</b>	0	0	0	0	0	0	0
<b>Description:</b> This measure is focused on the development of new sensors or tools resulting from 3-year NOPP marine sensor technology demonstrations. Staggered starts for projects will lead to four new sensors or tools every two years starting in FY 2015. This assumes at least one sensor or tool per topic demonstration.							

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of tools, technologies, or products developed from tested and validated sensors or related research used to improve ecosystem-based management and additional issue areas as defined by the National Oceanographic Partnership Program process	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	0	0	8	8	8
<b>Without Increase</b>	0	0	0	0	0	0	0
<p><b>Description:</b> This measure is focused on the application of marine sensor technologies and tools. Specifically, this measure tracks success in translating tested and validated sensor technologies and related findings into information products, tools, or technology that improve ecosystem-based management of ocean, coastal and Great Lakes resources, protection of trust resources, and the prediction and reduction of ocean and coastal related human and marine organism health risks. This measure assumes three-year technology demonstrations with resulting tools becoming available in year three and becoming available to operations in year four.</p>							

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of Regional IOOS supported coastal, ocean, and Great Lakes observations delivered to the GTS for use by NOAA operationally in daily forecasts (in millions)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	1.7	1.7	1.7	1.7	1.7
<b>Without Decrease</b>	2.1	2.1	2.1	2.1	2.1	2.1	2.1
<p><b>Description:</b> Regional IOOS partners contribute a significant proportion of observations available for use by forecasters via the Global Telecommunications System. IOOS observation platforms are typically located in near shore areas where National Data Buoy Center and National Ocean Service platforms are not present, thereby filling a data gap of critical observations for NOAA. Performance targets will lag relative to resource levels because number of observations will decline gradually over multiple years as maintenance is deferred and spare parts inventories are depleted. Regional observations that will be unavailable through the GTS include: data from CariCOOS, which provides 100 percent of the coastal buoys for Puerto Rico and the U.S. Virgin Islands; data from PacIOOS, which operates 100 percent of the wave buoys in the region which NWS uses for marine forecasts, including two buoys (Guam and CNMI) deployed in direct response to a NWS request; data from NERACOOS, whose buoys provide the only wave observations in Long Island Sound and the only ocean visibility observations in the Gulf of Maine for local WFOs. These losses will decrease the accuracy of forecasts.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	2,500
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	4,064
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>6,564</u>

**Coastal Services Center: Coastal Services Center (Base Funding: \$33,446,000 and 84 FTE; Program Change: -\$1,433,000 and 0 FTE):** NOAA requests a decrease of \$1,433,000 and 0 FTE for a total of \$32,013,000 and 84 FTE for a reduction in the number of new or enhanced climate products.

**Proposed Actions:**

NOAA requests a decrease in the Coastal Services Center base of \$1,433,000 which will result in the development of fewer new or enhanced climate products. NOAA will offset the reduction in product development capacity by leveraging external resources and capabilities associated with ongoing partnerships with states and other Federal agencies, ensuring coastal communities are aware of and able to access the broader range of Federal and non-Federal services.

CSC transfers successful tools and approaches to the coastal management community to ensure that national issues are effectively addressed at regional, state and local levels. This requires a sustained regional approach that includes direct interaction with state and local partners to understand and address their highest priority needs. Therefore, the Budget request continues support for all regionally-dedicated Coastal Service Centers (i.e., Pacific, Gulf, and West), as well as the NOAA Coastal Storms Program (CSP). CSP brings NOAA-wide expertise, products, and services to address the challenges unique to each region, developing integrated products and services that can reduce the adverse impacts of coastal storms in as efficient and cost-effective manner as possible. CSC will also continue to support established and emerging Regional Ocean Partnerships.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

**Schedule and Milestones:**

- Develop and deliver state coastal resource and emergency manager decision support tools, such as hazard assessment tools, sea level rise visualizations, and coastal county snapshots (FY 2013-2017)
- Provide regional technical assistance, tools, and coordination on priority issues to support managers in coastal regions associated with established Regional Ocean Partnerships, such as the Gulf of Mexico Alliance, West Coast Governor's Agreement, Northeast Regional Ocean Council, and others (FY 2013-2017)
- Develop, distribute, update, and apply moderate resolution coastal land cover change analysis data (refreshed on five-year basis) for coastal regions (FY 2013-2017)
- Develop integrated models to provide information about storm vulnerability and ecological impacts (FY 2013-2017)

**Deliverables:**

- Data, mapping, tools, and information resources through Digital Coast to address competing uses of coastal resources and adaptation to coastal hazards and climate change
- Training and workshops on data, tools, and techniques that address competing uses of coastal resources and adaptation to coastal hazards/climate change
- Effective regional ocean partnerships by building capacity through facilitation, training, and workshops addressing competing uses of coastal resources and adaptation to coastal hazards and climate change

- Outreach publications to increase capacities among coastal zone managers, land use planners, emergency management, floodplain managers, and others
- Development of environmental forecasting and risk and vulnerability decision-support tools to assist with decision making regarding the impacts of storms on natural resources and communities

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (Measure 18e)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	40%	46%	51%	57%	63%
<b>Without Decrease</b>	43%	34%	43%	49%	54%	60%	66%
<b>Description:</b> This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA's contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,433)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,433)</u>

**Coastal Services Center: Regional Geospatial Modeling Grants (Base Funding: \$2,861,000 and 0 FTE; Program Change: -\$2,861,000 and 0 FTE):** NOAA requests a decrease of \$2,861,000 and 0 FTE for a total of \$0 and 0 FTE for the Regional Geospatial Modeling grant program, funded in the Coastal Services Center PPA in FY 2012, which provides a competitive source of funding for the development of models and geographic information systems by researchers and regional resource managers. In the Consolidated and Further Continuing Appropriations Act, 2012, Congress provided funds to support Regional Geospatial Modeling Grants administered by the NOAA Coastal Services Center. Grants will be awarded and tracked to completion in FY 2012; however, no additional funding is needed for these projects. Base funding from the Coastal Services Center and Geodesy Program supports a range of regional geospatial requirements, including Continuously Operating Reference Stations (CORS) support, Height Modernization, data access, capacity building, and development of tools and models. NOAA will also continue to work with states and across Federal agencies to provide geospatial data and tools, training, social science information, and partnership-building services to address a range of high priority coastal issues.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,861)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(2,861)</u>

**Response and Restoration: Natural Resource Damage Assessment: (Base Funding: \$21,752,000 and 110 FTE; Program Change: +\$2,000,000 and 4 FTE):** NOAA requests an increase of \$2,000,000 and 4 FTE for a total of \$23,752,000 and 114 FTE to improve NOAA's capacity to conduct natural resource damage assessment (NRDA) and to expedite the restoration process.

**Proposed Actions:**

NOAA has identified active NRDA cases in which it believes that the immediate availability of additional resources would allow the program to expedite settlement and restoration implementation. The requested increase to the Response and Restoration base would provide the necessary support for additional attorneys, injury assessment scientists, and restoration specialists that could, in turn, yield accelerated settlements totaling tens of millions of dollars. NOAA currently uses base appropriations to conduct damage assessments following oil and chemical spills, perform legal work toward settlements, and to carry out restoration planning.

**Statement of Need and Economic Benefits:**

As a trustee NOAA is charged, along with co-trustees, with conducting a NRDA to assess and restore natural resources injured by oil spills or releases of hazardous chemicals (as well as ship groundings). There are over 200 Natural Resource Damage Assessment (NRDA) cases for which NOAA is currently engaged as a trustee. These cases represent a substantial amount of habitat restoration where responsible parties are liable for funding. On an annual basis, NOAA reviews its case load and prioritizes damage assessment resources based on the potential of settlement (and subsequent restoration). The process determines the type and amount of restoration needed to compensate the public for harm or injury to our collective natural resources that occur as a result of a pollution event. To help expedite cases, NOAA leads its co-trustees on most of the NRDA cases in which it is involved by providing technical, strategic, and process guidance and support. With much of NOAA's current NRDA capacity focused on the DWH case, there remain numerous NRDA cases around the country that will benefit from the resources provided in this increase.

The value of reducing, mitigating, and remediating injury to natural resources is easily quantifiable. Over the past 15 years, NOAA's Office of Response and Restoration has recovered more than \$437 million for the protection and restoration of coastal resources after spills and waste site releases. Federal and state trustees for the Deepwater Horizon oil spill reached a \$1 billion early restoration settlement with BP on April 21, 2011.

In conjunction with this initiative, NOAA will be coordinating with the Department of the Interior to prioritize NRDA activities that hold the greatest potential for accelerating habitat restoration.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

**Schedule and Milestones:**

N/A\*

*\*Note: NOAA can only estimate the number of cases that it can expedite as a result of this proposed increase at this time. While NOAA would direct the increased funding toward cases in which additional NOAA resources are most likely to speed recoveries, settlements are often dependent on the actions of numerous co-trustees and other external stakeholders. As such, NOAA cannot assure accelerated timelines for particular cases.*

**Deliverables:**

- Six Damage Assessment and Restoration Plans completed annually

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
<b>Number of Natural Resource</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Damage Assessment cases in</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>which liability is resolved</b>							
<b>With Increase</b>	N/A	N/A	5	6	6	6	6
<b>Without Increase</b>	6	4	4	4	4	4	4

**Description:** This measure tracks the number of natural resource damage cases that are resolved, and for which restoration funds are secured. Individual cases can represent as much as \$40 million in potential funding for habitat restoration. Successful cases reflect NOAA's ability to provide assistance and work cooperatively with industry and co-trustees on natural resource damage cases. NOAA can only estimate the number of settlements in any given year as settlements are often dependent on the actions of numerous co-trustees and other external stakeholders. Targets reflect average past performance.

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: National Ocean Service  
 Subactivity: Ocean Resources Conservation and Assessment

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Physical Scientist	Anchorage, AK	ZP-IV	1	89,370	89,370
Physical Scientist	St. Petersburg, FL	ZP-IV	1	86,575	86,575
Economist	Silver Spring, MD	ZP-IV	1	89,033	89,033
Restoration Specialist	Gloucester, MA	ZP-IV	1	81,823	81,823
Attorney	Silver Spring, MD	ZP-V	1	123,758	123,758
Attorney	Seattle, WA	ZP-V	1	121,357	121,357
					0
					0
<b>Total</b>			<u>6</u>		<u>591,916</u>
less Lapse		25%	<u>2</u>		<u>147,979</u>
Total full-time permanent (FTE)			4		443,937
2013 Pay Adjustment (0.5%)					2,220
TOTAL					446,157
<b>Personnel Data</b>			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			4		
Other than full-time permanent			0		
Total			<u>4</u>		
Authorized Positions:					
Full-time permanent			6		
Other than full-time permanent			0		
Total			<u>6</u>		

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$446
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>446</u>
12 Civilian personnel benefits	169
13 Benefits for former personnel	0
21 Travel and transportation of persons	10
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,365
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	10
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,000</u>

**Response and Restoration: Response and Restoration (Base Funding: \$21,752,000 and 110 FTE; Program Change: +\$536,000 and 0 FTE):** NOAA requests an increase of \$536,000 and 0 FTE for a total of \$22,288,000 and 110 FTE to improve NOAA's capacity to prepare for and respond to coastal environmental hazards, including an oil spill of national significance or simultaneous, large environmental hazard events in different regions.

**Proposed Actions:**

This funding will increase NOAA's engagement in the interagency review of Arctic Exploration Plans and proposals; allow NOAA to ensure that Environmental Response Management Application (ERMA) modules are accessible and secured in a cloud server environment for use by coastal managers and emergency responders; and enable NOAA to develop a response toolkit essential for Federal, state and local coastal decision makers in the Gulf of Mexico and Southeast regions.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

**Schedule and Milestones:**

- Increase NOAA engagement in and support to interagency review of Arctic Exploration and Production Plans, as well as Arctic drills and exercises by Q2 FY 2013
- Active ERMA modules accessible in Cloud server environment by Q4 FY 2013
- Develop comprehensive toolkit of response tools and training programs focused on NOAA products and services for critical Federal, state, and local decision makers by Q2 FY 2013

**Deliverables:**

- Leadership on two workshops in the North Slope specific to oil spill response environmental decision making
- Develop a standard emergency decision support tool kit for all NOAA facilities in the Gulf of Mexico and the Southeast and revise annually
- Convert active ERMA modules to cloud infrastructure

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Number of enhancements to scientific support tools that support US government response to hazardous material releases	59	59	77	80	80	80	80

**Description:** This measure tracks the number of improvements to scientific support tools, e.g., fate and trajectory models, ERMA, environmental sensitivity maps, that will help decision makers make the best cleanup decisions to minimize the environmental and economic impacts of oil and chemical spills and marine debris releases.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	536
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>536</u>

**National Centers for Coastal Ocean Science: National Centers for Coastal Ocean Science (Base Funding: \$36,379,000 and 199 FTE; Program Change: -\$344,000 and 0 FTE):** NOAA requests a decrease of \$344,000 and 0 FTE for a total of \$36,035,000 and 199 FTE to reflect savings from a realignment of NCCOS intramural research activities.

**Proposed Actions:**

In FY 2010 and 2011, NCCOS engaged in the evaluation and transformation of its intramural research portfolio. This has resulted in consolidating scientific priorities into four thematic areas consistent with Congressional direction, Administration and Agency priorities, and in line with NCCOS capabilities. Additionally, administrative functions have been streamlined and consolidated at the NCCOS Center in Charleston SC and NCCOS headquarters in Silver Spring, MD, and the number of contract positions at the Center for Coastal Ecosystem Health and Biomolecular Research in Charleston and in NCCOS Headquarters in Silver Spring have been reduced.

NCCOS is also evaluating the appropriate size and configuration of its labs in order to optimize the value of NOAA's investment in NCCOS science and plans to transition out its laboratories in Oxford, MD and Kasitsna Bay, AK in FY 2013. The mission of the Oxford Lab is largely localized unlike other NCCOS labs that have a more national focus. The work currently performed at Oxford by NCCOS will be terminated and resources will be reinvested in other NCCOS labs that better align with the core mission. NOAA plans to repurpose the NCCOS Cooperative Oxford Lab as a NMFS facility. The Kasitsna Bay lab remains underutilized and has not been able to reach its full potential. NOAA is currently exploring options to excess the facility and will focus resources on other NCCOS labs. NOAA will reassign staff currently at these labs to other programs.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

**Schedule and Milestones:**

- Begin closure of Kasitsna Bay laboratory (2013)
- Transition Oxford Laboratory to the National Marine Fisheries Service (2013)
- Identify and analyze biological, benthic and oceanographic datasets at appropriate spatial and temporal scales to support New York and North Carolina offshore energy plans
- Research to support National Marine Sanctuary (NMS) rezoning and boundary delineation
- Characterize environmental conditions for HAB species to produce toxins and estimate toxin flux into food chains
- Collect and analyze data to support national baseline assessments of coastal resource health
- Investigate land use and weather modifications on runoff, eutrophication, HABs and pathogens for coastal Southeast, Gulf of Mexico and Chesapeake Bay
- Assess impacts of bulkheads on wave attenuation and marsh vegetation

**Deliverables:**

- Data integration visualization tools
- Baseline ecological assessments in Gulf of Mexico, Chesapeake Bay and selected NMS and NERRs
- Reports on national ecological conditions and stressor impacts in coastal-ocean waters
- Models on marsh response to sea level rise and assessments of impacts of shoreline modification on ecosystem services in Mid-Atlantic region

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(344)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(344)</u>

**National Centers for Coastal and Ocean Science Competitive Research: Competitive Research (Base Funding: \$9,032,000 and 0 FTE; Program Change: +\$1,968,000 and 0 FTE):** NOAA requests an increase \$1,968,000 and 0 FTE for a total of \$11,000,000 and 0 FTE for National Centers for Coastal Ocean Science Competitive Research.

**Proposed Actions:**

With this increase, NOAA will increase its engagement with the extramural science community through additional grants for Harmful Algal Blooms (HABs), Hypoxia and Regional Ecosystem Research.

**Statement of Need and Economic Benefits:**

Coastal communities contain over half of the U.S. population and generate nearly 60 percent of the U.S. economy via tourism, recreation, commercial fisheries and commerce (Crossett et al., 2004). However, land-based discharges of trace metals, pesticides, pharmaceutical agents and pathogens from industrial, urban and agricultural sources negatively impact human health, impair coastal ecosystems, close beaches, and devastate coastal communities that rely on tourism and recreation as sources of income to achieve economic and environmental sustainability. Over 50 percent of the Nation's estuaries experience hypoxia (CENR 2003). Time-critical investments in research and applied science will fill gaps in NOAA's capacity to protect lives, promote healthy economies and improve human health, reduce the high costs associated with contamination clean-up and potential human health impacts, and respond to Administration priorities, the National Ocean Policy and NOAA's legal mandates.

NCCOS's contamination research and assessment programs provide leadership at the national level to assess the long-term patterns and extent of contamination of coastal resources that threaten ecosystem and human health. NCCOS partners with state, local and tribal agencies along the U.S. West Coast; Federal agencies such as the USGS, EPA, and FDA; the Canadian Government (to document highly contaminated areas in the Great Lakes); and the Gulf Watch Contaminants Monitoring Program (administered by the Gulf of Maine Council on the Marine Environment).

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean Resources Conservation and Assessment base narrative.

**Schedule and Milestones:**

The NCCOS competitive research portfolio at this funding level will include approximately 2 to 5 additional projects per year, each with required milestones and schedules over a 3 to 5 year period depending upon the award terms. Each project has interim milestones to ensure that deliverables will be met at their conclusion.

**Deliverables:**

- Development of operational Harmful Algal Bloom forecasting capabilities in at least one coastal region of the United States
- Development and implementation at the state level of two new technologies for detecting HABs
- Development of one ecological forecast to support a management decision to address a major regional hypoxic, or "dead" zone

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of coastal, marine and Great Lakes forecast capabilities developed and used for management (Measure 18b: NCCOS contribution only)							
<b>With Increase</b>	N/A	N/A	5	5	5	5	5
<b>Without Increase</b>	1	3	4	5	4	4	3

**Description:** This measure is a subset of measure 18b. NOAA's discrete forecast models allow resource managers to: 1) make decisions based on predicted environmental and socioeconomic impacts related to a particular issue; 2) use issue-based forecasts to predict the impacts of a single ecosystem stressor (e.g., climate change, extreme natural events, pollution, invasive species, and land and resource use) and 3) evaluate the potential options to manage those stressors to fulfill the ultimate goal for resource managers to use NOAA's forecasts to better manage ecosystem use, condition, and productivity. These forecasts will be based on field and laboratory studies, existing data, and models predicting environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in the Gulf of Mexico and Gulf of Maine are two separate forecast capabilities and similarly, multiple, distinct forecast capabilities could be counted within a single ecosystem (i.e., harmful algal blooms, pink shrimp harvest, and hypoxia –all in the Gulf of Mexico).

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,968
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,968</u>

The following exhibit shows the summary object class detail for Navigation Services program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
 Subactivity: Ocean Resources Conservation and Assessment

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	29
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	84
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	113

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: OCEAN AND COASTAL MANAGEMENT**

The objectives of the Ocean and Coastal Management subactivity are to:

- Maintain and improve the quality of the Nation's coastal lands and waters through a national network of federally approved, coordinated, and supported state management programs.
- Maintain the balance between resource protection and coastal-dependent economic activity, including coastal energy development.
- Provide technical assistance to states in the development, implementation, and improvement of state Coastal Zone Management programs and estuarine research reserves.
- Identify areas of the marine environment of special national significance due to their resource or human-use values.
- Implement the framework for a national network of Federal, state, tribal, and local marine protected areas.
- Support and coordinate scientific research on, and monitoring of, resources in protected areas.
- Coordinate the development of information, tools, strategies, and guidance to enhance and expand the protection of marine and estuarine protected areas.
- Protect and manage a system of nationally significant special marine areas through the National Marine Sanctuary System, a comprehensive conservation program.
- Enhance public education, awareness, and understanding of the marine and estuarine environment.
- Facilitate public/private uses of the resources of special marine areas compatible with resource protection.

To achieve these objectives, NOAA conducts activities in several program areas within the Office of Ocean and Coastal Resource Management (OCRM) and the Office of National Marine Sanctuaries (ONMS). These activities are conducted under the authority of the Coastal Zone Management Act (CZMA), the National Marine Sanctuaries Act (NMSA), Executive Order 13158 on Marine Protected Areas, and Presidential Proclamations 8031 and 8337.

The Ocean and Coastal Management subactivity contains two items: Coastal Management and Ocean Management.

**COASTAL MANAGEMENT (<http://coastalmanagement.noaa.gov>)**

The Nation's coastal and ocean areas represent some of its most ecologically and economically important regions. Coastal counties are also the most densely populated part of the U.S., an area that is on average two to three times more densely populated than the Nation as a whole. Congress recognized this fact in 1972 when it passed the Coastal Zone Management Act (CZMA). The CZMA declares that it is the national policy "to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through development and implementation of management programs...giving full consideration to ecological, cultural, historic and esthetic values as well as the need for compatible economic development." The importance of these areas and the need for this program has been recognized not only by the CZMA, but more recently by the U.S. Commission on Ocean Policy and the National Ocean Policy.

Responding to this challenge, the CZMA created a national framework for coastal protection through the Coastal Zone Management program and National Estuarine Research Reserve System.

The Coastal Management program also carries out responsibilities mandated under the Coastal Zone Act Reauthorization Amendments of 1990 (the Coastal Nonpoint Pollution Control Program); the Department of Commerce, Justice, and State Appropriations Act of 2002 and Omnibus Public Land Management Act of 2009 (the Coastal and Estuarine Land Conservation Program), the Ocean Thermal Energy Conversion Act (provides licensing of proposed ocean thermal energy projects); and the Deep Seabed Hard Mineral Resources Act. In addition, this program supports implementation of several Administration policy directives, including: the National Ocean Policy and regionally-based initiatives (Chesapeake Bay and Louisiana/Mississippi Gulf Restoration Working Group). It also supports mandates under the Coral Reef Conservation Act that are implemented through CZMA partnerships (e.g. local coral reef action strategies implemented through state coastal management programs).

Through this program, NOAA has provided financial assistance, national policy guidance, technical assistance, and other support to: implement 34 coastal management programs in partnership with coastal and Great Lakes states and territories; research, education, training and stewardship at 28 National Estuarine Research Reserves; and through FY 2012, manage a competitive grant program to protect ecologically significant coastal lands, such as wetlands, natural shorelines and other important habitats that benefit coral reefs, migratory fish, and protected species (the Coastal and Estuarine Land Conservation Program); and a national system of marine protected areas to enhance marine resource protection, which is being transferred to the Ocean Management program in FY 2013). The CZMA also requires periodic reviews of approved state coastal and estuarine programs and oversight of Coastal Energy Impact Program loan repayments to the U.S. Treasury, establishes an awards program to recognize achievement in the field, and requires coordination with other agencies on proposed actions affecting the coastal zone.

This program operates through formal partnerships with states and territories, agreements with other Federal agencies, tribes, and also through a broad range of informal partnerships with non-governmental organizations. It has formal partnerships with 34 states and territories to carry out the CZMP, NERRS, CELCP and Coral Reef local action strategies, as well as interagency agreements and other partnerships with other Federal agencies, including EPA, FEMA, DOI (FWS, NPS, USGS, and BOEMRE), USDA, DOD, and the State Department. Representatives of the program participate actively on a number of regional ocean governance initiatives, including the Council of Great Lakes Governors, the Northeast Regional Ocean Council, Gulf of Maine Council, Mid-Atlantic Regional Collaborative (MARCO), West Coast Governors Initiative, and the Gulf of Mexico Alliance. Within the Department of Commerce, this program has: developed a partnership with the Economic Development Administration (EDA) to increase collaborative efforts within states and regions to support development and resilience of coastal economies; collaborated with the Census Bureau to determine status and trends in coastal population and the coastal economy; and developed environmental technologies, 13 of which have been awarded patents. The program also has extensive partnerships with non-governmental organizations, such as those representing state governors, state natural resource managers, city and county administrators, land use planners, floodplain managers, the fishing industry, ocean energy industry, and conservation organizations, among others.

The Coastal Zone Management Act specifies how the CZMP and National Estuarine Research Reserve System (NERRS) funds are to be allocated and the cost-share requirements for these programs. Funding is awarded through cooperative agreements with a lead state agency responsible for managing each approved state coastal program and designated Reserve. The lead state agency is responsible for coordinating with other state or local agencies that are part of the state coastal program or Reserve. Within these amounts, NOAA negotiates the tasks and funding to target efforts at the state or local level that meet national priorities while also achieving the state

program's priorities. Federal funding leverages state and local funding provided in addition to cooperative awards. NOAA has also strengthened the way it allocates funds for system-wide improvements on the basis of merit, and has better aligned programmatic activities to address priority coastal management issues.

**COASTAL ZONE MANAGEMENT GRANTS** - The purpose of the national Coastal Zone Management (CZM) Program is to maintain and improve the Nation's coastal lands and waters through a national network of federally approved, coordinated, and supported state management programs. This program seeks to balance resource protection and coastal-dependent economic activity from a national and regional perspective that individual states cannot accomplish on their own. This program recognizes the significance of coastal resources to our Nation's population and economy and promotes improved management of these important assets, while also supporting development that is sustainable and resilient. Federal funds are provided through cooperative agreements to support core state CZM functions and community projects that address the broad spectrum of coastal management issues ranging from habitat conservation and protection of life and property from coastal hazards, to urban waterfront and port revitalization (Section 306/306A CZMA). One of the core functions is the application of Federal Consistency to help ensure that Federal agency activities do not harm state coastal resources. There are currently 34 (out of 35 eligible) coastal and Great Lakes states, territories and commonwealths with federally approved coastal management programs, protecting more than 99 percent of the Nation's 61,427 miles of ocean and Great Lakes coastline (excluding Alaska). Illinois received final Federal approval of its Coastal Zone Program on January 31, 2012; while Alaska withdrew from the voluntary national CZM Program in July 2011.

The majority of CZM funding is allocated using a formula based on shoreline mileage (60 percent) and coastal population (40 percent) of each state, and adjusted according to requirements for minimum and maximum amounts for each state or territory. Some CZM funding, such as a portion of the Coastal Zone Enhancement grants (Section 309 CZMA), for projects of special merit, are now being competed. Most of the CZM Grant funding is matched on a 1:1 basis (only CZMP enhancement funds do not require match).

In FY 2013, the Coastal Zone Management Program plans to increase effectiveness by better targeting grant funding to address significant national issues. Building on NOAA's Next Generation Strategic Plan and its Coastal Goal, NOAA has worked with the state partners to identify target areas for both Section 309 5-year strategies and for projects of special merit. These include wetlands, hazards (including adaptation to the potential effects of climate change), cumulative and secondary impacts of development, and ocean and Great Lakes resources (including planning for offshore energy uses).

#### **NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM (NERRS)**

<http://www.nerrs.noaa.gov>) - NERRS (Section 315 CZMA) is a national network of estuarine protected areas representing the diverse biological and physical characteristics of estuarine systems of the United States. Reserves are owned and operated by state agencies or universities. Reserves serve as living laboratories and local, regional, and national sources of scientific and technical information, training, and education on estuaries. The reserve system serves as a testing ground for the improvement of coastal resource management through direct resource management and restoration, science, and the translation and dissemination of information to coastal decision makers, teachers, students, and the public. There are currently 28 designated reserves in 22 states and territories covering over 1.3 million acres of estuarine lands and waters. NOAA added a 28th reserve in early FY 2011 with the designation of the Lake Superior Reserve in Wisconsin. In addition, the Governor of Connecticut has also submitted a request for the designation of a new reserve.

The NERRS allocates funding for site-specific programs as well as system-wide programs that achieve the program's objectives to protect estuarine areas, provide educational opportunities, promote and conduct estuarine research and monitoring, and transfer relevant information to coastal managers. The NERRS Strategic Plan (2011-2016) focuses on three priority topics: impacts of climate change; habitat loss and alteration; and water quality degradation.

Federal NERRS funding (70 percent) is matched by the states (30 percent) for reserve operations, research, monitoring, training, education and facilities construction. Federal NERRS funding (50 percent) for land acquisition is also matched by the states (50 percent). Base funds for NERRS support site-based science, education and stewardship programs, reserves operations, as well as system-wide programs including a System-wide Monitoring Program, Coastal Training Program, and K-12 Estuarine Education Program. In FY 2013, NOAA will provide \$4,732,000 for the NERRS Science Collaborative (a competitive collaborative research program involving intended users throughout each research project). In FY 2011, NERRS educated more than 83,275 students about estuaries; trained more than 11,519 coastal decision makers; approved updated management plans for four Reserves, as required by the CZMA; and completed site profiles (a complete characterization) for one Reserve.

**CZM AND STEWARDSHIP/CZMA NATIONAL PROGRAM** - The programs described above are implemented with the resources provided in the budget for the CZMA National Program by the Office of Coastal Resource Management (OCRM). OCRM staff perform numerous critical functions necessary to execute these programs, in addition to negotiating, processing, and providing oversight for more than 100 grants and cooperative funding agreements each year. These functions include:

- Providing management assistance to states in the development, implementation, and improvement of state CZM programs and estuarine research reserve management plans, which are assessed or updated every five years to reflect changing circumstances;
- Analyzing national issues and trends in coastal resource management and measuring the results of the CZMA programs;
- Conducting periodic programmatic evaluations of each state CZM program and NERR;
- Reviewing Federal agency actions for compliance with the Federal consistency provisions of Section 307 of the CZMA and providing mediation services when necessary;
- Conducting training, outreach, and education activities concerning coastal issues;
- Providing technical leadership, coordination, and management of NERRS system-wide education, training, research, monitoring, and technology development programs;
- Providing policy guidance and assistance to states on interpretation of CZMA requirements, as well as those of other Federal statutes and programs, and
- Administering outstanding loans and repayments to U.S. Treasury from the Coastal Energy Impact Program.

**REGIONAL OCEAN PARTNERSHIP GRANTS** – In FY 2011, NOAA established competitively allocated regional ocean partnership grants to advance regional ocean management through support for regional ocean partnerships. The program was developed to help support priority actions identified in the plans of existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Great Lakes Regional Collaboration, and the West Coast Governors' Agreement on Ocean Health), as well as development and implementation of ocean management plans in other regions (e.g. the Mid-Atlantic Regional Council on the Ocean, the South Atlantic Alliance, Hawaii, and other regions) and addressing regional activities in other parts of the country (e.g. the Pacific and Caribbean territories, and Alaska).

**Schedule and Milestones:**

- Complete revision of 18 NERR management plans by FY 2016
- Complete 89 percent of National Estuarine Research Reserve site profiles by FY 2016
- Pilot sentinel site monitoring of sea level change and habitat response at four reserves (FY 2013-2017)
- Work with states/territories toward approval of non-point pollution control programs (FY 2012-2017)
- Conduct national competition annually for Regional Ocean Partnership projects for funding and report on how they support regional priorities (FY 2013-2017)

**Deliverables:**

- Average of 250 sites that provide public access to the coast, added or improved per year through the CZM program
- More than 400 training activities conducted annually for coastal decision makers through the NERRS Coastal Training Program
- Four Federal Consistency trainings and regional workshops held for states, Federal agencies and interest groups to improve understanding and reduce the likelihood of consistency appeals to the Secretary of Commerce

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Annual number of new or improved public access sites through CZMP	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	262	250	250	250	250	250	250
<b>Description:</b> This measure tracks the number of new or improved sites for public access to coastal areas that have resulted from the Coastal Zone Management Program							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percentage of NERR System adequately characterized for management	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	82%	86%	89%	93%	96%	100%	100%
<b>Description:</b> This tracks NOAA's progress in characterizing each National Estuarine Research Reserve's resources and condition to guide effective long-term management. Reserves are characterized through site profiles, which summarize the existing state of knowledge about reserve research and monitoring activities and identify research needs that should be addressed in the future. It is measured as the percent of designated Reserves that have							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Implementation of priority action activities identified in regional action plans (cumulative)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	12	19	23	27	31	35	39

**Description:** Regional ocean partnerships will make progress in achieving the actions within integrated plans that have clearly identified goals and objectives for long term ocean health and sustainability and engage academic, non-governmental organizations and private interests. These efforts will build upon the existing accomplishments of the regional ocean partnerships including the Gulf of Mexico Alliance.

## **OCEAN MANAGEMENT**

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate areas of the marine environment of special conservation, recreational, ecological, historical, research, educational, or aesthetic value as national marine sanctuaries and to provide comprehensive management of these areas with the primary objective of resource protection. The NMSA provides NOAA with direct Federal management authority in designated ocean and coastal areas. The Act requires an extensive public process to identify and develop solutions regarding planning, implementation, and evaluation of marine areas, uses, and protections. With the increasing environmental pressures on our Nation's coastal areas, the importance of maintaining a system of marine protected areas is evident. Sanctuaries contain natural resource assets of extraordinary social and economic value. Investments that contribute to the long term health of these natural resources ensure that they can continue to be sustainably and responsibly utilized. In addition, Executive Order 13158 recognized the importance of coastal and marine protection by directing the Federal government to establish, significantly strengthen and expand the national system of marine protected areas (MPAs), working closely with state, territorial, local and tribal trustees, and other stakeholders.

In FY 2013, NOAA proposes to consolidate the Marine Protected Areas Program (MPA) and the National Marine Sanctuary System (NMSS) into one integrated program... In the Ocean Management Line Item, NOAA will administer the National Marine Sanctuary System and the Marine Protected Areas Program through the Office of National Marine Sanctuaries (ONMS).

## **NATIONAL MARINE SANCTUARY SYSTEM & MARINE PROTECTED AREAS PROGRAM**

The ONMS manages and operates the Nation's system of marine sanctuaries and the Papahānaumokuākea Marine National Monument. The system includes 13 designated national marine sanctuaries, as well as the Papahānaumokuākea Marine National Monument (established by President Bush on June 15, 2006 as the NWHI Marine National Monument and recently designated as a world heritage site), which is one of the largest marine protected areas in the world (stretching 1,200 miles, about the distance from Chicago to Miami). In addition, in 2009 NOAA was directed to consider incorporating the Rose Atoll Marine National Monument into the Fagatele Bay NMS. The 13 designated sanctuaries include: Monitor (NC), Channel Islands (CA), Gray's Reef (GA), Gulf of the Farallones (CA), Fagatele Bay (AS), Cordell Bank (CA), Florida Keys (FL), Flower Garden Banks (TX/LA), Gerry Studds Stellwagen Bank (MA), Monterey Bay (CA), Olympic Coast (WA), Thunder Bay Underwater Preserve (MI) and Hawaiian Islands Humpback Whale (HI). The sanctuaries range in size from one-quarter square mile in Fagatele Bay to over 5,300 square miles in Monterey Bay. Together, these sanctuaries encompass over 18,000 square miles of waters and marine habitats. The monuments and sanctuaries protect special habitats, including deep ocean and near-shore coral reefs, live bottom, whale migration corridors, deep sea canyons, areas of deep water upwelling, submerged banks that rise close to the ocean surface, kelp forests, sea grass beds, and special maritime heritage assets. With the increasing environmental pressures on our Nation's coastal areas, the importance of maintaining a system of marine protected areas is evident. The NMSS is increasing our knowledge and understanding of complex marine ecosystems. By monitoring human

and natural changes in these sentinel sites, NOAA's marine sanctuaries and marine monuments help preserve the Nation's marine environments.

Individual sanctuary and monument offices are responsible for the daily operation of a wide variety of education, research, monitoring and management programs. Through extensive public engagement processes, each site undertakes activities including: development, implementation, and systematic review of comprehensive management plans to protect these unique areas; development and implementation of local research and monitoring programs to better understand the resources and potential impacts on those resources; development and implementation of cultural resource programs to survey and inventory resources to ensure their long-term protection; development and implementation of education and outreach activities to inform the public about the value of marine resources and how human activities impact the marine environment; coordinating through partnerships to ensure enforcement of sanctuary regulations; permitting of otherwise prohibited activities to allow valuable research and education activities; management of volunteer programs that monitor and educate on marine resources; and management of citizen advisory councils to ensure that each sanctuary is responsive to community needs. In addition, each site is engaged in a number of partnership relationships with other Federal agencies, state agencies, local universities, and other local institutions.

ONMS Regional offices work to capitalize on potential opportunities and partnerships and coordinate with other Federal agencies, many of which operate at a regional level. The regions help to more efficiently coordinate various programs and assets among the sites, regions, and headquarters. The regions also provide an improved basis for program integration with NOAA's evolving ecosystem approach to management and NOAA regional teams for national priorities pertaining to climate change, coastal and marine spatial planning, and regional collaboration.

Programmatic oversight, guidance, and support from the headquarters office ensure that the sites function as a coordinated system. Headquarters functions include the development of programmatic initiatives, such as system-wide research, monitoring, cultural resource, education, and outreach programs; policy development; budget development and tracking; legislative and regulatory initiatives; review and revisions of management plans; development and designation of new sites; and overall guidance and program direction. These functions ensure that the NMSS is an integrated system that has greater national impact than the sum of the individual site actions.

In addition, the ONMS will manage the activities of NOAA's MPA Program which, in coordination with the Department of the Interior, fills a long-standing need for objective science, policy, and management tools to advance the effective use of MPAs in meeting diverse conservation and management objectives. The MPA Program is guided by the Framework for the National System of MPAs. Funding for the program supports core staff to provide MPA science, analysis, outreach, training, technical assistance and coordination. The MPA Center's primary goal is to work with MPA programs, managers and stakeholders to develop a comprehensive and integrated national system of MPAs that more effectively conserves and protects significant areas of our natural and cultural marine heritage. Moreover, the Center facilitates coordination among the various Federal, state and tribal MPA programs to improve the effectiveness of existing MPAs and accomplish conservation goals that could not otherwise be achieved. The MPA Center is headquartered in Silver Spring, Maryland, with scientific support in Monterey, California. A diverse MPA Federal Advisory Committee—including representatives of industry, user groups, scientists, and others—provides advice on the establishment and management of the national system.

For more information related to both of these functions, please see the following websites: (<http://sanctuaries.noaa.gov/>) and (<http://mpa.gov/>)

**Schedule and Milestones:**

- Complete development and implementation of revised management plans for five sanctuaries through community-based processes – Olympic Coast (FY 2012), Fagatele Bay (FY 2012), Flower Garden Banks(FY 2012) and HI/Humpback Whale (FY 2013)
- Implement additional sentinel monitoring activities where necessary to assess impacts of threats (e.g. climate change, biodiversity loss, invasive species) to ONMS resources and detect early warnings of change at national, regional, and local scales (FY 2012-2017)
- Conduct baseline assessments for priority coral marine protected areas (MPA) using the MPA Assessment Checklist (FY 2012-2013) then reevaluate these MPAs to determine improvements in management (FY 2014-2016)
- Update the Framework for the National System of Marine Protected Areas of the United States of America
- Implement data management (including access and distribution) protocols, infrastructure, and partnerships for ONMS Sentinel Monitoring Program (FY 2012- 2017)

**Deliverables:**

- Development and/or expansion of partnerships with local communities and businesses to implement sustainable practices for fishing, tourism, recreation, ecosystem protection and alternative energy technologies
- Development and/or expansion of education and public outreach, including those with multi-cultural communities, related to ecosystems, climate change and human use impacts
- Habitat restoration and marine debris removal at all sanctuaries
- Monitoring programs, scientific assessments, technology application, public awareness and mitigation strategies associated with ecosystem changes at all sanctuaries
- Marine acoustics programs to determine the distribution of marine mammals and vessel traffic patterns at Stellwagen Bank and Channel Islands sanctuaries. Develop education initiatives at all sites that protect marine mammals from vessel strikes and conduct disentanglement and rescue operations
- Design and implantation of MPA networks, to enable effective conservation of more acres of coral reefs within U.S. boundaries
- New education, survey and eradication programs to avoid and mitigate introduction of invasive species in multiple sanctuaries
- Community-based management plan for HI/Humpback Whale NMS

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of NMS Sites that maintain or improve water quality, habitat and living marine resources	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	9	10	10	10	10	12	12

**Description:** This measure assesses the status of water quality, habitat, and/or living marine resources based on indicators of biodiversity, key species, extracted species, invasive species, health and human impacts. The NMSP and independent evaluators (universities, research institutions SAC research subcommittees, and environmental consultants) evaluate data to determine whether the condition is improving, remaining stable (maintaining), or deteriorating. These outcome-based measures are derived from the National Marine Sanctuaries Act and provide direct and quantifiable evidence to demonstrate Program effectiveness. For each sanctuary, a "condition report" integrates the best available science and scientific interpretation to quantify the status and trends of WQ, habitat and living resource conditions. During the past five years, ONMS has undergone two additional formal

external reviews (NAPA and DOC OIG) that have documented successful application and progress toward these performance measures.

<b>Performance Measure:</b>	<b>FY</b>						
Number of MPA stewardship projects and technical assistance projects funded	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	4	4	4	4	4	4	4

**Description:** A primary goal of the National Marine Protected Areas Center is to provide technical assistance to federal, state and territorial MPA programs. This measure tracks the number of MPA Partnership Grants (provided through a partnership with the National Fish and Wildlife Foundation) and technical assistance projects directly supported by the MPA Center that enhance the management of coastal and marine resources.

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**PROGRAM CHANGES FOR FY 2013:**

**Coastal Zone Management Grants: Coastal Zone Management Grants (Base Funding: \$65,936,000 and 0 FTE; Program Change: +\$210,000 and 0 FTE):** NOAA requests a increase of \$210,000 and 0 FTE for a total of \$66,146,000 and 0 FTE to support coastal zone management cooperative agreements with coastal states and territories. With this increase, NOAA will enhance the ability of state and territorial coastal zone management (CZM) programs to balance coastal economic growth with conservation of the Nation's coastal resources. Specifically, this request, in combination with base funds, will further support state efforts to protect key coastal habitats, provide greater public access to the coast for recreation, protect coastal life and property, and revitalize waterfront areas through core state CZM functions, such as planning, permitting, enforcement, and the application of Federal Consistency, in accordance with the Coastal Zone Management Act.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean and Coastal Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	210
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>210</u>

**Coastal Zone Management and Stewardship: Coastal Zone Management and Stewardship (Base Funding: \$8,139,000 and 57 FTE; Program Change: -\$1,055,000 and 0 FTE):** NOAA requests a decrease of \$1,055,000 and 0 FTE for a total of \$7,084,000 and 57 FTE for Coastal Zone Management and Stewardship. This reduction is the result of a joint consolidation review of NOAA's coastal activities, and will result in the development of a more streamlined and focused coastal program, that will integrate data to inform management and decision-making, and leverage activities and resources from outside partners, especially at the regional and state level. As additional efficiencies and reductions are identified, they will be redirected to the highest priority activities in the new program.

**Proposed Actions:**

NOAA will propose a consolidation of certain coastal activities. NOAA is reviewing the organization of its coastal programs in order to better coordinate ongoing efforts, to improve focus on current and emerging coastal issues, and to maximize efficiencies. As part of this effort, NOAA is evaluating (and will reallocate where appropriate) Coastal Zone Management (CZM) staff in some or all of the following areas, and others, as appropriate:

- Energy Licensing and Appeals
- Coastal Energy Impact Program
- 6217 - Non point Pollution Control program
- Non-statutory performance management
- National Ocean and Coastal Policy

**Statement of Need and Economic Benefits:**

In conducting this consolidation review, NOAA is assessing coastal programs, with a goal of enhanced program integration, improved collaboration, and value-added to coastal constituents. This will be achieved by better alignment of requirements, partnerships, tools, data, and resources focused on coastal issues and constituencies. Through this improved collaboration across coastal programs, NOAA will increase the effectiveness of its strong array of capabilities and requirements to make coastal communities and habitats more resilient.

**Base Resource Assessment:**

The base resources for this activity are described in Ocean and Coastal Management base narrative.

**Schedule and Milestones:**

N/A

**Deliverables:**

- Coastal Program Consolidation Proposal

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean and Coastal Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(25)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	(5)
25.1 Advisory and assistance services	(875)
25.2 Other services	(55)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(50)
31 Equipment	(45)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,055)</u>

**Regional Ocean Partnership Grants: Regional Ocean Partnership Grants (Base Funding: \$3,489,000 and 1 FTE; Program Change: +\$511,000 and 0 FTE):** NOAA requests an increase of \$511,000 and 0 FTE for a total of \$4,000,000 and 1 FTE to expand a targeted competitive grant program to advance regional ocean management through support for regional ocean partnerships.

**Proposed Actions:**

NOAA proposes to expand its competitive grants program aimed at advancing effective ocean management through regional ocean governance. Through public processes, regional ocean partnerships have identified critical management issues such as: coastal water quality, nutrient loading and clean beaches; wetland and habitat restoration, protection and characterization; environmental education and literacy; coastal community resilience and sustainability (including working waterfronts); sustainable offshore renewable energy; ecosystem based management; coastal scientific information, research, and monitoring; addressing impacts from climate change; and aquatic invasive species.

This program continues to support priority actions identified in the plans of existing regional ocean partnerships (e.g., Gulf of Mexico Alliance, Northeast Regional Ocean Council, Mid-Atlantic Regional Council on the Ocean, the South Atlantic Alliance, and the West Coast Governors' Agreement on Ocean Health), as well as the development and implementation of place-based ocean management plans in other regions (e.g. the Pacific and Caribbean territories, and Alaska). Eligible grant recipients include state, local and tribal governments, institutions of higher learning, and non-profit organizations working with these regional ocean partnerships or member states.

**Statement of Need and Economic Benefits:**

Regional ocean partnerships support the effective management of ocean and coastal resources that contribute about \$230 billion each year to the national economy in market-based outputs, in addition to ecological systems that increase property values and the quality of life in coastal areas (NOEP, 2004. *Ocean-Related GDP with Multipliers, All Ocean Sectors*). A comprehensive regional approach to science-based, place-based planning for multiple uses of ocean and coastal resources yields many tangible benefits. Among them are reduced user conflicts, streamlined permitting, synergies among compatible uses, incentives for developing coastal infrastructure and business relevant to planned offshore uses, and more increased sustainability.

Increasing coastal populations, offshore energy development, aquaculture, and marine transportation add to the need to manage expanding and often competing uses of finite coastal and ocean areas. Climate change is expected to amplify these challenges. Effective management of ocean and coastal resources across jurisdictional boundaries requires improving communications, aligning priorities, and enhancing resource sharing between local, state, and Federal agencies. Such Federal-state partnerships are central to overcoming the fragmented management regimes that currently exist in many areas, and allow managers on all levels to leverage substantial Federal expertise for long term planning and day to day activities.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean and Coastal Management base narrative.

**Schedule and Milestones:**

- Assist ROPs with improving data management and decision support tools to support Regional Ocean Partnership priorities
- Develop performance measurement system to support National Ocean Policy and ROP implementation

**Deliverables:**

- Enter into up to eight cooperative agreement awards to support Regional Ocean Partnership coordination and development
- Enter into up to four cooperative agreement awards to implement Regional Ocean Partnership priorities supportive of the National Ocean Policy

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Implementation of priority actions identified in regional action plans (cumulative)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	24	28	32	36	40
<b>Without Increase</b>	12	19	23	27	31	35	39

**Description:** Regional ocean partnerships will make progress in achieving the actions within integrated plans for long term ocean health and sustainability and engage academic, nongovernmental organizations and private interests. The program will achieve the dual benefits of addressing regional priority actions while also advancing goals of the National Ocean Policy.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean and Coastal Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	511
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	511

**National Estuarine Research Reserve System: National Estuarine Research Reserve System (NERRS) (Base Funding: \$21,712,000 and 0 FTE; Program Change: -\$2,733,000 and 0 FTE):**

NOAA requests a decrease of \$2,733,000 and 0 FTE for a total of \$18,979,000 and 0 FTE to reduce funding for the National Estuarine Research Reserve (NERRS) program.

**Proposed Actions:**

NOAA proposes to eliminate funding in FY 2013 for the NERRS Graduate Research Fellowship Program and reduce funding for other Reserve specific programs. NOAA will continue to provide funds to support the staff, maintenance operations and programs to implement reserve management plans at each of the 28 reserves across the country. However, as a result of this reduction, Reserves may reduce or eliminate projects, activities, and /or staff positions. State matching funds (30 percent of the total) may also be reduced commensurately. Reserves will continue high priority activities with available funding. Each reserve has a management plan (updated every five years) that guides site-based research, monitoring, education, training and resource stewardship, and the schedule for review of these plans will be extended. Within the total for NERRS, the FY 2013 President's Request funds the NERRS Science Collaborative at \$4,732,000.

**Base Resource Assessment:**

The base resources for this activity are described in Ocean and Coastal Management base narrative.

**Schedule and Milestones:**

- Complete revision of 18 NERR management plans by FY 2016
- Complete 89 percent of National Estuarine Research Reserve site profiles by FY 2016
- Pilot sentinel site monitoring of sea level change and habitat response at four reserves (FY 2013-2017)

**Deliverables:**

N/A

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percentage of NERR System adequately characterized for	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	89%	93%	96%	96%	96%
<b>Without Decrease</b>	82%	89%	89%	93%	96%	100%	100%

**Description:** This tracks NOAA's progress in characterizing each National Estuarine Research Reserve's resources and condition to guide effective long-term management. Reserves are characterized through site profiles, which summarize the existing state of knowledge about reserve research and monitoring activities and identify research needs that should be addressed in the future. It is measured as the percent of designated Reserves that have completed a site profile.

<b>Performance Measure:</b>	<b>FY</b>						
Number of graduate research fellows funded by NERRS	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	0	0	0	0	0
<b>Without Decrease</b>	47	32	28	28	28	28	28
<b>Description:</b> The National Estuarine Research Reserve System funds applied research at reserves by providing graduate research fellowships to master's and Ph.D. students.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean and Coastal Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,733)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,733)</u>

**Marine Sanctuary Program Base: Marine Sanctuary System and Marine Protected Areas (Base Funding: \$49,634,000 and 191 FTE; Program Change: -\$3,043,000 and 0 FTE):**

NOAA requests a decrease of \$3,043,000 and 0 FTE for a total of \$46,591,000 and 191 FTE for the Marine Sanctuaries Program. The FY 2013 President's Budget proposes to consolidate the National Marine Protected Areas Center with the Office of National Marine Sanctuaries to create a single more efficient and effective program. At this level, NOAA will fund the highest priorities of the Marine Protected Areas (MPA) Program within the Office of National Marine Sanctuaries.

**Proposed Actions:**

The FY 2013 President's Budget request for the consolidated Office of National Marine Sanctuaries (ONMS) will continue support for the 13 Sanctuaries in the National Marine Sanctuary System, the Papahānaumokuākea Marine National Monument, and National Marine Protected Areas Center as required by Executive Order 13158. The proposed consolidation will allow NOAA to fully leverage ONMS capacities and regional networks for management MPAs and foster more effective information sharing among national and regional ocean management interests. At the requested funding level NOAA will support the highest priorities of all its mandates, maintain its unique capabilities, and continue engaging coastal communities and stakeholders to promote science-based stewardship of designated areas.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean and Coastal Management base narrative.

**Schedule and Milestones:**

- Complete development and implementation of revised management plan for HI/Humpback Whale (FY 2013)
- Implement additional sentinel monitoring activities where necessary to assess impacts of threats (e.g. climate change, biodiversity loss, invasive species) to ONMS resources and detect early warnings of change at national, regional, and local scales (FY 2013-2017)
- Conduct baseline assessments for priority coral marine protected areas (MPA) using the MPA Assessment Checklist (2013) then reevaluate these MPAs to determine improvements in management (FY 2014-2016)
- Implement data management (including access and distribution) protocols, infrastructure, and partnerships for ONMS Sentinel Monitoring Program (FY 2013- 2017)
- Update the Framework for a national system of Federal, state, tribal, and local marine protected areas
- Complete additions to the MPA Inventory on the natural and cultural resources protected by U.S. MPAs to support improved MPA management
- Expand the coverage of the U.S. EEZ for which the full range of current and emerging ocean uses are mapped and understood
- Continue to build and strengthen the National System of MPAs by providing technical assistance and tools to member programs (FY 2013-2017)

**Deliverables:**

- Development and/or expansion of partnerships with local communities and businesses to implement sustainable practices for fishing, tourism, recreation, ecosystem protection and alternative energy technologies
- Development and/or expansion of education and public outreach, including those with multi-cultural communities, related to ecosystems, climate change and human use impacts
- Habitat restoration and marine debris removal at all sanctuaries

- Monitoring programs, scientific assessments, technology application, public awareness and mitigation strategies associated with ecosystem changes at all sanctuaries
- Marine acoustics programs to determine the distribution of marine mammals and vessel traffic patterns at Stellwagen Bank and Channel Islands sanctuaries. Develop education initiatives at all sites that protect marine mammals from vessel strikes and conduct disentanglement and rescue operations
- Design and implementation of MPA networks, to enable effective conservation of more acres of coral reefs within U.S. boundaries
- New education, survey and eradication programs to avoid and mitigate introduction of invasive species in multiple sanctuaries
- Community-based management plan for HI/Humpback Whale NMS

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: Ocean and Coastal Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(3,043)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(3,043)

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**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION AND CONSTRUCTION**  
**SUBACTIVITY: PROCUREMENT, ACQUISITION AND CONSTRUCTION**

The NOS Procurement, Acquisition, & Construction account includes three line items.

**Coastal and Estuarine Land Conservation Program**

**(<http://coastalmanagement.noaa.gov/land/welcome.html>)**

The Coastal and Estuarine Land Conservation Program (CELCP) provided grants to state and local governments to protect important coastal and estuarine areas that have significant conservation, recreation, ecological, historical or aesthetic values, or are threatened by conversion from their natural or recreational state. The Federal grants required matching funds, which leverage additional state, local or private contributions. NOAA developed and issued guidelines delineating criteria for grant awards and a process for conducting a national competitive grants program under the CELCP. Through this program, NOAA supported efforts to protect important stream corridors and habitats, reduce the flow of polluted runoff into coastal waters, lessen the impacts of coastal flooding from severe storm events, and provide opportunities for coastal recreation and nature-based tourism. This program is authorized by the Coastal and Estuarine Land Conservation Act of 2009, which requires that 15 percent of any appropriation be allocated to projects that benefit a National Estuarine Research Reserve (NERR). These funds supplemented those in the NERRS construction/acquisition line by supporting land acquisition in the watershed of the reserve. As of the end of FY 2011, the program had protected almost 100,000 acres of coastal land.

The Outyear Funding Estimates are provided with the program change requested for this activity.

**National Estuarine Research Reserve System Construction/Acquisition**

**(<http://www.nerrs.noaa.gov/>)**

The National Estuarine Research Reserve System (NERRS) is a Federal-state partnership established under the CZMA designed to protect and understand valuable estuarine resources through research and education. For PAC, NERRS funding has been matched 70:30 (Federal: State) for facilities construction and 1:1 for land acquisition. Reserves are publicly owned lands and onsite facilities that provide opportunities for researchers as well as the public to better understand these estuarine areas. Supplementing or updating facilities at the 28 reserves has been carried on in conjunction with the development of system-wide construction plans. All construction activities have been carried out based on current needs for implementing core NERRS programs and external opportunities for partnerships. When funding and land buying opportunities were available, reserves acquired additional nearby critical habitat within, or adjacent to, a reserve boundary as identified in reserve management plans to increase protection and provide places for conducting long-term science, education, and demonstration programs. The facilities and land of the reserves are owned and managed by the states in this Federal-state partnership. NERRS construction and land acquisition projects have been selected on a competitive basis.

The Outyear Funding Estimates are provided with the program change requested for this activity.

**National Marine Sanctuary Program Construction/Acquisition (<http://sanctuaries.noaa.gov/>)**

NOAA administers the National Marine Sanctuary System under authority of the National Marine Sanctuaries Act. The Office of National Marine Sanctuaries manages and operates the Nation's system of 13 Marine Sanctuaries and the Papahānaumokuākea Marine National Monument. In FY 2012, the program is implementing a comprehensive facilities plan that prioritizes needs and opportunities at individual sites for constructing exhibits, collaborative education and visibility projects, and operational needs. In order to establish better understanding and appreciation for sanctuary and other ocean and coastal resources by the public, the program is constructing a network of exhibits, signage, and kiosks. Whenever possible, sanctuaries utilize existing aquaria, museums and other appropriate facilities to develop cooperative centers where the public and environmental decision makers can gain direct, objective and focused information on conservation issues. These facilities serve as important windows into the resources of the Sanctuaries and act as a storefront for public interaction with NOAA programs. The goal of these exhibits is to share with the public these ocean treasures. In addition to these efforts, currently available appropriations of PAC funding support operational facility requirements for NOAA-owned facilities, including safety improvements, ADA (Americans with Disabilities Act) upgrades, and replacement and repair.

The Outyear Funding Estimates are provided with the program change requested for this activity.

**Schedule and Milestones:**

N/A

**Deliverables:**

N/A

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Annual number acres acquired or designated for long-term conservation (CELCP)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1,350	600	0	0	0	0	0

**Description:** Measure 18d tracks NOAA's success through the National Estuarine Research Reserve System (NERRS), Coastal Zone Management (CZM) Program and Coastal and Estuarine Land Conservation Program (CELCP) programs in protecting habitats identified in the Coastal Zone Management Act as priorities. The measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats and opportunities for recreational access to the coast through the CZM Program and, CELCP, or the number of acres designated for long-term protection by NOAA and state partners through the NERRS. The Annual Performance Plan targets for this measure represent the number of acres acquired or designated for long-term conservation in a given year for each of these programs. In the President's Budget, however, the targets represent the number of acres that are estimated to be acquired or designated with the expected funding appropriated for that year, although the actual acquisition or designation may occur in a later year. Values above are a subset of measure 18d corresponding to funds provided for the CELP program. FY 2013-2017 Targets reflect proposed termination in FY 2013.

**PROGRAM CHANGES FOR FY 2013:**

**Coastal and Estuarine Land Conservation Program: CELCP (Base Funding: \$3,000,000 and 1 FTE; Program Change: -\$3,000,000 and -1 FTE):** NOAA requests a decrease of \$3,000,000 and 1 FTE for a total of \$0 and 0 FTE to terminate funding for the Coastal and Estuarine Land Conservation Program (CELCP).

**Proposed Actions:**

NOAA proposes to terminate funding for the Coastal and Estuarine Land Conservation Program (CELCP) as the base level of funding severely limits the size and number of conservation projects that could be approved and there are other, much larger Federal programs that foster land protection through acquisition and conservation easements.

**Base Resource Assessment:**

The base resources for this activity are described in the Procurement, Acquisition, and Construction base narrative.

**Schedule and Milestones:**

N/A

**Deliverables:**

N/A

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Annual number acres acquired or designated for long-term conservation (measure 18d-CELCP contribution only)	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	0	0	0	0	0
<b>Without Decrease</b>	1,350	600	600	600	600	600	600

**Description:** This measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats and opportunities for recreational access to the coast through the Coastal and Estuarine Land Conservation Program (CELCP). CELCP is one contributor to the NOAA "acres acquired or designated" GRPA Measure 18d. The targets in the budget submission reflect the estimated number of acres that could be acquired with the level of investment available each year. The actual number can vary depending on cost and acreage for each project selected for funding through the competitive process.

**Outyear Funding Estimates (\$ in thousands):**

<b>Coastal and Estuarine Land Conservation Program</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>		(3,000)	(3,000)	(3,000)	(3,000)	(3,000)		
<b>Total Request</b>	264,424	0	0	0	0	0	N/A	N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: National Ocean Service  
 Subactivity: NOS Acquisition

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Coastal Management Specialist	Silver Spring, MD	ZP-IV	-1	89,033	(89,033)
					0
					0
<b>Total</b>			<u>-1</u>		<u>(89,033)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-1		(89,033)
2013 Pay Adjustment (0.5%)					0
TOTAL					(89,033)
<b>Personnel Data</b>			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			-1		
Other than full-time permanent			0		
Total			<u>-1</u>		
Authorized Positions:					
Full-time permanent			-1		
Other than full-time permanent			0		
Total			<u>-1</u>		

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service

Subactivity: NOS Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$89)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(89)
12 Civilian personnel benefits	(26)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,885)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(3,000)

**National Estuarine Research Reserve System Construction: National Estuarine Research Reserve System Construction (Base Funding: \$1, 000,000 and 0 FTE; Program Change: -\$1, 000,000 and 0 FTE):** NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$0 and 0 FTE to terminate funding for National Estuarine Research Reserve (NERRS) construction activities.

**Proposed Actions:**

NOAA proposes to terminate grant funding for National Estuarine Research Reserve System construction activities. Current projects will be completed with grant funding already awarded. Maintenance of existing infrastructure and development of new public exhibits may be funded through the program’s operational budget.

**Base Resource Assessment:**

The base resources for this activity are described in the Procurement, Acquisition, and Construction base narrative.

**Schedule and Milestones:**

N/A

**Deliverables:**

N/A

**Outyear Funding Estimates (\$ in thousands):**

<b>National Estuarine Research Reserve System – Land Acquisition and Construction</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>		(1,000)	(1,000)	(1,000)	(1,000)	(1,000)		
<b>Total Request</b>	96,418	0	0	0	0	0	N/A	N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service  
Subactivity: NOS Construction

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(1,000)</u>

**Marine Sanctuaries Construction: Marine Sanctuaries Construction (Base Funding: \$4,000,000 and 0 FTE; Program Change: -\$4,000,000 and 0 FTE):** NOAA requests a decrease of \$4,000,000 and 0 FTE for a total of \$0 and 0 FTE to terminate funding for National Marine Sanctuary System construction activities.

**Proposed Actions:**

NOAA proposes to terminate base funding for Marine Sanctuaries Construction activities. Funding for emerging critical construction activities will be included as specific project requests in future budget submissions. Marine Sanctuaries Construction funding was used to construct and renovate facilities including visitor centers and to design and install exhibits. In FY 2012, NOAA will finalize work on projects currently in progress. Maintenance of existing infrastructure and development of new public exhibits may be funded through the program's operational budget.

**Base Resource Assessment:**

The base resources for this activity are described in the Procurement, Acquisition and Construction base narrative.

**Schedule and Milestones:**

N/A

**Deliverables:**

N/A

**Outyear Funding Estimates (\$ in thousands):**

National Marine Sanctuary's Construction and Acquisition	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		(4,000)	(4,000)	(4,000)	(4,000)	(4,000)		
Total Request	106,340	0	0	0	0	0	N/A	N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Ocean Service

Subactivity: NOS Construction

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(4,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(4,000)</u>

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## **APPROPRIATION ACCOUNT: DAMAGE ASSESSMENT AND RESTORATION REVOLVING FUND**

A National Oceanic and Atmospheric Administration (NOAA) Damage Assessment and Restoration Revolving Fund was established, under Section 1012(a) of the Oil Pollution Act of 1990, for deposit of sums provided by any party or governmental entity for response to discharges of oil or releases of hazardous substances, for assessment of damages to NOAA trust resources resulting from those discharges and releases, and for the restoration of the injured natural resources. Through the Revolving Fund, NOAA:

- Retains funds that are recovered through settlement or awarded by a court for restoration of injured natural resources, and retains reasonable costs of conducting spill response and damage assessments that are recovered by NOAA through negotiated settlement, court award, or other reimbursement.
- Ensures funds deposited shall remain available to the trustee, without further appropriation, until expended to pay costs associated with response, damage assessment, and restoration of natural resources.

The NOAA Damage Assessment and Restoration Revolving Fund facilitates and sustains: (1) natural resource damage assessment while the Departments of Commerce and Justice seek full reimbursement from potentially responsible parties; and (2) restoration, replacement, or acquisition of the equivalent of injured or lost natural resources, including resources of National Marine Sanctuaries and National Estuarine Research Reserves, tidal wetlands and other habitats, for which NOAA is trustee. These program functions are conducted jointly within NOAA by the Office of General Counsel, the National Ocean Service, and the National Marine Fisheries Service.

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**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Damage Assessment and Restoration Revolving Fund  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	16	16	6,000	72,899
less: Obligations from prior year balances	0	0	0	(51,299)
less: Unobligated balance transferred, DOI	0	0	0	(3,000)
plus: 2013 Adjustments to Base	0	0	0	0
<b>FY 2013 Base</b>	<b>16</b>	<b>16</b>	<b>6,000</b>	<b>18,600</b>
plus: 2013 Program Changes	0	0	0	0
<b>FY 2013 Estimate</b>	<b>16</b>	<b>16</b>	<b>6,000</b>	<b>18,600</b>

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Damage Assessment and Restoration Revolving	Pos/BA	28	7,071	16	6,000	16	6,000	16	6,000	0	0
	FTE/OBL	28	78,358	16	72,899	16	18,600	16	18,600	0	0
<b>Total: Damage Assessment and Restoration Revolving Fund</b>	Pos/BA	28	7,071	16	6,000	16	6,000	16	6,000	0	0
	FTE/OBL	28	78,358	16	72,899	16	18,600	16	18,600	0	0

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Damage Assessment and Restoration Revolving Fund  
**SUMMARY OF RESOURCE REQUIREMENTS**  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	28	78,358	16	72,899	16	18,600	16	18,600	0	0
<b>Total Obligations</b>	<b>28</b>	<b>78,358</b>	<b>16</b>	<b>72,899</b>	<b>16</b>	<b>18,600</b>	<b>16</b>	<b>18,600</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
Federal funds	0	102	0	0	0	0	0	0	0	0
New offsetting collections	0	(73,885)	0	(7,600)	0	(7,600)	0	(7,600)	0	0
Recoveries	0	(1,433)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(30,426)	0	(51,299)	0	0	0	0	0	0
Unobligated balance, transferred (From DOI)	0	(16,944)	0	(8,000)	0	(5,000)	0	(5,000)	0	0
Unobligated balance, EOY	0	51,299	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>28</b>	<b>7,071</b>	<b>16</b>	<b>6,000</b>	<b>16</b>	<b>6,000</b>	<b>16</b>	<b>6,000</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
Transfer to/from Dept of Interior	0	(7,071)	0	(6,000)	0	(6,000)	0	(6,000)	0	0
<b>Net Appropriation</b>	<b>28</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Department of Commerce**  
National Oceanic and Atmospheric Administration  
Damage Assessment and Restoration Revolving Fund  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
(Dollar amounts in thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base Program	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	2,978	1,373	1,373	1,373	0
11.3 Other than full-time permanent	0	8	8	8	0
11.5 Other personnel compensation	0	29	29	29	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	2,978	1,410	1,410	1,410	0
12.1 Civilian personnel benefits	484	552	552	552	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	131	210	210	210	0
22 Transportation of things	(3)	4	4	4	0
23.1 Rental payments to GSA	9	130	130	130	0
23.2 Rental payments to others	10	6	6	6	0
24 Printing and reproduction	62	4	4	4	0
25.1 Advisory and assistance services	71,488	844	844	844	0
25.2 Other services	208	67,602	13,303	13,303	0
25.3 Other purchases of goods and services from Govt accounts	731	182	182	182	0
26 Supplies and materials	542	146	146	146	0
31 Equipment	60	144	144	144	0
41 Grants, subsidies and contributions	1,658	1,652	1,652	1,652	0
42 Insurance claims and indemnities	0	1	1	1	0
43 Interest and dividends	0	12	12	12	0
99 <b>Total Obligations</b>	78,358	72,899	18,600	18,600	0

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Damage Assessment and Restoration Revolving Fund  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
 (Dollar amounts in thousands)

	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base Program	FY 2013 Estimate	Increase/ (Decrease)
Less collections	(73,783)	(7,600)	(7,600)	(7,600)	0
Less recoveries	(1,433)	0	0	0	0
Less unobligated balance, SOY	(30,426)	(51,299)	0	0	0
Plus unobligated balance, EOY	51,299	0	0	0	0
Plus unobligated balance transferred	(16,944)	(8,000)	(5,000)	(5,000)	0
<b>Total Budget Authority</b>	<b>7,071</b>	<b>6,000</b>	<b>6,000</b>	<b>6,000</b>	<b>0</b>
Transfers:					
Transfer from Other Accounts	0	0	0	0	
Transfer from DOI	(7,071)	(6,000)	(6,000)	(6,000)	0
Discretionary Budget Authority	0	0	0	0	0
<b>Personnel Data</b>					
Full-Time equivalent Employment:					
Full-time permanent	28	16	16	16	0
Other than full-time permanent	0	0	0	0	0
Total	28	16	16	16	0
Authorized Positions:					
Full-time permanent	28	16	16	16	0
Other than full-time permanent	0	0	0	0	0
Total	28	16	16	16	0

**APPROPRIATION ACCOUNT: SANCTUARIES ENFORCEMENT ASSET FORFEITURE FUND**

The Sanctuaries Enforcement Asset Forfeiture Fund receives proceeds from civil penalties and forfeiture claims against responsible parties, as determined through court settlements or agreements, for violations of NOAA sanctuary regulations. Penalties received are held in sanctuary site-specific accounts from year to year (technically reimbursables), as the funds are spent on resource protection within the sanctuary site where the penalty or forfeiture occurred. Funds are expended for resource protection purposes which may include all aspects of law enforcement (from equipment to labor), community oriented policing programs, and other resource protection and management measures such as the installation of mooring buoys or restoration of injured resources.

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**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Sanctuaries Enforcement Asset Forfeiture Fund  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	1,000	1,000
less: Obligations from prior year balances	0	0	0	0
plus: 2013 Adjustments to Base	0	0	0	0
FY 2013 Base	0	0	1,000	1,000
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity	FY 2011 Actuals		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease		
	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	
Sanctuaries Asset Forfeiture Fund											
	Pos/BA	0	0	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	0	0	1,000	0	1,000	0	1,000	0	0
	Pos/BA	0	0	0	1,000	0	1,000	0	1,000	0	0
Total: Sanctuaries Asset Forfeiture Fund	FTE/OBL	0	0	0	1,000	0	1,000	0	1,000	0	0

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Sanctuaries Enforcement Asset Forfeiture Fund  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	0	0	1,000	0	1,000	0	1,000	0	0
<b>Total Obligations</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
New offsetting collections	0	0	0	0	0	0	0	0	0	0
Recoveries	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
Transfer from Other Accounts	0	0	0	0	0	0	0	0	0	0
<b>Net Appropriation</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Sanctuaries Enforcement Asset Forfeiture Fund  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
 (Dollar amounts in thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base Program	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.1 Advisory and assistance services	0	0	0	0	0
25.2 Other services	0	1,000	1,000	1,000	0
25.3 Other purchases of goods and services from Govt accounts	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0
99 <b>Total Obligations</b>	0	1,000	1,000	1,000	0

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Sanctuaries Enforcement Asset Forfeiture Fund  
**SUMMARY OF REQUIREMENTS BY OBJECT CLAS**  
 (Dollar amounts in thousands)

	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base Program	FY 2013 Estimate	Increase/ (Decrease)
Less collections	0	0	0	0	0
Less recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Plus unobligated balance transferred	0	0	0	0	0
<b>Total Budget Authority</b>	<b>0</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>0</b>

## **BUDGET ACTIVITY: NATIONAL MARINE FISHERIES SERVICE**

For FY 2013, NOAA requests a net decrease of \$27,704,000 and 36 FTE below the FY 2013 base level for a total of \$880,286,000 and 2,836 FTE for the National Marine Fisheries Service after a technical transfer of \$5,116,000 and 4 FTE from the National Ocean Service. This includes \$10,678,000 and 3 FTEs in inflationary adjustments.

### **BASE JUSTIFICATION FOR FY 2013:**

The National Marine Fisheries Service (NMFS) is responsible for the management and conservation of living marine resources within the U.S. Exclusive Economic Zone (EEZ)—the area extending from three to 200 nautical miles offshore. NMFS provides critical support, and scientific and policy leadership in the international arena, and plays a key role in the management of living marine resources in coastal areas under state jurisdiction. NMFS implements science-based conservation and management actions aimed at sustaining long-term use and promoting the health of coastal and marine ecosystems. These actions result in maximized benefits to the Nation from the use of living marine resources. Programmatic authority for fisheries management, species protection, and habitat conservation activities is derived primarily from the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA). Other acts provide additional authority for enforcement, seafood safety, habitat restoration, and cooperative efforts with states, tribes, interstate fishery commissions, and other countries. All of these activities rely on a strong scientific and research competency to support the challenging public policy decision process associated with NMFS's stewardship responsibility.

The National Marine Fisheries Service budget is organized into five subactivities under the Operations, Research and Facilities appropriation:

- Protected Species Research and Management (\$176,648,000 and 812 FTE) includes Protected Species Research and Management Programs Base, Species Recovery Grants, Marine Mammals, Marine Turtles, Other Protected Species (Marine Fish, Plants, and Invertebrates), Atlantic Salmon, and Pacific Salmon.
- Fisheries Research and Management (\$431,374,000 and 1,387 FTE) includes Fisheries Research and Management Programs, National Catch Share Program, Expand Annual Stock Assessments - Improve Data Collection, Economics & Social Sciences Research, Salmon Management Activities, Regional Councils and Fisheries Commissions, Fisheries Statistics, Fish Information Networks, Survey and Monitoring Projects, Fisheries Oceanography, American Fisheries Act, National Standard 8, Reducing Bycatch, and Product Quality and Safety.
- Enforcement and Observers/Training (\$106,790,000 and 385 FTE).
- Habitat Conservation and Restoration (\$47,261,000 and 153 FTE) includes Habitat Management & Restoration.
- Other Activities Supporting Fisheries (\$58,439,000 and 134 FTE) includes Antarctic Research, Aquaculture, Climate Regimes & Ecosystem Productivity, Computer Hardware and Software, Cooperative Research, Information Analyses & Dissemination, Marine Resources Monitoring, Assessment & Prediction Program (MarMap), National Environmental Policy Act (NEPA), NMFS Facilities Maintenance, and Regional Studies.

The National Marine Fisheries Service budget includes the following other accounts:

- Fishermen's Contingency Fund
- Pacific Coastal Salmon Recovery Fund

- Promote and Develop American Fishery Products & Research Pertaining to American Fisheries, which includes Saltonstall-Kennedy (S-K) Funds
- Environmental Improvement and Restoration Fund
- Limited Access System Administration Fund
- Foreign Fishing Observer Fund
- Marine Mammal Unusual Mortality Event Fund
- Federal Ship Financing Fund
- Fisheries Finance Program Account
- Western Pacific Sustainable Fisheries Fund
- Fisheries Enforcement Asset Forfeiture Fund

In partnership with other Federal agencies and with state and local governments, NMFS is responsible for managing living marine resources along the Nation's coastal zone and throughout the EEZ. This is done through restoring degraded habitats; protecting and ensuring sustainable use of ocean, coastal, and Great Lakes living resources; and enabling domestic marine aquaculture production. NMFS is responsible for protecting, restoring, and managing species listed under the ESA and MMPA, as well as their habitats, and for managing and rebuilding fish stocks to population levels that will support economically viable and sustainable harvest opportunities. NMFS also provides advice, technical tools, scientific information, and training to coastal residents, communities, and other decision makers and users of ocean, coastal, and Great Lakes areas.

Ecosystem-based management is an important component of NMFS's conservation and management practices. By understanding the complex ecological and socioeconomic environments in which living marine resources exist, managers may be able to better anticipate and predict the effects of management actions on a given coastal or marine ecosystem. NMFS uses the following strategies for implementing ecosystem-based management:

- Engage and collaborate with partners to achieve regional objectives by delineating regional ecosystems, working with regional ecosystem councils, and implementing cooperative strategies to improve regional ecosystem health.
- Where appropriate, seek to transform the way fisheries are managed, moving from more traditional management tools to market-based approaches to fisheries management - variously called catch shares, limited access privilege programs, or sector management. These types of approaches create incentives for fishermen to engage in sustainable and economically efficient fishing practices that conserve and protect the fishery, thereby maximizing the current and future value of the resource.
- Improve management of living marine resources by advancing the understanding of ecosystems through better simulation and predictive models.
- Develop coordinated regional and national outreach and education efforts to improve public understanding and involvement in stewardship of coastal and marine ecosystems.
- Engage in technological and scientific exchange with domestic and international partners to protect, restore, and manage living marine resources within and beyond the Nation's borders.

Work is conducted by NMFS field elements, with oversight, review, and direction provided from NMFS headquarters in Silver Spring, Maryland. The field structure consists of six Regional Offices, each with a Science Center that conducts research and directs the work carried out by the other laboratories and satellite/special purpose facilities in that region.

Major NMFS facilities are located at the following sites:

Northeast: Regional Office - Gloucester, MA  
 Science Center - Woods Hole, MA  
 Major Laboratories - Milford, CT; Narragansett, RI  
 Satellite/Special Purpose Facilities - Smithsonian (National Systematics Lab), Washington, DC

Southeast: Regional Office - St. Petersburg, FL  
 Science Center - Miami, FL  
 Major Laboratories - Beaufort, NC; Galveston, TX; Panama City, FL; Pascagoula, MS  
 Satellite/Special Purpose Facilities - Stennis Space Center Bay, St. Louis, MS

Southwest: Regional Office - Long Beach, CA  
 Science Center - La Jolla, CA  
 Major Laboratories - Santa Cruz, CA

Northwest: Regional Office - Seattle, WA at Sand Point  
 Science Center - Seattle, WA at Montlake  
 Satellite/Special Purpose Facilities - Manchester, WA; Mukilteo, WA; Pasco, WA; Newport, OR; Hammond, OR

Alaska: Regional Office - Juneau, AK  
 Science Center - Seattle, WA at Sand Point  
 Major Laboratories – Ted Stevens Marine Research Institute, AK; Auke Bay, AK; Kodiak, AK  
 Satellite/Special Purpose Facilities - Little Port Walter, AK

Pacific Islands: Regional Office – Honolulu, HI  
 Science Center – Honolulu, HI

In the FY 2013 Request, NOAA proposes to close the Sandy Hook, NJ and the Pacific Grove, CA laboratories, consolidating into the remaining facilities.

**Research and Development Investments:**

The NOAA FY 2013 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NMFS requests \$59,673,000 for investments in R&D and infrastructure to support R&D in the FY 2013 Budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year

Research and Development Plan for NOAA (FY2013- 2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments to Base:**

NOAA requests an increase of 3 FTE and \$10,678,000 to fund adjustments to current programs for NMFS. The increase will fund the estimated FY 2013 federal pay raise of 0.5 percent. The increase will also provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Services Administration (GSA).

NOAA also requests the following transfers for a net change to NOAA of \$5,116,000.

From Office	Line	To Office	Line	Amount
NOS	Marine Debris Program	NMFS	Habitat Management and Restoration	\$4,618,000/ 3 FTE
NOS	Estuary Restoration Program	NMFS	Habitat Management and Restoration	\$498,000/ 1 FTE
NMFS	Fisheries Habitat Restoration	NMFS	Habitat Management and Restoration	\$20, 765,000/ 54 FTE

NOAA requests a technical adjustment to transfer the Marine Debris Program from NOS to NMFS. The consolidation of the Marine Debris Program to NMFS's Habitat Management and Restoration will allow NMFS to manage the activities in these programs in one line office and budget line.

NOAA requests a technical adjustment to transfer the Estuary Restoration Program from NOS to NMFS. The consolidation of the Estuary Restoration Program with NMFS's Habitat Management and Restoration will allow NMFS to manage the activities in these programs in one line office and budget line.

NOAA requests technical adjustments to: 1) change the name of the Sustainable Habitat Management line to Habitat Management and Restoration, and 2) to move \$20,765,000 and 54 FTEs from Fisheries Habitat Restoration to the renamed line: Habitat Management and Restoration. This renaming and transfer will allow NMFS to manage sustainable habitat management activities and fisheries habitat restoration activities, including Community Based Restoration and Chesapeake Bay Oyster Restoration, in one budget line – Habitat Management and Restoration.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on NMFS' administrative savings planned for FY 2012 (\$16.3 million), an additional \$0.23 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$16.5 million.

**Headquarters Administrative Costs:**

In FY 2013 NMFS Line Office headquarters will use \$21,378,000 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NMFS will use headquarters administrative funds to support the following:

<b>Headquarters Program Support Type</b>	<b>Description</b>	<b>FY 2013 Amount</b>	<b>FY 2013 FTE associated with NMFS</b>
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$7,683,000	36.3
Budget & Finance	Includes Budget, Finance and Accounting	\$4,738,000	20.5
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$2,564,000	5.0
Human Resources	All HR services, including EEO	\$2,492,000	13.8
Acquisitions and Grants		\$447,000	2.5
Information Technology	Includes IT-related expenses and other CIO related activities	\$3,454,000	20.9
<b>Total</b>		<b>\$ 21,378,000</b>	<b>99.0</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

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## **APPROPRIATION: OPERATIONS, RESEARCH AND FACILITIES**

### **SUBACTIVITY: PROTECTED SPECIES RESEARCH AND MANAGEMENT**

The mission of the Protected Species Research and Management program is to protect and improve the health of protected species, the ecosystems that sustain them, and the communities that value and depend on them. The program fosters partnerships and employs scientific excellence and rigorous conservation actions to reverse the trend of human-caused declines that threaten the marine and coastal ecosystems we all share. Further, healthy habitats and sustainable populations of protected species are necessary for the continuity and promotion of the Nation's fishery operations. Protected species include those listed under the Endangered Species Act (ESA) and most of the marine mammals covered by the Marine Mammal Protection Act (MMPA).

NMFS shares responsibility for implementing the ESA and MMPA with the U.S. Fish and Wildlife Service (USFWS). In general, USFWS is responsible for the conservation of terrestrial and freshwater aquatic organisms, some marine mammals, and marine turtles on their nesting beaches. NMFS is responsible for the conservation of most marine mammals, most marine and anadromous fish, marine turtles at sea, marine invertebrates (including corals), and marine plants.

NMFS develops recovery and conservation plans to identify and evaluate threats to species and how they can be reduced and/or eliminated. NMFS implements conservation programs for protected resources in cooperation with Federal partners, states, territories, tribal communities, and economic interests (e.g., energy and fisheries) by leveraging resources and engaging local knowledge and expertise. Conservation actions may also include promulgating regulations to ensure that lawful activities are compatible with species recovery. For example, NMFS promulgated regulations to reduce ship speed in coastal waters to reduce vessel collisions with endangered whales. To ensure its decisions are based on the best available science, NMFS conducts investigations within an ecosystem-based framework using ship, aerial, and acoustic surveys, as well as ecological modeling tools. Data gathered from these investigations provide information on the status of protected species and the effects on these species from fisheries, energy exploration and development, climate change and natural disasters, and methods to eliminate, minimize, or mitigate their adverse effects.

Protected Species Programs are administered through the following budget line items:

#### **Protected Species Research and Management Programs Base**

Under the legislative authority of the ESA and MMPA, as well as other environmental legislation, international treaties, and agreements, this budget line supports activities that conserve and recover species threatened or endangered with extinction, as well as most marine mammals. This effort is critical to ensuring biological sustainability of all marine and anadromous species and the ecosystems on which they depend, as well as sustainable economic development in a manner compatible with species conservation and recovery. These funds are also used to coordinate with other NOAA programs to deliver science for the assessment of threats and risk of proposed actions. The science is used for determining appropriate conservation measures to reduce or eliminate threats to protected species while authorizing appropriate economic and national defense readiness activities that may affect these species. Some examples of the scientific research conducted includes identifying and quantifying the effects of anthropogenic and natural factors on protected species populations and the variability of these effects over time and space. It also includes identifying and evaluating various science-based management tools such as fishing gear modifications and passive acoustic monitoring devices that can be

used to monitor populations as well as recover and conserve protected species. Major components of this budget line include:

Interagency Consultation (ESA Section 7): ESA Section 7 requires Federal agencies to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of threatened or endangered species, or result in the destruction or adverse modification of critical habitat that has been designated for these species. This consultation with Federal action agencies is critical for decision-making regarding authorizations for lawful activities such as building roads and bridges, commercial fishing, or defense readiness training to be implemented in a manner that is compatible with species conservation and recovery.

Listing: Any U.S. citizen or organization may petition NMFS to list a species as threatened or endangered, reclassify an already listed species, or revise designated critical habitat under the ESA. Once a petition is received, the ESA outlines specific deadlines that must be followed. Within 90 days of receiving a petition to list, reclassify a species, or revise critical habitat, NMFS must announce in the *Federal Register* its initial determination regarding whether the petitioned action may be warranted. If NMFS determines the petitioned action may be warranted it must begin a status review of the species. Status reviews rely upon the best available scientific and commercial data to determine whether a species should be listed or reclassified. Within 12 months of receiving the petition date NMFS must determine if the listing or reclassification is warranted. If warranted, NMFS must then publish a proposed rule to list a species. NMFS then considers public comments and any new information that might become available and must publish a final determination a year after the date of publishing the proposed rule. The ESA also generally required that critical habitat be designated concurrently with the final listing.

Once a species is listed, NMFS is required by the ESA to develop a recovery plan and implement the protections of the ESA. When a species is listed as endangered, the ESA Section 9 take prohibitions are automatically extended. However, if the species is listed as threatened NMFS must issue separate protective regulations under Section 4(d) of the ESA in order to extend take prohibitions to the species. Implementation of recovery actions usually takes place after these activities conclude.

Permits and Authorizations: Permits and authorizations are required under the ESA and MMPA to conduct activities that may result in the take (harassing, hunting, capturing, harming, killing, or collecting) of a protected species. NMFS issues permits and authorizations related to direct and indirect take of listed species as authorized by the ESA and MMPA. For example, permits and take authorizations cover scientific research to study the ecology and biology of protected species, the incidental take and harassment of marine mammals by explosive detonations or high-energy sonars, or commercial fishing activities.

Marine Mammal Health and Stranding Program: This program, authorized by the 1992 Amendments to the MMPA, designates NMFS as the lead Federal agency to coordinate stranding networks; responses and investigations of mortality events; biomonitoring; tissue and serum banking; and analytical quality assurance.

Marine Mammal and Sea Turtle Assessment and Marine Acoustics: The protected resources stock assessment and monitoring activities supported under this line also include assessment of the effects of noise on marine mammals from human-caused sources. These assessments and biological investigations improve the information available to determine whether a species' status is declining, stable, or increasing.

### **Species Recovery Grants**

Under the legislative authority of Section 6 of the ESA, NMFS administers agreements with states and territories and provides Species Recovery Grants to implement conservation actions for listed, recently de-listed, and candidate species that reside within that state or territory. Funding supports the development and implementation of recovery strategies, scientific research, or public outreach and education activities. NMFS currently has Section 6 agreements with 23 states and territories, and is developing additional agreements.

### **Marine Mammals**

Under the authority of the MMPA and ESA (for listed marine mammals), NMFS develops and implements a variety of programs for the protection, conservation, and recovery of the approximately 160 marine mammal stocks listed under the MMPA. The major activities conducted under this budget line include:

*Marine Mammal–Commercial Fisheries Interactions:* NMFS annually classifies fisheries into one of three categories according to the level of incidental mortality or serious injury of marine mammals. The categories are 1) frequent incidental mortality or serious injury of marine mammals; 2) occasional incidental mortality or serious injury of marine mammals; and 3) remote likelihood of or no known incidental mortality or serious injury of marine mammals. Throughout the year NMFS also works collaboratively with the commercial fishing industry and other stakeholders to identify measures to reduce the impact of commercial fisheries on protected species.

*Population Assessment and Monitoring:* NMFS uses several years of assessments and statistical modeling to forecast trends for protected species populations in the context of conservation actions, classification of fisheries interactions, other anthropogenic activities, and the impact of climate and natural environmental variations. Assessments, analyses of population trends over time, and assessments of human-induced mortality and serious injury provide the biological basis for management actions to list fisheries by levels of impact on marine mammals, and then effectively recover and conserve protected species, and minimize the impacts of various human activities. Further, the results of assessments inform the consideration of proposed actions affecting protected species and may lead to the development of regulatory actions.

*Research:* NMFS conducts research to address management actions focusing on specific questions concerning the biology and behavior of the species, status of protected species populations within the larger marine ecosystem, and the effects of human activities on the sustainability of protected species on regional and international scales.

*Partnerships with Alaska Native Organizations:* Under the MMPA, NMFS has entered into agreements with Alaska Native groups regarding the management of harvested marine mammal stocks in Alaska. These agreements provide funding for cooperative management of these stocks.

### **Marine Turtles**

Under the legislative authority of the ESA, NMFS implements the identification, listing, and recovery of threatened and endangered marine turtles. All six species of sea turtles occurring in the United States are protected under the ESA. NMFS has the lead responsibility for the conservation and recovery of sea turtles in the marine environment, and the USFWS has the lead for the conservation and recovery of sea turtles on nesting beaches. Major threats to sea turtles in the United States include: destruction and alteration of nesting and foraging habitats;

incidental capture in commercial and recreational fisheries; entanglement in marine debris; and vessel strikes. To reduce the incidental capture of sea turtles in commercial fisheries, NMFS has enacted regulations to restrict certain U.S. commercial fishing gears (gillnets, longlines, pound nets, and trawls) that are known to result in significant bycatch of sea turtles. To effectively address all threats to sea turtles, NMFS and the USFWS have developed recovery plans to direct research and management efforts for each sea turtle species.

Sea turtles are highly migratory, therefore their conservation and recovery requires multilateral cooperation and agreements. NMFS uses a broad national and international program for the conservation and recovery of sea turtles and works closely with two international environmental agreements that deal exclusively with sea turtle conservation: Indian Ocean-South-East Asian (IOSEA) Marine Turtle Memorandum of Understanding, and Inter-American Convention (IAC) for the Protection and Conservation of Sea Turtles. The goal of the international component of the sea turtle program is to facilitate the global conservation and recovery of sea turtles by working closely with other nations through diplomatic channels, capacity building, and scientific exchange.

Under the Marine Turtle budget line NMFS conducts interagency Section 7 consultations and listing activities as described under Protected Species Research and Management Programs Base, as well as the following activity:

*Bycatch in Commercial Fisheries:* Incidental take in fishing operations (bycatch) is one of the most serious threats to the recovery and conservation of sea turtle populations. To reduce this threat, NMFS convenes take reduction teams to develop plans that reduce the incidental serious injury or mortality of marine mammals and turtles from commercial fishing to levels less than the potential biological removal level (the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population); uses fishery observer programs to document the bycatch of sea turtles; and promulgates regulations to reduce sea turtle bycatch in the Pacific and Atlantic Oceans and the Gulf of Mexico. NMFS is currently involved in cooperative gear research projects designed to reduce sea turtle bycatch in the Gulf of Mexico and Atlantic pelagic longline fisheries, the Hawaii-based deep set longline fishery, the Atlantic sea scallop dredge fishery, the Chesapeake Bay pound net fishery, and non-shrimp trawl fisheries in the Atlantic and Gulf.

### **Other Protected Species**

This budget line includes invertebrates, plants, and non-salmonid fishes. Funding authorized under the ESA provides support for recovery of these species as well as proactive conservation efforts to help states and others address conservation needs of species that are approaching the need for listing as depleted under the MMPA, or as threatened or endangered under the ESA. Species in this category are referred to as “species of concern,” some of which are also “candidate species” that NMFS is actively considering for listing.

In addition to the proactive conservation activities conducted under this line, NMFS also conducts interagency Section 7 consultations and listing activities as previously described in the Protected Species Research and Management Programs Base.

### **Atlantic Salmon**

Under the legislative authority of the ESA, NMFS implements stock assessments, interagency Section 7 consultations, and listing and recovery actions to protect and recover the endangered Atlantic salmon. The major threats to Atlantic salmon are acidified water and associated

aluminum toxicity; aquaculture practices which pose ecological and genetic risks; avian predation; changing land use patterns (e.g., development, agriculture, forestry); degradation of water quality; non-native fish species that compete with or prey on Atlantic salmon; loss of habitat complexity and connectivity; sedimentation; and water extraction. NMFS continues to work to remove and or modify these barriers to improve the population status of Atlantic salmon.

### **Pacific Salmon**

Under the legislative authority of the ESA, NMFS implements stock assessments, interagency Section 7 consultations, and listing and recovery actions to protect and recover threatened and endangered Pacific salmon.

Most salmon stocks throughout the Pacific Coast are at a fraction of their historic levels. Overfishing had been a major cause of decline, but more recently the major cause has been loss of freshwater habitat. Variable ocean conditions over the past two decades reduced populations already weakened by loss of freshwater and estuary habitat, fishing pressures, and hatchery practices. Also, degradation of habitat due to water quality, water quantity and barriers to fish passage is a major obstacle to salmon recovery. Improved ocean conditions as well as improvements in habitat, the hydrosystem, and hatchery management have led to increased salmon returns.

Habitat loss and modification are believed to be the major factors determining the current status of salmonid populations. Conservation and recovery of Pacific salmon and steelhead depend on having diverse habitats with connections among those habitats. The salmonid lifecycle involves adults maturing in the ocean and migrating back to their home streams to spawn. Embryos incubate, fry emerge, juveniles grow, and smolts migrate to the estuary to acclimate to saltwater before moving out into the ocean. Each phase may require salmon to use and access distinct habitats. Loss of habitat reduces the diversity in salmon and steelhead life histories, which influences the ability of these fish to adapt to natural and human-caused changes. NMFS is also responsible for ensuring that hydroelectric facilities do not compromise the survival of salmon and steelhead that must pass through them while migrating. The majority of hydroelectric dams lack adequate fish passage.

### **Schedule & Milestones:**

#### **FY 2013 - 2017**

- Solicit and review Species Recovery Grant proposals submitted by states for conservation and recovery activities.
- Prepare final recovery plans and designate critical habitat.
- Provide technical assistance, consultation, and authorization services for all Federal agencies' proposed actions (ESA Section 7).
- Continue development and implementation of 10 Take Reduction Teams to achieve MMPA goals through increased compliance monitoring and bycatch assessments.
- Evaluate effectiveness and recommend enforcement measures, modify existing regulations, and add protective measures to reduce marine mammal bycatch in fisheries.
- Review listing petitions and issue 90-day findings.
- Conduct ESA status reviews and issue 12-month findings.
- Promulgate ESA protective regulations.
- Respond to marine animal strandings and unusual mortality events.
- Update the National Marine Mammal Tissue Bank and Marine Mammal Health and Stranding Response databases.

- Participate in international and regional agreements to further the U.S. policy on protected species conservation.
- Conduct protected species stock assessments.

**Deliverables/Outputs:**

**FY 2013 – 2017**

- Implement recovery actions identified in recovery plans to prevent species extinction.
- Develop comprehensive strategies for assessing the effectiveness of each marine mammal take reduction plan.
- Issue MMPA and ESA permits.
- Convene new Take Reduction Teams to reduce marine mammal and sea turtles bycatch in fisheries that meet MMPA requirements.
- Develop or improve abundance and fishery mortality estimates for stocks in Alaska, the Pacific Islands, and the Gulf of Mexico to inform management decisions.
- Prepare formal and informal consultation for other Federal agencies.
- Provide protection to species that are listed after the completion of status reviews.
- Complete assessments of protected species stocks with inadequate information to inform management decisions.
- Improve stock identification for more than 60 percent of protected species.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels (GPRA 17d)	29	28	27	27	27	28	27
<b>Description:</b> This measure tracks progress at achieving partial recovery of endangered, threatened or depleted protected species under the jurisdiction of the National Marine Fisheries Service. These species include those listed as threatened or endangered under the Endangered Species Act (ESA) as well as those marine mammal species listed as “depleted” under the Marine Mammal Protection Act. Recovery of threatened, endangered or depleted species can take decades, so while it may not be possible to recover or de-list a species in the near term, progress can be made to stabilize or increase the species population. For some, it is trying to stop a steep decline, while for others it is trying to increase their numbers. There are currently 72 species designated as threatened, endangered, or depleted.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percent of Protected Species with Adequate Population Assessments and Forecasts (GRPA 17c)	17.60%	20.60%	20.90%	22.50%	22.20%	22.80%	21.70%

**Description:** This measure tracks the percentage of protected species stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Protected Species Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the protected species stocks covered by MMPA or listed under ESA. The number of such stocks can change as new species are listed and as new stocks of listed species and marine mammals are identified. The number has increased from 230 in FY 2005 to 392 in FY 2011.

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## **Program Changes for FY 2013:**

### **Protected Species Research and Management Programs Base: Protected Species Research and Management Programs Base (Base Funding: \$39,960,000 and 174 FTE;**

**Program Change: \$1,603,000 and 0 FTE:** NOAA requests an increase of \$1,603,000 and 0 FTE for a total of \$41,563,000 and 174 FTE for supporting activities that conserve and recover species threatened or endangered with extinction, as well as most marine mammals.

### **Proposed Actions:**

NOAA will conduct ESA Section 7 consultations and provide authorizations of proposed Federal actions affecting protected species. NOAA will meet emerging requirements for Endangered Species Act (ESA) interagency technical assistance and authorizations under the Marine Mammal Protection Act (MMPA) and ESA for all proposed actions for energy exploration and development, national defense–related activities, and fishery operations.

### **Statement of Need and Economic Benefits:**

Section 7 of the Endangered Species Act (ESA) requires Federal agencies to ensure that any action they fund, authorize, or undertake is not likely to jeopardize the continued existence of “threatened” or “endangered” species, or result in the destruction or adverse modification of critical habitat that has been designated for such species. This is accomplished through interagency cooperation with NOAA under Section 7 of the ESA. This consultation with Federal “action agencies” results in authorizations for lawful activities such as building roads, bridges, commercial fishing, defense readiness training or water uses to be implemented in a manner that is compatible with species conservation and recovery.

NOAA also issues permits and authorizations related to direct and indirect take of listed species as authorized by the ESA and Marine Mammal Protection Act (MPA). NOAA also works to develop Habitat Conservation Plans under the ESA with non-Federal entities requesting authorization to incidentally take listed species as part of otherwise lawful activities. Activities such as scientific research to study the ecology and biology of protected species, authorizing the incidental take and harassment of marine mammals by explosive detonations or high energy sonars are examples of activities allowed by permits and take authorizations.

NOAA’s Marine Animal Health and Stranding Response program coordinates response activities through marine mammal and marine turtle stranding networks. The program supports the rescue of stranded marine mammals and marine turtles that are entrapped in fishing gear or wash ashore due to unusual mortality events. This program also administers the National Marine Mammal Tissue Bank, which maintains tissue samples from stranded and necropsied animals, to help with future disease diagnosis and response. Information on the causes of marine mammal strandings is useful to the public because marine mammals can serve as an indicator of ocean health, giving insight into larger environmental issues that may also have implications for human health and welfare. Stranding data also provides information on levels of fisheries interaction, both commercial and recreational, with protected species, which are then used for preparing marine mammal stock assessment reports and recovery/research plans. Knowledge of the health and status of marine mammals is invaluable to NOAA in assessing the effect of fisheries interactions, and helps ensure that fisheries are operating sustainably and in a manner compatible with conservation of ecosystems and to the economic benefit of coastal communities.

**Base Resource Assessment:**

The base resources for this activity are described in the Protect Species Research and Management base narrative.

**Schedules and Milestones:**

FY 2013 – 2017:

- Provide technical assistance, consultation and authorization services for all Federal agencies' proposed actions.
- Respond to marine animal strandings and unusual mortality events.

**Deliverables:**

FY 2013 – 2017:

- Conduct formal and informal consultation to other Federal agencies.
- Consider and authorize appropriate economic and national defense activities that may affect protected species.
- Retrieval, rehabilitation, assessment and reporting of marine animal stranding and unusual mortality events.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of additional Section 7 formal consultations and authorizations prepared for proposed Federal activities	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	15	18	18	20	26
<b>Without Increase</b>	0	0	0	0	0	0	0
<b>Description:</b> Increased consultations and related authorizations represent incremental improvement in performance by increased capacity and improvement in efficiencies in out years. The number of formal consultations completed in FY 2011 (i.e. baseline) was 311, and if this baseline were to remain constant from FY 2013 through FY 2017, the proposed increase would improve the baseline by 4% (to 326 in FY 2013), and by 8% (to 337 in FY 2017), However, the number in the baseline is highly variable and depends on the requests for consultations.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Respond to known strandings in a timely manner and collect data on diseases, cause of death and injuries	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Without Increase</b>	N/A	N/A	75%	75%	75%	75%	75%
<b>With Increase</b>	75%	75%	77%	79%	80%	80%	80%
<b>Description:</b> Percentage of recently deceased animals that receive rapid response and examination to enable a high probability of determining cause of death, type of disease, and other types of injuries.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	1,603
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>1,603</u>

**Protected Species Research and Management Programs Base: West Coast Proposal: (Base Funding: \$39,960,000 and 174 FTE; Program Change: -\$2,591,000 and -19 FTE):**

NOAA requests a decrease of \$2,591,000 and 17 FTE for a total of \$37,369,000 and 155 FTE in the Protected Species Research and Management Programs Base to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in the following budget lines:

Protected Resources Research and Management	-\$2,591,000	current page
Marine Mammals	-\$ 7,000	page NMFS - 25
Pacific Salmon	-\$ 484,000	page NMFS - 43
Fisheries Research and Management	-\$1,460,000	page NMFS - 64
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 71
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 144</u>
Total	-\$5,000,000	

**Proposed Actions**

As a result of the consolidation of offices, NMFS will reduce support for staff and salaries and benefits as part of reconfiguring NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office and closure of the Pacific Grove Lab.

**West Coast Proposal:**

A total reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of a total of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's

efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

**Schedule and Milestones:**

- The reconfiguration of the Northwest and Southwest Regional Offices needs to be implemented by October 2012.
- The excess and disposal of the Pacific Grove Facility should begin in FY 2012, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

**Deliverables:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service  
 Subactivity: Protected Species Research and Management

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Director, Regional Office	TBD	SES	-0.83	170,000	-141,100
Deputy Director, Regional Office	TBD	ZP-V	-0.83	126,687	-105,150
Various titles	TBD	Various	-15.34	116,093	-1,780,867
<b>Total</b>			<u>-17</u>		<u>-2,027,117</u>
less Lapse		0	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-17		-2,027,117
2013 Pay Adjustment 0.5%					<u>0</u>
<b>TOTAL</b>					<u>-2,027,117</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-17
Other than full-time permanent	0
Total	<u>-17</u>
Authorized Positions:	
Full-time permanent	-17
Other than full-time permanent	0
Total	<u>-17</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
Personnel compensation	
Full-time permanent	(2,027)
Other than full-time permanent	0
Other personnel compensation	0
Special personnel services payments	0
Total personnel compensation	(2,027)
Civilian personnel benefits	(564)
Benefits for former personnel	0
Travel and transportation of persons	0
Transportation of things	0
Rental payments to GSA	0
Rental Payments to others	0
Communications, utilities and miscellaneous charges	0
Printing and reproduction	0
Advisory and assistance services	0
Other services	0
Purchases of goods & services from Gov't accounts	0
Operation and maintenance of facilities	0
Research and development contracts	0
Medical care	0
Operation and maintenance of equipment	0
Subsistence and support of persons	0
Supplies and materials	0
Equipment	0
Lands and structures	0
Investments and loans	0
Grants, subsidies and contributions	0
Insurance claims and indemnities	0
Interest and dividends	0
Refunds	0
Total obligations	(2,591)

**Species Recovery Grants: Species Recovery Grants (Base Funding: \$2,811,000 and 1 FTE; Program Change: \$1,986,000 and 0 FTE):** NOAA requests an increase of \$1,986,000 and 0 FTE for a total of \$4,797,000 and 0 FTE for the conservation and recovery of marine and anadromous species under NMFS's jurisdiction and listed under the Endangered Species Act (ESA) through the Species Recovery Grants Program.

**Proposed Actions:**

Recovery and conservation efforts for ESA-listed species under NMFS's jurisdiction are largely implemented through Species Recovery Grants, which are awarded under the authority of section 6 of the ESA. This increase will provide additional grants to increase the capacity of states to conduct priority recovery actions for listed species. Priority recovery actions can include restoring habitat necessary for the recovery of listed species, reducing or removing significant sources of mortality and injury, assessing and monitoring species status and trends, partnering with others to conduct cross-jurisdictional conservation actions, developing conservation plans to mitigate incidental take of listed species, and educating the public about the conservation of ESA-listed species. Grants may also support needed monitoring of candidate and recently de-listed species. Listed Pacific salmonids are not addressed through this program and instead may be supported through the Pacific Coastal Salmon Recovery Fund. NMFS will track ongoing and completed recovery actions by incorporating NMFS information into the U.S. Fish and Wildlife Service's "Recovery Online Activity Reporting System" or an equivalent tracking system.

**Statement of Need and Economic Benefits:**

NMFS currently has jurisdiction over 87 threatened or endangered species, 7 species that have been proposed for listing, and 94 candidates for listing under the ESA. In 2011, nine distinct population segments and one species were added to the threatened and endangered species list, and many more might be added in 2012 due to the large number of species that have been petitioned for listing and ones that have been proposed or are candidates for listing.

Under the Species Recovery Grants Program, states partner with the Federal government in the conservation of listed species. NMFS has funded these grants to states since 2003 and currently has ESA section 6 cooperative agreements with 23 states and territories; such agreements are required under section 6 of the ESA in order for states and U.S. territories to receive this funding. Funding for Species Recovery Grants will allow the program to address the recovery needs of listed and candidate species in states, territories, and on tribal lands. Federal funding, provided in the form of grants, will be awarded annually through a competitive, merit-review based process that responds to national conservation and recovery priorities established by NMFS in cooperation with partner states.

Recovery of listed species is dependent on collaboration and cooperation with various partners. However, most of these entities do not have adequate resources to address even the most critical recovery actions, and Federal assistance is necessary to ensure their ability to engage in effective conservation programs and partnerships. By partnering with states, the Federal government can also leverage resources through matching requirements in grant solicitations. Section 6 of the ESA requires a 25 percent match of federal funding, or a 10 percent match when two or more states partner on a project. Matching funds offer additional financial resources that NMFS would not need to spend on recovery, thus allowing for larger or more complex conservation and habitat restoration projects. This request will strategically leverage state funds and coordinate the prioritization of protected species recovery actions.

This program also leverages the technical and educational resources of states and thus facilitates a greater level of conservation of listed species. Fostering relationships among states through the Species Recovery Grants Program allows utilization of local expertise and is an effective approach to protecting and recovering listed species. Closely involving states in the recovery of listed species also increases support for NMFS's regulatory actions, as states can aid NMFS in understanding the most effective means of reducing and eliminating threats to species.

**Base Resource Assessment:**

The base resources for this activity are described in the Protected Species Research and Management base narrative.

**Schedules and Milestones:**

FY 2013 – 2017:

- Solicit and review Species Recovery Grant proposals submitted by states for conservation and recovery activities.
- Develop additional section 6 agreements with states and territories.
- Update the U.S. Fish and Wildlife Service Recovery Online Activity Reporting System and the Species Recovery Grants Tracking Database.

**Deliverables:**

FY 2013 – 2017:

- Implement recovery actions identified in recovery plans to prevent species extinction.
- Modified Recovery Online Activity Reporting System and Species Recovery Grants Tracking Database.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b> Number of priority recovery actions being addressed through SRG	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>With Increase</b>	N/A	N/A	26	26	26	26	26
<b>Without Increase</b>	42	15	15	15	15	15	15
<b>Description:</b> Funding may support recovery actions for any of the listed species under NMFS jurisdiction, with the exclusion of listed Pacific salmonids. Given the multi-year nature of award funded through this program, an assumption of two high priority recovery actions per species was applied.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,986
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,986</u>

**Marine Mammals: West Coast Proposal: (Base Funding: \$49,714,000 and 163 FTE; Program Change: 0 FTE and -\$7,000):** NOAA requests a decrease of \$7,000 and 0 FTE for a total of \$49,707,000 and 163 FTE to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	current page
Pacific Salmon	-\$ 484,000	page NMSF - 43
Fisheries Research and Management	-\$1,460,000	page NMFS - 64
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 71
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 144</u>
Total	-\$5,000,000	

### **Proposed Actions**

The reduction in this PPA reflects saving from the closure of the Pacific Grove Laboratory. Marine Mammal funding has supported a limited amount of research on the influence of oceanographic processes on top predator distribution and community structure in the lab. NMFS will continue to support marine mammals through the La Jolla and Santa Cruz labs. The closure of the Pacific Grove Laboratory will result in administrative efficiencies and the savings proposed above.

### **West Coast Proposal:**

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

**Schedule and Milestones:**

N/A

**Deliverables:**

N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(7)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(7)</u>

**Marine Mammals: Prescott Grants Program (Base Funding: \$3,779,000 and 2 FTE; Program Change: -\$3,779,000 and -2 FTE:** NOAA requests an decrease of \$3,779,000 and - 2 FTE for a total of \$0 and 0 FTE to terminate funding for the John H. Prescott Marine Mammal Rescue Assistance Grant program.

**Proposed Actions:**

This reduction will eliminate funding for the John H. Prescott Marine Mammal Rescue Assistance Grant program. At the FY 2013 President’s Budget request level, NOAA will continue to support the rescue of large whales entangled in fishing gear; provide limited support for unusual mortality event investigations; and administer the National Marine Mammal Tissue Bank which maintains samples collected from stranded, by-caught, research, and subsistence animals to help with future disease diagnosis and response. NOAA will continue to support the coordination of stranding network responses to unusual marine mammal mortality events including assessment of causes and risks through the Protected Species Research and Management Base program. It is anticipated that some network members will still operate in the absence of Prescott grants as private funding is available.

**Base Resource Assessment:**

The base resources for this activity are described in the Protect Species Research and Management base narrative.

**Schedules and Milestones:**

N/A

**Deliverables:**

N/A

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Respond to known strandings in a timely manner and collect data on diseases, cause of death and injuries	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	50%	30%	30%	25%	25%
<b>Without Decrease</b>	75%	75%	75%	75%	75%	75%	75%
<b>Description:</b> Percentage of recently deceased animals that receive rapid response and examination to enable a high probability of determining cause of death, type of disease, and other types of injuries. The FY 2012 Prescott program grants will provide some funding for effort during FY 2013 and beyond depending on the type and length of award. Some network members who have 100% private funding will still operate in the absence of Prescott so this metric will continue to some extent.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Rapid first response and further examination in Navy training ranges	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	1/5	1/5	1/5	1/5	1/5
<b>Without Decrease</b>	4/5	4/5	4/5	4/5	4/5	4/5	4/5

**Description:** The US Navy has five training ranges that have letters of authorization to take or harass marine mammals. Examples of actions that may take/harass marine mammals include high energy sonar and explosive detonations. This performance measure indicates the number of US Navy training ranges that have stranding network participants who provide rapid response and further examination when strandings occur.

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Percent detection of Unusual Mortality Events	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	60	40	35	35	20
<b>Without Decrease</b>	80	80	80	80	80	80	80

**Description:** Percent of the coast with active stranding coverage in the contiguous states along the Pacific, Atlantic, and Gulf of Mexico that would enable detection of Unusual Mortality Events. Continuation of stranding response will be through limited volunteer efforts and only a few facilities are fully funded through a donation base.

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service  
 Subactivity: Protected Species Research and Management

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Fishery Biologist	Silver Spring, MD	ZP III	-0.5	62,467	-31,234
Administrative Specialist	Silver Spring, MD	ZA III	-1	62,467	-62,467
<b>Total</b>			<u>-1.5</u>		<u>-93,701</u>
less Lapse			<u>0</u>		<u>-93,701</u>
Total full-time permanent (FTE)			-1.5		0
2013 Pay Adjustment (0.5%)					0
TOTAL					-93,701

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-1.5
Other than full-time permanent	0
Total	<u>-1.5</u>

Authorized Positions:

Full-time permanent	-1.5
Other than full-time permanent	0
Total	<u>-1.5</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(94)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(94)
12 Civilian personnel benefits	(29)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(5)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(5)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(3,645)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(3,779)

**Marine Mammals: Marine Mammals (Base Funding: \$49,714,000 and 163 FTE; Program Change: -\$1,518,000 and 0 FTE:** NOAA requests a decrease of \$1,518,000 and 0 FTE for Marine Mammals for a total of \$48,196,000 and 163 FTE. In FY 2012 Congress provided additional funds for recovery and protection activities related to Hawaiian Monk Seals. The FY 2013 President's Budget will allow for continued analysis of data and biological samples; monitoring of the main Hawaiian Islands (MHI) population; completion of the final Programmatic Environmental Impact Statement (PEIS); limited monk seal response in the MHI; and education and outreach projects, and does not require these additional funds.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,518)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,518)</u>

**Marine Turtles: Marine Turtles (Base Funding: \$12,553,000 and 55 FTE; Program Change: -\$1,921,000 and 0 FTE:** NOAA requests a decrease of \$1,921,000 and 0 FTE for Marine Turtles for a total of \$10,632,000 and 55 FTE. In the FY 2012 appropriation, Congress provided additional funds for recovery and protection activities related to Hawaiian sea turtles. The FY 2013 President's Budget allows NMFS to build upon the knowledge gained and continue to carry out recovery activities such as interagency consultation and technical assistance on marine turtle bycatch reduction strategies; cooperative conservation actions with Hawaii, Territories of America Samoa and Guam, the Commonwealth of the Northern Mariana Islands, and foreign nations; and marine turtle stock assessments and scientific research projects. These activities will enable the effective conservation and protection of marine turtles by NOAA.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(961)
25.2 Other services	(960)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,921)</u>

**Other Protected Species: Other Protected Species (Base Funding: \$6,648,000 and 33 FTE; Program Change: \$500,000 and 0 FTE):** NOAA requests an increase of \$500,000 and 0 FTEs for a total of \$7,148,000 and 33 FTEs to augment its existing capability to support required Endangered Species Act (ESA) listing activities such as status reviews, development of recovery plans and protective regulations, and critical habitat designations.

**Proposed Action:**

With this proposed increase, NOAA will complete listing determinations for newly petitioned species; conduct post-listing activities (recovery plans, critical habitat designations, 4(d) rules) for several species that have been petitioned for listing; and monitor ongoing and completed recovery actions to better assess the effectiveness of its recovery program. Any U.S. citizen or organization may petition NOAA to list a species as threatened or endangered, reclassify an already listed species, or revise designated critical habitat under the ESA. If warranted once a species is listed, NOAA is required by the ESA to develop a recovery plan and implement the protections of the ESA. When a species is listed as endangered, the ESA Section 9 take prohibitions are automatically extended. However, if the species is listed as threatened NOAA must issue separate protective regulations under Section 4(d) of the ESA in order to extend take prohibitions to the species. Implementation of recovery actions usually takes place after these activities conclude.

**Statement of Need and Economic Benefits:**

The ability to recover protected species has been severely restricted by an increase in the number of listed species under the ESA. This has resulted in an increase in NOAA's responsibility to implement programs to recover these species from the brink of extinction. In recent years NMFS has been inundated with petitions to list species and to revise critical habitat, and in many cases, directed by Federal courts to accomplish these and other conservation measures at the expense of already listed species. Species are being listed under the ESA at an average of five species per year during the last four years. Already in 2012, five Distinct Population Segments (DPS) of Atlantic sturgeon have been listed. Responding to these statutory and court-ordered mandates has diverted staff and resources from existing conservation activities.

As of January 2012, there were 87 ESA-listed species under NOAA's jurisdiction. Several other species are proposed for ESA listing, and NOAA is currently addressing petitions to list 94 additional species including 82 corals.

**Base Resource Assessment:**

The base resources for this activity are described in the Protect Species Research and Management base narrative.

**Schedules and Milestones:**

FY 2013 – 2017:

- Complete ESA status reviews for candidate species.
- Compile public comment period for proposed species and make final listing determinations.
- Prepare ESA 4(d) rules for new species that are listed as threatened.
- Complete recovery plans for newly listed coral species.
- Designate critical habitat for newly listed species such as Atlantic sturgeon and corals.

**Deliverables:**

FY 2013 – 2017:

- Publish *Federal Register* notices on 90 day petitions, and 12 month findings, and final listing determinations.
- Final Section 4(d) rules, recovery plans and critical habitat designations.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**

**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
 Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
Personnel compensation	
Full-time permanent	\$0
Other than full-time permanent	0
Other personnel compensation	0
Special personnel services payments	0
Total personnel compensation	<u>0</u>
Civilian personnel benefits	0
Benefits for former personnel	0
Travel and transportation of persons	0
Transportation of things	0
Rental payments to GSA	0
Rental Payments to others	0
Communications, utilities and miscellaneous charges	0
Printing and reproduction	0
Advisory and assistance services	500
Other services	0
Purchases of goods & services from Gov't accounts	0
Operation and maintenance of facilities	0
Research and development contracts	0
Medical care	0
Operation and maintenance of equipment	0
Subsistence and support of persons	0
Supplies and materials	0
Equipment	0
Lands and structures	0
Investments and loans	0
Grants, subsidies and contributions	0
Insurance claims and indemnities	0
Interest and dividends	0
Refunds	0
Total obligations	<u>500</u>

**Atlantic Salmon: Atlantic Salmon (Base Funding: \$5,653,000 and 27 FTE; Program Change: \$347,000 and 0 FTE):** NOAA requests an increase of \$347,000 and 0 FTE for a total of \$6,000,000 and 27 FTE for the conservation and recovery of Atlantic salmon. The funds will be used to support ongoing projects that address fish passage barrier, restore habitat, and study major threats to Atlantic salmon. Activities that NMFS will implement with Atlantic salmon funds include conducting estuarine and early marine survival assessments using telemetry to better assess movements and migrations patterns; undertake hatchery evaluation studies to condition fish to increase predator avoidance behavior; study diseases to minimize disease and parasite transition from farmed fish to wild fish; and research the development of hydroacoustic techniques to monitor smolts and estimate abundance. All these activities will enable the effective conservation and protection of Atlantic salmon by NOAA.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	347
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>347</u>

**Pacific Salmon: Pacific Salmon (Base Funding: \$59,309,000 and 359 FTE; Program Change: -\$743,000 and 0 FTE:** NOAA requests a decrease of 0 FTE and \$743,000 for a total of \$58,566,000 and 359 FTE for ESA Pacific salmon activities.

**Proposed Actions:**

At the reduced level NOAA will meet existing requirements for Endangered Species Act (ESA) interagency technical assistance related to Pacific salmon in the Western United States. NOAA will continue to support the recovery of Pacific salmon through the Pacific Coastal Salmon Recovery Fund.

**Base Resource Assessment:**

The base resources for this activity are described in the Protect Species Research and Management base narrative.

**Schedules and Milestones:**

FY 2013 - 2017:

- Provide technical assistance, consultation and authorization services for requested proposed actions within the western U.S. and within the range of ESA listed Pacific salmon.

**Deliverables:**

FY 2013 - 2017:

- Complete formal and informal Section 7 consultations.
- Complete Biological Opinions.
- Reduce the impact of development projects on protected species through interagency advice and consultation.

**Performance Goals and Measurement Data:**

<b>Performance Goal:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of consultations (both Formal and informal) completed on time (NW and SW Regions)	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With Decrease	N/A	N/A	40.0%	36.0%	36.0%	36.0%	36.0%
Without Decrease	46.8%	41.8%	40.0%	38.2%	38.2%	38.2%	38.2%
<b>Description:</b> This measure tracks percent of section 7 consultations (formal and informal) completed within statutory deadlines in the NW and SW regions as they relate to Pacific Salmon PPA.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(372)
25.2 Other services	(371)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(743)</u>

**Pacific Salmon: West Coast Proposal: (Base Funding: \$59,495,000 and 359 FTE; Program Change: -2 FTE and -\$484,000):** NOAA requests a decrease of \$484,000 and 2 FTE for a total of \$58,825,000 and 357 FTE in Pacific Salmon to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office and eliminate support for Puget Sound ecosystem surveys and assessments.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 25
Pacific Salmon	-\$ 484,000	current page
Fisheries Research and Management	-\$1,460,000	page NMFS - 64
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 71
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 144</u>
Total	-\$5,000,000	

### **Proposed Actions**

Under this part of the proposal, NMFS will eliminate salmon research funding for the Newport Seawater Research program at the Newport Laboratory in Oregon. Salmon research will continue within other west coast research programs.

#### **West Coast Proposal:**

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's

efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Protected Resources Research and Management base narrative.

**Schedule and Milestones:**

- The excess and disposal of the Pacific Grove Facility should begin in FY 2012, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.
- The Puget Sound ecosystem surveys and assessments and the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon will end in FY 2013.

**Deliverables:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service  
 Subactivity: Protected Species Research and Management

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Director, Regional Office	TBD	SES	0	170,000	0
Deputy Director, Regional Office	TBD	ZP-V	0	126,687	0
Various titles	TBD	Various	-2	116,093	-232,186
<b>Total</b>			<u>-2</u>		<u>-232,186</u>
less Lapse			0		0
Total full-time permanent (FTE)			<u>-2</u>		<u>-232,186</u>
2013 Pay Adjustment 0.5%					0
TOTAL					<u>-232,186</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employer	
Full-time permanent	-2
Other than full-time permanent	0
Total	<u>-2</u>

Authorized Positions:

Full-time permanent	-2
Other than full-time permanent	0
Total	<u>-2</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Protected Species Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(232)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(232)
12 Civilian personnel benefits	(70)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(182)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(484)

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: FISHERIES RESEARCH AND MANAGEMENT**

The Fisheries Research and Management budget line base funding encompasses many of the scientific and management activities that enable NMFS to be effective stewards of living marine resources, using an ecosystem-based approach, for the benefit of the Nation.

Managing the Nation's marine fisheries at sustainable harvest rates and rebuilding depleted fish stocks requires the best available scientific information to implement sound management and conservation actions. NMFS's science quality assurance activities and a rigorous peer review program ensure that management decisions are based on the highest-quality scientific information on the biological, social, and economic status of the fisheries. This includes species' responses to environmental changes, species interactions, and fishing and other human activities that affect species and their habitat. Social, cultural, and economic behaviors and incentives that influence interactions between humans and marine fisheries are also addressed.

NMFS, and the eight regional Fishery Management Councils, develop fishery management plans and regulations through an adaptive public process for sustainable management of fisheries, using the best available science. The regulatory process involves extensive analysis of alternatives to meet a number of statutory requirements. The budget line also supports key partners, such as the interstate marine fishery commissions and States that manage many of the same fish stocks within State waters and therefore contribute to the sustainable fishery outcomes for which NMFS is responsible.

**Fisheries Research and Management Programs:**

Under the authority of the Magnuson-Stevens Act (MSA), and other fisheries legislation, the Fisheries Research and Management Program budget line supports activities and staff working on eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries. The funds are used to coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management, fishery management plan and regulatory implementation, and enforcement to ensure compliance with regulations. Major components of this line include:

- *Annual Catch Limits (ACLs) and Accountability Measures (AMs), Peer Reviews, and Stipends:* Overfishing has a detrimental impact on the ecological and economic sustainability of fisheries, negatively affecting fishing communities, industry and recreational interests and other marine resources. The MSA requires that ACLs and AMs now be implemented in all fisheries. The Councils use the funds to develop amendments to their Fishery Management Plans (FMPs) that implement ACLs and AMs. The six NMFS Regions and the Atlantic Highly Migratory Species Division establish and monitor ACLs and AMs, process and analyze catch data, and report annual data for national performance monitoring. Analysis of this data will determine management action and lead to the development or improvement of ACL management systems. In addition, this base activity supports independent and authoritative reviews of fisheries science and recommendations necessary for the management of marine fisheries resources using the best available science, as specified in the MSA.

- *International Requirements of the Magnuson-Stevens Reauthorization Act:* The international requirements of the MSA includes participation and leadership for international obligations under the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean as mandated by the reauthorized MSA. This program also allows NOAA to provide leadership for the U.S. delegation to the Western and Central Pacific Fisheries Commission (WCPFC). The WCPFC is responsible for the conservation and management of highly migratory fish stocks in the Western and Central Pacific Ocean.

NMFS publishes a biannual report identifying nations whose vessels are engaging in Illegal, Unreported, Unregulated (IUU) fishing. The identification of these nations opens the way for continued consultations between the U.S. Government and officials of these nations to take corrective action to stop IUU fishing. NMFS activities include bycatch identification, consultation and certification procedures, and collection of data to support the identification, consultation and certification actions with nationals engaged in IUU/bycatch activities and governing Regional Fishery Management Organizations. In the event that any nation fails to take MSA-required actions, the Department of Commerce, working through NOAA and in coordination with State Department, the U.S. Trade Representative, and other agencies, is required to take remedial steps. Such actions could lead to the eventual implementation of fishery-product trade prohibitions.

- *Recreational Fisheries Information:* Under MSA, NOAA established and implemented a regionally-based registry program for recreational fishermen and for-hire fishing vessels. Additionally, NOAA developed an improved recreational fisheries statistics program that uses the new regional registries and incorporates more complete and reliable data, to the maximum extent feasible. Along with funds in Fisheries Statistics, this base funding is used to support the Marine Recreational Information Program's work to improve and expand NMFS's data collection efforts for monitoring recreational fisheries impacts. This is contributing significantly to improving relations with the recreational fishing community and improving federal fisheries management.
- *Regulatory Streamlining Program:* The implementation of the Regulatory Streamlining Program (RSP) improves the quality and timeliness of regulatory processes and policy development for its Fishery Management Program through comprehensive impact analyses, full and timely consideration of all relevant issues, and compliance with all applicable laws and procedures. RSP enables NOAA to efficiently address policy issues with the Regional Fishery Management Councils early in the regulatory process, rather than later when it becomes difficult to comprehensively address a new and possibly contentious issue.

All eight Regional Fishery Management Councils and six NMFS regions receive support to frontload development, analysis, evaluation, and implementation of fishery management actions. Deliverables include fishery management plans, plan amendments, implementation regulations (proposed and final rules), annual harvest specifications, and in-season management actions. NOAA assists in the development, review, and implementation of Council-proposed actions. Staff is used to assist Councils' efforts to facilitate and expedite Secretarial approval and implementation of Fishery Management Plans and amendments, and to prepare analytical documents in support of rulemaking.

- *Marine National Monuments*: Funds are used to sustainably manage three Marine National Monuments in the Pacific Ocean. These Monuments encompass nearly 200,000 square miles, and together represent the largest marine reserve in the world. This requires that NOAA conduct fisheries and living marine ecosystem observation and monitoring, develop a management plan and monument advisory council, conserve Essential Fish Habitat designations, and consult on protected species.
- *Pelagic Fisheries Research*: NOAA collaborates with academic and research institutions that provide resources and opportunities relevant to NOAA's mission, but generally extend beyond the agency's own capacities. Projects under this program are determined via a competitive proposal process. Examples of previously funded projects include: research to improve the assessments of tuna and billfish populations in the Pacific; studies on the biology and ecology of sea turtles, seabirds, sharks and other non-target key open ocean ecosystem inhabitants that interact with or are incidentally taken in these fisheries; research on essential habitat for open ocean animals; and studies on fisheries economics and socio-cultural profiles of the Pacific Islands region fishing communities.
- *West Coast Groundfish Management and Research*: The West Coast groundfish program provides the key science support needed for management of over 80 fish stocks along the coasts of Washington, Oregon, and California. The full-service program conducts resource surveys to track trends in fish abundance; manages the coastwide observer program; conducts needed biological studies on fish habitat, bycatch, and other pertinent issues; and prepares stock assessments that provide the information needed to track rebuilding of six stocks and to guide sustainable catch levels for all stocks.
- *Atlantic Bluefin Tuna Observer Coverage*: The funds support observer coverage of the pelagic longline fishery in the Gulf of Mexico where Atlantic bluefin tuna (ABFT) are incidentally caught. ABFT is an extremely valuable and severely overfished stock, and while a rebuilding plan has been in place since 1999, management measures have yet to result in rebuilding the stock. Observers have been trained in documenting ABFT bycatch, collecting and preserving biological samples, and evaluating the performance of commercial and experimental fishing gear in reducing ABFT bycatch.
- *Regional Science and Operations*: These funds are used to support core survey and stock assessment activities in Alaska. These activities include groundfish survey and stock assessment personnel, as well as groundfish age and growth program, charters for survey vessels, fuel, supplies and gear. All of these basic components provide information on current Alaskan groundfish stock status for use by NMFS and the North Pacific Council in determining annual catch quotas. Funds are used internally and for competitive contracts in the case of charter survey vessels. Funds are also used to support implementation of fishery management plans, amendments, and regulations for managing the commercial fisheries in the EEZ off Alaska, and commercial, subsistence, and recreational halibut fisheries in U.S. Convention waters off Alaska, as well as the operational inseason management of fisheries under federal management. In addition, funds are used for the identification of Essential Fish Habitat (EFH) affected by fishery management actions and environmental review of non-fishing related activities that may adversely affect habitat described as EFH or other habitats for living marine resources.

- *Charters in Lieu of COBB*: These funds provide charter vessel support for the NMFS Alaska Fisheries Science Center's fishery-independent surveys, habitat assessments, longstanding marine mammal research, and logistical support of the Little Port Walter remote field station in Southeast Alaska. These funds are necessary since the NOAA ship *John N. Cobb* was retired in 2008.
- *Pacific Islands Region/Center*: Funds are included to support effective science-based fishery management decisions and advance peer-reviewed ecosystem science within the Pacific Islands. Furthermore, this base funding enhances the ability of NOAA and the Western Pacific Council to deliver timely, accurate advice and scientific input to inquiries from NMFS and other stakeholders.

### **National Catch Share Program:**

“Catch share” is a general term for several fishery management strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Each recipient of a catch share is directly accountable to cease fishing when its specific quota is reached. The term includes specific programs defined in law such as limited access privilege (LAP) and individual fishing quota (IFQ) programs, and other exclusive allocative measures such as Territorial Use Rights Fisheries (TURFs) that grant an exclusive privilege to fish in a geographically designated fishing ground.

Catch share management provides a tool to improve the economic and ecological quality of certain fisheries. A number of U.S. fisheries are under-performing biologically and economically and require the consideration of additional tools to improve management effectiveness. While this management strategy is not new, Congress, in its 2006 amendments to the MSA, and national experts, have recognized that catch shares are an important management tool that should be available for use in any fishery. In November 2010, NOAA released its Catch Share Policy, which encourages the consideration and adoption of catch share programs. Catch share programs have been used in the United States since 1990 and now include 15 different fisheries from Alaska to Florida managed by six different Councils. Additional fisheries are in the process of considering catch share programs as part of their management plans. Both here and in other countries catch shares have shown they can effectively achieve annual catch limits, reduce the negative biological and economic impacts of the “race for fish,” and when properly designed can eliminate overfishing and result in safer and more profitable fisheries while also addressing other social objectives. The base amount includes:

- Activities and capabilities that support development of catch share programs. This category includes program management at the national and regional levels, improvements in fishery-dependent data collection systems to support future catch share programs, quality control on historic catch data to support individual or group allocations, fishery data management, social and economic data collection or analysis, and adjudication of administrative appeals by program participants. This will support electronic reporting, quota accounting, and consideration of a lien registry.
- Implementation and operation of specific catch share programs, including NE Sectors, Pacific Trawl ITQ, Gulf of Mexico Grouper/Tilefish, Alaska Halibut Sportfish and development and implementation of new programs currently being worked on by the Councils. Key implementation activities include support for management and enforcement staff, establishment of share accounting databases and reporting systems, identification of

eligible participants, issuance of catch shares, and computation of annual quota for each participant. These activities need to be completed before fishermen begin fishing under the catch share program. The operational costs include program administration, at-sea and dockside monitoring, enforcement, and science evaluation. Some or all of the incremental operational costs for the catch share programs that meet the definition of a LAP program under the MSA can be recovered once the catch share program is operational. Agency cost recovery is capped at a maximum of 3 percent of the ex-vessel value of the fishery.

### **Expand Annual Stock Assessment (EASA):**

One of NMFS's core functions is to provide accurate and timely fish and shellfish stock assessments. These are critical for detecting and preventing overfishing and are also a foundation for successful catch share programs. This activity determines changes in abundance of fishery stocks in response to fishing and forecasts future trends of stock abundance and sustainable fishery yield. These assessments provide the technical basis for fishery management decisions, such as setting ACLs to achieve optimum yield from the fishery while avoiding overfishing and ecosystem harm.

These funds support major data collection efforts that include catch and biological data collected directly from the fisheries, fishery-independent surveys conducted on chartered vessels or NOAA Fishery Survey Vessels (FSVs), and processing of biological samples to determine fish age and growth. Typically, the fishery catch monitoring is a year-round continuous activity to monitor the total fishery catch and the fishery-independent surveys are conducted annually to track changes in the abundance, distribution and biological characteristics of the fish stocks. Collectively, these activities allow NMFS to update or initiate approximately 75 fish stock assessments each year.

The program achieves efficiency through increased standardization of methods and establishment of protocols for assessments, and development of advanced technologies for improved sampling and operations. Examples include: national working groups to share development efforts among all regions; widespread adoption of consistent assessment modeling software; and well-defined review processes to shorten time lag between assessment completion and management action. The program works across a wide range of assessment activities that include: baseline monitoring for minor stocks, adequate assessments with periodic updates for typical stocks in fisheries, high precision/high update frequency for highly important stocks, and ecosystem, climate, and habitat linkages for stocks that are particularly sensitive to these factors. Ecosystem studies include EASA support for the Fisheries and the Environment projects (see Fishery Oceanography program) and for the Habitat Assessment Improvement Plan.

### **Economics and Social Science Research:**

Funds support a broad range of socioeconomic data collection, modeling, and research activities as well as the development of decision support tools. The scope of issues undertaken by this program ranges from traditional fishery management issues including catch share programs, allocation decisions, and overfishing to emerging coastal and marine resource management issues such as coastal and marine spatial planning, ecosystem services trade-offs and valuation, and community resiliency.

NOAA requires a robust economic and socio-cultural assessment capability to meet the exacting requirements imposed on the agency by legislative mandates such as NEPA and MSA, thereby reducing litigation. In addition, the economic analyses undertaken by the program may be used to identify cost-minimizing solutions, which respects the hardship imposed on

participants from regulations and establishes credibility with stakeholders. The program enables NOAA to better respond to community needs, identify and provide market incentives that achieve management goals, and use information to achieve more sustainable marine ecosystems. Specifically, this capability enables NOAA to: a) develop indicators describing the status and trends of fishery participants, shoreside firms and fishing communities that help prevent economic and social hardship as well as detect it early on; b) assess the benefits/cost-effectiveness of fisheries' rebuilding programs and habitat restoration in an integrated ecosystem framework; c) assess the economic and social impacts of management options and current policies on fishery participants, shoreside firms and coastal communities; and d) develop means by which to identify whether a catch share program has excessive market share, is mindful of potential harmful effects on fishing communities, and ensures fair and equitable allocations of harvest privileges.

### **Salmon Management Activities:**

This base funding supports research and management activities associated with salmon not listed under the Endangered Species Act (ESA). Funding for the Mitchell Act component supports the operations and maintenance of Columbia River hatcheries through grants and contracts to the States of Washington, Oregon, and Idaho, and the U.S. Fish and Wildlife Service to mitigate the loss of salmon on the Columbia and Snake Rivers.

The Pacific Salmon Treaty component funds NMFS and the states of Alaska, Washington, Oregon, and Idaho to provide personnel support to the Pacific Salmon Commission's technical committees and conduct a broad range of salmon stock assessment and fishery monitoring programs to produce information required to implement Pacific Salmon Treaty provisions. These programs are carried out in fisheries and rivers located from Southeast Alaska to Oregon, including the Columbia River.

### **Regional Councils and Fisheries Commissions:**

NOAA is the sole source of funding for the eight Regional Fishery Management Councils. The Councils were established by the MSA to prepare fishery management plans for the Nation's fisheries for submission for approval to the Secretary of Commerce. The funding is divided among the eight councils and is used for their operating costs such as staff costs, rent, public meeting costs, council member salaries, and travel. It also supports the Interstate Fish Commissions and their related activities.

- The Regional Fishery Management Councils prepare fishery management plans for the Nation's fisheries for submission to the Secretary of Commerce for approval. Council members are appointed and consist of members from state governments, industry, and academia.

**International Fisheries Commissions:** This project was established in 1993 to meet U.S. obligations regarding joint enhancement efforts on the Transboundary River system as specified in the U.S.-Canada Agreement Relating to the Pacific Salmon Treaty. The program involves supplementing the number of sockeye salmon available to fishermen by increasing fry production from several Transboundary Lakes through hatchery incubation in the United States. The program utilizes otolith mass marking to identify these hatchery fish as a means to monitor the program and to aid in the management of fisheries targeting the Transboundary River stocks. The Commissions are comprised of the following groups:

- The Atlantic States Marine Fisheries Commission was formed by the Atlantic coastal states in 1942 for the promotion and protection of coastal fishery resources. The 15

- member states of the Commission are: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida.
- The Gulf States Marine Fisheries Commission (GSMFC) is an organization of five states (Texas, Louisiana, Mississippi, Alabama, and Florida), whose principal objectives are the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico, to provide food, employment, income, and recreation to the Nation.
  - The Pacific States Marine Fisheries Commission's primary goal is to promote and support policies and actions to conserve, develop, and manage our fishery resources in California, Oregon, Washington, Idaho and Alaska.

### **Fisheries Statistics:**

Funds are used to manage and conduct data collection, data processing, statistical analysis, information management, and statistical reporting activities for commercial and recreational fisheries. Accurate data and reliable statistics on fishing effort and catch are essential for assessing fishing impacts on fish stocks, as well as for monitoring fishing performance relative to fishery management targets. The funds support three functions: 1) statisticians, fishery biologists, economists, social scientists, and information technology specialists in the regional science centers, regional offices, and headquarters offices; 2) the collection of biological data on commercial and recreational fishery catches in all regions through well-designed survey sampling programs and the continued development of electronic reporting systems that will deliver more timely landings data for commercial and for-hire fisheries.

The third function is support for the Marine Recreational Information Program (MRIP). The MRIP uses these funds (1) to continue development of the National Saltwater Angler Registry needed for conducting more accurate and efficient future telephone or mail surveys of recreational fishing activities and (2) to continue development, testing, and implementation of improved survey designs for the monitoring and assessment of marine recreational fishing participation, fishing effort, and catch. Upgrading NMFS's data collection efforts for monitoring recreational fisheries impacts is important for improving relations with the recreational fishing community and improving Federal fisheries management.

### **Fish Information Networks:**

This base program supports a number of different state-Federal cooperative programs that work to coordinate data collection, data management, and information management activities that are essential for accurate monitoring of commercial and recreational fishing impacts in each region. These programs collect data and manage information on fishing participation, fishing effort, and catch. They also help to collect fishery-dependent biological data that are needed for stock assessments, as well as some economic data that are essential for use in economic impact and valuation assessments for recreational fisheries. This program includes:

- Atlantic States Marine Fisheries Commission is used to help fund the Atlantic Coast Cooperative Statistics Program which coordinates state and Federal fisheries statistics programs for the Atlantic coast.
- Gulf of Mexico Fisheries Information Network is used to coordinate state and Federal fisheries statistics programs for the Gulf of Mexico and the Atlantic coast of Florida.
- Alaska Fisheries Information Network supports the coordination of state and Federal commercial fisheries statistics work in Alaska.
- Pacific Fisheries Information Network is used to coordinate state and Federal commercial fisheries statistics programs for both the Pacific and Western Pacific regions.

- Recreational Fisheries Information Network supplements cooperative recreational fisheries statistics and economics programs for the Atlantic, Gulf, and Pacific coasts.
- National Fisheries Information System is used to coordinate cross-regional communication and planning efforts that enhance development of the regional networks while supporting improved national gathering and reporting of statistics on the status of U.S. fisheries.
- Marine Fisheries Initiative (MARFIN) operates a competitive grant program that provides financial assistance for research and development projects that optimize the use of fisheries in the Southeast region.

#### **Survey and Monitoring Projects:**

These fishery survey and monitoring activities are complementary to those conducted under the Expand Annual Stock Assessments (EASA) line. The fishery-independent survey and monitoring activities supported under this line include bluefin tuna tagging, red snapper monitoring, west coast groundfish surveys, Maine and New Hampshire inshore trawl surveys, Chesapeake Bay multi-species surveys and research, Bering Sea Pollock Research, and Gulf of Maine groundfish surveys to name a few. These targeted surveys and biological investigations improve the information available to conduct accurate stock assessments and directly contribute to the Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA) performance measure.

#### **Fisheries Oceanography:**

NMFS's resource management focuses on the connectivity of managed living resources with their predators and their prey, their habitats, and the effects of environmental variation within a determined ecosystem. Humans are also considered to be part of these ecosystems. The ecosystem approach to management relies upon research and analyses that integrate biological, socioeconomic, environmental, and oceanographic data into predictive models that improve the Nation's forecasting capabilities for resource management. NMFS's use of an ecosystem approach increases the ability to make scientifically sound management decisions that are less prone to risk and more likely to succeed. Improved scientific analyses ensure that constituents receive the most accurate and complete analyses, thereby fostering a constructive public stewardship process. Fisheries Oceanography funds are distributed between two programs; the Fisheries and the Environment, and the Integrated Ecosystem Assessments.

Fisheries and the Environment (FATE) is a research program to advance the understanding of environmental impacts on living marine resources in order to improve information available to stock and ecosystem assessments. FATE projects analyze the response of living marine resources to environmental change, including the development of ecosystem indicators, construction of new forecasting models, and development of techniques to incorporate ecosystem indicators into stock or ecosystem assessments.

Integrated Ecosystem Assessments (IEA) program offers a mechanism to enhance advice to better manage the Nation's resources to achieve economic and societal objectives. Building upon research conducted under other programs, like FATE, IEAs are a dynamic, iterative, and adaptive process that includes the analysis of diverse ecosystem information to manage and conserve essential parts of an ecosystem and ecosystem processes.

**American Fisheries Act:** The American Fisheries Act (AFA) requires a suite of management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the Bering Sea and Aleutian Islands (BSAI) pollock fishery and that allocate pollock to such sectors; (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery; (3) regulations to protect other fisheries from spillover

effects from the AFA; and, (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery.

### **National Standard 8:**

The Magnuson-Stevens Act requires all fishery management plans (FMPs) include a fishery impact statement intended to assess, specify, and describe the likely effects of the measures on fishermen and fishing communities (§303(a)). When establishing any new regulations, the cultural and social framework relevant to the fishery and any affected fishing communities (§303(b)(6)) must be taken into account. Values obtained from analyses may also be used for assessing the costs and benefits derived from stock rebuilding programs, protected species recovery efforts and habitat restoration and recovery efforts.

### **Reducing Bycatch:**

National Standard 9 of the MSA requires that “conservation and management measures shall, to the extent practicable, minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” This funding supports development of new gear technologies that reduce the bycatch of unwanted species and provide observer coverage in fisheries to determine the level of bycatch of overfished stocks, marine mammals, and endangered species. Information on bycatch of these critical species enhances the agency's ability to effectively manage and monitor their recovery. Testing of new gear technologies requires an experimental fishing permit. Most experimental fishing permits require an observer on board to collect data during the test.

### **Product Quality and Safety:**

NMFS helps ensure that the Nation's seafood industry is economically sustainable and complies with food regulations. This is done through support for the National Seafood Inspection Laboratory that provides an analysis laboratory, data management, regulatory compliance risk analysis, and information transfer expertise to support the Department of Commerce's National Seafood Inspection Program. Voluntary services, such as sanitation evaluation, product inspection and certification, auditing of food quality and safety programs, and training are also part of the program. Approximately 10 percent of the seafood industry uses NOAA services, and 20 percent of the seafood consumed in the United States is processed by facilities that are inspected by the Program. This line also supports the economic sustainability of fishermen and fishing communities through improvements in the fishing fleet and shoreside processing operations; and reductions in overcapacity in fisheries.

### **Schedule & Milestones:**

#### *Fisheries Management*

- The Fish Stock Sustainability Index (FSSI), a performance measure for the sustainability of 230 U.S. fish stocks selected for their importance to commercial and recreational fisheries, will increase from 587 (FY 2011 actual) to 649.5 by the end of 2017.
- NMFS will address MSA mandates to implement IUU/Bycatch identification, monitoring, certification procedures, and reports to Congress, and engage in technical assistance to improve the capacity of other countries to conserve and manage living marine resources of mutual interest. (FY 2013 - FY 2017)
- NMFS will submit to Congress IUU/Bycatch Identification/ Certification Reports on a biennial basis. In the event of countries engaging in IUU or bycatch of protected living marine resources, the Program will coordinate with other government agencies to consider possible fishery-product trade prohibitions.

#### *National Catch Share Program (FY 2013 - 2017)*

- NMFS will continue to work with interested Regional Fishery Management Councils to develop and implement new catch share programs.
- NMFS will advance efforts to explore the use of technology to improve the cost effectiveness of catch share programs.

#### *Fisheries Monitoring, Assessment and Forecasting (FY 2013 - 2017)*

- NMFS will conduct fishery independent surveys to provide stock assessment scientists with the information necessary to conduct stock assessments for commercially and recreationally important species.
- NMFS will improve the frequency of updating assessments for key stocks, provide adequate assessments for more FSSI stocks, conduct a baseline monitoring report for all managed fish stocks, and add next-generation assessments for selected stocks with high sensitivity to ecosystem conditions.
- NMFS will improve the quality of marine recreational fishery catch statistics by increasing the number of NMFS subregions with: improved registry-based telephone and mail surveys of recreational anglers for the collection of fishing effort data; improved shoreside surveys of recreational fishing trips for the collection of catch data; and, improved logbook reporting programs to provide catch and effort data for for-hire fisheries.
- NMFS will conduct non-market recreational fishery valuation surveys for recreationally important fish species.

#### *Ecosystem Science*

- NMFS will begin to provide Management Strategy Evaluations to resource managers for evolving constituent defined management issues in the California Current. NMFS will continue to develop the Gulf of Mexico, Northeast Shelf, Alaska, and Pacific Islands IEA regions.
- NMFS will develop and evaluate environmental indicators for improving stock assessments and integrated ecosystem assessments. (FY 2013 – 2017)

#### *Economics and Social Science (FY 2013-2017):*

- Partnering with state agencies and fishing commissions, as appropriate, NMFS will expand its economic and social data collection programs.
- NMFS will develop quantitative methods for conducting benefit-cost analyses. Specific tasks include: (1) predicting the benefits and costs associated with specific stock rebuilding programs; (2) developing inventories of the use and non-use values of marine ecosystems; and (3) developing values associated with particular types of habitats, including the scope and value of the ecosystems services provided by a habitat.

#### **Deliverables/Outputs:**

##### *Fisheries Management*

- Support preventing and eliminating overfishing and rebuilding overfished stocks. This is essential to ensuring biological sustainability and to increasing long-term economic and social sustainability of fisheries.
- Coordinate with other NOAA programs to deliver products and services, including basic and applied science for the analysis and decision-making that support ecosystem approaches to fisheries management and enforcement to ensure compliance with regulations.
- Work within the legislative structure to implement international agreements, education and outreach

- Development of fisheries regulations and Fisheries Management Plans and amendments in order to maintain and restore productive stocks important to commercial, recreational, tribal, and subsistence fisheries.
- Provide for agency analysis and research to implement agency responsibilities to identify, consult and certify nations whose vessels engage in IUU fishing and bycatch of protected living marine resources (PLMR).
- Provide recommendations to the Secretary of Commerce, after coordination with other agencies, on possible fishery-product trade prohibitions on nations whose vessels engage in IUU and bycatch of PLMRs.
- Implement and monitor a worldwide international technical assistance program, including use of bilateral and regional workshops, invitational travel to agency facilities and technology transfer to support agency domestic conservation and management objectives.
- Ensure the continuation of economically and ecologically sustainable fishing communities in a manner consistent with the goals of the MSA and each Council's fishery management plan objectives.

#### *National Catch Share Program*

- Development of additional guidance on the design and development of catch share programs.
- Increase efficiencies in catch share program administration and infrastructure.
- The number of catch share programs may increase as the Councils approve additional catch share programs.
- Assessments of the economic and social impacts of catch share management options and current policies on fishery participants, firms, and communities.

#### *Fisheries Monitoring, Assessment and Forecasting*

- Four new fishery-independent surveys, potentially including a clam survey in the Northeast using charter vessels and, in several regions, use of advanced technologies to survey fish stocks inhabiting rough terrain that cannot be surveyed with current methods.
- More precise estimates of recreational catch through expanded use of telephone and mail surveys that are based on the National Saltwater Angler Registry and implementation of both improved shoreside surveys of shore and private boat fishing trips and improved logbook reporting of effort and catch on for-hire boat fishing trips.

#### *Ecosystem Science*

- Initial Management Strategy Evaluations (MSEs) delivered to resource managers from the California Current IEA).
- Environmental indicators and predicted impacts on managed species will be delivered to appropriate stock assessment scientists and management councils.

#### *Economics and Social Science*

- Assessments of the benefits/cost-effectiveness of fisheries rebuilding programs and habitat and protected species recovery programs
- Assessments of the economic and social impacts of management options and current policies on fishery participants, firms, and communities.
- Developed indicators describing the status and trends of fishery participants and shoreside firms and communities, which will help detect economic and social change.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Fish Stock Sustainability Index (GPRA 17a)	587	603.5	617	625.5	632.5	646.5	649.5

**Description:** The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: <http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>.

**Note:** These targets reflect the proposed FY 2013 program changes.

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA 17b)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	59.1% (136/230)	60.9% (140/230)	62.6% (144/230)

**Description:** This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.

**Note:** These targets reflect the proposed FY 2013 program changes.

Base targets have changed from the FY 2012 President’s Budget for several reasons including ACL implementation and the prioritization of which stocks assessed.

<b>Performance Goal:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of defined management needs, identified through the Integrated Ecosystem Assessment process, met by Management Strategy Evaluations (cumulative)	0	0	4	6	16	22	28

**Description:** This measure tracks the annual performance of Integrated Ecosystem Assessments (IEAs) by identifying the number of management needs, as defined by resource managers through the IEA process, that are met by a Management Strategy Evaluation (MSE). MSEs are a formal approach using models and forecast scenarios, based on the best available science, to evaluate the benefits and risks (trade-offs) of proposed management actions on ecosystems (including the human component) and to inform management decisions.

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of key catch share programs objectives met	7	14	14	16	16	16	16
<p><b>Description:</b> This measure tracks the number of key objectives met by catch share programs. The key objectives are:  Increased revenue per vessel (with catch share program)*  Increased or full utilization of target species*  Decreased bycatch*  ACL not exceeded</p> <p>*Changes will be determined by comparing the performance under the catch share program with the average performance prior to implementation of the catch share program.</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of new catch share programs meeting all objectives	0	3	4	4	4	4	4
<p><b>Description:</b> The number of key catch share program objectives met includes the four key objectives that are expected outcomes of implementing catch share programs. By meeting these key objectives, the programs will demonstrate their success in improving the ecological and economic health of that fishery. More detailed information will be reported on a fishery-by-fishery basis when available.</p>							

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## **Program Changes for FY 2013:**

**Fisheries Research and Management Programs (Base Funding: 825 FTE and \$181,045,000; Program Change: 0 FTE and -\$2,025,000):** NOAA requests a decrease of 0 FTE and \$2,025,000 for a total of 825 FTE and \$179,020,000 for Fisheries Research and Management Programs.

### **Proposed Actions**

NOAA requests a \$2.0 million reduction that will be spread across all NMFS regional offices and Science Centers. With NOAA on track to have required annual catch limits in place for all 46 FMPs in time to be effective for their respective 2012 fishing year NOAA anticipates that the regulatory workload at the Regional Fishery Management Councils will be reduced. Therefore, NMFS proposes to reduce fishery regulation and monitoring funding to all NMFS Regional Offices and Science Centers. However, NMFS staff and Councils will work closely together to minimize the impact of this reduction on timeliness with which adaptive fishery management actions can be put in place and maintain effectiveness of catch monitoring efforts

With the FY 2013 request, NMFS regional offices will continue to work with the eight Regional Fishery Management Councils to manage more than 530 stocks, monitor annual catch limits (ACLs) to identify appropriate harvest levels, administer management programs through which ACLs are implemented, and collaborate on administering fishery management plans. The scientific activities that Fisheries Research and Management support enable NMFS to be effective stewards of living marine resources, using an ecosystem-based approach, for the benefit of the Nation. This in turn provides the scientific knowledge base for NMFS's Regional Offices, regional fishery management councils, interstate fishery commissions, and other agencies to facilitate informed marine resource management decisions for sustainable fisheries, aquaculture, protected resources, endangered species and habitat.

### **Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management base narrative.

### **Schedule and Milestones:**

FY 2013 – 2017:

- Continue to support critical fisheries science activities in order to deliver applied science data and information necessary for decision-making supporting ecosystem approaches to fisheries management.
- Address MSA mandates to implement IUU/Bycatch identification, monitoring, certification procedures, and reports to Congress, and engage in technical assistance to improve the capacity of other countries to conserve and manage living marine resources of mutual interest.
- Submit to Congress IUU/Bycatch Identification/ Certification Reports on a biennial basis. In the event of countries engaging in IUU or bycatch of protected living marine resources, the Program will coordinate with other government agencies to consider possible fishery-product trade prohibitions.

### **Deliverables:**

FY 2013 – 2017:

- Fishery Management Plan amendments

- Fisheries and living marine ecosystem observation and monitoring data
- Basic and applied science data and information on the biological, ecological, economic and social aspects necessary for decision-making supporting ecosystem approaches to fisheries management

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
<b>Fish Stock Sustainability Index (FSSI) (GPRA 17a)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With decrease</b>	N/A	N/A	617	627.5	635	647	650
<b>Without decrease</b>	587	603.5	617	628.5	637	649	652

**Description:** The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA's efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: <http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm>.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,025)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,025)</u>

**Fisheries Research and Management Programs: West Coast Proposal: (Base Program: 181,045,000 and 825 FTE; Fisheries Research and Management Programs -5 FTE and- \$1,460,000):** NOAA requests a decrease of \$1,460,000 and 5 FTE for a total of \$179,585,000 and 820 FTE In the Fisheries Research and Management Programs to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to elimination of support for the Newport Seawater Research program at the Newport Laboratory in Oregon.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 25
Pacific Salmon	-\$ 484,000	page NMFS - 43
Fisheries Research and Management	-\$1,460,000	current page
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 71
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 144</u>
Total	-\$5,000,000	

### **Proposed Actions**

Under this part of the proposal, the Fisheries Research & Management reduction will support the reconfiguring NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office, and the closure of the Pacific Grove Laboratory in California, eliminating the Puget Sound ecosystem survey; ending the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon.

### **West Coast Proposal:**

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Fisheries Research and Management narratives.

**Schedule and Milestones:**

- The Puget Sound ecosystem survey and the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon will end in FY 2013.
- The reconfiguration of the Northwest and Southwest Regional Offices needs to be implemented by October 2012.
- Lay up small vessel R/V *Harold Streeter*
- The excess and disposal of the Pacific Grove Facility should begin in FY 2012, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

**Deliverables:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service

Subactivity: Fisheries Research and Management

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Director, Regional Office	TBD	SES	-0.17	170,000	-28,900
Deputy Director, Regional Office	TBD	ZP-V	-0.17	126,687	-21,537
Various titles	TBD	Various	-4.66	116,093	-540,993
<b>Total</b>			<u>-5</u>		<u>-591,430</u>
less Lapse		0	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-5		-591,430
2013 Pay Adjustment 0.5%					0
<b>TOTAL</b>					<u>-591,430</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-5
Other than full-time permanent	0
Total	<u>-5</u>

Authorized Positions:

Full-time permanent	-5
Other than full-time permanent	0
Total	<u>-5</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(591)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(591)
12 Civilian personnel benefits	(177)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(592)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(100)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,460)

**Expand Annual Stock Assessments: (Base Funding: 147 FTE and \$64,333,000; Program Change: 0 FTE and +\$4,320,000):** NOAA requests an increase of \$4,320,000 and 0 FTE for a total of \$68,653,000 and 147 FTEs to increase the number of stocks with adequate assessments to help verify that overfishing is no longer occurring and safely allow optimum catch levels to be set to support the sustainability and economic viability of Fish Stock Sustainability Index (FSSI) stocks.

**Proposed Actions:**

The requested increase will allow for an increase in NMFS's capability to conduct assessments for more stocks. Building on advances in stock assessment prioritization begun in FY 2012, NMFS will conduct improved surveys using advanced technologies to estimate fish abundance in additional habitats. Improving fishery-independent surveys using advanced sampling technologies, including the following activities:

- Foster expertise in advanced sampling technologies, such as acoustic and optical methods which can be used to concurrently sample multiple species.
- Implement existing advanced sampling technologies aboard NOAA's new FSVs, such as the new ME70 multibeam sonar system.
- Develop and implement innovative sampling technologies to improve fisheries-independent surveys, particularly acoustic and optical remote sensing technologies.
- Develop and operationally utilize alternative sampling platforms for new fisheries-independent surveys to improve data-poor stock assessments, focusing on stocks in regions that are inaccessible to conventional sampling gear.

**Statement of Need and Economic Benefits:**

Fish stock assessments provide quantitative information on the abundance of fish stocks and the level of catch that can be sustained without harming the marine ecosystem. The role of fish stock assessments has been well-established. National Research Council studies and the Ocean Commission Report both found that a strong fishery stock assessment program is the foundation of successful management of commercial and recreational fisheries. Furthermore, the MSA, which mandated establishment by 2011 of annual catch limits (ACLs) in all fisheries to prevent overfishing, requires improved assessment capacity.

For many fish stocks, the incomplete scientific information from lack of adequate stock assessments forces fishery managers to set annual catch limits in an overly conservative manner in order to prevent overfishing, thus limiting fishing opportunity. For example, some annual catch limits may be set 25 percent below potential maximum levels of catch in order to implement the buffers necessary to account for scientific uncertainty in estimates of the sustainable level of catch. This could result in foregoing millions of dollars in short-term commercial catch and recreational fishing opportunities. Smaller buffers can be implemented by increasing NMFS capabilities to conduct adequate stock assessments, thus increasing economic opportunities for fishing communities whose livelihood depends on the scientifically sound management of fisheries. The benefits of this program accrue to the American people because stock assessments are a key factor in rebuilding overfished fish stocks and maintaining them at a productive level.

**Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management Programs base narrative.

**Schedule and Milestones:**

NMFS will:

- FY 2013: Conduct workshops and contract studies to evaluate advanced technologies most ready for transition to operations;
- FY 2014: Select area and target fish stocks for operational survey (for example, reef fish off South Florida); design survey;
- FY 2015: Conduct pilot survey in the selected area;
- FY 2016: Repeat the survey and initiate assessment activities;
- FY 2017: Deliver assessment status reports for stocks in the surveyed area.

**Deliverables:**

- Survey design using advanced technologies
- Stock survey results for key species found in the selected survey area by 2016
- Initial stock assessment reports by 2017.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Percentage of Fish Stocks with Adequate Assessments and Forecasts (GPRA 17b)							
<b>With Increase</b>	N/A	N/A	57.4% (132/230)	57.4% (132/230)	58.3% (134/230)	59.1% (136/230)	60.0% (138/230)
<b>Without Increase</b>	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	57.0% (131/230)	56.5% (130/230)	56.5% (130/230)	56.1% (129/230)
<b>Description:</b> This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Fish Stock Sustainability Index (FSSI) (GPRA 17a)							
<b>With Increase</b>	N/A	N/A	617	628.5	638	652	655
<b>Without Increase</b>	587	603.5	617	628.5	637	649	652
<b>Description:</b> The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: <a href="http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm">http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm</a> .							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	4,320
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>4,320</u>

**Expand Annual Stock Assessments: West Coast Proposal: (Base Funding: \$64,333,000 and 147 FTE; Program Change: 0 FTE and -\$8,000):** NOAA requests a decrease of \$8,000 and 0FTE for a total of \$64,325,000 and 147 FTE in the Expand Annual Stock Assessment program to reconfigure NMFS’s Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President’s efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 25
Pacific Salmon	-\$ 484,000	page NMFS - 43
Fisheries Research and Management	-\$1,460,000	page NMFS - 71
Expand Annual Stock Assessments	-\$ 8,000	current page
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>page NMFS - 144</u>
<u>Total</u>	<u>-\$5,000,000</u>	

**Proposed Actions**

The reduction in this PPA reflects the administrative savings that result from closing the Pacific Grown Laboratory. A limited amount of Expand Annual Stock Assessment funding has supported Pacific Grove lab operations for scientists developing methods and approaches for explicitly incorporating marine environmental data in fisheries assessments and ecosystem models. This work will continue to be done at other laboratories, and this reduction will not adversely impact GPRA measures; Fish Stock Sustainability Index (GPRA 17a); Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA 17b).

**West Coast Proposal:**

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS’ Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region’s support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS’ reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Fisheries Research and Management base narrative.

**Schedule and Milestones:**

- The excess and disposal of the Pacific Grove Facility should begin in FY 2012, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

**Deliverables:**

N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>		<b>2013 Decrease</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	(8)
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(8)</u>

**Salmon Management Activities (Base Funding: 13 FTE and \$33,437,000; Program Change: 0 FTE and -\$6,519,000):** NOAA requests a decrease \$6,519,000 and 0 FTE for a total of \$26,918,000 and 13 FTE to Salmon Management Activities.

### **Proposed Actions**

The funding reduction for salmon management activities is comprised of two parts; the Mitchell Act and a one-time increase for hatchery reforms.

NOAA is requesting a decrease of \$637,000 to reduce the level of contracts with the States and U.S. Fish and Wildlife Service for the Mitchell Act components within the Salmon Management Activities PPA. At the requested level, NMFS will continue to meet its obligations under the Mitchell Act through continuing to support the operations and maintenance of Columbia River hatcheries. The hatcheries mitigate the loss of fish production due to hydroelectric dams. NMFS will also conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers. These projects fund activities associated with salmon not listed under ESA.

NOAA is also requesting a decrease of \$5,882,000 to terminate support provided in FY 2012 to implement hatchery reforms based on recommendations by the Hatchery Scientific Review Group. NMFS received \$10.0 million in FY 2010 and \$5.9 million in FY 2012 for a total of \$15.9 million for hatchery reform projects. NMFS and does not anticipate additional need to continue funding in FY 2013 for these projects.

### **Statement of Need and Economic Benefits**

Projects funded under the Salmon Management Activities line are conducted for the conservation, development, and enhancement of salmon. This base funding supports research and management activities associated with salmon not listed under ESA and is composed of three main activities: the Mitchell Act–Columbia River hatcheries, Pacific Salmon Treaty, and Chinook salmon research and management. The Mitchell Act component supports the operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydropower dams.

### **Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management base narrative.

### **Schedule and Milestones:**

FY 2013-2017:

- Support the operations and maintenance of Columbia River hatcheries to mitigate the loss of fish production due to hydro power dams.
- Conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers.

### **Deliverables:**

FY 2013-2017:

- Maintain an adequate smolt production as required under the Mitchell Act.
- Conduct a broad range of salmon stock assessment and fishery monitoring programs in the Snake and Columbia Rivers.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of salmon smolt produced by Mitchell Act hatcheries (in millions)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	65.8	65.8	65.8	65.8	65.8
<b>Without Decrease</b>	70	70	70	70	70	70	70
<b>Description:</b> This performance measure projects the number of salmon smolt produced by the Columbia River hatcheries. Hatcheries currently produce approximately 70 million.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(637)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(5,882)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(6,519)</u>

**Regional Councils and Commissions (Base Funding: 6 FTE and \$32,488,000; Program Change: 0 FTE and -\$5,139,000):** NOAA requests a decrease of 0 FTE and \$5,139,000 for a total of \$27,349,000 and 6 FTE to Regional Councils and Commissions.

**Proposed Actions**

With Annual Catch Limits (ACLs) in place for all Fishery Management Plans (FMPs), NOAA proposes to reduce funding for to the Regional Fishery Management Councils (Councils) and Atlantic States Fishery Management Commission. Fewer resources are required to update adaptive measures or pass new management measures. At the requested funding level, NMFS will apply a prorated reduction of 14 percent to the (Councils and Atlantic States Fishery Management Commission. Since NMFS is the sole source of funding for the Councils, this may result in slowing passage of new fisheries management measures and may delay the implementation of adaptive measures that ensure the prevention and end of overfishing. This Council reduction will be applied using the formula approved by the Councils to appropriately divide their funding. NMFS will also reduce funding for the Atlantic Cooperative Coastal Act by 14 percent.

**Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management base narrative.

**Schedule and Milestones:**

- Continue to revise Fishery Management Plans and amendments to address ACLs, AMs, bycatch EFH and deep-sea corals (8/yr in 2013-2017)
- Work with the Councils to revise fishery management plans using an updated or specific Optimal Yield (9/yr in 2013-2017)
- Complete socioeconomic analyses for fishery management actions (9/yr in 2013-2017)
- Work with Councils to develop regional implementation plans for deep-sea corals (8/yr in 2013 – 2017);

**Deliverables:**

- Draft fisheries amendments to Fishery Management Plans
- Collect and analyze socioeconomic data on the impacts of fishery management actions

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Fish Stock Sustainability Index (FSSI) (GPRA 17a)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With decrease</b>	N/A	N/A	617	626.5	632	644	647
<b>Without decrease</b>	587	603.5	617	628.5	637	649	652
<b>Description:</b> The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA’s efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: <a href="http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm">http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm</a> .							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(5,139)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(5,139)</u>

**Survey and Monitoring Projects: (Base Funding: 128 FTE and \$22,014,000; Program Change: 0 FTE and +\$2,322,000):** NOAA requests an increase of \$2,322,000 and 0 FTE for a total of \$24,336,000 and 128 FTEs to provide funding for fishery independent survey and monitoring activities.

**Proposed Actions:**

The requested increase will enable NOAA to maintain the integrity of scientific data collections for fishery stock assessments that support the scientific basis for managing regional fisheries to prevent overfishing and to achieve optimum yield. Specifically, funding will support:

Red Snapper Monitoring – Funding will be used for at-sea data collections for Gulf of Mexico reef fish stock assessments. Stock assessments rely on bottom trawl, bottom longline, reef fish video, and plankton surveys - all of which collect information on red snapper to support fishery management. These are long-term activities that provide over 30 years of historical time series data. Recent expansion of the bottom longline and vertical line surveys were implemented to increase data on red snapper age composition not typically sampled by other survey methods. Funds also support reef fish ecology, including analysis of spatio-temporal distribution and patterns of essential fish habitat affiliation. This applied research informs annual survey design and data collection protocols to improve and advance the quality and utility of fishery-independent data, with direct implications for stock assessment and ecosystem-based management of southeast U.S. marine fisheries in state and federal waters.

Bycatch in regional shrimp trawl fisheries is a major mortality factor on juvenile red snapper. This line supports bycatch reduction device innovation in several fisheries, including Gulf shrimp trawl and skimmer trawls, and annual monitoring of current Bycatch Reduction Device regulations and their efficacy. Quantification of bycatch and release mortality rates are developed through observer data collection programs to improve accuracy of stock assessments.

Alaska Groundfish Monitoring – The requested increase will provide funding for survey and assessment activities at the Alaska Fisheries Science Center. These funds will support snow crab and Tanner crab stock assessments, rockfish stock assessment in the Bering Sea and Aleutian Islands, and echo-integration trawl surveys of walleye Pollock in the Bering Sea, and Shelikof Strait, Shumagin Islands and out to the shelf break of the Gulf of Alaska shelf.

West Coast Groundfish – The requested program change will provide funding for at-sea data collections that provide the only biomass estimates for all West Coast groundfish stock assessments. Efforts to assess the status of groundfish stocks in population models incorporating data from the fishery, fishery-independent surveys and life-history studies are complicated by long-term shifts in the ocean climate. The funding will allow NMFS to expand coast-wide surveys of groundfish populations and ocean conditions.

The remaining funds will be used for other critical agency science activities such as Gulf of Maine Groundfish Survey and New England Stock Depletion, which provides information and analyses used in the development of stock status reports to advance the recovery of New England groundfish stocks. Funds will also be used for Bluefin Tuna Tagging, which provides biological sampling, elemental and genetic analyses, and the development and use of population models to elucidate Atlantic bluefin tuna stock structure, mixing, connectivity, movement and distribution. The resulting work will lead to improved estimates of abundance and significantly strengthen stock assessments. Finally, funds will be used for Atlantic Herring

and Mackerel, which provides information on assessing the status of the herring and mackerel resources.

**Statement of Need and Economic Benefits:**

The field surveys, fishery monitoring, and research supported by this line provides the foundation for fish stock assessments needed to manage the Nation's valuable marine resources. Survey & Monitoring activities are used in conjunction with activities performed under Expand Annual Stock Assessments to produce improvements to the overall program. Data from these sources are used in stock assessments that provide the Regional Fishery Management Councils and NOAA with the scientific information needed to implement ACLs that prevent overfishing, rebuild overfished stocks, and obtain optimum yield from the fisheries. Optimum yield is the amount of fish harvest that will provide the greatest overall benefit to the national economy, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. The surveys collect standardized observations of fish abundance over the range of the stock according to a rigorous statistical design. These data provide a direct measure of changes in stock abundance. Fishery monitoring provides direct measures of fish catch and bycatch, which are needed to estimate fishing mortality. Research provides data on fish age, growth, movement, and reproduction, and also provides direct evidence of ecosystem changes.

**Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management Programs base narrative.

**Schedule and Milestones:**

FY 2013-FY 2017:

- Conduct surveys of red snapper and reef fish stocks in southeast U.S. continental shelf waters and bottom trawl surveys in the Gulf of Mexico.
- Conduct eastern Bering Sea trawl surveys to estimate king crab and tanner crab abundance.
- Conduct biannual surveys of walleye Pollock, other groundfish and crabs in the Bering Sea, Aleutian Islands and Gulf of Alaska shelf.
- Conduct biannual surveys of Pacific hake off the U.S. west coast.
- Spring deployment of observers on commercial longline vessels-of-opportunity for bluefin tuna tagging.
- Conduct Spring surveys of Atlantic herring and mackerel to monitor species biomass.

**Deliverables:**

FY 2013-FY 2017:

- Update and provide annual stock assessments for:
  - Gulf of Mexico Red Snapper and Reef Fish stocks
  - West Coast Pacific hake and groundfish stocks
  - Eastern Bering Sea and Gulf of Alaska Pollock stocks
  - Eastern Bering Sea, Aleutian Islands, and Gulf of Alaska groundfish stocks
  - Eastern Bering Sea snow and tanner crab stocks
  - Southeast Alaska rockfish stocks
  - Northeast Multispecies FMP and Gulf of Maine Fish stocks
  - Atlantic herring and Atlantic mackerel stocks

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percentage of Fish Stocks with Adequate Assessments and Forecasts (GPRA 17b)							
<b>With Increase</b>	N/A	N/A	57.4% (132/230)	57.0% (131/230)	57.4% (132/230)	58.2% (134/230)	58.7% (135/230)
<b>Without Increase</b>	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	57.0% (131/230)	56.5% (130/230)	56.5% (130/230)	56.1% (129/230)
<p><b>Description:</b> This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	2,322
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,322</u>

**Fisheries Oceanography: Integrated Ecosystem Assessments (Base Funding: 4 FTE and \$1,158,000; Program Change: +0 FTE and +\$4,989,000):** NOAA requests an increase of 0 FTE and \$4,989,000 for a total of 4 FTE and \$6,147,000 to support the creation of Integrated Ecosystem Assessments (IEA).

### **Proposed Actions**

The funds being requested in FY 2013 will allow NOAA to make the California Current IEA fully operational, including the delivery of management strategy evaluations (MSEs), and continue to develop and expand the IEA framework in the Gulf of Mexico and Northeast Shelf Regional Ecosystems. The additional funds will also allow NOAA to accelerate the IEA development recently initiated in the Alaska and Pacific Islands Regional Ecosystems, providing the analytical basis for ecosystem-based decision support in all five of these regions.

Funding will also be used to ensure continued access to existing biological, oceanographic, and socioeconomic data required by the ecosystem models to simulate and forecast conditions, and ultimately evaluate the efficacy of management options. The data management systems and ecosystem modeling frameworks will enable analysis of the indicators, and will be used to inform policy regarding potential management actions, monitor changes resulting from actions taken, and develop the ability to evaluate and forecast outcomes that might result from various management options on a regional to local level.

NOAA will partner with and provide at least \$1 million in extramural funding to existing and emerging NOAA partnerships, such as Cooperative Institutes, State and Federal agencies, and academic institutions, to leverage expertise needed for specific IEA objectives in each region.

### **Statement of Need and Economic Benefits**

IEAs will provide a more comprehensive science-based decision-making framework for NOAA's management of coastal and marine ecosystem resources. IEAs bring scientific and technological rigor to resource management decisions by incorporating diverse sources of data into ecosystem models, including socioeconomic data, that evaluate trade-offs between ecosystem and societal goals. The management strategy evaluations provided by as part of an IEA will allow managers to make better management decisions by allowing them to weigh those trade-offs, resulting from possible management actions. Trade-offs might include, for example, those between ecological elements, such as predator species, prey species, habitat; environmental conditions such as temperature, salinity, and currents; sectoral uses, such as fishing, aquaculture, offshore alternative energy development, and recreation; other ecosystem goods and services sectors; and or socio-economics, thus allowing managers to make more informed management decisions and further the implementation of ecosystem-based management (EBM).

In addition to bringing increased scientific and technological rigor to management decisions, IEAs promote job retention and economic growth by supporting sustainable resource use within and across various sectors such as fisheries, energy, coastal development and tourism. For example, understanding the interactions between a proposed offshore wind energy farm, commercial and or recreational fisheries areas, shipping corridors, and marine mammal migration routes is key to maximizing economic growth and job creation and preservation in each sector while considering ecosystem health. This provides greater consistency and dependability in job sectors reliant on marine ecosystems. At a local- to regional-scale, IEAs will require support for data management and ecosystem modeling, thus spurring creation of jobs.

**Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management base narrative. This PPA includes \$1,000,000 for the FATE program, as described in the base narrative.

**Schedule and Milestones:**

IEA Milestones	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Adaptation and expansion of data management/ services framework (ongoing)	CCE PI GOM	CCE PI GOM	CCE PI GOM	CCE PI GOM	CCE PI GOM
Adaptation and expansion of ecosystem models (can include climate and/ or socio-economic) (ongoing)	CCE NE GOM PI	CCE NE GOM PI	CCE NE GOM PI	CCE NE GOM PI	CCE NE GOM PI
Scoping with managers/ stakeholders to identify priority management needs; outreach to inform and educate both managers/ stakeholders and general public about the utility/ benefit of IEAs (ongoing)	CCE NE GOM PI AK	CCE NE GOM PI AK	CCE NE GOM PI AK	CCE NE GOM PI AK	CCE NE GOM PI AK
Identification and/ or evaluation of ecosystem indicators (can include socio-economic) (ongoing)	CCE GOM NE PI AK	CCE GOM NE PI AK	CCE GOM NE PI AK	CCE GOM NE PI AK	CCE GOM NE PI AK
Complete building of initial IEA	CCE		GOM NE		
IEA updated with new information (ongoing after initial IEA)		CCE	CCE	CCE GOM NE	CCE GOM NE
Delivery of Management Strategy Evaluations (MSE) (ongoing after initial IEA)	CCE	CCE	CCE GOM NE	CCE GOM NE	CCE GOM NE

California Current (CCE), Gulf of Mexico (GOM), Northeast Shelf (NE), Pacific Islands (PI), Alaska (AK)

**Deliverables:**

Funds in FY 2013 will provide the following for:

California Current

- Region-wide stakeholder scoping sessions
- Analyze indicators for status and trends; continue indicator identification (including socio-economic)
- Continued enhancement and development of ecosystem models
- Economic input-output models and climate models linked to ecosystem models
- Risk Assessment using indicators
- Evaluation of management strategies against indicators
- IEA outreach products
- Identification of data and modeling gaps

Gulf of Mexico:

- Initial stakeholder scoping processes
- Ecosystem indicator evaluation and development
- Data management and services framework development
- Continue building ecosystem modeling capabilities and capacity
- Identification of data and modeling gaps

Northeast Shelf:

- Region-wide stakeholder scoping sessions
- Continue ecosystem indicator evaluation for development of reference points
- Develop a risk analysis framework
- Enhance existing ecosystem modeling capability
- Continued development of climate modules for ecosystem models
- Conduct preliminary management strategy evaluations
- Identification of data and modeling gaps

Pacific Islands and Alaska:

- Develop initial scoping processes and identify initial priority management issues
- Ecosystem (including socio-economic) indicator development and evaluation
- Data management and services framework development
- Enhance ecosystem model development

**Performance Goals and Measurement Data:**

<b>Performance Goal:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of defined management needs, identified through the Integrated Ecosystem Assessment process, met by Management Strategy Evaluations (cumulative)	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	4	6	16	22	28
<b>Without Increase</b>	0	0	4	6	8	10	12
<p><b>Description:</b> This measure tracks the annual performance of Integrated Ecosystem Assessments (IEAs) by identifying the number of management needs, as defined by resource managers through the IEA process, that are met by a Management Strategy Evaluation (MSE). MSEs are a formal approach using models and forecast scenarios, based on the best available science, to evaluate the benefits and risks (trade-offs) of proposed management actions on ecosystems (including the human component) and to inform management decisions.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11 Full-time permanent	0
11 Other than full-time permanent	0
12 Other personnel compensation	0
12 Special personnel services payments	0
12 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	56
22 Transportation of things	0
23 Rental payments to GSA	0
23 Rental Payments to others	0
23 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	14
25 Advisory and assistance services	0
25 Other services	2,910
25 Purchases of goods & services from Gov't accounts	0
25 Operation and maintenance of facilities	0
26 Research and development contracts	1,000
26 Medical care	0
26 Operation and maintenance of equipment	0
26 Subsistence and support of persons	0
26 Supplies and materials	1,009
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>4,989</u>

**American Fisheries Act (Base Funding: 35 FTE and \$3,958,000; Program Change: 0 FTE and +\$1,662,000):** NOAA requests an increase of \$1,662,000 and 0 FTE for a total of \$5,620,000 and 35 FTE to implement the American Fisheries Act.

### **Proposed Actions**

American Fisheries Act (AFA) is a long standing budget line directed at the statutory requirements in Alaska fisheries management and science. These funds provide core support for research and management in Alaska Bering Sea and Aleutian Islands (BSAI) groundfish fishery. NMFS will increase the agency's ability to provide real-time in-season management of the largest volume fishery in US waters. NOAA will also increase its ability to maintain and monitor complex IT systems essential for the management of this fishery, to make modifications to the fishery regime, or to monitor and update necessary recordkeeping which supports backbone monitoring and enforcement.

### **Statement of Need and Economic Benefits**

The American Fisheries Act (AFA) requires a suite of management measures that fall into four general categories: (1) regulations that limit access into the fishing and processing sectors of the Bering Sea and Aleutian Islands (BSAI) pollock fishery and that allocate pollock to such sectors; (2) regulations governing the formation and operation of fishery cooperatives in the BSAI pollock fishery; (3) regulations to protect other fisheries from spillover effects from the AFA; and, (4) regulations governing catch measurement and monitoring in the BSAI pollock fishery. Reduced bycatch, higher rates of catch utilization, increased economic returns, and improved safety are among the direct benefits of AFA.

### **Base Resource Assessment:**

The base resources for this activity are described in the Fisheries Research and Management base narrative.

### **Schedule and Milestones:**

- Update the Interagency Electronic Reporting System (IERS) web-based reporting system that enables landings and production data to be reported by shoreside processors, to accommodate catch share (e.g., Limited Access Privilege Program) fisheries such as pollock, Gulf of Alaska rockfish, Bering Sea crab, Bering Sea flatfish and halibut/sablefish fisheries.
- Update the catch accounting methods used to monitor and manage target and non-target species catch in the Alaska groundfish (including Bering Sea pollock) and halibut fisheries.
- Conduct Eastern Bering Sea Crab and Groundfish Bottom Trawl survey annually to estimate the distribution and abundance of Alaska groundfish resources in the Eastern Bering Sea.
- Conduct Eastern Bering Sea Upper Continental Slope Trawl survey biennially to estimate the distribution and abundance of Alaska groundfish resources in the Eastern Bering Sea.
- Comprehensive bottom trawl survey of the Chukchi Sea to monitor effects of loss of sea ice.

### **Deliverables:**

- Accurate information needed to assure accurate harvests of pollock, Gulf of Alaska rockfish, Bering Sea crab, Bering Sea flatfish and halibut/sablefish fisheries, consistent with allocations of total allowable catch under various catch share programs
- Data collected on the Eastern Bering Sea Crab and Groundfish Bottom Trawl Survey is used in NMFS annual stock assessment and evaluation reports and used by the North Pacific Fishery Management Council to set catch quotas.

- Data collected on the Eastern Bering Sea Upper Continental Slope Trawl Survey is used in NMFS stock assessment and evaluation reports and used by the North Pacific Fishery Management Council to set catch quotas.

**Performance Goals and Measurement Data:**

N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,662
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,662</u>

**Product Quality and Safety: (Base Funding: 52 FTE and \$6,299,000; Program Change: 0 FTE and +\$290,000):** NOAA requests a increase of \$290,000 and 0 FTE for a total of \$6,589,000 and 52 FTE to provide support for seafood product quality and safety. The increase will help ensure that the Nation's seafood industry is economically sustainable and complies with food regulations. NMFS will more easily be able to address Infectious Salmon Anemia Virus (ISAV) and consumption advisories related to mercury in seafood. Overall funding will support laboratory analysis, data management, regulatory compliance risk analysis, and information transfer expertise to support the Department of Commerce's National Seafood Inspection Program, the Department of Agriculture, and the Food and Drug Administration (FDA).

NOAA has a secondary, complimentary role to the FDA regarding seafood safety focused on providing technical, regulatory, trade, and inspection services to support commerce and trade in seafood on behalf of the United States. These funds also support forensic analyses in support of enforcement investigations of economic fraud involving seafood and also provide analyses of contaminants to assess seafood safety for areas affected by episodic contamination events.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	290
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>290</u>

The following exhibit shows the summary object class detail for Fisheries Research and Management program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
 Subactivity: Fisheries Research and Management

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	271
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	271

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: ENFORCEMENT & OBSERVERS / TRAINING**

**ENFORCEMENT**

NOAA's Office of Law Enforcement (OLE) is a federal law enforcement agency charged with enforcing NOAA's natural resource protection laws and improving compliance with federal regulations to conserve and protect our nation's living marine resources and their natural habitat. OLE's jurisdiction spans more than three million square miles of ocean, more than 85,000 miles of U.S. Coastline, the country's thirteen National Marine Sanctuaries and its two Marine National Monuments. OLE is responsible for carrying out more than 35 federal statutes and international agreements related to living marine resources with primary mandates contained in the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Endangered Species Act, National Marine Sanctuaries Act, and the Lacey Act. OLE provides direct support for enforcement activities in the NMFS Regional Offices, NMFS headquarters' Office of Sustainable Fisheries, and Office of Protected Resources, and the National Ocean Service's (NOS) Office of National Marine Sanctuaries. NOAA's Office of Law enforcement further leverages the strength of collaboration through the operation of joint enforcement agreements with 27 coastal states and territories, and partnerships with other federal agencies such as the U.S. Coast Guard. OLE enforcement cases that document violations are referred to NOAA's Office of General Council, Department of Justice, or the United States Attorney's Office for review and potential prosecution under their jurisdiction.

NOAA's mandate to end overfishing could not be realized without OLE's efforts to ensure that the millions of people who enjoy these resources for recreation or rely on them for their livelihood understand and comply with the regulations necessary to ensure sustainable resources for future generations. OLE supports two objectives: (1) enforce laws and regulations that govern: commercial fisheries, international and interstate commerce in marine resources, human interactions with marine mammals and threatened and endangered species; and (2) protect resources within designated sanctuaries, marine monuments, and protected areas. To address these mission requirements OLE implements four primary methods: (1) traditional enforcement such as investigations and patrols, (2) partnerships with state and federal agencies, (3) technological tools such as Vessel Monitoring Systems, and (3) outreach and education strategies designed to enhance voluntary compliance. OLE's goal is to increase compliance with environmental laws and regulations.

Enforcement and Surveillance:

The purpose of most enforcement programs is to ensure effective compliance with the law such that the intent of the laws is met. In NOAA's case, this means ensuring compliance with a number of laws designed to protect such natural resources as fisheries, ocean ecosystems, sanctuaries, threatened and endangered species and marine mammals, through enforcement tools designed to encourage people to meet their legal obligations under these laws. NOAA's special agents and enforcement officers around the country work to deter, detect, investigate and document any violations of federal laws and regulations to protect and conserve the marine environment and its resources. NOAA's approach to fisheries enforcement will continue to emphasize compliance assistance and increases in monitoring and inspections to assist regulated parties in understanding and complying with fishery regulations. The capabilities associated with deterring violations and investigating egregious violations will be maintained as critical elements in NOAA's enforcement approach, but will be part of an integrated approach supporting increased understanding and voluntary compliance by regulated parties. Most commercial and recreational fishers comply with conservation measures and NOAA's Office of

Law Enforcement role is to ensure that those who follow the rules reap the benefits of fair competition and an even playing field.

#### Cooperative Agreements with States:

The Cooperative Enforcement Program leverages the resources of 27 coastal state and U.S. territorial marine conservation law enforcement agencies in direct support of the federal enforcement mission. Through the execution of joint enforcement agreements, these partners are primarily involved in federal enforcement efforts nearshore, at-sea, and land-based monitoring and inspection activities. Since 2001, OLE has capitalized on this approach as a way to address some of the challenges associated with the geographic jurisdiction, breadth of laws and regulations within NOAA's stewardship responsibilities, amount of regulated commercial activity (fishing and both domestic and international trade), and amount of recreational use of the marine environment. This cooperative program affords OLE the opportunity to concentrate on the investigation and resolution of more serious violations by integrating monitoring and inspection activities for federal requirements with the work of state/territorial enforcement partners and the U.S. Coast Guard. In 2011 these partnerships directly provided 157,687 hours of manpower increasing the amount of hours dedicated to federal marine conservation activities by more than five times what NOAA could have accomplished alone.

#### Vessel Monitoring System:

The Vessel Monitoring System (VMS) is a satellite-based technology program for remote monitoring of fishing vessels at sea. The Program supports a growing number of regulations requiring vessels to report in the VMS, and it allows NOAA's Office of Law Enforcement to monitor compliance and track violators over vast expanses of water. The VMS data is proven to be valuable evidence for prosecutions. VMS data is vital to NMFS's scientific community and to fisheries managers. This satellite-based communications system remotely reports vessel positions and provides an infrastructure for the communication of positional, fisheries declaration, and Days-at-Sea data. Efficiencies realized by this electronic monitoring method and the data it produces are monumental and have been a significant advance in NOAA's at-sea monitoring efforts. The VMS data cost effectively helps enforce protected areas, fishing quotas, actual landings, and several federal natural resource, environmental, and species conservation laws. Prior to VMS implementation the only methods used to police protected areas were surface and air patrols. These methods are costly and do not provide the round-the-clock coverage provided by VMS at lower cost.

#### Implementation of the High Seas Driftnet Fisheries Enforcement Act:

The High Seas Driftnet Fisheries Enforcement Act sets forth U.S. policy to enforce the United Nations' worldwide moratorium on large-scale driftnet fishing beyond the exclusive economic zone of any nation. Renegade large-scale high seas drift net fishing indiscriminately kills massive amounts of fish and other marine life such as whales and turtles by means of enormous nets suspended for miles in open water. The practice is universally condemned as it is a significant threat to ocean ecosystems and to the food and economic security of nations that rely on fishery resources. The Act provides for denial of port privileges and import sanctions against nations whose vessels and/or nationals are determined to be conducting illegal driftnet activities, and who do not take corrective action. The implementation of the Act requires a high level of coordination across multiple agencies including NOAA, the U.S. Coast Guard and the Department of State as well as international partners to continue to combat these illegal, unreported and unregulated (IUU) fishing activities and to achieve the sustainable management of all living marine resources. OLE provides investigation and enforcement efforts required to prosecute and deter these IUU fisheries actions.

## **OBSERVERS/TRAINING**

The goal of the Observer Programs is to provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources. The scientific data collected by observer programs are critical input for population assessments of threatened and endangered species such as sea turtles, seabirds, and marine mammals, and for effective management of the nation's fish stocks. Observer programs also support sustainable and resilient fisheries, species, and habitats, and help protect and restore biodiversity within healthy and productive ecosystems. Without observer programs there would be insufficient data and information to monitor and adapt to changes in the ocean's environment and living marine resources. Fisheries observer programs are a proven, unbiased, and valuable source of information on the Nation's fisheries, and are considered the most reliable and cost-effective means currently available to collect fishery-dependent data.

Since 1972, NMFS has deployed fishery observers to collect catch and bycatch data from U.S. commercial fishing and processing vessels. Observers monitor fishing activities on all U.S. coasts and collect data for a range of conservation and management issues. Observers are fishery biologists deployed at sea onboard commercial fishing vessels to collect data and information on fishery catch and bycatch. This includes information on fishing practices, vessel and gear characteristics, fishing locations and times, environmental conditions on the fishing grounds, compliance with fishing regulations, and socio-economic data. Observers also collect biological samples and may assist in fish tagging and tag recovery, or in special data collections for stock assessment programs.

Observer programs are implemented in each of NMFS's six regions. Improvements in data collection, observer training, and the integration of observer data with other research are coordinated by the Office of Science and Technology in NMFS headquarters. Collectively, the regional programs and the headquarters office comprise the National Observer Program, which supports implementation of observer programs nationwide. Approximately 45 fisheries are monitored by observer programs each year, and the data they collect are often the best means to gather information on catch, bycatch, and discards. Resources are allocated to each of the regions according to the number of fisheries and sea days that are observed annually. The authority to place observers on commercial fishing and processing vessels operating in particular fisheries is provided by the Magnuson-Stevens Act (MSA), the Marine Mammal Protection Act (MMPA), and the Endangered Species Act (ESA).

NMFS's FY 2013 observer program priorities include monitoring fisheries in each of the regions to meet statutory and regulatory requirements under the MSA, MMPA and ESA for observer coverage in U.S. commercial fisheries, while also addressing critical science and management needs for catch and discard estimates as well as stock assessments. A secondary priority is to expand observer coverage into fisheries with bycatch concerns, as identified in the National Bycatch Report published in September 2011, and in fisheries with little or no observer coverage.

During FY 2011, NOAA implemented observer programs in each region with over 1,000 observers and over 73,000 sea days observed in 47 fisheries nationwide. NOAA increased observer coverage in the Northeast and Northwest regions to collect data used to monitor new catch and bycatch limits established under new catch share management measures in the multispecies groundfish fishery and the Northwest trawl rationalization program. Specific regional accomplishments during FY 2011 include:

- The Southeast Fisheries Observer Program observed over 3,502 sea days in FY 2011 in the pelagic longline, reef fish, shrimp trawl, coastal teleost gillnet, and shark fisheries. The Southeast pelagic longline observer program implemented enhanced observer coverage in the Gulf of Mexico from March through June 2011 to monitor landings and discards of bluefin tuna during the bluefin tuna spawning season. This is the only known spawning area for western Atlantic bluefin tuna, a species of concern due to its overfished status. Concerns over bluefin tuna bycatch mortality and a critical need to collect biological samples led to enhanced observer coverage which continues in FY 2012. The program also provided observer coverage in the Gulf menhaden fishery for the first time.
- The Northeast Fisheries Observer Program observed 14,879 sea days through six monitoring programs in FY 2011. The New England Fishery Management Council's Multispecies FMP (Amendment 16) was implemented on May 1, 2010, and included mandatory observer coverage requirements for 19 sectors, and Northeast observers and at-sea monitors provide this increased coverage to monitor catch and discards in addition to collecting data on gear performance and characteristics and monitoring experimental fisheries.
- The North Pacific Groundfish Observer Program observed a total of 38,305 sea days across the groundfish fisheries in Alaska in 2011. The data provided by the observers enabled the tracking of over 1,500 separate management quotas for Alaska groundfish. Currently, the North Pacific Observer Program has 100 percent coverage for vessels over 125 feet in length, which includes the Alaska pollock fishery (the largest U.S. fishery by volume), and 30 percent coverage on vessels 60 to 124 feet in length. The North Pacific Fishery Management Council has approved a plan to restructure the observer program to include new observer coverage in the halibut fishery in 2013.
- The West Coast Groundfish Observer Program observed a total of 9,305 sea days in eight fisheries in 2011, a significant increase resulting from 100 percent observer coverage in the trawl rationalization program. Observers recorded haul information, determined the official total catch, sampled hauls for species composition, collected length and age structure data, completed projects related to salmon, and recorded marine mammal and seabird sighting and interaction data. These data are being used for fish stock and protected species population assessments.
- The Southwest Observer Program provided 276 days of observer coverage in the California swordfish drift gillnet fishery and the California-based swordfish pelagic longline fishery to document the incidental take of marine mammals, sea turtles, seabirds, and target and non-target fish species, and to collect selected biological specimens. The program also collected socio-economic data from vessel owners/operators. The data are being used to develop new bycatch reduction methodologies with the goal of reducing overall bycatch and bycatch mortality of these species.
- In FY 2011 the Hawaii Fisheries Observer Program implemented 100 percent observer coverage in the shallow-set longline fishery and 20 percent coverage in the deep-set longline fishery. The program also observed 2,150 sea days in the American Samoa longline fishery. Overall the program observed 7,719 sea days in FY 2011. Observers collected data on incidental sea turtle takes and fishing effort, documented interactions

of all protected species, and recorded species of fish kept and discarded. They also processed selected specimens for life history information. The data will be used to conduct an ESA Section 7 consultation for the American Samoa longline fishery with the goal of reducing overall sea turtle interaction.

- The National Observer Program published the first edition of the National Bycatch Report on September 22, 2011. The report provides the first-ever national compilation by NMFS of bycatch estimates for U.S. commercial fisheries. It will serve as a comprehensive baseline for evaluating improvements to and informing strategic investments by NMFS in conservation engineering, fisheries monitoring programs, and management actions. NMFS plans to provide yearly web-based updates of bycatch estimates and progress made to implement report recommendations, with a larger baseline National Bycatch Report produced at 5-year intervals.  
[http://www.nmfs.noaa.gov/by\\_catch/bycatch\\_nationalreport.htm](http://www.nmfs.noaa.gov/by_catch/bycatch_nationalreport.htm)

## **Schedule & Milestones:**

### **Enforcement**

OLE measures outputs in terms of incidents (documentation of possible violations) initiated, man-hours of monitoring and inspection work, and man-hours of outreach to the regulated public. The goal of increasing compliance with management regimes is difficult to measure; a satisfactory outcome measure has not been identified. OLE work performance has fluctuated based primarily on staffing levels with a general increasing trend in outputs.

During FY 2013 OLE plans to:

- Continue the transition to catch share management and appropriate enforcement strategies including the shifting of existing resources to compliance assistance and monitoring activities designed to foster voluntary compliance and deter violations.
- Refresh and maintain equipment that supports law enforcement functions.

### **Observers/Training**

FY 2013 – 2017:

- Provide coverage in approximately 47 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries and implementing new observer programs in fisheries with bycatch concerns.
- Maintain the number of fisheries with adequate or near adequate observer coverage at 29, the number of sea days observed annually at 72,500, and the percentage of fish stocks with adequate population assessments and forecasts. As described in further detail below, the number of fisheries with adequate or near adequate observer coverage, as well as the target observer coverage may vary depending on fishing effort and program priorities.
- Provide updated bycatch estimates for the National Bycatch Report.

FY 2013

- The Southeast Fisheries Observer Program will continue to provide 2 percent observer coverage in the Southeast and Gulf of Mexico shrimp otter trawl fisheries (including rock shrimp); eight percent in the Atlantic, Gulf of Mexico, and Caribbean pelagic longline fishery, with increased coverage in the Gulf of Mexico during bluefin tuna spawning season; 100 percent in the Southeast shark research fishery; and approximately two percent in the Gulf of Mexico reef fish fishery. Observer coverage will continue to be

provided in the Gulf menhaden fishery. The data from observer programs will be used to monitor the catch of target and non-target species and bycatch of protected species, and will provide biological and other data used in stock assessments.

- The Northeast Fisheries Observer Program will continue to provide 38 percent observer coverage in the New England groundfish sectors, 30 percent in the groundfish common pool fisheries; 20 percent in the herring fishery; three percent in the mid-Atlantic coastal gillnet fishery; three percent in the Northeast and mid-Atlantic small mesh trawl fisheries; and three to five percent in the mid-Atlantic Illex squid trawl fishery, Atlantic sea scallop dredge fishery, and Northeast and Mid-Atlantic large mesh trawl fisheries. Data from the Northeast Fisheries Observer Program will be used to monitor marine fisheries to identify fisheries that interact with protected species and, if necessary, help develop ways to reduce incidental takes, understand the effects of fishing on stocks, and better estimate the potential biological and economic benefits of changes in methods of managing the fishery, such as minimum legal sizes and trip quotas for individual species.
- The North Pacific Groundfish Observer Program (NPGOP) will continue to provide 100 percent observer coverage on vessels greater than 125 feet in length and 30 percent observer coverage on vessels 60 to 124 feet in length. In October 2010 the North Pacific Fishery Management Council approved restructuring of the observer program which is proposed to take effect in January 2013. The restructured program will levy a fee of 1.25 percent of ex-vessel landings for all vessels with less than 100 percent observer coverage (i.e., vessels <125 feet in length) and implement 30 percent observer coverage in the halibut fishery for the first time. The NPGOP will be responsible for training, briefing, debriefing, and overseeing observers who collect catch data onboard fishing vessels and at onshore processing plants and for quality control and quality assurance of the data provided by these observers. Data are used for estimation of catch and bycatch, bycatch mortality, and quota monitoring.
- The West Coast groundfish trawl catch share program which began in 2011 will continue in 2013. Under the trawl rationalization program, observer coverage provided by the West Coast Groundfish Observer Program (WCGOP) increased from 20 to 100 percent on all vessels participating in the rationalized fishery. Vessels that previously had 100 percent observer coverage, such as catcher-processors, will continue to be observed at 100 percent with two observers per vessel. The WCGOP will continue to provide 1 to 10 percent observer coverage in state-managed fisheries (e.g., halibut trawl, nearshore shrimp, and pink shrimp). The WCGOP will monitor and record catch data, including species composition of retained and discarded catch, and collect critical biological data such as fish length, sex, and weight to provide accurate accounts of total catch, bycatch, and discards associated with different fisheries and fish stocks.
- The Southwest Observer Program will continue to provide 20 percent observer coverage in the California drift gillnet fishery and 100 percent in the California pelagic longline fishery. The observer program is also planning to expand observer coverage into the coastal pelagic species purse seine fishery for sardine off Oregon and Washington. The data collected by the observer program will be used to document the incidental take of marine mammals, sea turtles, seabirds, and target and non-target fish species. Data will be used in stock assessments and for management of the fisheries.

- The Hawaii Fisheries Observer Program will continue to provide 20 percent observer coverage in the pelagic longline deep-set fishery and 100 percent coverage in the shallow-set fishery for swordfish, and a target of approximately 12 percent coverage in the American Samoa pelagic longline fishery. Data from the Hawaii Observer Program will be used to document interactions of all protected species, provide tallies by species of the fish that are kept and discarded, and provide selected specimens for life history information.
- The National Observer Program will complete an update to the National Bycatch Report that was first published in September, 2011. The next update is planned for 2013, and will include 2010 data. The next comprehensive report is tentatively planned for 2016.

### **Deliverables/Outputs:**

#### **Enforcement**

##### FY 2013

- Equipment re-refresh for computers, safety equipment, uniforms, and general law enforcement equipment.
- Increased compliance assistance through enhanced outreach to the regulated community.

##### FY 2014 – 2017

- Increased compliance assistance through enhanced outreach to the regulated community.
- Increased monitoring and inspections activity while maintaining investigative capability.
- Replacement of essential law enforcement equipment as required.

#### **Observers/Training**

##### FY 2013

- Data necessary for management of the Nation's fisheries, including information necessary to support management of marine mammals and other protected species.
- Information on catch, bycatch, discards, and biological data necessary for in-season monitoring and stock assessments.
- Information to increase compliance with specific regulations.
- Establishment of contracts needed to hire observers through companies providing independent observers.
- Information needed to support other specified science and management programs.
- Biological information needed for age and growth studies and genetic analyses of threatened or endangered sea turtle populations.
- Information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch.

##### FY 2014 – 2017

- Programs will continue to provide observer coverage and the same products and deliverables described above.
- Performance measures developed in the FY 2011 National Bycatch Report will be used to monitor bycatch trends and changes in the quality of bycatch data collection and estimation over time.

**Performance Goals and Measurement Data:  
Enforcement**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Increase the Stock Sustainability Index (GPRA 17a)	587	603.5	617	625.5	632.5	646.5	649.5
<b>Description:</b> The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA's efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. For more information: <a href="http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm">http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm</a> .							
<b>Note:</b> These targets reflect the proposed FY 2013 program changes.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Investigations	4,423	2,700	2,520	2,520	2,250	2,250	2,250
<b>Description:</b> Total number of investigations conducted.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Man hours of monitoring and inspections	18,456	7,200	6,300	6,300	5,850	5,850	5,850
<b>Description:</b> Total number of hours spent on inspections and monitoring.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Man hours of Outreach	11,336	10,800	9,900	9,900	9,000	9,000	9,000
<b>Description:</b> Total number of hours spent on outreach.							

**Observers/Training**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA 17b)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	59.1% (136/230)	60.9% (140/230)	62.6% (144/230)

**Description:** This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.

**Note:** These targets reflect the proposed FY 2013 program changes.

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Fisheries with adequate observer coverage	29	29	29	29	29	29	29

**Description:** Total number of fisheries that are observed with adequate observer coverage as defined in the Fishery Management Plan.

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of Sea Days Observed	70,000	71,000	72,500	72,500	72,500	72,500	72,500

**Description:** These values represent the total number of sea days observed. Some sea days are industry-funded; however, they still rely on federal funding to occur, and should thus be included in performance tracking, as is the case in the NMFS Annual Operating Plan.

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## **PROGRAM CHANGES FOR FY 2013:**

**Enforcement: (Base Funding: 248 FTE and \$66,532,000; Program Change: 0 FTE and +\$591,000):** NOAA requests a increase of \$591,000 and 0 FTE for a total of \$67,123,000 and 248 FTE to support the compliance assistance program.

### **Proposed Actions:**

The requested increase will provide funding to expand the compliance assistance program. Specialists will work directly with regulated fishermen, businesses, and industry organizations to increase knowledge of and compliance with regulations. Under the compliance assistance program the Office of Law Enforcement (OLE), working through compliance liaisons, will foster better cooperation with the fishing industry.

### **Statement of Need and Economic Benefits:**

Enforcement's responsibility to monitor compliance with the laws and regulations under which NOAA manages the Nation's fisheries is critical to ensuring that the scientifically-based harvest levels are not exceeded. A strong enforcement program is essential to protecting the investments of the U.S. seafood industry. The Nation's fisheries supported 1.5 million full and part-time jobs and contributed \$79 billion to GDP, \$183 billion in sales in 2010. Further, the jobs supported by the commercial fishing industry increased from 2009 to 2010, by 16 percent from 1 million to 1.2 million.<sup>1</sup> . Beginning in January 2010, the DOC Office of the Inspector General issued a series of reports detailing recommended changes in NOAA's management of enforcement and civil prosecutorial services, including management of the Fisheries Enforcement Asset Forfeiture Fund under the Magnuson-Stevens Act. NOAA adopted a series of Corrective Action Plans that have resulted in expanding enforcement outreach and formalizing a Compliance Assistance function within enforcement to improve outreach to regulated businesses and communities.

### **Base Resource Assessment:**

The base resources for this activity are described in the Enforcement and Observers base narrative.

### **Schedule and Milestones:**

- Expand the compliance program being developed in FY 2011 and 2012 and enhance monitoring of regulated activity designed to foster voluntary compliance and deter violations.

### **Deliverables:**

- Expand the pilot compliance program to increase compliance assistance through enhanced outreach to the regulated community.

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<sup>1</sup> Fisheries Economics of the United States, 2010 (*forthcoming, not yet published*)

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Enforcement and Observers/Training

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	591
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>591</u>

**Observers and Training: (Base Funding: 137 FTE and \$40,258,000; Program Change: 0 FTE and +\$2,908,000):** NOAA requests an increase of \$2,908,000 and 0 FTE for a total of \$43,166,000 and 137 FTEs for Observers and Training to provide accurate and timely information and analyses on the biological, ecological, economic, and social aspects of the Nation's fisheries resources.

**Proposed Actions:**

Observer programs will continue to provide coverage in approximately 47 fisheries nationwide, with a goal of expanding observer coverage in existing fisheries and implementing new observer programs in fisheries with bycatch concerns. Observer programs will maintain the number of fisheries with adequate or near adequate observer coverage at 29, and increase the number of sea days observed annually to 72,500. The number of fisheries with adequate or near adequate observer coverage, as well as the target observer coverage, may vary depending on fishing effort and program priorities. The National Observer Program will also provide updated bycatch estimates for the National Bycatch Report.

This increase, and a reallocation of \$1.3 million of the \$5.3 million total from the Hawaii Longline Observer Program, will be directed toward supporting observing and monitoring for fisheries currently under catch share management. In addition, the increase will also support observing and monitoring costs for programs expected to transition to catch share management in FY 2013.

NOAA is reallocating \$1.3 million provided in FY 2012 that supplemented data collection to achieve statistically valid protected species interactions and bycatch estimates for the American Samoa Long Line fishery. NMFS will continue to identify and, where practicable, implement alternative approaches for collection of fishery-dependent data such as electronic monitoring systems and/or industry-funded observer programs to meet current data collection requirements for stock assessments, quota monitoring, and bycatch estimation.

**Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

**Schedule and Milestones:**

FY 2013 – 2017:

- Implement observer programs in 47 fisheries, 29 with adequate observer coverage, across six regions to meet statutory and regulatory requirements under the MSA, MMPA, and ESA for observer coverage in U.S. commercial fisheries, while also addressing critical science and management needs for catch and discard estimates as well as stock assessments.
- Observe approximately 72,500 sea days annually to meet these requirements.
- Provide adequate observer coverage for new and existing programs under catch share management.

**Deliverables:**

FY 2013:

- Update the National Bycatch Report

FY 2013 – FY 2017:

- Provide observer coverage totaling 72,500 sea days observed annually in 47 fisheries across six regions;

- Data necessary for management of the Nation’s fisheries, including information necessary to support management of protected species such as sea turtles, marine mammals, and sea birds;
- Information on catch, bycatch, and biological data necessary for in-season monitoring and stock assessments;
- Information to increase compliance with specific regulations;
- Biological information needed for age and growth studies and genetic analyses of threatened or endangered sea turtle populations.
- Information on fishing effort, fishing gear, and specific fishing techniques that minimize bycatch.
- Data for incidental mortality and serious injury of sea turtles, marine mammals, and sea birds, to certify that takes of endangered species do not exceed the authorized incidental take limits.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Fisheries with adequate observer coverage Conducted Annually	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	29	29	29	29	29
<b>Without Increase</b>	29	28	28	28	28	28	28
<b>Description:</b> Total number of fisheries that are observed with adequate observer coverage as defined in the Fishery Management Plan.							

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of Sea Days Observed Conducted Annually	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	72,500	72,500	72,500	72,500	72,500
<b>Without Increase</b>	70,000	71,000	70,000	70,000	70,000	70,000	70,000
<b>Description:</b> These values represent the total number of sea days observed. Some sea days are industry-funded; however, they still rely on federal funding to occur, and should thus be included in performance tracking, as is the case in the NMFS Annual Operating Plan.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Enforcement & Observers

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	2,908
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,908</u>

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: HABITAT CONSERVATION & RESTORATION**

The Habitat Conservation and Restoration Program has a critical and challenging conservation mission to protect and restore habitats for a broad range of societal benefits. This includes conserving habitat for living marine resources such as commercial and recreational fisheries and protected species, increasing the resiliency of coastal communities, providing for the public's use and enjoyment, and supporting the biodiversity on which marine and coastal ecosystems depend. Healthy habitats provide more than two million jobs and over \$250 billion in economic activity annually (Fisheries Economics of the United States, 2009). Estuaries provide habitat for more than 68 percent of America's commercial fish catch by value and for 80 percent of the recreational fish catch by weight.

The Program serves an integral role in the conservation and management of fisheries, protected species, and corals. NOAA's Fisheries Management; Coral Reef Conservation; and Protected Species rely on the Program's habitat conservation expertise for the best available science, avoiding adverse impacts to habitat, determining and implementing appropriate conservation techniques for addressing threats to habitat, and monitoring conservation success. NOAA partners with government agencies, the public, academia, non-governmental organizations, industry, and Tribes to manage and implement conservation. Activities of the Habitat Conservation and Restoration Program directly support multiple priorities of the National Ocean Policy.

NMFS is taking a new approach for its habitat management, protection, and restoration activities through the NOAA Habitat Blueprint ([www.habitat.noaa.gov/blueprint](http://www.habitat.noaa.gov/blueprint)). NOAA expects it to be fully implemented in 2013. The Blueprint is designed to increase the effectiveness of NOAA's efforts to improve habitat conditions for fisheries, coastal and marine life, and coastal communities. The Blueprint provides a forward-looking framework for NOAA to think and act strategically across programs and with partner organizations to address the growing challenge of habitat loss and degradation. Under the Blueprint, NOAA will implement regional habitat initiatives, establish geographic priorities to focus habitat science and conservation, implement a systematic and strategic approach to habitat science, and strengthen policy and legislation to more effectively protect and restore habitat. The Blueprint will elevate the agency's focus on habitat conservation and foster and leverage partnerships to achieve the greatest possible benefits for fisheries, protected resources, at-risk habitats, and coastal communities.

**HABITAT CONSERVATION AND RESTORATION**

Habitat management and protection activities are the first step and most cost-effective means for ensuring the long-term survival and health of fishery resources. Habitat management and protection is integral to ensuring healthy regional ecosystems and the host of societal benefits derived from healthy and productive marine, coastal, and riverine habitats. As marine fish depend on habitat for survival and reproduction, it is important to protect and restore the habitats that sustain and enhance commercial and recreational fisheries. Sustainable habitat management integrates sound science and management and technical expertise to assist private organizations and other federal agency actions in the following areas:

- Designating and consulting with federal agencies on the impacts of proposed actions on essential fish habitat (EFH) related to federally managed species – The program, in consultation with the Fishery Management Councils, describes and identifies EFH and Habitat Areas of Particular Concern, and evaluates the effects of proposed federal projects on EFH. This work ensures that proposed actions posing threats to marine, coastal, and

riverine essential fish habitats are undertaken in a manner that prevents, minimizes, or compensates for adverse effects.

NOAA protects more than 15,000 acres each year through more than 3,000 EFH consultations that provide recommendations and other measures for construction projects, applications for dredging and filling wetlands, licenses for hydroelectric power plant operation, waste discharge permits, renewable energy proposals, and other federal funding and permit activities. NOAA targets its consultations to consider projects at various scales at both the local and watershed levels. Many of the consultations are technically complicated and controversial in nature and thus require a high level of analysis and coordination. The Program looks for opportunities to collaborate with industry sectors and regulatory agencies to establish best management practices for major activities or to expand use of programmatic consultations on recurring threats to NOAA's trust resources.

- Ensuring passage for migratory fish past hydroelectric dams that block valuable river miles – Under the authority of Federal Power Act and the Energy Policy Act of 2005, NOAA recommends measures to address the impacts of hydroelectric dams on migratory fish (such as salmon) and their habitats. This mandate is closely linked to NOAA's protected species and fishery management programs.
- Habitat conservation within federal, state, and local agencies – NOAA works with other agencies, especially on regional partnerships, such as those being established under the National Fish Habitat Action Plan (NOAA is a leader in the effort), to increase the effectiveness of state, federal, and local habitat conservation efforts. These efforts enhance habitat sustainability and support the goals of no net habitat loss, increased fish production, and resilient coastal communities.
- Implementing a deep sea coral research and technology program – The Magnuson-Stevens Fishery Conservation and Management Act (MSA) directs NOAA to implement a Deep Sea Coral Research and Technology Program. The MSA also provided discretionary authority to designate zones to protect deep sea corals identified by the program from physical damage from fishing gear. Since initial funding in FY 2009, NOAA continues to implement a program to identify and map locations of deep sea coral as well as analyze and provide scientific information needed to protect deep sea coral habitats. NOAA implements this work in coordination with other federal agencies and research institutions. Three major outcomes from our work include discovering new deep sea coral habitats, providing relevant information to Council management efforts, and supporting NOAA's coastal and marine spatial planning work.

The NOAA Restoration Center, as directed by the MSA, implements and supports restoration of priority coastal, marine, and riverine habitats essential for the reproduction, growth, and sustainability of commercial and recreational fisheries and protected species. NOAA provides a full range of restoration expertise and services (e.g., planning and consultation for project design, engineering, environmental compliance and permitting; oversight during implementation and construction; and monitoring and evaluation of project success), and financial support for habitat restoration projects nationwide, capitalizing on the investments offered by partnering organizations to meet MSA requirements.

Habitat restoration benefits local economies through improved habitat conditions that support recreational and commercial uses of coastal resources. In addition, habitat restoration projects support a range of job types in local communities including construction workers and project

managers working directly onsite, as well as other businesses and professionals who design, engineer, provide materials, and monitor the success of these projects.

NOAA also provides the base infrastructure to manage Natural Resource Damage Assessment and Restoration Trustee (NRDA) responsibilities for over 300 active cases (e.g., Deepwater Horizon oil spill) as required by the Oil Pollution Act (OPA) and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund Act). The scientific and policy expertise housed in this Program is critical to NOAA's ability to respond to oil spills and hazardous waste releases, and restore habitats after these events. The base infrastructure of the Restoration Center allows NOAA to provide restoration services across other NOAA programs including the Coral Reef Conservation Program, National Marine Sanctuaries Program, Office of Response and Restoration, and the Protected Species Program and oversee activities for:

- Community-based restoration for sustainable fisheries and threatened and endangered species– Support fishery rebuilding efforts and recovery of listed species by reversing the loss of coastal wetlands that provide spawning and rearing habitat, improving hydrological function of coastal wetlands, and restoring the ecological functions of our rivers. Provide the planning, engineering and design expertise, and financial support not found in local communities for habitat restoration projects. This highly successful national effort partners with industry, nonprofit organizations, and state and local governments and regularly leverages non-Federal funding to Federal funds by factors of five-to-one. NOAA supports national and regional partners that catalyze additional partnerships, community collaboration, partnership building, and interagency cooperation. Community-based restoration provides opportunities for hands-on citizen involvement in local and regional ecosystem restoration initiatives, resulting in long-term stewardship of the Nation's coastal and marine resources.
- Damage Assessment, Remediation, and Restoration Program (DARRP) – NOAA coordinates and conducts restoration planning and implementation, and monitors the success of implemented restoration projects for coastal and marine resources threatened or injured by oil spills (e.g., Deepwater Horizon), waste sites, or ship groundings. Through the program, injuries to habitat are repaired when possible and any lost natural resources are replaced through restoration projects that focus on revitalizing and improving coastal and marine habitats such as wetlands, coral reefs, and submerged aquatic vegetation. Although DARRP restoration projects are supported with funding recovered from polluters, the restoration expertise and leadership required for project planning, implementation, and monitoring is provided with Habitat Management and Restoration resources.
- Marine Debris Program and Estuary Restoration Programs – The Marine Debris Program (MDP), mandated by the Marine Debris Research, Prevention, and Reduction Act of 2006, has a lead role in addressing marine debris affecting the ocean and coastal environment, and navigation safety in the United States. The MDP conducts removal, prevention, and research activities leveraging partnerships to address marine debris issues. The MDP is a leader on marine debris issues in the Federal community and chairs the Federal Interagency Marine Debris Coordinating Committee. The Estuary Restoration Program was created in response to the Estuary Restoration Act of 2000 (ERA) to make restoring estuaries a national priority. The Estuary Restoration Program maintains a national inventory of restoration projects, supports the work of the ERA

Council, and provides assistance for restoration project monitoring. These two Programs are being transferred from NOS to NMFS for consolidation in FY 2013.

Through FY 2012, Habitat Conservation and Restoration activities were funded primarily from two program lines: Sustainable Habitat Management and Fisheries Habitat Restoration. Beginning in FY 2013, NOAA proposes to consolidate the funding for habitat conservation and restoration activities in one budget line: Habitat Management and Restoration. This consolidation will increase management flexibility to address habitat issues.

### **Schedules & Milestones:**

FY 2013 – 2017:

- Conduct over 3,000 required project consultations each year to protect EFH.
- Work with 10 coastal and marine Fish Habitat Partnerships to develop and implement strategic plans.
- Conduct deep sea coral research activities in conjunction with habitat characterization cruises.
- Participate in re-licensing and license implementation for an estimated 125 hydroelectric projects.
- Develop initial management options for protecting deep coral in partnership with Fishery Management Councils and National Marine Sanctuaries.
- Develop and implement communication protocols for efforts within NOAA and with stakeholders on renewable ocean energy.
- Develop and select strategic national restoration partnerships (FY2013, 2016).
- Develop and implement restoration plans for addressing NRDA, OPA, and CERCLA injuries to NOAA trust resources.
- Develop and implement priority restoration projects critical for NOAA trust resources.
- Evaluate restoration projects to better quantify the socio-economic and ecological benefits.
- Address marine debris impacts by researching debris sources and behavior, and implementing removal projects.

### **Deliverables/Outputs:**

FY 2013 – 2017:

- Management-driven research products to better understand how deep sea corals function as habitat for fish and invertebrates.
- Accurate deep sea coral habitat distribution maps that allow managers to better protect these biologically rich ecosystems.
- Improved assessments of potential fisheries impacts to deep sea coral habitats.
- Increased presence of target migratory fish species.
- Technical guidance and assistance provided to NOAA partners, federal action agencies, and resource decision-makers to achieve protection and restoration of NOAA trust resources.
- Restoration Plans reviewed and approved through NRDA public process
- Restoration requirements met as defined by specific NRDA settlements.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Number of Habitat Acres Restored (Annually) (GPRA 17f)</b>	79,381	80,007	82,000	74,500	63,125	53,125	48,125
<b>Habitat Acres</b>	5,102	4,000	4,000	1,500	125	125	125
<b>ARRA Acres</b>	10,318	2,007	0	0	0	0	0
<b>PCSRF acres</b>	63,961	74,000	78,000	73,000	63,000	53,000	48,000
<p><b>Description:</b> NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. This measure does not include restoration conducted through Natural Resource Damage Assessments or the Species Recovery Grants.</p> <p><b>Note:</b> Targets include proposed FY 2013 program changes.</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Stream miles made accessible (Annually)</b>	737	889	890	740	640	550	500
<b>Habitat stream miles</b>	179	175	140	30	30	30	30
<b>ARRA stream miles</b>	184	4	0	0	0	0	0
<b>PCSRF stream miles</b>	374	710	750	710	610	520	470
<p><b>Description:</b> This performance measure counts stream miles made accessible as a result of Habitat Program activities. Stream miles made accessible in this context will include barrier removal and fish passage projects that support recovery of listed species.</p> <p><b>Note:</b> Targets include proposed FY 2013 program changes.</p>							

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## **PROGRAM CHANGES FOR FY 2013:**

**Habitat Management and Restoration (Base Funding: 153 FTE and \$42,145,000; Program Change: 0 FTE and -\$10,058,000):** NOAA requests a decrease of \$10,058,000 and 0 FTE for a reduction in community-based restoration, for a total of \$32,087,000 and 153 FTEs in order to continue support for mandated restoration activities conducted through the NOAA Restoration Center related to Natural Resource Damage Assessment (NRDA), Oil Pollution Act (OPA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and other priority habitat restoration activities.

### **Proposed Actions:**

NOAA will focus on restoration projects that enhance stewardship and advance NOAA's priorities for sustainable fisheries, recovering protected resources, and supporting coastal economies. While NOAA will significantly reduce financial support for partnerships and grants provided through the Community-based Restoration Program, NOAA will continue to provide technical expertise and leadership to states, tribes, and local communities implementing fishery and coastal habitat restoration projects, within the guiding principles of NOAA's Habitat Blueprint. This expertise will also be provided to other programs and federal agencies such as NOAA's Coral Reef Conservation and Protected Species Programs, the EPA, and the Army Corp of Engineers. Technical expertise such as engineering and design, implementation support, and monitoring provided to external and internal partners allow NOAA to maximize the benefits for resources and habitats, including coral reefs, wetlands, and oysters, for which DOC/NOAA has trustee responsibility.

NOAA will maintain its core operations and restoration team that allows for quick response and restoration after acute disasters such as oil spills, and hazardous waste releases. Through the Damage Assessment, Remediation, and Restoration Program (DARRP), NOAA helps to compensate the public for lost trust resources through the NRDA process. NOAA established the DARRP to meet its responsibilities as a public trustee as established in the Oil Pollution Act (OPA) and Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund). Under these statutes, NOAA is responsible for addressing injury to natural resources, and acts on behalf of the public to protect and restore coastal and marine resources and their services. Natural resources include fish, plants, birds, other wildlife and their habitats, soil, and both surface and groundwater.

Through the NRDA process, NOAA responds and assesses injury to trust resources. The NOAA Restoration Center, the restoration arm of the DARRP, implements restoration plans that compensate the public for damages associated with an incident. The Restoration Center directs the planning, implementation, and monitoring of case-specific projects to restore NOAA trust resources, for example currently working on over 300 projects. NOAA has worked with teams of state, tribal, and Federal trustees to generate more than \$300 million since 1990 for restoration projects. This money has been used to improve wetlands, restore bird and other wildlife populations, create reefs for fish and lobster habitats, create and improve fishing access sites, and restore salmon streams.

### **Base Resource Assessment:**

The base resources for this activity are described in the Habitat Conservation and Restoration base narrative.

### **Schedule and Milestones:**

FY 2013 – FY 2017:

- Develop and implement priority restoration projects critical for NOAA trust resources
- Develop and select strategic national restoration partnerships (FY2013, and FY2016).
- Develop and implement restoration plans for addressing NRDA, OPA, and CERCLA injuries to NOAA trust resources.
- Evaluate restoration projects to better quantify the socio-economic and ecological benefits.

**Deliverables:**

- Restoration Plans reviewed and approved through NRDA public process.
- Restoration requirements met as defined by specific NRDA settlements.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>		<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Habitat Acres Restored (Annually) (GPRA 17f)</b>		<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
		<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Total Acres</b>	<b>with Habitat decrease</b>	79,381	80,007	82,000	74,500	68,125	63,125
	<b>without Habitat decrease</b>	79,381	80,007	82,000	77,000	72,000	67,000
<b>Habitat Acres</b>	<b>with Habitat decrease</b>	5,102	4,000	4,000	1,500	125	125
	<b>without Habitat decrease</b>	5,102	4,000	4,000	4,000	4,000	4,000
<b>ARRA Acres</b>		10,318	2,007	0	0	0	0
<b>PCSRF acres</b>		63,961	74,000	78,000	73,000	63,000	48,000

Description: NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. This measure does not include restoration conducted through Natural Resource Damage Assessments or the Species Recovery Grants.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Habitat Conservation and Restoration

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,559)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(7,499)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(10,058)</u>

**Habitat Management and Restoration: Marine Debris and Estuary Restoration Programs (Base Funding: 4 FTE and \$5,116,000 Program Change: 0 FTE and -\$1,216,000):** NOAA requests a decrease of \$1,216,000 and 0 FTE for a total of \$3,900,000 for Marine Debris and Estuary Restoration Programs.

**Proposed Actions:**

In the FY 2012 appropriation, Congress provided additional funds to track and mitigate the immense debris field generated by the Japanese earthquake and tsunami that struck in March 2011. It is anticipated that the debris will impact the United States in FY 2012. The FY 2013 President's Budget reduces funding for Marine Debris, and does not request these additional funds. Transferring Marine Debris and Estuary Restoration into Habitat Management and Restoration will allow NMFS to find administrative efficiencies while building upon the knowledge gained and continuing to carry out Marine Debris and Estuary Restoration activities.

**Base Resource Assessment:**

The base resources for this activity are described in the Habitat Conservation and Restoration base narrative.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Habitat Management and Conservation

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,216)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,216)</u>

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: OTHER ACTIVITIES SUPPORTING FISHERIES**

Other Activities Supporting Fisheries includes items that cross multiple NMFS programs. Activities funded include aquaculture, Antarctic research, climate impacts research, computer hardware and software, cooperative research, information analysis and dissemination, the National Environmental Policy Act (NEPA), regional studies, and facilities maintenance.

**ANTARCTIC RESEARCH**

The Antarctic Ecosystem Research Division (AERD) conducts ecosystem-based research to provide scientific advice in support of U.S. policy interests related to resource management by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). This ecosystem research program, known as the U.S. Antarctic Marine Living Resources (AMLR) Program, is mandated by the U.S. AMLR Convention Act of 1984 and is NOAA's only dedicated, long-term ecological presence in the Antarctic, with observations extending over the past 25 years. The U.S. AMLR Convention Act requires that the Department of Commerce conduct the program of directed scientific research" required to "achieve the United States goal of effective implementation of the objectives of the Convention [on the Conservation of Antarctic Marine Living Resources]". NOAA is the only bureau within the Department of Commerce with the capabilities to fulfill this mandate.

The objective of the U.S. AMLR Program is to understand the relative impacts of fishing, climate change, and other human caused impacts on the Antarctic marine ecosystem. The program includes research to monitor the reproductive successes (or failures) and foraging patterns of krill-dependent predators such as penguins and seals and to study how the production of these predators are, in turn, impacted by predation from higher-level predators such as leopard seals. These aspects of the research program are annually conducted from two field camps located in the vicinity of important krill fishing areas. Remaining components of the Program's regular field research effort such as, research to characterize oceanographic conditions, estimate the biomasses of Antarctic krill and finfish (species that have been or presently are the targets of commercial fisheries), and map the distributions of Vulnerable Marine Ecosystems, are currently being restructured to fit within new budget constraints.

Research to synthesize all field data occurs at the laboratory and includes efforts to build and implement ecosystem and stock-assessment models to advise harvest strategies for Antarctic fisheries. Outputs from the U.S. AMLR Program include biomass estimates for commercially important species, peer-reviewed articles and other reports that increase knowledge about the Antarctic marine ecosystem and the impacts of fishing and climate change on that ecosystem, scientific advice to the U.S. delegation to CCAMLR, and representation of the U.S. to the CCAMLR Scientific Committee and its working groups.

**AQUACULTURE**

The NMFS Office of Aquaculture is guided by the objectives in the 2011 Department of Commerce and NOAA Aquaculture Policies. These policies establish a framework to allow sustainable domestic aquaculture to contribute to the U.S. seafood supply, support job creation in coastal communities, enhance important commercial and recreational fisheries, and help to restore species and habitat. The United States is a major consumer of aquaculture products, yet we are a minor producer. The U.S. imports 84 percent of its seafood, of which half is from foreign produced aquaculture. NOAA is working to address this issue by focusing on the regulatory, technical and scientific barriers to domestic marine aquaculture production. These efforts include implementing the National Shellfish Initiative, developing private-public

partnerships for the Technology Transfer Initiative, and rulemaking to implement the Gulf of Mexico Aquaculture Fishery Management Plan. In the current fiscal environment, the Office of Aquaculture is working to develop external partnerships with the private sector and research institutions to leverage private or university resources in order to implement the DOC and NOAA Aquaculture Policies.

Base funds at NMFS support:

- Operations at the NOAA Office of Aquaculture to lead and coordinate national regulatory, research, and outreach activities for marine aquaculture.
- Regional aquaculture coordinators that are currently in place in the northeast, northwest, southeast, southwest, and Pacific Islands.
- Aquaculture science research and development activities at NOAA laboratories, including work to assess and minimize environmental impacts of shellfish and finfish aquaculture; environmental modeling, hatchery research, and disease and genetics management.

### **Climate Regimes & Ecosystem Productivity**

The Climate Regimes & Ecosystem Productivity Program (CREP) provides federal, state, tribal and private-sector decision-makers with information on how climate variability and change is impacting U.S. marine ecosystems and the communities and economies that depend on them. This information is critical to fulfilling NOAA's core management responsibilities for marine-related fisheries, protected species and habitats in a rapidly changing world. To provide information and projections of climate-related impacts on valuable fisheries and other marine resources, CREP works with many partners to collect data on climate, ocean and living marine resource conditions through a highly efficient, leveraged network of in situ and remote observing systems. Information from the observing systems is then used to:

- Improve fishery recruitment predictions and stock assessments used in fishery management decisions;
- Track climate-related impacts on fisheries and other living marine resources; and
- Anticipate and reduce the impacts of climate-related changes on living marine resources (fisheries, protected species, habitats) and the communities that depend on them.

CREP provides information, assessments and projections of climate-related impacts on living marine resources of the Bering Sea and Gulf of Alaska (North Pacific Climate Regimes and Ecosystem Productivity project (NPCREP)). This area is home to some of our nation's richest commercial fishing grounds – almost 50 percent of the U.S. landings, by weight, occur in Alaska. The walleye pollock fishery alone is worth more than \$1 billion annually. The area is also home to many protected species and native communities that depend on this productive marine ecosystem. These resources and the communities that depend on them are particularly vulnerable to climate-related impacts given the scale and scope of climate changes in this region.

The NPCREP research and observing system has provided information on climate-related impacts in the eastern Bering Sea and western Gulf of Alaska since 2004. During this time, the project has delivered observations, biophysical indicators and models to track and project changes in the marine ecosystem with changes in climate conditions. This information has been used to increase the accuracy of predictions of fish stocks in future climate conditions, and allowed the North Pacific Fisheries Management Council to take proactive steps to help sustain valuable fish stocks during changing climate conditions that threatened these valuable

resources. In FY 2013, NPCREP will continue to provide the information and projections needed by fisheries and other decision-makers on the impacts of climate variability and change in the valuable and vulnerable Bering Sea marine ecosystem.

### **Computer Hardware and Software**

The Computer Hardware and Software line item is the sole appropriated resource available to operate and maintain the NMFS Wide Area Network (WAN) and the NMFS IT security program. The WAN is the primary conduit for all mission-critical data and enterprise applications used in support of the stewardship of commercial and recreational fishing, protection of species and their habitats, and NMFS law enforcement efforts. It provides crucial security components including firewall hardware, secured router hardware, security monitoring software, and intrusion detection system software—all critical for preventing and monitoring security risks and vulnerabilities to the NMFS network.

### **Cooperative Research**

Cooperative research enables commercial and recreational fishermen to become involved in collecting fundamental fisheries information to support the development and evaluation of management options. Through cooperative research, industry and other stakeholders can partner with NMFS and university scientists in all phases of the research program—planning the survey and statistical design, conducting research, analyzing data, and communicating results.

Current cooperative research activities complement existing NMFS monitoring programs nationwide by providing access to platforms (recreational and commercial fishing vessels) widely distributed over a variety of habitats simultaneously, including areas not accessible to NOAA vessels. The information collected through cooperative research programs assists scientists and managers by supplementing the data currently collected through federal research programs. This information improves the information base for single species, multi-species, and ecosystem assessment models and ultimately improves the evaluation of stock status and the management of fishery resources.

Cooperative research covers a wide range of study areas, including fishery-dependent data, species life history, conservation engineering, species abundance and distribution, habitat, and socio-economic impacts. The agency's program selects high-level cooperative research projects nationwide through competitive grant and contract procurements, as well as cooperative agreements. These projects are selected in consultation with the Councils, Commissions, and stakeholders and in accordance with research areas established in Section 318 of the reauthorized Magnuson-Stevens Fishery Conservation and Management Act (MSA).

### **Information Analysis and Dissemination**

The Information Analysis and Dissemination line allows NMFS to maintain efficient data processing, integration, data analyses and timely information dissemination. The tools and mechanisms produced using this line support effective decision-making and promote public awareness and education. Furthermore, this line is used to improve the scientific data and information management and infrastructure to analyze, produce, and disseminate population assessments and other biological, ecological, and oceanographic data and analyses.

The MSA mandates requirements for data collection, analyses, and dissemination. NMFS has specific roles and responsibilities under MSA that require staff expertise in model development for population dynamics and economic trends, statistical data analyses for stock assessments, database development and data warehousing, and computer programming. Additionally, this line enables NMFS to maintain data management systems and policies critical to supporting the

Integrated Ocean Observing System (IOOS), Data Management and Communications (DMAC), and NOAA Data Management Committee (DMC), Fisheries Information Systems (FIS) requirements for data collection, processing, dissemination, archiving, and sharing.

### **National Environmental Policy Act (NEPA)**

This funding supports NMFS's NEPA coordinators and a staff of NEPA experts who conduct environmental impact studies. NEPA requires federal agencies to consider the interactions of natural and human environments by using "a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences ... in planning and decision-making" (NEPA §102(2)(a)). NEPA instructs federal agencies to address the aesthetic, historic, cultural, economic, social, or health effects of regulations that may be direct, indirect, or cumulative. Consideration of the social impacts associated with fishery management measures is a growing concern for managers, as fisheries experience variable participation and are affected by declines in stocks. Base funding supports NMFS guidelines for social impact assessments that specify the following elements to be utilized in the development of Fishery Management Plans (FMP) and FMP amendments:

- Information on distributional impacts, non-quantifiable considerations such as expectations and perceptions of the alternative actions, and the potential impacts of the alternatives on both small economic entities and broader communities.
- Descriptions of the ethnic character, family structure, and community organization of affected communities.
- Descriptions of the demographic characteristics of the fisheries.
- Descriptions of important organizations and businesses associated with the fisheries.
- Identification of possible mitigating measures to reduce negative impacts of management actions on communities.

### **NMFS Facilities Operations and Maintenance**

The NMFS Facilities Operations and Maintenance line supports lease costs for the Kodiak, Alaska; and some of the operations and maintenance costs for the Lena Point laboratory in Juneau, Alaska.

- The Kodiak Fisheries Research Center (KFRC) in Alaska is the primary facility for the Alaska Fisheries Science Center's Resource and Conservation Engineering Shellfish Assessment Program. The KFRC facility also provides offices and research support for other NMFS program activities, including: Groundfish Assessment Program, North Pacific Groundfish Observer Program, National Marine Mammal Laboratory, and Alaska Regional Office Sustainable Fisheries Division.
- The Lena Point laboratory in Juneau consists of 66,000 square feet of office and laboratory space and houses the Auke Bay Laboratories.

### **Marine Resources Monitoring, Assessment & Prediction Program**

The Marine Resources Monitoring, Assessment, and Prediction (MARMAP) Program is a cooperative fisheries project of NMFS and the South Carolina Marine Resources Research Institute (MRRI). For 30 years, the MRRI has conducted fisheries-independent research on groundfish, reef fish, ichthyoplankton, and coastal pelagic fishes within the region between Cape Lookout, North Carolina, and Cape Canaveral, Florida. The overall mission of the program has been to determine distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the South Atlantic Bight (SAB) and to relate these features to environmental factors and exploitation activities. Research toward fulfilling these goals has included trawl surveys (from 6-350 m depth), ichthyoplankton surveys, location and mapping of reef habitat, sampling of reefs throughout the SAB, life history and population

studies of priority species, tagging studies of commercially important species, and special studies directed at specific management problems in the region. Survey work has also provided a monitoring program that has allowed the standardized sampling of fish populations over time, and development of a historical base for future comparisons of long-term trends.

## **Regional Studies**

### *SEAMAP*

The base funding for SEAMAP supports the collection of fishery-independent data through state, federal, and university partnerships. Partnership arrangements are set up through cooperative agreements with the states from North Carolina through Texas, as well as the U.S. Virgin Islands and Puerto Rico. SEAMAP is composed of three components: the South Atlantic (North Carolina to Florida), the Gulf of Mexico (Florida to Texas) and the Caribbean (U.S. Virgin Islands and Puerto Rico). SEAMAP coordinates state and federal surveys for the collection, management, and dissemination of fishery-independent data on marine resources. The data support the sustainable use of commercially and recreationally valuable fish stocks in the southeastern United States.

State, federal, and university partners in the SEAMAP program conduct a variety of fishery-independent research surveys, including groundfish trawl surveys, plankton and larval fish surveys, shark and snapper longline surveys, and reef fish video surveys. These surveys provide a wide range of information to support regional stock assessment and management activities, including biological information on distribution, abundance, growth, mortality, and recruitment. In addition, all surveys collect environmental and habitat information that provides a broad-based ecosystem approach to survey methodology. These data are essential to support current species-specific and habitat fishery management plans, while supporting marine spatial planning and ecosystem-based management approaches.

The data provided by SEAMAP supports management activities in four Regional Fishery Management Councils: Mid-Atlantic, South Atlantic, Gulf of Mexico, and Caribbean. SEAMAP data provide the basis for the majority of stock assessments conducted for managed species in these regions and are critical to current requirements to set Annual Catch Limits (ACL) for managed stocks. Data management activities include electronic data collection on all research surveys, centralization of SEAMAP data to improve accessibility, and coordination with the National Data Center to link SEAMAP data to additional environmental data such as satellite and buoy data. These activities will ensure that SEAMAP data are easily accessible to fishery managers, scientists, and the general public.

The majority of funding is provided to the SEAMAP partners through NOAA cooperative agreements. The Southeast Fisheries Science Center's Mississippi Laboratories receive funds to support data management activities for all components of the SEAMAP program. The remaining funds are proportionally allocated to the regional SEAMAP components and then to the individual states. Coordination of SEAMAP activities is conducted through meetings of the SEAMAP components to ensure consistency in data collection and use.

### *Chesapeake Bay Studies*

The base funding for Regional Studies supports the NOAA Chesapeake Bay Office (NCBO). NCBO is a focal point for executing NOAA's role in the Chesapeake Bay Program and to meet the requirements of Executive Order 13508 (EO) to protect and restore the Chesapeake Bay. In FY 2012, NCBO conducted activities to meet priority requirements in line with base funding in support of the EO related to fish and wildlife, water quality, strengthening science, and citizen stewardship. In FY 2013, NCBO will refocus its activities on mapping and assessment as it

relates to habitat protection and restoration, and fisheries science and research support of federally managed fisheries. As part of this refocus on core missions, NCBO will reduce peripheral activities related to citizen stewardship by terminating its modest funding for educational grants, while maintaining science communication and outreach functions through the Environmental Science Training Center at Oxford. In addition, the Chesapeake Bay Interpretive Buoy (CBIBS) system and associated staff will be either be eliminated or reprogrammed to another part of NOAA.

#### **Schedule and Milestones:**

NMFS will continue to conduct monitoring, assessments, and forecasts to provide resource managers with the best available science on living marine and coastal resources, their habitats, and socio-economic conditions.

#### **Aquaculture**

- FY 2013 – Continue implementing the NOAA Aquaculture Policy and DOC Aquaculture Policy.
- FY 2013 – Publish regulations for marine aquaculture in federal waters of the Gulf of Mexico.
- FY 2013 – Based on outcomes of NOAA Aquaculture Regulatory Working Group, continue to develop internal and interagency strategies to streamline NOAA aquaculture permit reviews and better provide science to permit reviewers and industry.
- FY 2013-2014 – Implement, as per the National Ocean Policy, a joint federal agency effort to make federal aquaculture permit reviews more efficient.
- FY 2013 –2014 – Report on progress of the Washington State Shellfish Initiative.
- FY 2013–2017 – Update and report on NOAA Science Center research on environmentally sound aquaculture practices (e.g., genetics and disease management; citing studies and reports).
- FY 2013–2017 – Continue research on the environmental impacts of shellfish aquaculture, and support restoration and commercial shellfish initiatives that provide locally produced food and jobs, help improve water quality, and restore coastal habitat.
- FY2013–2014 – Monitor progress on research and technology transfer projects or grants.

#### **Cooperative Research**

FY 2013–2017

- Issue call for cooperative research proposals for competitive grants program.
- Conduct Spring and Fall ME-NH inshore trawl survey;
- Conduct pilot surveys to address critical data gaps in scup, black sea bass, Gulf of Maine cod, and Southern New England yellowtail flounder;
- Pilot census coverage on Northeast small fisheries (e.g., tilefish, red crab) using study fleets;
- Release annual Marine Resource Education Program (MREP) course curriculum for stakeholder participation;
- Issue Northeast Cooperative Research Program (NCRP) annual request for competitive research proposals focused on conservation engineering, bycatch reduction, and the establishment of multi-institution regional networks that pursue collaborative efforts to assist the industry in reducing bycatch of critical stocks with low ACLs, and to assist in the management transition to sector based management;
- Issue Annual Federal Funding Opportunity based on annual research priorities via Grants.gov for Southeast CRP competitive grants;
- Conduct Fall Western Gulf of Alaska Cooperative Acoustic Survey;

- Conduct fishery independent survey for bottomfish in waters around Oahu and Maui;
- Conduct acoustic-video survey of West Coast rockfish.

### **Climate Regimes and Ecosystem Productivity**

FY 2013–2017

- Maintain the NPCREP climate and ecosystem observing network and distribute data to decision-makers and stakeholders.
- Conduct long-term observations of climate-related impacts on Bering Sea ecosystem using variety of observation networks and platforms for use in integrated ecosystem assessments.
- Increase information on climate-related impacts on early life history stages of key Bering Sea fisheries.
- Deliver Bering Sea Ecosystem Forecasts to help living marine resource managers incorporate climate-related impacts into management decisions.

### **Information Analyses and Dissemination**

FY 2013–2017

- Improve population dynamics/assessment/management model development to include socio-economic, ecosystem, and environmental considerations.
- Improve statistical data analyses for stock assessments.
- Improve and expand database development and integration and data standards.
- Improve data dissemination and sharing of integrated (climatology, socio-economic, ecosystem, and fishery-dependent and -independent) data and analyses, both internally and externally.
- Develop cost-effective uses of cutting-edge technologies to facilitate data analyses and dissemination.
- Incorporate ecosystem data, including habitat and climate forcing events, into stock assessments.
- Improve data documentation and information sharing.
- Improve data standards and system interoperability.

### **Marine Resources Monitoring, Assessment, and Prediction (MARMAP)**

FY 2013–2017

- Provide fishery-independent assessments of reef fish abundance and life history survey of shelf and upper slope waters from Cape Lookout to Cape Canaveral.

### **NMFS Facilities Maintenance**

FY 2013 –2017

- Maintain space to relieve critical overcrowding.
- Make necessary repairs to ensure safety.

### **Regional Studies**

*SEAMAP*

FY 2013–2017

- Update SEAMAP management plan to expand coordination activities and improve standardization of collected data.
- Conduct summer and fall SEAMAP groundfish surveys in state and federal waters, conduct spring and fall SEAMAP plankton surveys in state and federal waters, conduct SEAMAP inshore and offshore longline surveys, and conduct spring and summer reef fish surveys in offshore waters.

- Provide fishery, habitat, biological, and environmental data to Regional Fishery Management Councils for incorporation into regional species stock assessments and for development of effective fisheries and habitat management strategies.
- Continue coordination with the National Data Center for linkage of SEAMAP data to data collected via satellites, buoys, and other mechanisms to provide integrated information to support marine spatial planning and ecosystem-based management activities.

### *Chesapeake Bay*

FY 2013

- Develop Federal Funding Opportunity calling for proposals aimed at quantifying the relationship between habitat and fisheries health
- Participate in the Chesapeake Bay Program activities to establish interagency research and assessment priorities consistent with NOAA's mission
- Identify two target tributaries suitable for oyster restoration in partnership with Maryland, Virginia, and the U.S. Army Corps of Engineers
- Conduct side scan survey of proposed tributaries
- Continue identification of reef restoration sites in targeted tributaries through multi-beam surveys
- Monitor success of FY 2012 restoration efforts
- Link habitat assessment and characterization efforts to Chesapeake Bay fisheries and living resources
- Develop the annual blue crab advisory report
- Engage in science communications and training activities through the Environmental Science Training Center at Oxford, Maryland

FY 2013 – FY 2017:

- Administer multi-species grants
- Continue to survey additional tributaries for oyster restoration and evaluate the progress made during the previous year's effort
- Develop annual blue crab advisory reports
- Continue science communication and training activities

### **Deliverables/Outputs:**

#### **Antarctic Ecosystem Research**

FY 2013 – 2017:

- Provide advice on ecosystem-based management of fisheries that impact krill, fin fishes, krill-dependent predators, and other components of the Antarctic ecosystem.

#### **Aquaculture**

FY 2013:

- Publish regulations for marine aquaculture in federal waters of the Gulf of Mexico.
- Based on outcomes of NOAA Aquaculture Regulatory Working Group, develop internal and interagency strategies to streamline federal aquaculture permit reviews and better provide best available science to permit reviewers and industry.
- Publish additional fact sheets to inform the public on marine aquaculture topics.

FY 2013 – 2014:

- Report on progress of key research and technology transfer projects, including restoration and commercial shellfish aquaculture initiatives.

FY 2013 – 2017:

- Update and report on environmentally sound aquaculture practices (e.g., genetics and disease management; citing studies and reports).

### **Climate Regimes and Ecosystem Productivity**

FY 2013 – 2017:

- Ensure NPCREP climate and ecosystem observation network is operational and delivering high-quality data and products to living marine resource managers and stakeholders of the Bering Sea Ecosystem.
- Deliver Eastern Bering Sea Ecosystem Synthesis reports to the North Pacific Fisheries Management Council that includes assessment of current and future climate-related impacts on fisheries.
- Develop and update climate and ecosystem indices for presentation to the Scientific and Statistical Committee of the North Pacific Fishery Management Council.
- Monitor commercially important fish and shellfish in the Bering Sea.

### **Cooperative Research**

FY 2013 – 2017:

- All funded projects are required to produce final reports of their results, and all of associated data will be archived with the respective Science Center.

### **Information Analyses and Dissemination**

FY 2013 – 2017:

- Support IOOS (Integrated Ocean Observing System); NOAA EDM (Enterprise Data Management); NMFS FIS (Fisheries Information Systems); GeoSpatial One Stop; data.gov requirements for data collection, processing, dissemination, archiving, and data sharing.
- Use advances in modern technology to improve information analysis, sharing, dissemination and storage capabilities within NOAA Fisheries including headquarters, science centers, regional offices, and Fisheries Information Networks (FINs).
- Develop central data repository and improve data accessibility through data management programs such as FIS.
- Continue NMFS-wide data management program documentation through InPort.
- Continue building NMFS scientific information management infrastructure to support NMFS scientific enterprise.

### **Marine Resources Monitoring, Assessment, and Prediction (MARMAP)**

- 2014 and 2016: Conduct reef fish assessment from Cape Lookout, North Carolina, to Fort Pierce, Florida.

### **NMFS Facilities Maintenance**

FY 2013 – 2017:

- Close Sandy Hook, NJ lab and relocate staff and programs to other NOAA facilities
- Maintain the effectiveness and efficiency of staff at all locations.
- Maintain safety standards and reduce risks to employees.
- Maintain operational and functional efficiency.

### **Regional Studies**

*SEAMAP*

- FY 2016: Update SEAMAP management plan to improve coordination and standardization of SEAMAP surveys.

- FY 2013: Develop central data repository and improve data accessibility through coordination with the National Data Center.
- FY 2013- 2016: Provide ecosystem data to support ecosystem modeling and management activities.
- FY 2013 – 2016: Conduct all SEAMAP surveys in inshore and offshore waters and provide data to Regional Fishery Management Councils.

*Chesapeake Bay*

- Each year NCBO will develop maps and habitat assessments in furtherance of oyster restoration.
- NCBO will collate sponsored research results and report out on the implications of the work.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percentage of Fish Stocks with Adequate Population Assessments and Forecasts (GPRA 17b)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	57.4% (132/230)	59.1% (136/230)	60.9% (140/230)	62.6% (144/230)
<p><b>Description:</b> This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.</p> <p><b>Note:</b> The targets include proposed FY 2013 program changes.</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Conduct pre and post restoration monitoring in 20 tributaries out of 35 to 40 candidate tributaries by 2025 (cumulative) ( <i>Chesapeake Bay</i> )	0	0	1	3	5	7	9
<p><b>Description:</b> This performance measure projects the cumulative number of tributaries monitored before and after restoration has occurred.</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
The number of SEAMAP surveys conducted annually ( <i>SEAMAP</i> )	25	25	25	25	25	25	25
<b>Description:</b> This performance measure projects the number of surveys conducted annually within the Southeast Area Monitoring and Assessment Program (SEAMAP).							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of web-based tools or applications developed to support NMFS Science programs ( <i>Information Analysis &amp; Dissemination</i> ).	21	19	21	21	21	21	21
<b>Description:</b> This performance measure projects the number of data analysis tools and web sites produced to support NMFS science data management mission each year.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Scientific and Technical publications produced by the NMFS Scientific Publications Office ( <i>Information Analysis &amp; Dissemination</i> )	18	16	19	19	19	19	19
<b>Description:</b> This performance measure projects the number of scientific and technical publications produced by the NMFS Scientific Publications Office (SPO).							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of Cooperative Research Projects Conducted Annually ( <i>Cooperative Research</i> )	55	50	54	54	54	54	54
<b>Description:</b> This performance measure projects the number of cooperative research projects conducted annually. These cooperative research projects do not include projects funded from the National Catch Share Program in FY 2011 and FY 2012.							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of Antarctic Fish Assessments ( <i>Antarctic Research</i> )	17	16	26	26	26	26	26
<b>Description:</b> This measure tracks the 26 stocks of Antarctic krill, finfishes, and crabs to quantify the functional relationships between krill, finfishes, their environment and their predators.							

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## **PROGRAM CHANGES FOR FY 2013:**

**Antarctic Research: (Base Funding: 9 FTE and \$1,680,000; Program Change: 0 FTE and +\$1,085,000):** NOAA requests an increase of \$1,085,000 and 0 FTE for a total of \$2,765,000 and 9 FTEs to support NOAA's ability to meet mandates established in the U.S. Antarctic Marine Living Resources (AMLR) Conservation Act and significantly improve NOAA's ability to make scientific recommendations regarding the management and conservation of Antarctic fisheries by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR).

### **Proposed Actions:**

The requested increase will allow NOAA to collect data needed to meet the mandates of the U.S. AMLR Convention Act and support ecosystem based management of krill and finfish fisheries in the Southern Ocean. Funds will support research cruises and acoustic surveys of Antarctic krill to estimate the biomass of this critical species. Krill is the largest fishery in Antarctica and the main source of food for most of the Southern Ocean's fishes, birds, and mammals. The increase will also be used to ensure that the research cruises are appropriately staffed with contractors who help to collect data on all aspects of the Antarctic marine ecosystem.

Additional funds will be used to acquire additional days at sea and provide logistics support for two field camps, thereby allowing NOAA researchers to conduct comprehensive surveys of Antarctic krill, fishes, and krill-dependent predators. This work will result in stock assessments for 26 targeted stocks of Antarctic krill, fishes, and crabs. Given the growing demand of krill for human consumption (in the form of Omega-3 oil) and the expanding commercial interest in the krill fishery, managing this resource will have greater relevance in the next decade than in previous years.

### **Statement of Need and Economic Benefits:**

Under the authority of the U.S. Antarctic Marine Living Resources Convention Act of 1984 (Public Law 98-623), NOAA must conduct a program of "directed scientific research" to provide the scientific basis for fisheries management in the Southern Ocean and "achieve the United States goal of effective implementation of the objectives of the Convention [on Antarctic Marine Living Resources]". NOAA's AMLR Program is the United States' only long-term, ecosystem-based program designed specifically to address fisheries management and conservation issues in the Southern Ocean. The USA is the world's leading consumer of Antarctic marine living resources. For example, domestic imports of Patagonian and Antarctic toothfish (Chilean seabass) during 2010 were estimated to have a wholesale value of \$190 million, and, during the second quarter of 2011, estimated sales of Omega-3 krill oil totaled more than \$160 million.

NOAA's AMLR Program is designed to support an ecosystem approach to management and includes work to estimate the abundances of targeted (e.g., krill and finfishes), dependent (e.g., penguins), and associated (e.g., seals) species; monitor the impacts that U.S. and international fishing activities have on these species; collect scientific observations of fishing operations; and monitor environmental conditions (e.g., sea temperatures, salinities, nutrient concentrations, and other oceanographic parameters) to account for climate variation. NOAA's AMLR Program routinely provides scientific data, analyses, and expertise to the CCAMLR that are not provided by any other Member of the Commission, and CCAMLR sets fishery catch limits that are based on these products and services.

### **Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries Program.

**Schedule and Milestones:**

FY 2013-2017:

- Complete research surveys to estimate the biomasses of Antarctic krill and fishes and provide or contribute to stock assessments for 26 targeted stocks.
- Continue annual studies and assessments of krill-dependent predators (e.g., penguins and seals) at remote field camps.
- Contract small businesses to provide personnel for field work conducted at sea and at the field camps.

**Deliverables:**

FY 2013-2017:

- Complete or contribute to stock assessments for 26 targeted stocks of krill, fishes, and crabs managed by the CCAMLR.
- Complete land-based research on and assessments of key krill predators in the Antarctic Peninsula region.
- Provide annual updates to the NOAA’s only long-term data set designed both to address fisheries management and conservation issues in the Southern Ocean and to understand the ecological impacts of climate change.
- Provide opportunities for other government agencies (both domestic and international) and academic partners to conduct climate-change research (e.g., on ocean acidification) at sea.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Antarctic Fish Assessments</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	26	26	26	26	26
<b>Without Increase</b>	17	16	16	16	16	16	16
<b>Description:</b> This measure tracks the 26 stocks of Antarctic krill, finfishes, and crabs in order to quantify the functional relationships between krill, finfishes, their environment and their predators. The number refers to the total number of fish stock assessments that AMLR scientists will complete independently (10) and those which AMLR scientists will make substantive contributions (16).							

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Days at Sea for Antarctic Research</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	45	45	45	45	45
<b>Without Increase</b>	70	30	30	30	30	30	30
<b>Description:</b> This measure tracks the number of sea days for NOAA researchers to conduct comprehensive field surveys for 26 stocks of Antarctic krill, fishes, and crabs. The numbers refer to the total number of sea days in which AMLR scientists are in the field and able to collect data designed specifically to address the management issues of the Southern ocean. The 30 base sea days is subject to change pending final FY 2012 Spend Plan allocations.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	578
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	507
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,085</u>

**Cooperative Research: (Base Funding: 17 FTE and \$11,132,000; Program Change: 0 FTE and +\$868,000):** NOAA requests an increase of \$868,000 and 0 FTE for a total of \$12,000,000 and 17 FTEs to leverage cooperative partnerships and maximize agency investments in science and management nationwide.

**Proposed Actions:**

NOAA requests additional resources to implement the science priorities identified in the 2010-2014 Northeast Cooperative Research Strategic Plan. These additional funds will afford NMFS the opportunity for new cooperative research projects to complement long term NOAA-NMFS monitoring programs in the Northeast/Mid-Atlantic by partnering and leveraging the capacity of a widely distributed network of commercial fishermen to collect unique biological and physical observations that would be unavailable through NOAA-NMFS resources (i.e., Industry-Based Surveys (IBS)). A key example of IBS and where partial funding support for this increase would go is the ME-NH inshore trawl survey which provides critical data for stock assessments on Atlantic herring, haddock, American lobster, and monkfish.

**Statement of Need and Economic Benefit:**

There is an increasing need for the agency's current fisheries science system to adequately support the requirements of catch limit and catch shares management policies, particularly in the Northeast/Mid-Atlantic regions which combined represent over 30 percent of total U.S. commercial landings. This increase will go to addressing a top science priority identified in the 2010-2014 Northeast Cooperative Research Strategic Plan —specifically the development and implementation of innovative monitoring tools and pilot programs to address critical data gaps through Industry-Based Surveys (IBS). IBS provide additional abundance measures to supplement existing monitoring programs, primarily by increasing the spatial and temporal resolution of local area surveys. Industry-based surveys also include detailed biological sampling of the catch and supplemental environmental observations (e.g., temperature, salinity, etc.), and produce greater industry exposure to scientific survey methods. Some survey projects provide platforms for special experiments (e.g., tagging, gear development). It is important to note that the emphasis on IBS as well as the prioritized cooperative research strategy overall was a collaborative product between NOAA Fisheries, the Councils, and the Atlantic States Marine Fisheries Commission with broad stakeholder input. ([http://www.gmri.org/community/seastate/CR\\_NE\\_StratDir2010-14Final.pdf](http://www.gmri.org/community/seastate/CR_NE_StratDir2010-14Final.pdf))

**Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries Programs base narrative.

**Schedule and Milestones:**

FY 2013-2017:

- Conduct Spring and Fall ME-NH inshore trawl survey;
- Conduct pilot surveys to address critical data gaps in scup, black sea bass, Gulf of Maine cod, and Southern New England yellowtail flounder.
- Pilot census coverage on Northeast small fisheries (e.g., tilefish, red crab) using study fleets;
- Release annual Marine Resource Education Program (MREP) course curriculum for stakeholder participation;
- Issue Northeast Cooperative Research Program (NCRP) annual request for competitive research proposals focused on conservation engineering, bycatch reduction, and the establishment of multi-institution regional networks that pursue collaborative efforts to

assist the industry in reducing bycatch of critical stocks with low ACLs, and to assist in the management transition to sector based management;

**Deliverables:**

FY 2013-2017:

- Produce individual project final reports of the results and archive all associated data with the NOAA Fisheries Science Centers.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Cooperative Research Projects Conducted Annually</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	54	54	54	54	54
<b>Without Increase</b>	55	50	50	50	50	50	50

**Description:** This performance measure estimates the number of cooperative research projects conducted annually. These cooperative research projects do not include projects funded from the National Catch Share Program.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	868
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>868</u>

**Information Analysis and Dissemination: (Base Funding: 63 FTE and \$15,608,000; Program Change: 0 FTE and +\$2,801,000):** NOAA requests an increase of \$2,801,000 and 0 FTE for a total of \$18,409,000 and 63 FTEs to increase support to scientific information management systems and information dissemination activities.

**Proposed Actions:**

NOAA requests additional resources to augment the number of critical contracts, supplies and equipment purchases to support the development and expansion of NMFS data systems that jointly analyze a wide range of fishery data sets, as well as improve the ability to enhance the quality, utility and availability of fisheries decision-support tools. This enhancement will accelerate improvements in the quality and timeliness of data delivered to Living Marine Resources (LMR) managers and the information users. In addition, NMFS will analyze new and existing data sets and model fisheries oceanography interactions. This will help to improve, streamline and better integrate data and information the Agency has already collected and continues to collect. Priorities will be given to (1) building efficient data management tools to support management decision making, (2) developing a comprehensive data analysis, dissemination and reporting capabilities such as Fisheries One Stop Shop (FOSS), (3) improving accessibility of data from activities such as environmental surveys and observations through the development of enterprise level data management tools and the link to a centralized data documentation repository, (4) improving data reporting and visualization capabilities, (5) increasing the amount of scientific information made available to the public, resource managers and research partners, and (6) continuing high quality and timely publications of scientific research paper, article, and journals for an informed public.

Overall, the resulting improvements will expedite NMFS's capacity to analyze, produce and disseminate population assessments, forecasts, and other biological, ecological and oceanographic data and analyses, which are critical for sustainable management of LMRs and the implementation of ecosystem-based management of all NOAA managed resources.

**Statement of Need and Economic Benefits:**

The Magnuson Stevens Act (MSA), the Marine Mammal Protection Act, the Endangered Species Act, the Data Quality Act, Paper Reduction Act and the Data Documentation Procedural Directive (DDPD) all include requirements and directives for data collection, analysis, and dissemination. NMFS has specific roles and responsibilities under these mandates that require staff expertise in model development for population dynamics and economic trends, statistical data analyses for stock assessments, database development and data warehousing, and computer programming. Additionally, this line enables NMFS to maintain Data Management systems and policies that are critically needed to support IOOS (Integrated Ocean Observing System); the Open Government Directive issued by President Obama in 2009; NOAA's EDMC (Environmental Data Management Committee); and FIS (Fisheries Information Systems) requirements for data collection, processing, dissemination, archiving, and data sharing. New investments will improve the scientific data and information management process as well as the infrastructure needed to enable NMFS to improve information technology, information sharing and storage capabilities within six Fisheries Science Centers and the Office of Science and Technology. The requested increase will improve NMFS's capabilities to technologically support its mission-critical initiatives, such as stock and oceanographic assessments and forecasts to inform ocean resource management, including economically important fisheries. NMFS will work to maximize data usage and laboratory efficiencies across the NMFS Fisheries Science Centers. This capability will allow NMFS to manage and process information and develop data management capabilities and products to increase data accuracy and information granularity, as well as the resolution of scientific

information management products for fisheries management to make decisions that creates maximum values and minimize ecosystem and socio economic impacts to the marine natural resources; and alternately, promote long-term sustainability, including economic prosperity, a healthy community, and social well-being.

**Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

**Schedule and Milestones:**

FY 2013-2017:

- Improve population dynamics/assessment/management model development to include socio-economic, ecosystem, and environmental considerations.
- Improve statistical data analyses for stock assessments.
- Incrementally improve and expand database development, integration and data warehousing.
- Improve data dissemination and sharing of integrated (climatology, socio-economic, ecosystem and fishery dependent and independent) data and analyses both internally and externally.
- Develop cost effective uses of cutting edge technologies to facilitate data analyses and dissemination.
- Incorporate ecosystem data, including habitat and climate forcing events, into stock assessments.
- Improve data documentation and information sharing.
- Improve data standards and system interoperability.

**Deliverables:**

FY 2013-2017:

- Support IOOS (Integrated Ocean Observing System); DMAC (Data Management and Communications); FIS (Fisheries Information Systems) and NOAA DMC (Data Management Committee) requirements for data collection, processing, dissemination, archiving, and data sharing.
- Use advances in modern technology to improve information analysis, sharing, dissemination and storage capabilities within NMFS including headquarters, science centers, regional offices, and with Fisheries Information Networks (FINs).
- Develop central data repository and improve data accessibility through data management programs such as FIS.
- Continue NMFS wide data management program documentation through InPort.
- Continue building NMFS scientific information management infrastructure to support NMFS scientific enterprise.

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of web-based tools or applications developed to support NEST/EOP programs	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	21	21	21	21	21
<b>Without Increase</b>	21	19	19	19	19	19	19
<b>Description:</b> This performance measure projects the number of data analysis tools and web sites produced to support NMFS science data management mission each year.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Scientific and Technical publications produced by the NMFS Scientific Publications Office	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	19	19	19	19	19
<b>Without Increase</b>	18	16	16	16	16	16	16
<b>Description:</b> This performance measure projects the number of scientific and technical publications produced by the NMFS Scientific Publications Office (SPO).							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	585
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	162
25.1 Advisory and assistance services	0
25.2 Other services	1,479
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	552
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	23
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,801</u>

**Information Analysis and Dissemination: West Coast Proposal: (Program Change: -27 FTE and -\$5,000,000; Information Analysis and Dissemination -3 FTE and -\$450,000):**

NOAA requests a decrease of \$450,000 and 3 FTE for a total of \$15,158,000 and 60 FTE in the Information Analysis and Dissemination PPA to reconfigure NMFS's Southwest and Northwest Regional Offices into a single West Coast Regional Office, and to close the Pacific Grove Laboratory in California.

NOAA requests a decrease of \$5,000,000 and 27 FTE in several NOAA programs as part of the President's efforts to find efficiencies and savings in a constrained fiscal environment. These efficiencies will be achieved, by reducing program activities and reconfiguring the West Coast Regional Offices, closing a science lab and eliminating support for a specific survey and assessment, as well as a research program. The various budget lines affected by this proposal are identified below and will be discussed throughout the Congressional Justification in budget order.

The proposal includes reductions in following budget lines:

Protected Resources Research and Management	-\$2,591,000	page NMFS - 18
Marine Mammals	-\$ 7,000	page NMFS - 25
Pacific Salmon	-\$ 484,000	page NMFS - 43
Fisheries Research and Management	-\$1,460,000	page NMFS - 64
Expand Annual Stock Assessments	-\$ 8,000	page NMFS - 71
<u>Information, Analysis, and Dissemination</u>	<u>-\$ 450,000</u>	<u>current page</u>
Total	-\$5,000,000	

**Proposed Actions**

Under this part of the proposal NMFS will close the Pacific Grove Laboratory and eliminate three FTE from the Information Analysis and Dissemination PPA. The work supported at the lab to assess, understand and predict the effects of climate and environmental variability that are important to fish populations, protected species, and marine ecosystems will be maintained in the Santa Cruz and La Jolla Laboratories; labs that are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove.

**West Coast Proposal:**

A reduction of \$5.0 million is requested to reduce lower value program activities and reconfigure NMFS' Southwest and Northwest Regional Offices into a single West Coast Regional Office; eliminate the Puget Sound ecosystem surveys and assessments; close the Pacific Grove Laboratory in California; and end the Northwest Region's support for the Newport Seawater Research program at the Newport Laboratory in Oregon. NMFS' reconfiguration of the Northwest and Southwest Regional offices will result in the elimination of 27 staff including one Regional Administrator and one Deputy Regional Administrator. The geographic distribution of the remaining staff will be driven by programmatic needs. As part of eliminating the Puget Sound ecosystem survey, NMFS would lay up the small vessel, R/V *Harold Streeter*, and eliminate approximately four staff. Laying up this vessel would eliminate costs in operating and maintenance of this vessel. With closure of the Pacific Grove Laboratory, programmatic functions would be maintained by relocating staff to the Santa Cruz and La Jolla Laboratories. Both Santa Cruz and La Jolla are larger and more modern facilities that can accommodate the additional programs currently conducted at Pacific Grove. Approximately three staff may be eliminated instead of transferring to Santa Cruz and La Jolla. Because the Northwest Region would no longer support the Newport Seawater Research Program, staff currently working on this program would be relocated to the Manchester Laboratory in Washington State.

The reconfiguration of the West Coast regional offices will result in a leaner management structure and the elimination of other positions, while the proposed facilities changes will reduce NMFS's physical footprint and associated costs over time. These changes reflect NOAA's efforts to focus its limited resources on its highest priority mission functions and reduce costs to the greatest possible extent.

**Base Resource Assessment:**

The base resources for activities associated with these reductions are described in the Other Activities Supporting Fisheries base narrative.

**Schedule and Milestones:**

- The excess and disposal of the Pacific Grove Facility should begin in FY 2012, as NMFS will need to continue to pay utility costs at the vacated facility pending GSA disposal.

**Deliverables:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service

Subactivity: Other Activities Supporting Fisheries

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Director, Regional Office	TBD	SES	0	170,000	0
Deputy Director, Regional Office	TBD	ZP-V	0	126,687	0
Various titles	TBD	Various	-3	116,093	-348,279
<b>Total</b>			<u>-3</u>		<u>-348,279</u>
less Lapse		0	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		-348,279
2013 Pay Adjustment 0.5%					0
<b>TOTAL</b>					<u>-348,279</u>

**Personnel Data**

Full-Time Equivalent Employment

Full-time permanent	-3
Other than full-time permanent	0
<b>Total</b>	<u>-3</u>

Authorized Positions:

Full-time permanent	-3
Other than full-time permanent	0
<b>Total</b>	<u>-3</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(348)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(348)
12 Civilian personnel benefits	(102)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(450)

**Marine Resources Monitoring, Assessment & Prediction Program (MARMAP): (Base Funding: 0 FTE and \$502,000; Program Change: 0 FTE and +\$340,000):** NOAA requests a increase of \$340,000 and 0 FTE for a total of \$842,000 and 0 FTE to provide additional grant funding for cooperative fisheries activities with the South Carolina Marine Resources Research Institute (MRRRI) and NMFS. Increase in research activities, such as surveys, reef habitat mapping, and tagging studies will be performed. These important projects are conducted to determine the distribution, relative abundance, and critical habitat of economically and ecologically important fishes of the South Atlantic Bight (SAB). This data provides critical input for the assessments of stock status conducted by NOAA Fisheries, and greatly assists federal stock assessment scientists and decision makers in the management of snapper/grouper complex of the SAB.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	340
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>340</u>

**Closure and Relocation of the Northeast Fisheries Science Center James J. Howard Laboratory at Sandy Hook, New Jersey: Sandy Hook Laboratory:** NOAA proposes the closure of the NMFS James J. Howard Marine Sciences Laboratory in Sandy Hook, New Jersey. While this will not provide savings in FY 2013, it will mean reduced costs in the future. At a cost of \$36.30 per square foot, Sandy Hook represents one of NMFS' most expensive leases. With the 20-year lease expiring in December of 2013, this action is timely in order to secure savings for the future.

**Proposed Actions:**

NOAA proposes to relocate Sandy Hook research programs from the currently leased facility in New Jersey to other facilities in the Northeast Region. This move will be planned to allow as much as possible of the ecosystem-based multidisciplinary research to continue with the least possible disruption. Accordingly, the relocation will take place in the beginning of FY 2013. The following programs will be relocated:

**Habitat Program:** Core positions supporting the Habitat Program will relocate to the Oxford Lab in Oxford, Maryland. These positions conduct collaborative field research on commercial vessels; to conduct shellfish research, contaminants effects research, and provide consultations to support Fishery Management Councils and the NOAA Habitat programs. NOAA plans to relocate 11 FTEs, two contractors and one post-doctoral position.

**Ocean Acidification Program:** The Ocean Acidification Program will relocate to the Northeast Fisheries Science Center (NEFSC) lab in Milford, Connecticut, as facilities capabilities already exist. The Milford lab also conducts ocean acidification research, therefore this will allow for program coordination. NOAA plans to relocate nine FTEs, one post-doctoral position, and three contractors.

**Ecosystem Research in Support of Stock Assessment:** The associated positions and work will relocate to the Oxford lab. These core positions will continue to conduct primarily field research on small vessels, which can be staged from Oxford, and focus on the development of ecosystems models. NOAA plans to relocate three FTEs and one post doctoral position.

**Library Collection:** A portion of the large Sandy Hook Lab library collection will be transferred to the Oxford Lab library. An interested institution of fisheries or related science will be sought to assume stewardship of the remaining volumes, or these volumes will be distributed between interested libraries throughout NOAA. NOAA plans to relocate one FTE.

In addition to the moves detailed above, the R/V NAUVOO (a 49-foot research vessel) will be relocated to Oxford. NOAA plans to relocate nine leadership and support FTEs to Oxford, and four FTE will be accommodated in other NOAA facilities.

**Statement of Need and Economic Benefits:**

The staff working on the activities at Sandy Hook provides multiple services to local, regional, national, and international clients. For example, scientists work with community groups on shellfish restoration, with the New England and Mid-Atlantic Fishery Management Councils on the designation of Essential Fish Habitat, with other federal agencies on the threats to cold-water coral ecosystems and with North American and European partners on the effects of climate change on marine ecosystems. Research is conducted through field monitoring and surveys from Maine to Cape Hatteras, NC, as well as through field and laboratory experiments and analyses of environmental samples.

The Northeast Fisheries Science Center has developed a research agenda for 2012-2016 which supports an integrated ecosystem approach, and prioritizes activities which clearly support NOAA's science portfolio underpinning the Next Generation Strategic Plan (NGSP). Most science, service and stewardship activities at the Sandy Hook Lab are integral to the ecosystem approach in the NEFSC. However, some activities may not be critical in the longer term and much of this activity can be conducted at other NOAA facilities, without using leased space and incurring the associated lease costs. The current lease and other facilities costs are \$3 million. Since the lease at the Sandy Hook Laboratory expires in December 2013, terminating this lease will save lease costs in the future.

Our strategy to consolidate operations as a result of the closure of the Sandy Hook Lab is to:

- review and strategically prioritize current operations to ensure that they continue to support high-priority objectives of NMFS's mission;
- review and strategically prioritize current operations to ensure that they continue to support objectives in the NOAA NGSP, particularly the long term Healthy Oceans Vision and the Climate Adaptation and Mitigation Vision;
- realign operations to minimize costs while maintaining critical services; and
- terminate non-critical operations.

The Sandy Hook Marine Laboratory is owned by the State of New Jersey; NOAA Fisheries leases approximately 80 percent of the lab. The lab supports about 50 NOAA staff and contractors and an additional 20 or more summer interns and volunteers. Most personnel are part of the NEFSC, Ecosystems Processes Division. Staff from Rutgers University, New Jersey Marine Academy of Science and Technology, and the New Jersey State Treasury Department also occupies the Lab.

**Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

**Schedules and Milestones:**

The relocation is planned first quarter of FY 2013. Programs and positions will be relocated to facilities in Milford, CT and Oxford, MD.

Habitat Program:

- Continue offshore surveys.
- Shellfish contaminant research will be interrupted while equipment is moved and calibrated, and new lab space is configured, which will be approximately twelve months.
- Consultation work, including consultation work with the Councils, will be provided as requested.

Ocean Acidification Program:

- All planned experimental research will be interrupted for about twelve months while acceptable environmental conditions are established in the new location, and fish breeding and egg collection can occur.
- Nearshore surveys will be interrupted while vessels are relocated from Sandy Hook to Oxford.
- Time series collections terminated. A new time series monitoring will be established in the Chesapeake Bay area.

Program on Ecosystem Research in Support of Stock Assessment:

- Coastal ecosystem surveys will be interrupted for about six months.

Climate Program

- All offshore surveys will be conducted as planned
- Analytical work and climate modeling will continue as planned
- Climate effects research on managed and forage species in the laboratory will be delayed until equipment can be moved and appropriate working conditions can be established in relocated lab space, which should take about twelve months.

**Deliverables:**

- Relocation of Sandy Hook research programs from the currently leased facility in New Jersey to other facilities in the Northeast Region

**Performance Goals and Measurement Data:**

N/A

**Regional Studies: Chesapeake Bay Studies and Restoration: (Base Funding: 16 FTE and \$5,191,000; Program Change: -7 FTE and -\$1,730,000):** NOAA requests a decrease of \$1,730,000 and -7 FTE for Chesapeake Bay Studies, for a total of \$3,461,000 and 9 FTEs for Chesapeake Bay Studies and Restoration.

**Proposed Actions:**

NOAA proposes to reduce the following activities in the NOAA Chesapeake Bay Office (NCBO):

- Administrative costs will be reduced by approximately \$200,000 through consolidating office space, reducing travel, vehicles, supplies, and equipment.
- Funding for environmental education grants will be eliminated, resulting in a savings of \$300,000.
- The Chesapeake Bay Interpretive Buoy System's (CBIBS) buoys will be removed from the water and stored or otherwise repurposed by another part of NOAA, or an agency or organization if possible, resulting in savings of \$300,000.
- Seven FTEs and two contractors will be eliminated from the program, resulting in savings of approximately \$1 million.

These reductions will allow the NCBO to more exclusively align with the National Marine Fisheries Service's (NMFS) mission of stewardship through science-based conservation and management and the promotion of healthy ecosystems, by focusing its resources on mapping and assessment as it relates to habitat protection and restoration, and fisheries science and research support of federally managed fisheries. While there are no federally managed fisheries in the Chesapeake Bay, NCBO will continue to maintain an active local staff presence to engage with the Chesapeake Bay Program and on the ground partners. NCBO will fulfill its statutory mandate through appropriate leadership roles in the Chesapeake Bay Program, particularly through multi-species fisheries research, habitat characterization and assessment, community engagement and outreach, and coordination of NOAA activities under Executive Order 13508.

In addition, NCBO will work closely with NMFS's Northeast Fisheries Science Center (NEFSC), Northeast Regional Office (NER), Office of Science and Technology, and Office of Sustainable Fisheries, to strengthen the coordination of NCBO's habitat assessment and fisheries science programs with other NMFS programs and activities along the eastern seaboard.

**Base Resource Assessment:**

The base resources for this activity are described in the Other Activities Supporting Fisheries base narrative.

**Schedule and Milestones:**

FY 2013:

- Develop Federal Funding Opportunity calling for proposals aimed at quantifying the relationship between habitat and fisheries health.
- Participate in the Chesapeake Bay Program activities to establish interagency research and assessment priorities consistent with NOAA's mission.
- Identify two target tributaries suitable for oyster restoration in partnership with Maryland, Virginia, and the U.S. Army Corps of Engineers.
- Conduct side scan survey of proposed tributaries.

- Continue identification of reef restoration sites in targeted tributaries through multi-beam surveys.
- Monitor success of FY 2012 restoration efforts.
- Link habitat assessment and characterization efforts to Chesapeake Bay fisheries and living resources.
- Develop the annual blue crab advisory report.
- Engage in science communications and training activities through the Environmental Science Training Center at Oxford, Maryland.

FY 2013 – FY 2017:

- Administer multi-species grants.
- Continue to survey additional tributaries for oyster restoration and evaluate the progress made during the previous year's effort.
- Develop annual blue crab advisory reports.
- Continue science communication and training activities.

**Deliverables:**

- Each year NCBO will develop maps and habitat assessments in furtherance of oyster restoration.
- NCBO will collate sponsored research results and report out on the implications of the work.

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of students reached through environmental literacy efforts in Chesapeake Bay	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	3,250	0	0	0	0
<b>Without Decrease</b>	0	3,250	3,250	3,250	3,250	3,250	3,250
<b>Description:</b> This performance measure projects the number of ecosystem-fisheries students reached through environmental literacy programs each year. Note: There is a one year lag between funding and performance results.							

**PROGRAM CHANGE PERSONNEL DETAIL**

(Dollar amount in thousands)

Activity: National Marine Fisheries Service  
 Subactivity: Other Activities Supporting Fisheries

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Fish Biologist	Annapolis, MD	ZA-4	1	-89,033	<b>-89,033</b>
Fish Biologist	Annapolis, MD	ZA-4	1	-89,033	<b>-89,033</b>
Outreach Specialist	Norfolk, VA	ZA-4	1	-89,033	<b>-89,033</b>
Ecologist	Oxford, MD	ZP-4	1	-89,033	<b>-89,033</b>
IT Specialist	Annapolis, MD	ZP-3	1	-62,647	<b>-62,647</b>
Physical Science Technician	Annapolis, MD	ZT-5	1	-89,033	<b>-89,033</b>
Oceanographer	Annapolis, MD	ZP-4	1	-89,033	<b>-89,033</b>
<b>Total</b>			<u>7</u>		<u>-596,845</u>
less Lapse		25%	<u>N/A</u>		<u>0</u>
Total full-time permanent (FTE)			<u>7</u>		<u>-596,845</u>
2013 Pay Adjustment (0.5%)					
TOTAL					-596,845

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	7
Other than full-time permanent	0
Total	<u>7</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(597)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(597)</u>
12 Civilian personnel benefits	(180)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(23)
22 Transportation of things	(20)
23.1 Rental payments to GSA	(110)
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	(14)
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(186)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(200)
31 Equipment	(100)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(300)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,730)</u>

The following exhibit shows the summary object class detail for Other Activities Supporting Fisheries program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
 Subactivity: Other Activities Supporting Fisheries

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	61
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	61

## **APPROPRIATION ACCOUNT: PACIFIC COAST SALMON RECOVERY**

Land-use, harvest, and hatchery practices, as well as changing ocean conditions, have increased the vulnerability of Pacific salmonid populations, contributing to their decline and the listing of many populations as threatened or endangered under the Endangered Species Act (ESA). Over the course of their life cycle, salmonids require suitable habitat in main stem rivers, tributaries, coastal estuaries, wetlands, and the Pacific Ocean. A number of environmental challenges affect the survival of salmonids, including variability in ocean conditions, destruction of nearshore and freshwater habitats, and other natural and human-caused ecosystem changes.

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by Congress in FY 2000 to protect, restore, and conserve Pacific salmonids and their habitats, and to address the impacts of the Pacific Salmon Treaty Agreement between the United States and Canada. The Congressionally authorized activities that were funded under the PCSRF program included: (1) conserving salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk or to be so-listed; (2) maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing; and (3) conserving Pacific coastal salmon and steelhead habitat. NMFS provides competitive funding to states and Tribes of the Pacific Coast region (Washington, Oregon, California, Idaho, Nevada, and Alaska) to foster development of Federal-state-tribal-local partnerships to implement projects that restore and protect salmonid populations and their habitats. Through these partnerships, Federal and state-matching funds are supplemented by significant private and local contributions at the project level.

Key accomplishments for PCSRF-funded activities from 2000-2011 include:

- Restoration, protection, and accessibility of more than 879,000 acres of habitat;
- Nearly 5,400 miles of stream opened; and
- More than 238 million fish marked, which has supported efforts to gather data for improved stock identification, more accurate fish abundance estimates, and more effective management of selective fisheries on hatchery fish.

Habitat restoration activities funded by PCSRF are an important component of overall salmonid recovery efforts in the Pacific Coast. Restoration projects provided increased quality and quantity of spawning and rearing habitat from stream headwaters to coastal estuaries. Upstream restoration activities provided erosion control, enhanced instream flow and stream bed conditions, and provided the habitat necessary for successful spawning and egg survival. Estuary and wetland restoration projects closer to the coast protected and improved feeding and rearing habitat used by juvenile fish as they transition from freshwater to the open ocean. PCSRF restoration projects have also removed over 2,203 barriers to fish passage along small creeks and streams, restoring access to high-quality habitat. Additionally, PCSRF habitat projects also provided a number of benefits to the human community, including enhanced water quality, recreation opportunities, flood control, and coastline protection.

Since 2000, the PCSRF has funded over 10,200 projects across the Pacific coast that contribute to preventing extinction and improving the status of ESA-listed species and their habitats, as well as supporting and protecting healthy populations. Projects range from single-site culvert replacement to hundreds of acres of habitat acquisition and restoration. As projects are completed, grantees at the state and local levels are required to collect and report data for the performance metrics defined. The PCSRF program works closely with the Protected

Species Research and Management program to identify salmonid critical needs and long-term recovery objectives.

**Schedule & Milestones:**

FY 2013 – 2017:

- Issue *Federal Register* notice soliciting proposals for Pacific salmon recovery from states and tribes from the Pacific Coast region.
- Review Pacific salmon recovery proposals.
- Award Pacific salmon recovery grants to states and tribes from the Pacific region to implement habitat restoration and recovery projects focused on improving the status of salmonid population and their habitats.
- Annually review, evaluate, and assess the effectiveness of funded projects and programs to improve species recovery.
- Track progress, measure performance, and ensure accountability in the use of PCSRF funds.

**Deliverables/Outputs:**

FY 2013 – 2017:

- Enhance availability and quality of salmonid habitat.
- Improve management practices.
- Address major habitat limiting factors.
- Improve the status of ESA-listed salmonids.
- Maintain healthy salmon populations.
- Recover salmonid populations to self-sustaining levels in fully functioning ecosystems.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of Habitat Acres Restored (Annually) (GPRA 17f)	79,381	80,007	82,000	74,500	63,125	53,125	48,125
Habitat Acres	5,102	4,000	4,000	1,500	125	125	125
ARRA Acres	10,318	2,007	0	0	0	0	0
PCSRF acres	63,961	74,000	78,000	73,000	63,000	53,000	48,000
<p><b>Description:</b> NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species. The intent of this measure is to summarize or project the geographic area over which ecosystem function has been or will be improved as the direct result of habitat restoration efforts. These measures have at least a two-year lag time from the year of appropriation of funds to when projects are accomplished.</p> <p><b>Note:</b> Targets included proposed FY 2013 program changes.</p>							

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Stream miles made accessible (Annually)	737	889	890	740	640	550	500
Habitat stream miles	179	175	140	30	30	30	30
ARRA stream miles	184	4	0	0	0	0	0
PCSRF stream miles	374	710	750	710	610	520	470
<b>Note:</b> Targets included proposed FY 2013 program changes.							

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## **PROGRAM CHANGES FOR FY 2013:**

**Pacific Coastal Salmon Recovery Fund: Pacific Coastal Salmon Recovery Fund (Base Funding: \$65,000,000 and 0 FTE; Program Change: -\$15,000,000 and 0 FTE:** NOAA requests a decrease of \$15,000,000 and 0 FTE for the Pacific Coastal Salmon Recovery Fund for a total of \$50,000,000 and 0 FTE.

### **Proposed Actions:**

The FY 2013 President's Request level provides needed funding to continue engaging partners to protect, restore, and conserve Pacific salmonids and their habitats, and to address the impacts of the Pacific Salmon Treaty Agreement between the United States and Canada. Since 2000, NOAA's investment in cooperative salmon recovery efforts has restored more than 879,000 acres of habitat and opened access to over 5,300 miles of salmon and steelhead streams. Grant funding will be competitively awarded to states and tribes of the Pacific Coast region to conserve salmon and steelhead populations that are listed as threatened or endangered, or identified by a State as at-risk or to be so-listed; maintaining populations necessary for exercise of tribal treaty fishing rights or native subsistence fishing; and conserve Pacific salmon and steelhead habitat. The President's Request will continue to support projects across the Pacific coast that contribute to preventing extinction and improving the status of ESA-listed species and their habitats, as well as supporting and protecting healthy populations.

### **Base Resource Assessment:**

The base resources for this activity are described in the Pacific Coastal Salmon Recovery Fund base narrative.

### **Schedules and Milestones:**

FY 2013 – 2017:

- Issue *Federal Register* notice soliciting proposals for Pacific salmon recovery from states and tribes from the Pacific Coast region.
- Review Pacific salmon recovery proposals.
- Award Pacific salmon recovery grants to states and tribes from the Pacific region to implement habitat restoration and recovery projects focused on improving the status of salmonid population and their habitats.
- Annually review, evaluate, and assess the effectiveness of funded projects and programs to improve species recovery.
- Track progress, measure performance, and ensure accountability in the use of PCSRF funds.

### **Deliverables:**

FY 2013 – 2017:

- Enhance availability and quality of salmonid habitat.
- Improve management practices.
- Address major habitat limiting factors.
- Improve the status of ESA-listed salmonids.
- Maintain healthy salmon populations

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Habitat Acres Created, Protected or Restored (Only PCSRF)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	74,000	78,000	73,000	63,000	53,000	48,000
<b>Without Decrease</b>	63,961	74,000	78,000	73,000	68,000	63,000	63,000
<b>Description:</b> The measure above tracks the number of habitat acres protected through PCSRF only.							

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Number of Stream Miles Made Accessible (Only PCSRF)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	710	750	710	610	520	470
<b>Without Decrease</b>	374	710	750	710	660	610	610
<b>Description:</b> The measure above tracks the number of stream miles made accessible through PCSRF only.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Marine Fisheries Service  
Subactivity: Pacific Coastal Salmon Recovery Fund

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(15,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(15,000)</u>

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Pacific Coast Salmon Recovery  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Appropriation	Budget Authority	Direct Obligations
FY 2012 Currently Available		0	65,000	65,000	65,000
less: Prior year obligations	0	0	0	0	0
less: Terminations	0	0	0	0	0
plus: 2013 Adjustments to Base	0	0	0	0	0
FY 2013 Base	0	0	65,000	65,000	65,000
plus: 2013 Program Changes	0	0	(15,000)	(15,000)	(15,000)
FY 2013 Estimate	0	0	50,000	50,000	50,000

Comparison by activity/subactivity		FY 2011	FY 2012	FY 2013	FY 2013	Increase/
		Actuals Personnel Amount	Currently Available Personnel Amount	Base Program Personnel Amount	Estimate Personnel Amount	Decrease Personnel Amount
Pacific Coastal Salmon Recovery Account	Pos/BA	0 79,760	0 65,000	0 65,000	0 50,000	0 (15,000)
	FTE/OBL	1 79,760	0 65,000	0 65,000	0 50,000	0 (15,000)
Total: Pacific Coastal Salmon Recovery Account	Pos/BA	0 79,760	0 65,000	0 65,000	0 50,000	0 (15,000)
	FTE/OBL	1 79,760	0 65,000	0 65,000	0 50,000	0 (15,000)

Department of Commerce  
National Oceanic and Atmospheric Administration  
Pacific Coast Salmon Recovery  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	79,760	0	65,000	0	65,000	0	50,000	0	(15,000)
Total Obligations	0	79,760	0	65,000	0	65,000	0	50,000	0	(15,000)
Adjustments to Obligations:										
Unobligated balance, expiring	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	79,760	0	65,000	0	65,000	0	50,000	0	(15,000)
Financing from Transfers and Other:										
Appropriations permanently reduced	0	160	0	0	0	0	0	0	0	0
Transfer to ORF	0	80	0	0	0	0	0	0	0	0
Net Appropriation	0	80,000	0	65,000	0	65,000	0	50,000	0	(15,000)

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Pacific Coast Salmon Recovery  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

<u>Object Class</u>	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	143	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	143	0	0	0	0
12.1 Civilian personnel benefits	39	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	375	0	0	0	0
26 Supplies and materials	1	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	79,202	65,000	65,000	50,000	(15,000)
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Pacific Coast Salmon Recovery  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

44	Refunds	0	0	0	0	0
99	Total Obligations	79,760	65,000	65,000	50,000	(15,000)
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	0	0	0	0	0
	Plus unobligated balance, EOY	0	0	0	0	0
	Unobligated Balance, expiring	0	0	0	0	0
	Total Budget Authority	79,760	65,000	65,000	50,000	(15,000)

Personnel Data

Full-Time equivalent Employment:

Full-time permanent	1	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	1	0	0	0	0

Authorized Positions:

Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

## APPROPRIATION ACCOUNT: FISHERMEN'S CONTINGENCY FUND

For FY 2013, NMFS requests a total of \$350,000 for the Fishermen's Contingency Fund.

### BASE JUSTIFICATION FOR FY 2013:

The Fishermen's Contingency Fund is authorized under Section 402 of Title IV of the Outer Continental Shelf Lands Act Amendments of 1978. NOAA compensates U.S. commercial fishermen for damage or loss of fishing gear, vessels, and resulting economic loss caused by obstructions related to oil and gas exploration, development, and production in any area of the Outer Continental Shelf. The funds used to provide this compensation are derived from fees collected on an annual basis by the Secretary of the Interior from the holders of leases, exploration permits, easements, or rights-of-way in areas of the Outer Continental Shelf.

This activity is funded totally through user fees. Disbursements can be made only to the extent authorized in appropriation acts.

### PROPOSED LEGISLATION:

For carrying out the provisions of Title IV of Public Law 95-372, not to exceed \$350,000, to be derived from receipts collected pursuant to that Act, to remain available until expended.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account

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Department of Commerce  
National Oceanic and Atmospheric Administration  
Fishermen's Contingency Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	1	350	350
plus: Obligations from prior year balances	0	0	0	0
plus: Other Adjustments-to-Base	0	0	0	0
FY 2013 Base	0	1	350	350
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	1	350	350

		FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
		Actuals		Currently		Base Program		Estimate		Personnel	
Comparison by activity/subactivity		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Amount	
Fishermen's Contingency Fund	Pos/BA	0	0	1	360	1	350	1	350	0	0
	FTE/OBL	0	0	1	350	1	350	1	350	0	0
Total: Fishermen's Contingency Fund	Pos/BA	0	0	1	350	1	350	1	350	0	0
	FTE/OBL	0	0	1	350	1	350	1	350	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Fishermen's Contingency Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	1	360	1	350	1	350	0	0
Total Obligations	0	0	1	360	1	350	1	350	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(10)	0	(10)	0	0	0	0	0	0
Unobligated balance, EOY	0	10	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	1	350	1	350	1	350	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	1	350	1	350	1	350	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Fishermen’s Contingency Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

Object Class	2011 Actuals	2012 Currently Available	2013 Base	2013 Estimate	Increase/ (Decrease)
42 Insurance claims and indemnities	0	360	350	350	0
43 Interest and dividends	0	0	0	0	0
44 Refunds	0	0	0	0	0
99 Total Obligations	0	360	350	350	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(10)	(10)	0	0	0
Plus unobligated balance, EOY	10	0	0	0	0
Total Budget Authority	0	350	350	350	0

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## APPROPRIATION ACCOUNT: FOREIGN FISHING OBSERVER FUND

For FY 2013, NMFS requests a total of \$0 for the Foreign Fishing Observer Fund.

### BASE JUSTIFICATION FOR FY 2013:

The Foreign Fishing Observer Fund is financed through fees collected from owners and operators of foreign fishing vessels fishing within the U.S. EEZ (such fishing requires a permit issued under the Magnuson-Stevens Act). This includes longline vessels fishing in the Atlantic billfish and shark fishery and other foreign vessels fishing in the EEZ. The fund is used by NOAA to pay salaries, administrative costs, data editing and entry costs, and other costs incurred in placing observers aboard foreign fishing vessels. The observer program is conducted primarily through contracts with the private sector. NOAA/NMFS places these observers aboard foreign fishing vessels to monitor compliance with U.S. fishery laws and to collect fishery management data. Amounts available in the fund can be disbursed only to the extent and in amounts provided in appropriation acts. In FY 1985 Congress approved the establishment of a supplemental observer program. The program provided that foreign vessels without federally funded observers are required to obtain the services of private contractors certified by the Secretary of Commerce.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Foreign Fishing Observer Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	(350)	0
less: Obligations from prior year balances	0	0	350	0
Technical adjustment to base	0	0	0	0
FY 2013 Base	0	0	0	0
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Decrease Personnel Amount	
Foreign Fishing Observer Fund	Pos/BA	0	0	0	(350)	0	0	0	0	0	0
	FTE/OBL	0	0	0	0	0	0	0	0	0	0
Total: Foreign Fishing Observer Fund	Pos/BA	0	0	0	(350)	0	0	0	0	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Foreign Fishing Observer Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease		
	Actuals		Currently Available		Base Program		Estimate				
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	
Direct Discretionary Obligation	0	0	0	0	0	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:											
Unobligated balance, adj. SOY	0	(522)	0	(522)	0	(172)	0	(172)	0	0	0
Unobligated balance, EOY	0	522	0	172	0	172	0	172	0	0	0
Total Budget Authority	0	0	0	(350)	0	0	0	0	0	0	0
Financing from Transfers and Other:											
Unobligated balance, rescission	0	0	0	350	0	0	0	0	0	0	0
Net Appropriation	0	0	0	0	0	0	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Foreign Fishing Observer Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

<u>Object Class</u>	<u>2011 Actuals</u>	<u>2012 Currently Available</u>	<u>2013 Base</u>	<u>2013 Estimate</u>	<u>Increase/ (Decrease)</u>
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Foreign Fishing Observer Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

44	Refunds	0	0	0	0	0
99	Total Obligations	0	0	0	0	0
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	(522)	(522)	0	0	0
	Plus unobligated balance, EOY	522	172	0	0	0
	Unobligated balance, rescission	0	350	0	0	0
	Total Budget Authority	0	0	0	0	0

## APPROPRIATION ACCOUNT: FISHERIES FINANCE PROGRAM ACCOUNT

For FY 2013, NMFS requests a total of \$0 for the Fisheries Finance Program Account.

### BASE JUSTIFICATION FOR FY 2013:

The Fisheries Finance Program (FFP) is a national loan program that makes long-term fixed-rate financing available to U.S. citizens who otherwise qualify for financing or refinancing of the construction, reconstruction, reconditioning, and, in some cases, the purchasing of fishing vessels, shoreside processing, aquaculture, mariculture facilities, and the purchase of individual fishing quota (IFQ). The purpose of these loans is to provide stability to at least one aspect of an otherwise volatile industry. The FFP also provides fishery-wide financing to ease the transition to sustainable fisheries through its fishing capacity reduction programs and provides financial assistance in the form of loans to fishermen who fish from small vessels and entry-level fishermen to promote stability and reduce consolidation in already rationalized fisheries. Additionally, FFP can provide loans for fisheries investments of Native American Community Development Quota (CDQ) groups.

The FFP operates under the authority of Title XI of the Merchant Marine Act of 1936, as amended (46 USC 53701); Section 303(a) of the Sustainable Fisheries Act amendments to the Magnuson-Stevens Act; and, from time to time FFP-specific legislation. FFP lending practices are guided by Title XI, general rules implementing Title XI (found at 50 CFR part 253, subpart B), NOAA's sustainable fisheries policy, and the practical considerations of a program that has continually not required an appropriation of loan loss subsidy under the Federal Credit Reform Act, as discussed below. The overriding guideline for all FFP financings is that they cannot contribute or be construed to contribute to an increase in existing fishing capacity.

All FFP authority is subject to the Federal Credit Reform Act of 1990 (FCRA) (2 U.S.C. 661) which requires the estimated loan losses (FCRA cost) be appropriated in cash at the time Congress authorizes annual credit ceilings. Some types of FFP loans require no FCRA subsidy appropriations because these types of loans have historically not required additional loan subsidy. However, specific loan ceilings for each type of loan authority must be included in appropriation language or other bill language regardless of the need for cash appropriations.

### PROPOSED LEGISLATION:

Subject to section 502 of the Congressional Budget Act of 1974, during fiscal year 2013, obligations of direct loans may not exceed \$24,000,000 for Individual Fishing Quota loans and not to exceed \$59,000,000 for traditional direct loans as authorized by the Merchant Marine Act of 1936: Provided, That none of the funds made available under this heading may be used for direct loans for any new fishing vessel that will increase the harvesting capacity in any United States fishery.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
National Oceanic and Atmospheric Administration  
Fisheries Finance Program Account  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	5,771	6,091
less: 2013 Adjustments to Base	0	0	(5,771)	(6,091)
less: Negative Subsidy Receipts Adjustment	0	0	0	0
FY 2013 Base	0	0	0	0
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2011		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease Personnel Amount	
		Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount
Fisheries Finance Program Account	Pos/BA	0	9,910	0	5,771	0	0	0	0	0	0
	FTE/OBL	0	9,910	0	6,091	0	0	0	0	0	0
Total: Fisheries Finance Program Account	Pos/BA	0	9,910	0	5,771	0	0	0	0	0	0
	FTE/OBL	0	9,910	0	6,091	0	0	0	0	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Fisheries Finance Program Account  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Cost Loan Subsidy	0	0	0	0	0	0	0	0	0	0
Credit Reestimates	0	9,910	0	6,091	0	0	0	0	0	0
Total Obligations	0	9,910	0	6,091	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(3,013)	0	(3,019)	0	(2,699)	0	(2,699)	0	0
Unobligated balance, EOY	0	3,019	0	2,699	0	2,699	0	2,699	0	0
Total Budget Authority	0	9,916	0	5,771	0	0	0	0	0	0
Financing from Transfers and Other:										
Less: Permanent Indefinite Authority (Mandatory)	0	0	0	(5,771)	0	0	0	0	0	0
Net Appropriation	0	9,916	0	0	0	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Fisheries Finance Program Account  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

<u>Object Class</u>	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	9,910	6,091	0	0	0
42 Insurance claims and indemnities	0	0	0	0	0
43 Interest and dividends	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Fisheries Finance Program Account  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

44	Refunds	0	0	0	0	0
99	Total Obligations	9,910	6,091	0	0	0
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	(3,013)	(3,019)	(2,699)	(2,699)	0
	Plus unobligated balance, EOY	3,019	2,699	2,699	2,699	0
	Unoblig Balance, Transfer to ORF	0	0	0	0	0
	Total Budget Authority	9,916	5,771	0	0	0

## APPROPRIATION ACCOUNT: PROMOTE AND DEVELOP FISHERIES PRODUCTS

For FY 2013, NMFS requests a total of \$5,000,000 for the Saltonstall-Kennedy Grant Program. NMFS estimates that a total of \$124,064,000 will be transferred from the Department of Agriculture to the Promote and Develop Account and that \$119,064,000 will be transferred from the Promote and Develop account to the Operations, Research and Facilities account.

### BASE JUSTIFICATION FOR FY 2013:

The American Fisheries Promotion Act (AFPA) of 1980 amended the Saltonstall-Kennedy (S-K) Act to authorize a grants program for fisheries research and development projects to be carried out with S-K funds. S-K funds are derived from a transfer from the Department of Agriculture to NOAA from duties on imported fisheries products. An amount equal to 30 percent of these duties is made available to NOAA and, subject to appropriation, is available to carry out the purposes of the AFPA. The S-K grants program has provided substantial assistance to address impediments to the management, development, and utilization of the Nation's living marine resources. Each year a *Federal Register* notice is published announcing the program. The annual notice outlines priority areas, such as research on reduction/elimination of bycatch and aquaculture. The remainder of the S-K funds transferred is used to offset the appropriation requirements of the Operations, Research, and Facilities account.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Promote and Develop Fisheries Products  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	0	0
less: Obligations from prior year balances	0	0	0	0
plus: 2013 Adjustments to Base	0	0	5,000	5,000
FY 2013 Base	0	0	5,000	5,000
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	5,000	5,000

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Decrease Personnel Amount	
Promote and Develop Fisheries Products	Pos/BA	0	0	0	0	0	5,000	0	5,000	0	0
	FTE/OBL	0	0	0	0	0	5,000	0	5,000	0	0
Total: Promote and Develop Fisheries Products	Pos/BA	0	0	0	0	0	5,000	0	5,000	0	0
	FTE/OBL	0	0	0	0	0	5,000	0	5,000	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Promote and Develop Fisheries Products  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	0	0	5,000	0	5,000	0	0
Total Obligations	0	0	0	0	0	5,000	0	5,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(312)	0	(78)	0	0	0	0	0	0
Recoveries	0	(319)	0	0	0	0	0	0	0	0
transfer of unobligated balances	0	553	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	78	0	78	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	5,000	0	5,000	0	0
Financing from Transfers and Other:										
Transfer from USDA	0	(90,240)	0	(109,098)	0	(124,064)	0	(124,064)	0	0
Transfer to ORF	0	90,240	0	109,098	0	119,064	0	119,064	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Promote and Develop Fisheries Products  
SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
(Dollar amounts in thousands)

<u>Object Class</u>	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	5,000	5,000	0
42 Insurance claims and indemnities	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Promote and Develop Fisheries Products  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

43	Interest and dividends	0	0	0	0	0
44	Refunds	0	0	0	0	0
<hr/>						
99	Total Obligations	0	0	5,000	5,000	0
	Less prior year recoveries	(319)	0	0	0	0
	Less unobligated balance, SOY	(312)	0	0	0	0
	Unobligated balance, transferred	553	0	0	0	0
	Plus unobligated balance, EOY	78	0	0	0	0
<hr/>						
	Total Budget Authority	0	0	5,000	5,000	0

APPROPRIATION ACCOUNT: FEDERAL SHIP FINANCING FUND

For FY 2013, NMFS estimates a total of \$0 for the Federal Ship Financing Fund Account.

BASE JUSTIFICATION FOR FY 2013:

The Federal Ship Financing Fund is the liquidating account necessary for the collection of premiums and fees of the loan guarantee portfolio that existed prior to FY 1992. Administrative expenses for management of the loan guarantee portfolio were charged to the Federal Ship Financing Fund prior to the enactment of the Federal Credit Reform Act of 1990. Currently administrative expenses are charged to the Operations, Research, and Facilities (ORF) account.

PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Federal Ship Financing Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	0	0
plus: 2013 Adjustments to Base	0	0	0	0
FY 2013 Base	0	0	0	0
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	
Federal Ship Financing Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	204	0	0	0	0	0	0	0	0
Total: Federal Ship Financing Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	204	0	0	0	0	0	0	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Federal Ship Financing Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	0	0	204	0	0	0	0	0	0
Offsetting collections, mandatory	0	0	0	(204)	0	0	0	0	0	0
Total Obligations	0	0	0	0	0	0	0	0	0	0
Adjustments to Obligations:										
EOY Transfer to Treasury	0	(204)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, adj. EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	(204)	0	0	0	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Federal Ship Financing  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
33 Investments and loans	0	0	0	0	0
99 Total Obligations	0	0	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Mandatory Appropriation	0	0	0	0	0
Less Offsetting Collections	(204)	0	0	0	0
Total Budget Authority	(204)	0	0	0	0

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APPROPRIATION ACCOUNT: ENVIRONMENTAL IMPROVEMENT & RESTORATION FUND

For FY 2013, NMFS estimates obligating \$194,000 in the Environmental Improvement and Restoration Fund.

BASE JUSTIFICATION FOR FY 2013:

The Environmental Improvement & Restoration Fund (EIRF) was created by the Department of Interior and Related Agencies Appropriations Act of 1998 for the purpose of carrying out marine research activities in the North Pacific. These funds will provide grants to Federal, State, private or foreign organizations or individuals to conduct research activities on or relating to the fisheries or marine ecosystems in the North Pacific Ocean, Bering Sea, and Arctic Ocean.

PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Environmental Improvement and Restoration Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	290	290
less: obligations from prior year balances	0	0	0	0
plus: 2013 Adjustments to Base	0	0	(96)	(96)
FY 2013 Base	0	0	194	194
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	194	194

Comparison by activity/subactivity		FY 2011		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount	
Environmental Improvement & Restoration Fund	Pos/BA	0	9,896	0	290	0	194	0	194	0	0
	FTE/OBL	0	9,870	0	290	0	194	0	194	0	0
Total: Environmental Improvement & Restoration Fund	Pos/BA	0	9,896	0	290	0	194	0	194	0	0
	FTE/OBL	0	9,870	0	290	0	194	0	194	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Environmental Improvement and Restoration Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	9,870	0	10,205	0	194	0	194	0	0
Total Obligations	0	9,870	0	290	0	194	0	194	0	0
Adjustments to Obligations:										
Recoveries	0	(19)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(9,870)	0	(9,915)	0	0	0	0	0	0
Unobligated balance, EOY	0	9,915	0	0	0	0	0	0	0	0
Total Budget Authority	0	9,896	0	290	0	194	0	194	0	0
Financing from Transfers and Other:										
Net Mandatory Appropriation	0	9,896	0	290	0	194	0	194	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Environmental Improvement and Restoration Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

<u>Object Class</u>	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
23.1 Rental payments to GSA	0	0	0	0	0
23.2 Rental payments to others	0	0	0	0	0
23.3 Commun., util., misc. charges	0	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	0	0	0	0	0
26 Supplies and materials	0	0	0	0	0
31 Equipment	0	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	9,870	10,205	194	194	0
42 Insurance claims and indemnities	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Environmental Improvement and Restoration Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

43	Interest and dividends	0	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total Obligations	9,870	10,205	194	194	0
	Less prior year recoveries	(19)	0	0	0	0
	Less unobligated balance, SOY	(9,870)	(9,915)	0	0	0
	Plus unobligated balance, EOY	9,915	0	0	0	0
	Total Budget Authority	9,896	290	194	194	0

## APPROPRIATION ACCOUNT: LIMITED ACCESS SYSTEM ADMINISTRATION

For FY 2013, NMFS estimates obligating \$10,934,000 in the Limited Access System Administration account.

### BASE JUSTIFICATION FOR FY 2013:

Under the authority of the Magnuson-Stevens Act Section 304(d)(2)(A), NMFS must collect a fee to recover the incremental costs of management, data collection, and enforcement of Limited Privilege (LAP) programs. Funds collected under this authority are deposited into the "Limited Access System Administrative Fund" (LASAF). Fees shall not exceed three percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested. The LASAF shall be available, without appropriation or fiscal year limitation, only for the purposes of administering the central registry system; and administering and implementing the Magnuson-Stevens Act in the fishery in which the fees were collected. Sums in the fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by the U.S. Also, in establishing a LAP program, a Regional Council can consider, and may provide, if appropriate, an auction system or other program to collect royalties for the initial or any subsequent distribution of allocations. If an auction system is developed, revenues from these royalties are deposited in the Limited Access System Administration Fund.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Limited Access System Administration Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	9,675	9,675
less: Obligations from Prior Year Balances	0	0	1,259	1,259
FY 2013 Base	0	0	10,934	10,934
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	10,934	10,934

Comparison by activity/subactivity		FY 2011		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount		Personnel Amount		Personnel Amount		Personnel Amount			
Limited Access System Administration Fund	Pos/BA	0	12,113	0	9,675	0	10,934	0	10,934	0	0
	FTE/OBL	40	10,181	0	9,675	0	10,934	0	10,934	0	0
Total: Limited Access System Administration Fund	Pos/BA	0	12,113	0	9,675	0	10,934	0	10,934	0	0
	FTE/OBL	40	10,181	0	9,675	0	10,934	0	10,934	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Limited Access System Administration Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2012		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	40	10,181	0	9,675	0	10,934	0	10,934	0	0
<b>Total Obligations</b>	<b>40</b>	<b>10,181</b>	<b>0</b>	<b>9,675</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
Recoveries	0	(10)	0	0	0	0	0	0	0	0
Unobligated balance, adj. SOY	0	(11,871)	0	(13,813)	0	0	0	0	0	0
Unobligated balance, EOY	0	13,813	0	13,813	0		0		0	0
<b>Total Budget Authority</b>	<b>40</b>	<b>12,113</b>	<b>0</b>	<b>9,675</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
<b>Net Appropriation</b>	<b>40</b>	<b>12,113</b>	<b>0</b>	<b>9,675</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>10,934</b>	<b>0</b>	<b>0</b>

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Limited Access System Administration Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

<u>Object Class</u>	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	3,009	0	0	0	0
11.3 Other than full-time permanent	22	0	0	0	0
11.5 Other personnel compensation	453	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	3,484	0	0	0	0
12.1 Civilian personnel benefits	1,562	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	144	0	0	0	0
22 Transportation of things	4	0	0	0	0
23.1 Rental payments to GSA	235	0	0	0	0
23.2 Rental payments to others	28	0	0	0	0
23.3 Commun., util., misc. charges	136	0	0	0	0
24 Printing and reproduction	0	0	0	0	0
25.2 Other services	1,819	0	0	0	0
25.3 Purchases of goods & svcs from Govt accounts	0	0	0	0	0
26 Supplies and materials	256	0	0	0	0
31 Equipment	34	0	0	0	0
32 Lands and structures	0	0	0	0	0
33 Investments and loans	0	0	0	0	0
41 Grants, subsidies and contributions	2,479	9,675	10,934	10,934	0
42 Insurance claims and indemnities	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Limited Access System Administration Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

43	Interest and dividends	0	0	0	0	0
44	Refunds	0	0	0	0	0
99	Total Obligations	10,181	9,675	10,934	10,934	0
	Less prior year recoveries	(10)	0	0	0	0
	Less unobligated balance, SOY	(11,871)	(13,813)	0	0	0
	Plus unobligated balance, EOY	13,813	13,813	0	0	0
	Total Budget Authority	12,113	10,363	10,934	10,934	0

## APPROPRIATION ACCOUNT: MARINE MAMMAL UNUSUAL MORTALITY EVENT FUND

For FY 2013, NMFS estimates obligating \$0 in the Marine Mammal Unusual Event Fund.

### BASE JUSTIFICATION FOR FY 2013:

An unusual mortality event (UME) is defined under the Marine Mammal Protection Act as "a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response." In recent years, increased efforts to examine carcasses and live stranded animals have improved the knowledge of mortality rates and causes, allowing a better understanding of population threats and stressors and the ability to determine when a situation is "unusual." Understanding and investigating marine mammal UMEs is important because they can serve as indicators of ocean health, giving insight into larger environmental issues which may also have implications for human health and welfare.

The Marine Mammal Protection Act Section 405 (16 USC 1421d) establishes the Marine Mammal Unusual Mortality Event Fund and describes its purposes and how donations can be made to the Fund. The fund: "shall be available only for use by the Secretary of Commerce, in consultation with the Secretary of the Interior:

- to compensate persons for special costs incurred in acting in accordance with the contingency plan issued under section 1421c(b) of this title or under the direction of an Onsite Coordinator for an unusual mortality event;
- for reimbursing any stranding network participant for costs incurred in preparing and transporting tissues collected with respect to an unusual mortality event for the Tissue Bank; and
- for care and maintenance of marine mammal seized under section 1374(c)(2)(D) of this title"

According to the MMPA, deposits can be made into Fund by the following:

- "amounts appropriated to the Fund;
- other amounts appropriated to the Secretary for use with respect to unusual mortality events; and
- amounts received by the United States in the form of gifts, devises, and bequests under subsection (d) of this section"

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Marine Mammal Unusual Mortality Event Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	0	200
less: Obligations from prior year balances	0	0	0	(200)
FY 2013 Base	0	0	0	0
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	0	0

Comparison by activity/subactivity		FY 2011		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount
Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	184	0	200	0	0	0	0	0	0
Total: Marine Mammal Unusual Mortality Event Fund	Pos/BA	0	0	0	0	0	0	0	0	0	0
	FTE/OBL	0	184	0	200	0	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Marine Mammal Unusual Mortality Event Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	184	0	200	0	0	0	0	0	0
Total Obligations	0	184	0	200	0	0	0	0	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(407)	0	(223)	0	0	0	0	0	0
Unobligated balance, EOY	0	223	0	23	0	0	0	0	0	0
Total Budget Authority	0	0	0	0	0	0	0	0	0	0
Financing from Transfers and Other:										
Net Appropriation	0	0	0	0	0	0	0	0	0	0

Department of Commerce  
 Marine Mammal Unusual Mortality Event Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
25.2 Other services	0	0	0	0	0
41 Grants, subsidies and contributions	0	0	0	0	0
99 Total Obligations	0	200	0	0	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(407)	(223)	0	0	0
Plus unobligated balance, EOY	223	23	0	0	0
Total Budget Authority	(184)	0	0	0	0

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## APPROPRIATION ACCOUNT: WESTERN PACIFIC SUSTAINABLE FISHERIES FUND

For FY 2013, NMFS estimates obligating \$1,000,000 in the Western Pacific Sustainable Fisheries Fund.

### BASE JUSTIFICATION FOR FY 2013:

Section 204(e) of the 2006 amendments to the Magnuson-Stevens Fishery Conservation and Management Act authorizes the establishment of the Western Pacific Sustainable Fisheries Fund. The purpose of this Fund is to allow foreign fishing within the U.S. Exclusive Economic Zone (EEZ) in the Western Pacific through a Pacific Insular Area Fishery Agreement. Before entering into such an Agreement, the Western Pacific Fishery Management Council must develop a Marine Conservation Plan that provides details on uses for any funds collected by the Secretary of Commerce. Marine Conservation Plans must also be developed by the Governors of the Territories of Guam and American Samoa and of the Commonwealth of the Northern Mariana Islands and approved by the Secretary or designee.

The Western Pacific Sustainable Fisheries Fund serves as a repository for any permit payments received by the Secretary for foreign fishing within the U.S. EEZ around Johnston Atoll, Kingman Reef, Palmyra Atoll, and Jarvis, Howland, Baker and Wake Islands, sometimes known as the Pacific remote island areas (PRIA). Also, in the case of violations by foreign vessels occurring in these areas, amounts received by the Secretary attributable to fines and penalties shall be deposited into the Western Pacific Sustainable Fisheries Fund. Additionally, any funds or contributions received in support of conservation and management objectives under a Marine Conservation Plan for any Pacific Insular Area other than American Samoa, Guam, or the Northern Mariana Islands shall be deposited in the Western Pacific Sustainable Fisheries Fund.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Western Pacific Sustainability Fisheries Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	1,000	2,030
less: 2012 Obligations from prior year balances	0	0	0	(1,030)
FY 2013 Base	0	0	1,000	1,000
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	1,000	1,000

Comparison by activity/subactivity		FY 2011		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease Personnel Amount	
		Actuals Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Personnel Amount	Amount	Amount	Amount
Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,030	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	1,001	0	2,030	0	1,000	0	1,000	0	0
Total: Western Pacific Sustainability Fisheries Fund	Pos/BA	0	1,030	0	1,000	0	1,000	0	1,000	0	0
	FTE/OBL	0	1,001	0	2,030	0	1,000	0	1,000	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Western Pacific Sustainability Fisheries Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	1,001	0	2,030	0	1,000	0	1,000	0	0
Total Obligations	0	1,001	0	2,001	0	1,000	0	1,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	(1,001)	0	(1,030)	0	0	0	0	0	0
Unobligated balance, EOY	0	1,030	0	0	0	0	0	0	0	0
Total Budget Authority	0	1,030	0	1,000	0	1,000	0	1,000	0	0
Financing from Transfers and Other:										
Net Appropriation	0	1,030	0	1,000	0	1,000	0	1,000	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Western Pacific Sustainability Fisheries Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

Object Class	FY 2011 Actuals	FY 2012 Currently Available	FY 2013 Base	FY 2013 Estimate	Increase/ (Decrease)
11 Personnel compensation					
11.1 Full-time permanent	0	0	0	0	0
11.3 Other than full-time permanent	0	0	0	0	0
11.5 Other personnel compensation	0	0	0	0	0
11.8 Special personnel services payments	0	0	0	0	0
11.9 Total personnel compensation	0	0	0	0	0
12.1 Civilian personnel benefits	0	0	0	0	0
13 Benefits for former personnel	0	0	0	0	0
21 Travel and transportation of persons	0	0	0	0	0
22 Transportation of things	0	0	0	0	0
25.2 Other services	1,001	2,030	1,000	1,000	0
99 Total Obligations	1,001	2,030	1,000	1,000	0
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	(1,001)	(1,030)	0	0	0
Plus unobligated balance, EOY	1,030		0	0	0
Total Budget Authority	1,030	1,000	1,000	1,000	0

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## APPROPRIATION ACCOUNT: FISHERIES ASSET FORFEITURE FUND

For FY 2013, NMFS estimates it will collect \$5,000,000 in fines, penalties, and forfeitures proceeds. NOAA will obligate this amount to support the activities described below.

### BASE JUSTIFICATION FOR FY 2013:

Section 311(e)(1) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) authorizes the Secretary of Commerce (Secretary) to pay certain enforcement-related expenses from fines, penalties and forfeiture proceeds received for violations of the Magnuson-Stevens Act, Marine Mammal Protection Act, National Marine Sanctuaries Act, or any other marine resource law enforced by the Secretary. Pursuant to this authority, the NOAA has established a Civil Monetary Penalty/Asset Forfeiture Fund (AFF). Certain fines, penalties and forfeiture proceeds received by NOAA are deposited into this Fund, and subsequently used to pay for certain enforcement-related expenses. When Congress established the AFF it was deemed appropriate to use these proceeds to offset in part the costs of administering the Enforcement program. Expenses funded through this source include: costs directly related to the storage, maintenance, and care of seized fish, vessels, or other property during a civil or criminal proceeding; expenditures relate directly to specific investigations and enforcement proceedings such as travel for interviewing witnesses; enforcement unique information technology infrastructure; annual interagency agreement and contract costs for the administrative adjudication process, including Administrative Law Judges hired by the Coast Guard.

### PROGRAM CHANGE FOR FY 2013:

No program change is requested for this account.

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Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Fisheries Enforcement Asset Forfeiture Fund  
 SUMMARY OF RESOURCE REQUIREMENTS  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	8,000	8,000
less: 2012 Obligations from prior year balances	0	0	0	0
plus: 2013 Adjustments to base	0	0	(3,000)	(3,000)
FY 2012 Base	0	0	5,000	5,000
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	5,000	5,000

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/Decrease	
		Actuals Personnel Amount		Currently Available Personnel Amount		Base Program Personnel Amount		Estimate Personnel Amount		Personnel Amount	
Fisheries Enforcement Asset Forfeiture Fund	Pos/BA	0	0	0	8,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	0	0	8,000	0	5,000	0	5,000	0	0
Total: Fisheries Enforcement Asset Forfeiture Fund	Pos/BA	0	0	0	8,000	0	5,000	0	5,000	0	0
	FTE/OBL	0	0	0	8,000	0	5,000	0	5,000	0	0

Department of Commerce  
National Oceanic and Atmospheric Administration  
Fisheries Enforcement Asset Forfeiture Fund  
SUMMARY OF RESOURCE REQUIREMENTS  
(Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Mandatory Obligation	0	0	0	8,000	0	5,000	0	5,000	0	0
Total Obligations	0	0	0	8,000	0	5,000	0	5,000	0	0
Adjustments to Obligations:										
Unobligated balance, adj. SOY	0	0	0	0	0	0	0	0	0	0
Unobligated balance, EOY	0	0	0	0	0	0	0	0	0	0
Total Budget Authority	0	0	0	8,000	0	5,000	0	5,000	0	0
Financing from Transfers and Other:				(3,000)		(5,000)		(5,000)		
Net Appropriation	0	0	0	5,000	0	0	0	0	0	0

Department of Commerce  
 National Oceanic and Atmospheric Administration  
 Fisheries Enforcement Asset Forfeiture Fund  
 SUMMARY OF REQUIREMENTS BY OBJECT CLASS  
 (Dollar amounts in thousands)

		FY 2011	FY 2012	FY 2013	FY 2013	Increase/
Object Class		Actuals	Currently Available	Base	Estimate	(Decrease)
21	Travel and transportation of persons	0	0	0	0	0
22	Transportation of things	0	0	0	0	0
23.1	Rental payments to GSA	0	0	0	0	0
24	Printing and reproduction	0	0	0	0	0
25.2	Other services	0	8,000	5,000	5,000	0
26	Supplies and materials	0	0	0	0	0
31	Equipment	0	0	0	0	0
43	Interest and dividends	0	0	0	0	0
99	Total Obligations	0	8,000	5,000	5,000	0
	Non-Federal Sources	0	0	0	0	0
	Less prior year recoveries	0	0	0	0	0
	Less unobligated balance, SOY	0	0	0	0	0
	Plus unobligated balance, EOY	0	0	0	0	0
	Less unobligated balance, transferred	0	0	0	0	0
	Total Budget Authority	0	8,000	5,000	5,000	0

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## **BUDGET ACTIVITY: OCEANIC AND ATMOSPHERIC RESEARCH**

For FY 2013, NOAA requests a net increase of \$25,926,000 and 3 FTE above the FY 2013 base level for a total of \$413,820,000 and 758 FTE for the Office of Oceanic and Atmospheric Research (OAR). This includes \$3,176,000 and 0 FTE in adjustments-to-base.

OAR is the primary center for research and development (R&D) within NOAA. NOAA looks to OAR to meet key NOAA science challenges; to lead advances in Earth system research using observations, analysis, and modeling; and to play an expanded role as the innovator, incubator and integrator of science and technology across NOAA. The Agency relies on OAR to coordinate and develop research and technology for such emerging and integrative subjects as ocean acidification, “warn on forecast,” climate and weather testbeds, diagnosing and forecasting the behavior of the Earth system, ocean exploration, unmanned aircraft systems, and autonomous underwater vehicles. OAR conducts weather and climate research necessary to provide society with useful information, such as information to help decision-makers manage regional water resources and plan for extreme events in a variable and changing climate. OAR also serves as the programmatic lead for environmental modeling as we move to truly integrated modeling that spans the full domain of physical, chemical, and biological systems. When mature, the products and the information produced will inform a broad range of users, sectoral interests, and transition appropriate advances to another Line Office for operation or application.

### **BASE JUSTIFICATION FOR FY 2013:**

The OAR budget is organized into four subactivities under the Operations, Research, and Facilities (ORF) account (377,598,000 and 755 FTE):

- Climate Research (\$184,517,000 and 366 FTE) includes Laboratories and Cooperative Institutes and competitive research that seek to establish a greater understanding of and ability to predict climate variability and change to enhance society’s ability to plan and respond.
- Weather and Air Chemistry Research (\$68,471,000 and 210 FTE) includes Laboratories and Cooperative Institutes as well as Research Programs that develop improved understanding and forecast capabilities for atmospheric events that endanger lives and property.
- Ocean, Coastal, and Great Lakes Research (\$115,664,000 and 166 FTE) includes Laboratories and Cooperative Institutes, the National Sea Grant College Program, Office of Ocean Exploration and Research, and Other Ecosystem Programs. Collectively, activities funded here seek to better understand habitats, processes, and resources in the oceanic, coastal, and Great Lakes environments and lead to innovative and useful management tools that help NOAA meet its mission.
- Information Technology Research and Development (\$8,946,000 and 13 FTE) includes High Performance Computing Initiatives, which seeks to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA.

The Procurement, Acquisition, and Construction (PAC) account (\$10,296,000 and 0 FTE) includes the following subactivity:

- System Acquisition, which includes NOAA’s investments in Research High Performance Computing.

OAR operates through a national network of laboratories and other university-based research programs. Through FY 2012, OAR has managed its budget through seven organizational components: Laboratories and Cooperative Institutes, Climate Program Office, National Sea Grant College Program, Office of Ocean Exploration and Research (OER), Other Ecosystem Programs, Office of Weather & Air Quality (OWAQ), and the NOAA High-Performance Computing and Communications (HPCC) Program. Beginning in FY 2013, the NOAA Undersea Research Program under OER is proposed for termination.

With its diverse research capabilities and ability to increase its breadth and depth of expertise from our many partners, OAR provides national and international leadership on critical environmental issues and addresses the environmental R&D needs of internal NOAA customers as well as of states, industry, the Department of Commerce (DOC), and other Federal agencies.

### **OAR Laboratories and Cooperative Institutes**

OAR has seven laboratories across the United States that administer and manage its programs, emphasize theoretical and analytical studies, and conduct laboratory experiments and field observations. These laboratories collaborate with numerous external partners, including NOAA-funded cooperative institutes. The primary purpose of the laboratories and cooperative institutes is to improve NOAA products and services and to provide the basis for improved decision making by policy makers and the public.



### **Research Laboratories**

- **Air Resources Laboratory (ARL)**, headquartered in Silver Spring, MD, and with offices in Oak Ridge, Tennessee, Idaho Falls, Idaho, and Las Vegas, Nevada, carries out research on

air chemistry, atmospheric dispersion, and climate, with a focus on conditions near the Earth's surface that affect people and ecosystems. More information about ARL is available at <http://www.arl.noaa.gov/>.

- **Atlantic Oceanographic and Meteorological Laboratory (AOML)**, in Miami, Florida, conducts research in oceanography, tropical meteorology, atmospheric and oceanic chemistry, and acoustics. More information about AOML is available at <http://www.aoml.noaa.gov/>.
- **Earth System Research Laboratory (ESRL)** in Boulder, Colorado, represents a combination of climate and weather research capabilities aimed at observing and understanding the Earth system and developing environmental information products and services on global to local scales. ESRL primarily works to understand the roles of gases and particles that contribute to climate change, provides weather and climate information related to water management decisions, improves weather prediction, studies the recovery of the stratospheric ozone layer, and develops air quality forecast models. ESRL has four divisions:
  - **Chemical Sciences Division (CSD)** conducts research aimed at discovering, understanding, and quantifying the processes that control the chemical makeup of Earth's atmosphere to better understand its future. More information about CSD is available at: <http://www.esrl.noaa.gov/csd/>.
  - **Global Monitoring Division (GMD)** conducts sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in Earth's climate and environment. GMD also conducts research on the depletion of the global stratospheric ozone layer and Antarctic ozone hole, ultraviolet radiation, and ozone-depleting gases, including those regulated by the Montreal Protocol. More information about GMD is available at: <http://www.esrl.noaa.gov/gmd/>.
  - **Global Systems Division (GSD)** incorporates new findings in atmospheric, oceanic, and hydrologic sciences into systems designed to improve understanding of weather and intraseasonal climate and through new observation techniques, innovative diagnostic and predictive models, advanced computational analysis, and leading-edge workstation display technology. More information about the Global Systems Division can be found within the Earth System Research Laboratory web site: <http://www.esrl.noaa.gov/gsd/>.
  - **Physical Sciences Division (PSD)** conducts the physical process research needed to provide a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments. In so doing, the program advances NOAA's abilities to observe, understand, and critically evaluate and advance the ability of existing and emerging models to predict behaviors of the atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local and days-to-decades time scales. To meet needs for science-based information, the program works closely with its internal partners and a broad external user community. This research is conducted with support from the Cooperative Institute for Research in Environmental Studies (CIRES). More information about PSD is available at: <http://www.esrl.noaa.gov/psd/>.
- **Geophysical Fluid Dynamics Laboratory (GFDL)**, in Princeton, New Jersey, conducts the cutting-edge research necessary to understand, project and predict Earth's climate on a range of space and timescales. Research at GFDL addresses many topics through advanced mathematical modeling of the climate and Earth system, including natural climate

variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion. More information about GFDL is available at: <http://www.gfdl.noaa.gov/>.

- **Great Lakes Environmental Research Laboratory (GLERL)** in Ann Arbor, Michigan, conducts integrated interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters, with a primary emphasis on the Great Lakes. More information about GLERL is available at: <http://www.glerl.noaa.gov/>.
- **National Severe Storms Laboratory (NSSL)**, in Norman, Oklahoma, conducts weather research aimed at improving the accuracy and timeliness of forecasts and warnings of hazardous weather events such as thunderstorms, blizzards, ice storms, flash floods, tornadoes, and lightning. More information about NSSL is available at: <http://www.nssl.noaa.gov/>.
- **Pacific Marine Environmental Laboratory (PMEL)**, in Seattle, Washington, carries out interdisciplinary scientific investigations in oceanography, marine meteorology, and related subjects. PMEL also supports an undersea observation and research program in Newport, Oregon. More information about PMEL is available at: <http://www.pmel.noaa.gov/>.

**Cooperative Institutes** (<http://www.nrc.noaa.gov/ci>)

OAR has Cooperative Institute partnerships with academic and scientific institutions to foster long-term collaborations dedicated to advancing oceanic and atmospheric research. These Cooperative Institutes are usually co-located with one or more NOAA facilities to promote scientific exchange and technology transfer, and provide valuable capabilities and expertise to supplement OAR laboratory work.

The primary purpose of each institute is to create a mechanism to bring together the resources of a research-oriented university or institution, OAR, and other branches of NOAA in order to develop and maintain a center of excellence in research. Each Cooperative Institute represents a synergy that has brought together NOAA and premier academic and scientific institutions in a mutually beneficial arrangement to address issues of national and international significance unique to these partnerships. The institutes are:

- The **Cooperative Institute for Climate Applications and Research (CICAR)**, located at the Lamont-Doherty Earth Observatory Campus of Columbia University in Palisades, NY, conducts research on Earth system modeling, modern and paleo-climate observations, and climate variability and change applications. CICAR collaborates primarily with GFDL.
- The **Cooperative Institute for Climate Science (CICS)**, located at Princeton University's Forrestal Campus in Princeton, NJ, conducts research on Earth system modeling development and analysis, Earth system modeling applications, and data assimilation. CICS collaborates primarily with CPO and GFDL.
- The **Cooperative Institute for Climate and Satellites (CICS-M)** is a national consortium of academic, non-profit and community organizations with leadership from the University of Maryland and North Carolina State University. CICS-M conducts research on climate and satellite research and applications, climate and satellite observations and monitoring, and climate

research and modeling. CICS-M collaborates primarily with ARL, the Center for Satellite Applications and Research in NESDIS, and the Climate Prediction Center in NWS.

- The **Cooperative Institute for Alaska Research (CIFAR)**, located at the University of Alaska-Fairbanks, Alaska, conducts research on ecosystem function, coastal hazards, and climate change and variability. CIFAR collaborates primarily with CPO and PMEL.
- The **Cooperative Institute for Limnology and Ecosystems Research (CILER)** is a ten-member consortium of academic institutions in the Great Lakes region. CILER is administratively housed at the University of Michigan in Ann Arbor, Michigan. CILER conducts research on Great Lakes forecasting, invasive species, observing systems, protection and restoration of resources, and integrated assessment. CILER collaborates primarily with GLERL.
- The **Cooperative Institute for Marine and Atmospheric Studies (CIMAS)**, located at the University of Miami in Miami, Florida, conducts research on climate variability, fisheries dynamics, regional coastal ecosystem processes, human interactions with the environment, air-sea interactions and exchanges, and integrated ocean observation. CIMAS collaborates primarily with AOML and the NMFS' Southeast Fisheries Science Center.
- The **Cooperative Institute on Marine Ecosystems and Climate (CIMEC)**, located at Scripps Institution of Oceanography (SIO) at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and R&D on observations systems CIMEC collaborates primarily with the Climate Laboratories and Southwest Fisheries Science Center. (Formerly titled the Joint Institute for Marine Operations (JIMO).)
- The **Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)**, located at the University of Oklahoma in Norman, Oklahoma, concentrates its research efforts and resources on basic convective and mesoscale research, forecast improvements, climatic effects of and controls on mesoscale processes, socioeconomic impacts of mesoscale weather systems and regional-scale climate variations, Doppler weather radar R&D, and climate change monitoring and detection. CIMMS collaborates primarily with NSSL and several NWS components.
- The **Cooperative Institute for Marine Resource Studies (CIMRS)**, located at Oregon State University, Corvallis, Oregon, conducts research on West Coast fisheries, ocean environment, and marine mammal acoustics. CIMRS collaborates primarily with PMEL and NMFS' Northwest Fisheries Science Center.
- The **Cooperative Institute for the North Atlantic Region (CINAR)**, located at Woods Hole Oceanographic Institution, Woods Hole, MA, conducts research on ecosystem forecasting, ecosystem monitoring, ecosystem management, protection and restoration of resources, and sustained ocean observations and climate research. CINAR collaborates primarily with the Climate Laboratories and Northeast Fisheries Science Center.
- The **Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT)**, located at Florida Atlantic University's Harbor Branch Oceanographic Institution in Boca Raton, Florida, conducts research on the development of advanced underwater technologies, exploration and research in the frontier regions of the eastern U.S. continental shelf, and vulnerable deep and shallow coral reefs. CIOERT collaborates primarily with OER as a NOAA Undersea Research Program (NURP) regional center. Since this center replaced four NURP

undersea research centers on the East Coast, it is identified as an undersea research center on the above OAR map.

- The **Cooperative Institute for Research in the Atmosphere (CIRA)**, located at the Colorado State University in Fort Collins, Colorado, conducts research on satellite algorithm development training and education, regional to global scale modeling systems, data assimilation, climate-weather processes, and data distribution. CIRA collaborates primarily with the Boulder Labs and NESS satellite programs.
- The **Cooperative Institute for Research in Environmental Sciences (CIRES)**, at the University of Colorado, in Boulder, CO, conducts research on advanced modeling and observing systems, climate system variability, geodynamics, integrative activities, planetary metabolism, and regional processes. CIRES collaborates primarily with CPO and ESRL.
- The **Joint Institute for Marine and Atmospheric Research (JIMAR)**, located at the University of Hawaii in Honolulu, Hawaii, conducts research on tsunamis and other long-period ocean waves, equatorial oceanography, climate, fisheries oceanography, tropical meteorology, and coastal research. JIMAR collaborates primarily with NOAA's Boulder labs and NMFS programs.
- The **Cooperative Institute for Marine Ecosystems and Climate (CIMEC)**, located at Scripps Institution of Oceanography (SIO) at the University of California-San Diego, conducts research on climate and coastal observations, analysis, and prediction, research on biological systems, research in extreme environments, and R&D on observations systems. CIMEC collaborates primarily with CPO and PMEL.
- The **Joint Institute for the Study of the Atmosphere and Ocean (JISAO)**, located at the University of Washington in Seattle, Washington, conducts research on climate, environmental chemistry, marine ecosystems, and coastal oceanography. JISAO collaborates primarily with PMEL and NMFS programs.
- The **Northern Gulf Institute (NGI)** is a consortium of universities, led by Mississippi State University, which includes the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab, at Stennis Space Center, MS. NGI conducts research on ecosystem management, geospatial data integration and visualization in environmental science, climate change and climate variability effects on regional ecosystems, and coastal hazards. NGI collaborates primarily with AOML, PMEL, and GLERL.

### **NOAA Climate Program Office**

The NOAA Climate Program Office (CPO) manages the OAR Climate Competitive Research, Sustained Observations and Regional Information and Climate Data and Information budget lines under the OAR Climate Research subactivity, and coordinates with the climate programs in the OAR Laboratories. CPO coordinates climate activities with other line offices (including NESDIS, NWS, NMFS, and NOS) and works with many external partners. CPO manages competitive grant programs and seeks to understand climate variability and change to enhance society's ability to plan and respond. CPO develops integrated ocean and atmospheric observing systems, sponsors research into the forcings and feedbacks contributing to changes in the Earth's climate, improves climate predictive capability from weeks to decades, and develops climate products and services to enhance decision making capabilities across all sectors of society. Finally, CPO serves as the NOAA focal point for such national and international climate efforts as:

- Maintaining the National Integrated Drought Information System (NIDIS) Office in Boulder, CO;
- Managing NOAA's international research activities in the terrestrial, atmospheric, and marine Arctic, Bering Sea, North Pacific, and North Atlantic regions;
- Leading U.S. involvement in the SAON (Sustaining Arctic Observing Networks) and the Circumpolar Marine Biodiversity Monitoring Plan;
- Implementing and maintaining nearly half of the global ocean observing system;
- Participating in multilateral and bilateral policy discussions through interaction with the Global Earth Observing System of Systems (GEOSS), the UN Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), the World Meteorological Organization (WMO), key bilateral partners, and other climate leadership organizations;
- Promoting climate literacy and outreach activities; and
- Leading the National Climate Assessment.

More information about CPO can be found at <http://www.climate.noaa.gov>.

### **Office of Weather & Air Quality**

The Office of Weather & Air Quality (OWAQ) has two major missions. The first is to provide R&D that supports more accurate and timely warnings and forecasts of: (a) high-impact weather that causes loss of life and property and (b) air quality parameters, including ozone and aerosols/particulate matter which impact human health, cause crop damage, and affect private-sector power-generation planning. The second is to support research that provides the scientific basis for air-quality decision-makers to develop policies and plans that effectively protect public health while also maintaining a vital economy. The Office manages the U.S. Weather Research Program (USWRP).

### **National Sea Grant College Program**

Congress established the National Sea Grant College Program in 1966 to enhance the development, use, and conservation of the Nation's coastal, marine and Great Lakes resources. The legislation establishes a network of Sea Grant Colleges to conduct education, training, and research in all fields of marine study. It also directs that grants and contracts may be awarded to "any individual; any public or private corporation, partnership, or other association or entity (including any Sea Grant College, Sea Grant Institute or other institution) or any State, political subdivision of a State, or agency or officer thereof." The National Sea Grant College Program Office is located in Silver Spring, Maryland. Currently, there are 32 university-based Sea Grant programs located in every U.S. coastal and Great Lakes state, Vermont, and Puerto Rico. These programs have aligned their efforts around the NOAA National Sea Grant College Program Strategic Action Agenda, which focuses on four critical areas: Safe and Sustainable Seafood Supply, Sustainable Coastal Development, Healthy Coastal Ecosystems and Hazard Resilience in Coastal Communities. More information about the National Sea Grant College Program can be found at <http://www.seagrant.noaa.gov>.

### **Office of Ocean Exploration and Research (OER)**

OER is currently comprised of the Ocean Exploration (OE) Program and the NOAA Undersea Research Program (NURP), which is proposed for termination in FY 2013. OER's two primary functions are exploration and research:

- *Exploration*: This program supports: (1) exploring unknown and poorly known ocean areas; (2) mapping the physical, geological, biological, chemical, and archaeological aspects of the oceans; (3) utilizing new sensors and systems for ocean exploration; and (4) engaging a wide variety of

audiences by innovative means, including new telepresence technologies. OER operates the *Okeanos Explorer*, a NOAA ship dedicated to the ocean exploration missions.

- *Research:* OER operates a network of regional centers and two institutes to focus on the following areas: (1) core research based on national and regional undersea priorities, (2) development, testing, and transition for advanced technologies associated with ocean observatories, submersibles, advanced diving technologies, remotely operated vehicles, autonomous underwater vehicles, and new sampling and sensing technologies; (3) discovery, study, and development of natural resources and products from ocean, coastal, and aquatic systems; and (4) undersea science-based education and outreach.

More information about the Office of Ocean Exploration and Research can be found at <http://explore.noaa.gov>.

### **Other Ecosystem Programs**

Other Ecosystem Programs is comprised of the Integrated Ocean Acidification Program. The Integrated Ocean Acidification Program's primary function is to complement, accelerate, and enhance current NOAA Ocean Acidification (OA) activities and provide comprehensive research, dedicated monitoring, and enhanced forecasting capabilities leading to adaptive strategies toward improved management of living marine resources impacted by OA. This is a coordinated effort throughout NOAA. Both the Federal Ocean Acidification Research and Monitoring Act of 2009 and the Magnuson Stevens Reauthorization Act designate NOAA as the lead agency for ocean acidification research in the U.S. and as liaison with international efforts.

### **NOAA High Performance Computing and Communications Program (HPCC)**

HPCC supports many NOAA Strategic Plan objectives through support of information technology (IT) research targeted at improving NOAA's mission, services, and science education. HPCC seeks to make major improvements in the ability to forecast weather and climate, and to disseminate environmental information by stimulating modernization of NOAA's computationally-intensive services. HPCC provides NOAA with "mission" agency representation in the Networking and Information Technology Research and Development (NITRD) program.

### **Research Supercomputing**

OAR supports the management of a high-performance computing system, which provides a key platform to characterize and quantify climate variations and change through the following leveraged research activities: long-term simulations using better and improved global climate models that include interactive atmospheric chemistry and aerosols; Earth System modeling to determine the fate of the anthropogenic carbon in the land and oceans; research on decadal predictability of the unforced and forced climate system including dependence on initialization and assimilation techniques; and progressively higher resolution atmospheric and oceanic modeling for regional climate change information.

### **Research and Development Investments**

The NOAA FY 2013 Budget estimates for its activities, including R&D programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. OAR requests \$378,924,000 for investments in R&D and infrastructure to support R&D in the FY 2013 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and

underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY 2013-2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests an increase of 0 FTE and \$3,176,000 to fund adjustments to current programs for OAR activities. The increase will fund the estimated 2013 Federal pay raise of 0.5 percent. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA also requests the following transfers for a net change of \$0 and 0 FTE:

From Office	PPA	To Office	PPA	Amount/FTE
OAR	Weather and Air Chemistry Research (W&ACR) - USWRP	OAR	Weather and Air Chemistry – Laboratories & Cooperative Institutes	\$0/12 FTE
OAR	Climate Operations	OAR	Climate Data & Information	\$908,000/0 FTE

NOAA requests a transfer of \$0 and 12 POS/12 FTE from U.S. Weather Research Program (USWRP) to the Weather & Air Chemistry Research (W&ACR) Labs & CI's line item to clarify the funding source for the FTE working on the USWRP program. In addition, NOAA requests to transfer the funding and functions of the small Climate Operations line item to its Climate Data and Information line item. These programs work interactively, and managing them together will allow for greater flexibility.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on OAR's administrative savings planned for FY 2012 (\$6.6 million), an additional \$0.23 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$6.9 million.

**Headquarters Administrative Costs:**

In FY 2013, OAR Line Office headquarters will use \$10,846,443 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, OAR will use headquarters administrative funds to support the following:

<b>Headquarters Program Support Type</b>	<b>Description</b>	<b>FY 2013 Amount</b>	<b>FY 2013 FTE associated with OAR HQ</b>
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$3,767,000	23.2
Budget & Finance	Includes Budget, Finance and Accounting	\$2,460,000	15.5
Information Technology	Includes IT-related expenses and other CIO related activities	\$1,008,000	6.7
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$1,330,000	0
Human Resources	All HR services, including EEO	\$1,413,000	9.5
Acquisitions, and Grants		\$867,000	7
<b>Total</b>		<b>\$10,846,000</b>	<b>61.9</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**  
**SUBACTIVITY: CLIMATE RESEARCH**

The objectives of the Climate Research subactivity are to:

- Describe and understand the state of the climate through sustained atmospheric observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth;
- Understand and predict climate variability and change from weeks to decades to centennial timescales;
- Conduct advanced mathematical modeling of the climate and Earth systems, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion to improve the prediction of climate phenomena;
- Sustain the observing systems essential for climate, oceanographic, monitoring, and data management;
- Conduct physical process research to advance a seamless suite of information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments; and
- Understand how decision makers use climate information to improve the ability of society to plan for and respond to climate variability and change.

Climate research has the mission of monitoring and understanding the Earth's climate system to predict both the potential long-term changes in global climate as well as shorter-term climate variations that are of societal and economic importance. More information on OAR's climate research is available at: <http://www.oar.noaa.gov/climate/>.

**LABORATORIES AND COOPERATIVE INSTITUTES**

**Modeling**

The focus of OAR's climate modeling research is to better understand natural climate variability and anthropogenic climate changes via the development and improvement of global Earth System models. Research is conducted at Geophysical Fluid Dynamics Laboratory (GFDL) with the Cooperative Institute for Climate Sciences, partners across NOAA, and a range of national and international partners to provide expert assessments of changes to regional, national, and global climate conditions. Research efforts are focused on two major areas: 1) comprehensive long lead-time climate research fundamental to expanding the scientific understanding of the physical and biogeochemical processes governing the behavior of the atmosphere, cryosphere, land, and oceans and their ecosystems and 2) short-term warning and forecast products that cover a broad spectrum of environmental events with timescales from several minutes to several months. Improved Earth System models will reduce uncertainties in sea level rise projections, address gaps in the understanding of the Arctic climate system, characterize and quantify uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate, and enable better understanding of possible decadal climate predictability and abrupt climate change.

A key rationale for this research is to generate applications and to transition new techniques and models to operations – for example:

- State-of-art global Earth System models, which provide a suite of climate products for decision support by policy-makers by supporting a scalable high-performance computer

system that provides critical computing, storage, and analysis capabilities as well as model development infrastructure support and data services. This allows NOAA to leverage the world-class research staff at GFDL to provide the best possible information and reliable products on climate variability and change to policy-makers and the public.

- Numerical models that are used to predict short-term atmospheric phenomena, such as hurricanes and coastal storms, and longer-term events, such as the climatology of storm tracks over the oceans and El Niño Southern Oscillation (ENSO) cycles.

### **Physical Sciences**

The Physical Sciences Division has an essential core capability to conduct physical science research across time and space scales to advance NOAA's capacity to observe, understand, critically evaluate and advance prediction of the behavior of the atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local scales over periods of time from days to decades. These Physical Sciences activities have five strategic goals: (1) improve observations and understanding of Earth-system processes and maintain its world-class capabilities in water resource research and boundary layer science common to weather and climate; (2) integrate climate, weather, and water research; (3) diagnose, understand, explain, and improve the prediction of extremes such as droughts, heat waves, and floods in a variable and changing climate; (4) advance understanding of regional processes and critically assess the skill of associated predictive tools; and (5) conduct research and develop prototypes to improve NOAA environmental information and services. To meet needs for science-based information, the program works closely with its internal partners and a broad external user community. This research is conducted with support from the Cooperative Institute for Research in Environmental Studies (CIRES).

### **Chemical Sciences**

The Chemical Sciences Division, in partnership with CIRES, conducts studies that are fundamental to our understanding and prediction of the Earth's climate, U.S. air quality, and the stratospheric ozone layer. Related meteorological, dynamical, and radiative processes also are addressed when necessary. These goals are met through studies in the laboratory, extensive measurements in the atmosphere in focused field studies, diagnostic analyses, representation of these processes in models (in collaboration with others in NOAA and the extramural community), and interpreting the results to elucidate the roles of these processes. NOAA provides this information to its customers in government, industry, and the public through the preparation of assessments and evaluations of the current and future states of the Earth's stratosphere (ozone layer), climate, and air quality, as well as the processes that link them.

### **Global Monitoring and Research**

The Global Monitoring Division (GMD), in partnership with CIRES, conducts sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in Earth's climate and environment. This research advances climate projections and provides scientific policy-relevant, decision support information to enhance society's ability to plan and respond by providing the best possible information on atmospheric constituents that drive climate change, stratospheric ozone depletion, and baseline air quality. Sustained observations are conducted through globally distributed observing networks which include six manned Global Atmospheric Baseline Observatories, and as many as 250 different atmospheric parameters are measured. They provide valuable information on: (1) the state and recovery of the ozone layer; (2) global carbon dioxide and other greenhouse gases impacting the global climate; and (3) the quality of the air entering and departing the United States. GMD supports several components of the U.S. Global Change Research Program (USGCRP), much of the World Meteorological Organization (WMO) Global Atmospheric Watch program, and other international programs, including the Global Climate Observing System, the Baseline Surface Radiation Network,

and the Global Earth Observing System of Systems. The U.S. scientific community coordinates its carbon cycle activities through the USGCRP North American Carbon Program, which aims to quantify, understand, and project the evolution of global carbon sources and sinks in order to better predict future climate. With input from other agencies, the CarbonTracker analysis tool forms the foundation for routine spatial carbon maps and is essential for other USGCRP reports and products, such as periodic “State of the Carbon Cycle” reports and assessments that keep scientists and policy-makers abreast of progress in understanding the North American carbon cycle.

### **Climate Observations and Monitoring**

OAR’s Climate Observations and Monitoring provides and interprets oceanographic data and conducts research relevant to decadal climate change and coastal ecosystems. On a global scale, Atlantic Oceanographic and Meteorological Laboratory (AOML) scientists use observations and models to understand and characterize the role of the oceans in climate variability and change. Observations of ocean currents, temperature, and salinity, provide a basis for studying interactions between oceans, climate, and coastal environments. Monitoring and estimating carbon dioxide both taken up and released by the ocean’s surface contributes to understanding the effects of carbon dioxide on global warming and climate change, including changes in the pH of ocean waters (ocean acidification).

In support of these studies, AOML partners with OAR’s Climate Program Office to manage all or significant portions of the following NOAA contributions to the internationally coordinated Global Ocean Observing System (GOOS) and other climate research activities: Global Drifter Program; U.S. Argo Program; Global Ship of Opportunity Program; CLIVAR CO<sub>2</sub> Repeat Hydrography Program; Prediction and Research Moored Array in the Tropical Atlantic Program (PIRATA); Ocean reference stations (including the Western Boundary Time Series Program and the South Atlantic Meridional Overturning Circulation program); Tropical Atlantic Variability; and Global Climate Variability.

These activities, described under the Climate Competitive Research, Sustained Observations, and Regional Information line item, include the design, implementation, maintenance, and enhancement of the observational network, real-time quality control of the data for use by operational forecast agencies, delayed mode quality control of the data for use in scientific projects, and the production and provision of ocean products used by operational and research communities. This research is conducted through numerous open-ocean cruises aboard NOAA’s research vessel, the *Ronald H. Brown*, and commercial shipping vessels, autonomous vehicles, and expendable instruments. These data lay the framework for future research that promises to improve the ability of climate models to predict summer rainfall and hurricane activity for the Western Hemisphere. In addition, AOML’s carbon dioxide monitoring program and related studies in ocean acidification exemplify climate research that intersects with NOAA’s Healthy Oceans goal to improve understanding of how ecosystems will respond to a changing climate. AOML regularly produces reports on the state of the ocean for the scientific community demonstrating excellence in: implementing and maintaining the ocean observing system, distributing data to science and operational centers, and monitoring and assessing critical ocean parameters related to climate. AOML collaborates with the National Science Foundation (NSF) and NASA, as well as NOAA’s NWS, NOS, and NMFS.

The following is a more detailed description of the AOML Climate Research currently being conducted:

- Meridional Overturning Circulation (MOC): AOML conducts monitoring and research to document the current state and changes in the global ocean circulation through several programs in the North and South Atlantic Oceans. Together with its partners, AOML

maintains long-term observations across the Atlantic Ocean through the Western Boundary Time Series in the Straits of Florida, the RAPID/MOCHA/WBTS array in the subtropical Atlantic, and the South Atlantic MOC program. AOML deploys, maintains, and collects data from the instrumentation associated with these programs and performs data analysis that leads to improved understanding of the global ocean's impacts on climate.

- Tropical Atlantic Variability: The upper ocean waters of the Tropical Atlantic Ocean play an important role in determining regional weather and climate on seasonal to inter-annual time scales and beyond. Using global data sets and statistical-numerical models, AOML conducts diagnostic studies of the multi-scale behavior of the Atlantic and its impact on climate, oceans and weather such as hurricanes, seasonal rainfall and drought.
- Global Climate Variability: AOML is a NOAA partner in the global effort to obtain high-quality, high spatial and vertical resolution measurements of a suite of physical, chemical, and biological parameters over the full water column through the CLIVAR program. In partnership with PMEL, AOML conducts vital research to understand the ocean's role in the global carbon cycle. This research is critical to calculating changes caused by increased production of carbon dioxide, of particular importance due to the impacts of these changes on living organisms in the ocean (e.g. ocean acidification). AOML carries out research projects with the objective of estimating and understanding the variability of surface and subsurface currents and chemistry using observations from surface drifting buoys, Argo floats, volunteer observing ships, buoys, moorings and satellite altimetry. AOML houses data acquisition centers for Argo, drifters and XBTs and is responsible for the world-wide dissemination of this data onto the Global Telecommunications System (GTS).

### **Climate Observations and Analysis**

OAR's Climate Observations and Analysis program provides core infrastructure activities (including research, technology development and observing system implementation) that are central to meeting NOAA's climate goals and has a strong history of innovation to meet the challenge of fielding a robust, accurate observation activity. These include: (1) providing instrumentation (funded by NWS) to support the Tropical Moored Observations in the Pacific (TAO); (2) establishing and maintaining moored buoys in the Atlantic (PIRATA) and tropical moored buoy arrays in the Indian Ocean (RAMA); (3) conducting Argo float deployment and research activities; (4) monitoring ocean carbon uptake and storage; (5) conducting moored and underway CO<sub>2</sub> measurements; (6) conducting research (funded by the Integrated Ocean Acidification Program) on the issue of Ocean Acidification; (7) conducting NOAA/NSF operations in support of the global CLIVAR Repeat Hydrography program; (8) maintaining global ocean reference station time series moored arrays; (9) conducting Marine Aerosol, Atmospheric Chemistry, and Air Quality research cruises; (10) conducting autonomous glider sections of western boundary currents in the Solomon Sea; (11) observing ocean modeling system adequacy studies; (12) participating in ocean data management and information technology activities; and (13) supporting climate observations critical to international assessments, such as the United Nations established Intergovernmental Panel on Climate Change (IPCC), the leading scientific body assessing climate change. While most of these activities are conducted in partnership with OAR's Climate Program Office (and are described in more detail under the Climate Competitive Research, Sustained Observations, and Regional Information line item), there are several highly innovative activities that should be cited here:

- *Atmospheric Chemistry Program* coordinates with coastal states on research ranging from coastal investigations to larger-scale experiments downstream of major continental land masses and industrialized areas. Recent efforts have focused on offshore and coastal regions of Texas and California to determine the sources of airborne aerosol particles and particulate matter from industrialized areas and to determine the effects of these aerosols on the environment. FY 2012 efforts are planned in the North Atlantic and in the Indian Ocean.

This program also operates an Unmanned Autonomous Vehicle System which was deployed to Svalbard, Norway, in April 2011 as part of the Soot Transport Absorption and Deposition Study, which is the NOAA component of the 2011 Coordinated Investigation of Climate-Cryosphere Interactions, studying black carbon in the Arctic.

- *Autonomous Glider Sections* have been made in the Solomon Sea by PMEL and Scripps Institute of Oceanography scientists, who have used autonomous gliders to make a series of detailed current observations along pre-programmed transect routes in the Solomon Sea. This research coordinated between NASA, NOAA, and NSF has completed eleven sections since 2007. Western Boundary Currents being studied in the Solomon Sea provide key information about ocean circulation patterns and their impact on global climate.
- *Data Management and Communication (DMAC)* activities of the Global Integrated Ocean Observing System has supported a PMEL-led partnership with NOS and NESS to improve management and availability of the wide array of ocean-related data collected by member nations.

These programs provide a major portion of the U.S. contribution to the global ocean observations for climate, which are required to monitor, understand, and forecast the Earth's climate system. This information is crucial for the future health of the entire planet. It contributes to forecasts of natural disasters such as major El Niños, which occur on interannual time scales. A major El Niño, such as the unpredicted 1981-1982 event, can cost the U.S. economy billions of dollars. Floods, droughts, heat waves, and extreme weather events are all influenced by the climate system. Our ability to predict them depends on ongoing climate measurements, especially in the 70 percent of the globe covered by the ocean. For example, sea-level rise depends on the heat content of the ocean, which is monitored by both the Argo float and repeat hydrography programs. This program supports cross-cutting activities at the NSF and NASA, as well as activities within NOAA's NWS, NOS, and NMFS.

### **Atmospheric Observations & Monitoring / Plume Dispersion**

OAR's Atmospheric Observations & Monitoring efforts, overseen by ARL, include:

- Making and organizing high quality observations of climate variability and change and key physical and chemical processes that influence climate. For example, water from the soil and plants is transferred to the air, affecting atmospheric humidity and temperature and influencing agriculture and drought. Such information is important for evaluating and improving models of the climate, as the fluxes of energy and moisture between the land and air are important factors in climate variability and change. Another example of promoting climate-grade observations is leading the establishment of an international network to take highly accurate and reliable measurements of the atmosphere above the Earth's surface.
- Analyzing climate observations to determine what natural climate variability and what climate trends have occurred in the past. These analyses are used to evaluate and improve climate models and to inform national and international climate assessments.
- Investigating how regional climate models and observations can be effectively combined to improve projections of the future, improving the Nation's ability to understand localized impacts of climate change. Reducing uncertainties via these models is essential for improving the understanding of natural climate variability and climate trends and for improving projections of future climate to inform mitigation and adaptation decisions.

ARL also oversees OAR's Monitoring/Plume Dispersion research in which it tracks, characterizes and predicts dispersion of airborne hazardous materials, including smoke, harmful chemicals, radioactive materials, and biological agents (released either accidentally or intentionally). These plume dispersion activities provide essential information for first responders and emergency

management in the government, as well as industrial, agricultural, and transportation sectors to minimize risks to health, safety, and economic activities. Knowledge of where hazardous materials will spread enables emergency managers to effectively evacuate people from harm's way and helps industrial and transportation companies to take protective measures for a wide range of situations, including oil drilling platform disasters, chemical plant explosions, containment failures at nuclear reactors, and the spread of plant pathogens. Thousands of people and groups use these tools, including NWS; other Federal agencies (e.g., the Forest Service, Nuclear Regulatory Commission, and the Environmental Protection Agency); other countries' weather services; international organizations (e.g., International Atomic Energy Agency); universities; and the private sector. These dispersion tools have also been applied to natural causes of degraded air quality issues, such as wildfire smoke, dust, and volcanic ash.

## **CLIMATE DATA AND INFORMATION**

NOAA's Climate Data and Information Program manages the resource of global climate *in situ* and remotely sensed data and information to promote global environmental stewardship; to describe, monitor and assess the climate; and to support efforts to predict changes in the Earth's environment. Climate observing networks assemble, develop, and communicate data and information about the trends and predictions of climate and weather events to decision makers (e.g. energy, agriculture, state and local officials). NOAA is responsible for infrastructure that addresses: (1) improving access and data management activities associated with large-volume climate databases supplied by satellite and ground-based instruments; (2) implementation of operational updates to NOAA's long-term ocean and atmospheric reference data sets; and (3) improving the performance of the observational network; and (4) value-added data visualization, contextualization and interpretation of climate trends and conditions. NOAA supports the following under the Climate Data and Information Program:

- The U.S. Climate Reference Network (USCRN) provides baseline, high-quality surface observations of air temperature and precipitation to detect long-term changes in climate through a robust climate record. Observations from this network will provide benchmark measurements for an improved national climate and weather monitoring network. The USCRN also supports the National Integrated Drought Information System (NIDIS)<sup>1</sup> through the inclusion of soil moisture sensors, which provide data critical to understanding drought.
- The U.S. Drought Portal is part of NIDIS and it provides users with the ability to determine the potential impacts of drought and their associated risks, while also providing needed decision support tools. More information is available at: <http://www.drought.gov>.
- NOAA's Observing System Monitoring Program provides early detection and remediation of network problems that can adversely affect the quality of data records and diminish the ability to evaluate climate variability and change. The Observing System Monitoring Program will alert observing system managers in near-real time to problems that can distort the historical archive, providing the opportunity to take corrective action.
- The Climate Model Data Archive will generate and house model-based data records and implement an operational archive and access capability for the next generation, high resolution, weather and climate reanalysis datasets.
- The Climate Model Data Archive addresses the recommendation of the NOAA Science Advisory Board (SAB) that NOAA develop products and access capabilities derived from climate model

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<sup>1</sup> The NIDIS program is funded both through the Climate Data and Information program, and also through the Climate Competitive Research, Sustained Observations and Regional Information program. See page 23 for more information with regards to NIDIS base funds.

outputs. The Climate Model Data Archive provides a single point of access to several new key NOAA datasets, and will improve the linkages between research findings and the transfer of those findings into operational capabilities and will facilitate model and observational data access issues.

- In FY 2012, NOAA transitioned the Climate Portal Prototype to a phase of active development of the comprehensive Portal, which will represent the full breadth and depth of NOAA's climate sciences and available services and serve as the public's primary online point of entry. Existing data and new products in formats that are readily usable by decision-makers in government agencies and businesses will be available. These geospatial tools enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting. The full Portal's scope, product content, and functionality will evolve based on user needs and expectations for data and information.
- In addition, OAR's Climate Operations programs provide accurate and timely climate information and operational forecasts. Public and private users and NOAA's mission goals demand this information on a broad range of timescales from sub-seasonal through interannual and beyond. Through Climate Operations, NOAA is working to improve its ability to produce and disseminate operational forecast products by improving model performance, developing new forecast designs, and upgrading existing data sets.

### **CLIMATE COMPETITIVE RESEARCH, SUSTAINED OBSERVATIONS, AND REGIONAL INFORMATION**

The Climate Competitive Research, Sustained Observations, and Regional Information program supports three main capabilities: 1) the development and sustained use of observations, 2) improved scientific understanding through the use of competitive research, and 3) the development of climate products generated from observations and research to address the demands for regional information. This program allows NOAA the flexibility to develop these complementary climate capabilities in a coordinated way.

The Climate Competitive Research, Sustained Observations, and Regional Information program supports sustained ocean and atmospheric observations, and it addresses an important aspect of global change – understanding the global climate system. It sponsors scientific research aimed at improving predictions and assessments of climate variability over seasonal to decadal time scales and beyond in an effort to better understand how society can best adapt and respond to climate variability and change. Both climate observations and research provide the foundation to develop and deliver regional information to respond to decision maker needs.

#### **Research Programs**

The Climate Competitive Research, Sustained Observations, and Regional Information program funds high-priority climate science within NOAA and with our academic partners to advance our understanding of Earth's climate system, including its atmospheric, oceanic, land, and snow and ice components, as well as the impacts of climate on society. This science contributes to knowledge about how climate variability and change affect our health, economy, and well-being. The program supports research that is conducted in regions across the United States, at national and international scales, and globally. The program also provides strategic guidance and oversight for the agency's climate science and services programs.

The grant activities are organized within three program activities:

### *Climate Monitoring*

The Climate Monitoring (CM) activity contributes to the development of continuous records and analyses of a range of ocean and atmosphere parameters. CM ensures that the data sets researchers need to understand the climate system are available for analysis. CM supports projects that document and study variations in climate on time scales ranging from less than one year to periods of 100 years and longer, i.e., both instrumental and paleoclimate eras. CM also provides data and information management support for national and international climate assessment projects. Analysis products support other program efforts in modeling of the climate system and development of targeted services to better inform society about climate impacts and response options.

CM comprises the following focus areas:

1. Develop long-term, continuous, and consistent data sets that can be used to diagnose changes in the behavior of extreme climate and weather events
2. Reconstruct the climate history over the last two millennia at sufficient resolution to allow extreme events to be identified and characterized
3. Perform diagnostic studies of observed and modeled patterns of climate variability and change to enable the detection and attribution of regional extremes

### *Earth System Science*

The Earth System Science (ESS) activity provides the process-level understanding of the climate system through observation, modeling, research analysis and field studies to support the development of improved climate models and predictions in support of NOAA's mission. Major activities include:

1. Understanding and improving the prediction of tropical convection, with a focus on identifying the key processes involved in linking convection with environmental moisture and responsibility for the dynamic evolution of cloud populations on intra-seasonal time scales
2. Identifying the location, magnitude, dynamics, and variability of global carbon sources and sinks; understanding how ocean ecosystems are impacted by changes in carbon cycling and the role of these ecosystems in regulating the ocean's carbon uptake
3. Improving understanding of the role of aerosols and chemically-active greenhouse gases in the global climate system

ESS-sponsored research is carried out at NOAA and other Federal laboratories, NOAA Cooperative Institutes, and academic institutions and is coordinated with major national and international scientific bodies including the World Climate Research Programme, the International Geosphere-Biosphere Programme, and the U.S. Global Change Research Program.

### *Modeling, Analysis, Predictions, and Projections*

The mission of the Modeling, Analysis, Predictions, and Projections (MAPP) activity is to enhance the Nation's capability to predict variability and changes in Earth's climate system. MAPP focuses on the coupling, integration, and application of Earth system models and analyses across NOAA, among partner agencies, and with the external research community. Primary objectives include:

1. Improving Earth system models,
2. Developing a national multi-model ensemble prediction system for intra-seasonal to inter-annual time scales, and
3. Advancing decadal climate predictions and climate projections out to a century and beyond.

MAPP includes targeted infrastructure support, competitive grants programs, and mechanisms to support transferring research findings into NOAA's operations.

More information on the wide variety of climate research programs is available at:  
[http://www.climate.noaa.gov/cpo\\_pa/](http://www.climate.noaa.gov/cpo_pa/).

## **Observing Systems**

The Competitive Research, Sustained Observations, and Regional Information Program includes several major observing systems for the oceans and atmosphere:

- *Global Ocean Observing System (GOOS)* – GOOS is maintained by the Climate Program Office and is necessary for climate research and prediction as well as long-term monitoring for climate change detection and attribution. NOAA provides the major U.S. contribution to the Global Component of the Integrated Ocean Observing System (IOOS), as codified in the Integrated Coastal and Ocean Observation System Act of 2009. IOOS is also the U.S. contribution to the GOOS and the ocean baseline of the Global Earth Observation System of Systems (GEOSS). This international observation system is based on measuring a set of core variables (for example: ocean temperature, surface winds, salinity, sea level, carbon dioxide) that have been agreed to nationally and internationally as necessary to provide the information needed by the United States and the other nations to effectively plan for and manage their response to climate variability and change. In addition, GOOS includes Arctic observations as part of the U.S. contribution to the International Arctic Observing Network. The major elements of GOOS are: 1) Argo Profiling Floats, 2) Surface Drifting Buoys, 3) Tide Gauge Stations, 4) Tropical Moored Buoys, 5) Ocean Reference Stations, 6) Ships of Opportunity (SOOP), 7) Ocean Carbon Networks, 8) Arctic Ocean Observing System, 9) Dedicated Ships, 10) Data Management, Data Assimilation, and Analysis. Satellites are also critical elements of this composite system, but they are listed elsewhere in the NOAA and NASA budgets. All of these interdependent elements work together to provide the needed system.

### *Argo Profiling Floats*

These floats provide the subsurface measurements of ocean temperature and salinity that are necessary, along with the satellite altimeter measurements, to monitor global sea level change and upper ocean heat content. This is an international effort with 22 nations plus the European Union currently maintaining 3,000 floats. Development of deep diving Argo floats is underway with deployment of test floats anticipated for FY 2014.

### *Surface Drifting Buoys*

Sea surface temperature is the single most important ocean variable for the global heat, water, and carbon cycles. NOAA maintains with its 14 international partners, a global array of 1,250 surface drifting buoys. This array is used to calibrate satellite observations and reduce errors in global measurement of this critical ocean climate variable. The drifters also measure surface currents globally and provide sea surface data under hurricanes to help improve hurricane intensity and landfall predictions.

### *Tide Gauge Stations*

Sea level rise is one of the most immediate impacts of climate change. NOAA in cooperation with 66 nations is implementing the Global Climate Observing System (GCOS) sea level reference network of 170 tide gauge stations. The stations measure sea level change at the coast and are used to calibrate and validate the satellite altimeter measurements of the deep ocean. They report in near-real-time and are also used for the tsunami warning system, storm surge, navigation, and other coastal marine services.

### *Tropical Moored Buoys*

The Earth's tropics are the ocean's major capacity for heat exchange with the atmosphere. The Pacific El Niño influences global climate and weather patterns. Together with international partners, NOAA is working to instrument all three tropical oceans - the Pacific - Tropical Atmosphere Ocean (TAO) Array; Atlantic; and Indian Ocean - for continuous real-time measurement of ocean-atmosphere exchanges that affect the way our climate varies from year to year.

#### *Ocean Reference Stations*

NOAA, in cooperation with the National Science Foundation and international partners, is implementing a sparse global network of the highest quality ocean reference station moorings, to provide the most accurate long-term climate data records of oceanic and near-surface atmospheric parameters in key ocean regions. The surface and subsurface measurements from these Reference Stations have been a cornerstone of the documentation of long term changes in the ocean and provide "ground truth" for improvement of forecast models. This network also monitors major ocean currents (for example, the Gulf Stream) to identify changes in circulation that could provide possible indications of abrupt climate change.

#### *Ships of Opportunity (SOOP)*

The global atmospheric and oceanic data from Ships of Opportunity have been the foundation for understanding long-term changes in marine climate and are essential input to climate and weather forecast models. The Ships of Opportunity are also the system's primary vehicle for deployment of the Drifting Buoys and Argo Floats.

#### *Ocean Carbon Networks*

Projecting decadal to centennial global climate change is closely linked to assumptions about feedback effects between the ocean and atmosphere related to sequestering of carbon in the ocean and additional input of carbon dioxide into the atmosphere. The SOOP fleet and NOAA in cooperation with the National Science Foundation and international partners are implementing an ongoing ocean carbon inventory surveying the globe once every ten years, supplemented by autonomous carbon dioxide sampling instruments on the ships and the moored buoys to measure the air-sea exchange of carbon dioxide seasonally.

#### *Arctic Ocean Observing Network*

Over the past 20 or more years, significant changes have been noted in the Arctic, such as thawing of permafrost, earlier break-up of ice on rivers, and thinning of the ice cover on the Arctic Ocean. NOAA is co-leading with the NSF and joining with other Federal agencies and international collaborators to begin a long-term effort to deploy an Arctic Ocean Observing Network. Current NOAA efforts focus on developing quantitative estimates of the transport of heat, salt, nutrients and total water volume through the Bering Strait and the Chukchi Sea, periodic characterization of the impacts of climate change on marine ecosystems in the Chukchi Sea, pilot deployments of buoys to measure Arctic sea ice thickness and ice mass balance changes, and a small network of circum-Arctic coastal observatories to track atmospheric factors that control sea ice and other aspects of Arctic climate.

#### *Dedicated Ships*

Ocean research vessels from NOAA and university partners are essential elements of the support infrastructure necessary to sustain the ocean observing system. The dedicated ships provide the highest quality reference data sets, the platforms for the ocean carbon

surveys, and platforms for deployment of the Moored and Drifting Buoys and the Argo Floats.

#### *Data Management, Data Assimilation, and Analysis*

A robust and scalable Data Management and Communications infrastructure is essential to the vision of a sustained and integrated ocean observing system. Standards and protocols are essential to enable interoperability across all global and coastal ocean observing systems. Data must be retained and made available for analyses and for assimilation into models to understand and forecast climate change, and for efficiently managing observing system operations and improvements. Thus, the advancement of assimilation techniques and the scientific analysis of ocean data are also important elements of the global ocean observing system.

- *Baseline Observatories* – NOAA’s Global Atmospheric Baseline Observatories measure up to 250 different atmospheric parameters relevant to the study of climate change and ozone depletion at: Barrow, Alaska; Mauna Loa, Hawaii (since 1957); Cape Matatula, American Samoa; and South Pole, Antarctica (since 1957). In addition, NOAA funds operations at its Baseline Air Quality station at Trinidad Head, California. These observations are critical to the collection and continuity of the world’s longest atmospheric data time series, supplying information on: (1) the state and recovery of the ozone layer, (2) global carbon dioxide and other trace gases impacting the global climate, and (3) the quality of the air entering the west coast of the U.S.
- *Carbon Cycle Atmospheric Observing System* – The U.S. scientific community coordinates its carbon cycle activities through an integrated interagency effort that aims to quantify, understand, and project the evolution of global carbon sources and sinks in order to better predict future climate. As part of this multi-agency effort, NOAA has launched a network of airborne and tall-tower based sampling sites over North America. With input from other agencies, this program forms the foundation for routine spatial carbon “maps” and periodic “State of the Carbon Cycle” reports that will keep scientists and policy-makers abreast of progress in understanding the North American carbon cycle.

#### **Regional Information**

NOAA has extensive regional climate capabilities and also partners with Federal agencies; state, local, and tribal governments; universities; the private sector; and non-governmental organizations (NGOs). The Climate Competitive Research, Global Ocean Observations and Regional Information Applications program includes funding for both internal and external research and development programs. NOAA coordinates these regional capabilities and produces and delivers regional information which are used in other more operational areas within NOAA and by the external community.

#### *Climate and Societal Interactions*

The NOAA Climate and Societal Interactions (CSI) activity provides national leadership in developing interdisciplinary science and services, including assessments, for application in climate-sensitive sectors and regions. The goals of CSI are: 1) identification and articulation of user-community requirements in multiple sectors, initially with regard to water resources and the coastal zone then branching to related sectors; 2) R&D of innovative and broadly applicable approaches to support decision-making, especially for risk characterization, both through a broad network of regionally scoped, long-term efforts and stakeholder-specific efforts; and 3) promotion of the transfer of knowledge, tools, and products across climate research efforts (within NOAA, across the Federal government, nationally, and internationally).

In addition, several of CSI's initiatives support the Coping with Drought initiative of the National Integrated Drought Information System (NIDIS) by supporting regions threatened by drought. CSI's focus areas are:

- Regional Integrated Science and Assessments (RISA) – supports research that addresses complex climate sensitive issues of concern to decision-makers and policy planners at a regional level through the establishment of RISA teams;
- Sectoral Applications Research Program (SARP) – addresses the needs of a specific stakeholder or set of stakeholder within key socioeconomic sectors (e.g., water resources, agriculture, health, etc.) grappling with pressing climate-related issues;
- Coastal and Ocean Climate Applications (COCA) – supports interdisciplinary applications research on the impacts of climate variability and change on coastal communities and coastal and marine ecosystems to inform decision making; and
- International – supports decision-making and stakeholder networks internationally.

Information and data from the above activities (CM, ESS, MAPP, and CSI) are used to assess climate forcing, climate feedbacks, climate response, ozone depletion and baseline, urban, and regional air chemistry, to develop and test diagnostic and predictive models, and to keep the public, policy makers, and scientists abreast of the current state of our atmosphere. This program addresses the NOAA Next Generation Strategic Plan goal of Long Term Climate Adaptation and Mitigation and its objectives for (1) Improved scientific understanding of the changing climate system and its impacts, (2) Assessments of current and future states of the climate system that identify potential impacts and inform science, service, and stewardship decisions, (3) Mitigation and adaptation choices supported by sustained, reliable, and timely climate services and (4) A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions.

### **National Integrated Drought Information System (NIDIS)**

The NIDIS program (\$8,363,000 under the Climate Competitive Research, Sustained Observations, and Regional Information program) includes Coping with Drought Grants, drought modeling and regional drought early warning system development. Additional activities (\$3,753,000) under the NIDIS program (including soil moisture sensors for the U.S. Climate Reference Network and the U.S. Drought Portal) are funded by the Climate Data and Information program for a total funding level of \$13,616,000 (see page 16).

### **Assessment Services**

The Global Change Research Act of 1990 (GCRA) calls for the President (through a Federal interagency body) to prepare and submit to the Congress, on a periodic basis (not less frequently than every 4 years), an assessment which: 1) integrates, evaluates, and interprets the findings of the Federal interagency research effort and discusses the scientific uncertainties associated with such findings; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years. The next National Assessment is due in 2013. The demand for climate information at regional to local scales for decision making requires increased resolution of the Nation's mandated assessment product.

### **Communication and Education Program**

The Climate Competitive Research, Sustained Observations and Regional Information program also conducts a Communication and Education Program (CommEd) that has missions to improve public

climate science literacy, and to raise public awareness, understanding of, and engagement with NOAA's climate science and services programs.

**Schedule and Milestones:**

FY 2013 – FY 2017

GFDL

- Modeling

Schedule/Milestones	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
National and International Assessment Products	Submit papers for inclusion in IPCC AR5 report; IPCC lead author work continues	IPCC AR5 Working Group I report completed and released.	Use ESM to conduct suite of regional climate change projections	Develop quarter degree model for reduction in tropical uncertainties of climate projections	Continuing ESM development	Continuing ESM development
Experimental Decadal Forecasts	Decadal Predictability studies continue	Develop capability for nowcasting of Atlantic MOC	Extend decadal predictions to applications: drought and hurricanes	Decadal projections using higher resolution coupled model	Decadal Predictability studies continue	Decadal Predictability studies continue

- Improved understanding decadal-to-centennial climate change, variability and predictability, and increasing confidence in climate projections, using coupled-climate model (CM2.5) at 4 times the resolution of recent IPCC-class coupled climate models.
- Robust simulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model.
- Improved realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle.
- Reduction in percentage uncertainty in possible twenty-first century sea level rise
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improved sea ice models essential to developing a predictive understanding of Arctic climate change.
- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes & important feedbacks in climate models, and analysis of causes of past climate change; greater confidence in projections of regional climate impacts.

ESRL / PSD

- Earth System Analysis

Schedule/Milestones	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Cumulative field projects advancing water resources	1	1	2	3	4	5

Cumulative assessments of extreme weather and climate events, anomalies, and trends	1	1	2	2	3	3
Advance Ensemble Kalman Filter (ENKF) techniques for transition to operations for extended range forecasting	1	1	-	-	-	-
Increase utilization of Earth system observations in the Russian Arctic as measured by cumulative publications	1	2	3	4	5	6
Carry out analysis of oceanic weather-climate observations in the tropics as measured by cumulative publications	0	1	2	2	3	4

- Co-lead and complete the execution and data processing phase of the DYNAMO experiment in the Indian Ocean to better understand the dynamics of the Madden-Julian Oscillation which may improve sub-seasonal prediction over the United States.
- Terminate the next generation historic reanalysis at higher resolution.
- Assess the improvement in boundary layer wind forecasting at successive time scales using real-time assimilation of radar wind profiler data drawing from resources from WFIP (Wind Forecast Improvement Project) sponsored by DOE.
- Assess the causes for recent variations in U.S. national and regional seasonal temperature, precipitation and drought.
- Complete a study of inter-basin transport between the San Joaquin Valley (SJV) and the Los Angeles (LA) Basin using a combination of wind profiler analysis and numerical models in support of the CalNex program.
- Carry out field study and analysis of boundary layer effects on surface chemistry in the Uintah Basin Ozone Study in support of GMD and CSD.
- Complete Delivery of a global Ensemble Kalman Filter system to operational forecast centers for pre-operational testing (an EnKF is a data assimilation technique for making atmospheric analyses and forecasts).
- Complete analysis of HMT and CalWater experiments in terms of understanding the role of atmospheric rivers and aerosols in water supply and extreme precipitation.
- Quantify baseline performance on NOAA extreme precipitation forecasts over previous 10 years.

ESRL / CSD

- Chemical Sciences

Schedule/ Milestones	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Climate-Air Chemistry field campaigns	Assess climate/air chemistry interactions using 2010 California mission	Climate and air chemistry study in the southeastern USA	To be based on earlier findings	Climate and air chemistry study in the USA	To be based on earlier findings	To be based on earlier findings

	(CalNex) data					
Field campaigns on aerosol-cloud interactions	Assess impact of aerosols on cloud systems in SE Pacific and Caribbean	Participate in aerosol-cloud field study in Brazil	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings
Field campaigns on upper tropospheric water vapor and cirrus	Deploy new water vapor instrument in an independent assessment of water vapor measurement techniques and sensors	Analyze measurements of water vapor	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings	To be based on earlier findings
Climate research on upper tropospheric water vapor to improve models that provide a predictive understanding of the physical processes	Develop a new fully automated instrument to measure water vapor concentrations for use on board high-altitude research aircraft	To be based on earlier findings	Continue analyses	To be based on earlier findings	Continue analyses	To be based on earlier findings
Laboratory study of climate agents	Evaluation of climate-related properties of one compound proposed as a replacement for ozone-depleting substances	Initiate study of compound #2 to address key uncertainties	Continuing	Initiate study of compound #3 to address key uncertainties	Continuing	Initiate study of compound #4 to address key uncertainties
Modeling study of climate processes and agents	Analyze models and data to quantify role of water vapor, ozone, and other forcing agents on climate and stratospheric ozone	Initiate study #2 to address key uncertainties	Continuing	Initiate study #3 to address key uncertainties	Continuing	Initiate study #4 to address key uncertainties
Laboratory studies related to air chemistry	Laboratory assessment of one chemical reaction relevant to stratospheric ozone chemistry and climate-chemistry coupling	Initiate kinetic study of compound #2 to address key uncertainties	Continuing	Initiate kinetic study of compound #3 to address key uncertainties	Continuing	Initiate kinetic study of compound #4 to address key uncertainties
Evaluation of emission	Top-down evaluations of	Continuing	To be based on earlier	Continuing	To be based on earlier	

inventories	greenhouse emission inventories using data from the California field campaign (CalNex)		findings		findings	
Black carbon studies	Assessment of black carbon emissions	To be based on earlier findings	Continuing	To be based on earlier findings	Continuing	To be based on earlier findings

#### ESRL / GMD

- Global Monitoring and Research

Schedule/Milestones	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
High quality, calibrated, traceable measurements of ~250 atmospheric, climate, & radiatively important species at each of the 6 Atmospheric Baseline Observatories (Total #/yr/site)	250	250	250	250	250	250
NOAA Annual Greenhouse Gas Index (AGGI) Indicator: Number of Updates Unit of Measure: Cumulative number of updates	8	9	10	11	12	13
NOAA Ozone Depleting Gas Index (ODGI) Indicator: Number of Updates Unit of Measure: Cumulative number of updates	7	8	9	10	11	12

- Continue to conduct sustained observations and research related to global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth. Continue to advance climate projections and provide scientific policy-relevant, decision support information to enhance society's ability to plan and respond. Continue research of improving instruments, reducing uncertainty values, economies of scale, calibration techniques, and statistical analysis of data.
- Updates to Daily/Monthly/Annual GHGP Products suite as appropriate (<http://www.esrl.noaa.gov/gmd/dv/>).
- Publish Annual Greenhouse Gas Index (<http://www.esrl.noaa.gov/gmd/aggi/>) and Ozone Depleting Gas Index Update (<http://www.esrl.noaa.gov/gmd/odgi/>).
- Updates and refinement to CarbonTracker (<http://www.esrl.noaa.gov/gmd/ccgg/carbontracker/>)
- Maintain current Arctic observation capability in support of Arctic science as directed by the AGM/NGSP

#### AOML

- Observing Systems:
  - Continue to maintain observing systems, monitoring and analysis of critical climate-related parameters such as ocean heat content, meridional heat advection, sea level trends, ocean acidification, and ocean currents.

- Complete twelve new reports using observations from ocean temperature and salinity profiles (via XBTs and Conductivity Temperature density platforms), Argo floats, and mooring observations that describe the state of the ocean and meridional heat transport and heat storage.
- Complete four reports or publications on the state of the ocean describing estimates of global surface currents based on observations from ocean drifters
- Complete four reports or publications describing carbon dioxide exchange at the ocean surface globally based on underway observations of carbon dioxide from ships of opportunity and research vessels.

#### PMEL

- Ocean Climate Stations: Maintain OceanSITES mooring in the Kuroshio Extension region and at station PAPA. Moorings are visited and refreshed at least once each year.
- Argo Floats: Provide approximately 50 Argo floats per year to replace older floats that have reached the end of their useful lives. The global array consists of 3000 floats, each with an expected life span of four years.
- Atmospheric Chemistry Program: Conduct a major survey cruise to monitor marine aerosols and air quality approximately every other year.
- Tropical Moored Arrays for Climate: RAMA array in the tropical Indian Ocean is planned for completion in 2014, although the schedule of completion could slip due to uncertainties in international partnerships.
- Autonomous Glider Sections in the Solomon Sea: Complete two sections per year across the Solomon Sea, and conduct numerical modeling studies to help interpret the observations.

#### AOML and PMEL

- Tropical Moored Arrays for Climate:
  - PIRATA array maintained in the tropical Atlantic.
  - Deploy and maintain moorings, and visit and refresh each mooring at least annually
- Ocean Carbon Uptake and Storage: Repeat hydrography cruises are carried out approximately every year. These are repeats of sections originally conducted more than ten years ago, during other international ocean monitoring programs, and show the long-term changes in ocean temperature, salinity, CO<sub>2</sub> and other chemical concentrations, and other water properties. Ocean heat content can be inferred from the data.
- Air-Sea CO<sub>2</sub> Exchange: Maintain instruments that collect CO<sub>2</sub> underway measurements by three ships in the equatorial Pacific and three ships off the Pacific coast of North America. This is a very cost-effective way to monitor the oceans, requiring no funded research ship time and little intervention by scientists.
- CO<sub>2</sub> Time Series: PMEL will maintain 15 existing moorings and deploy an average of 5 additional moorings each year (FY 2013 – FY 2017), provided adequate funding support from the Climate and Ocean Acidification program offices.

#### ARL

- Climate Assessments: Contribute to national/international climate assessments (e.g., Intergovernmental Panel on Climate Change) to inform climate mitigation and adaptation (ongoing).
- Climate Observing Systems: Conducts studies on the design and evaluation of an international climate-quality observation system for the atmosphere above the surface, which will provide essential information for understanding and predicting climate change.

- Atmospheric Studies: Conduct studies characterizing the climatology of the lowest portion of the atmosphere, which is the portion of the atmosphere that directly affects people, agriculture, and ecosystems.
- Spatial Variability: Perform studies of spatial variability around surface climate stations to improve interpretation of regional climate variability and change and to support evaluation of models (ongoing).
- Snow Measurement Technology: Report on automated snow measurement technologies to improve characterization of snowfall variability and change—an important influence on water resources in cold and mountainous regions. Remote sensing technologies will be evaluated with respect to uncertainty and ability to be transitioned from research to operations by FY 2013.
- Surface Energy Fluxes: Initiate regional evaluation studies of physical energy fluxes in different regions of the continental United States to improve land service model parameterizations and to improve seasonal predictions of water resources.
- Urban Meteorology: Improve dispersion predictions (ongoing).
- Dispersion Forecast System: Complete updates to dispersion forecast system, used for local to international incidents annually.
- Wind Power Study: Report on efforts to improve the prediction of hub height winds that will translate into improved operational support for wind energy production.

**Climate Competitive Research, Sustained Observations and Regional Information**

Climate Monitoring

Schedule/Milestones	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Grants awarded in support of the development and delivery of climate analysis products, such as climate indices, USGCRP deliverables, Climate Data Records, etc. (number per year)	16	16	16	16	16	16
Research climate data sets transitioned to operations (number per year)	1	1	1	1	1	1
Paleoclimate reconstructions (number per year)	4	4	4	4	4	4

FY 2013 - 2017: Solicit annual calls for proposals for competitive awards. These awards will address priority research topics in the areas of climate monitoring; Earth system science; modeling, analysis, predictions, and projections; and climate and societal interactions.

The deliverables for the competitive grants program are based upon the call for proposals in FY 2012; Priorities targeted for the FY 2013 call for research proposals have not been finalized, but may include:

- *Climate Monitoring*- Climate data set development and diagnostics to identify climate variability and change; climate change detection and attribution with a focus on regional scales; and paleoclimatology with a focus on reconstructions of the late Holocene
- *Earth System Science*- Decadal climate variability and predictability, including identification of climate signals such as the Atlantic Meridional Overturning Circulation; understanding and improving prediction of Tropical convection, with a focus on climate processes being studied as part of the Dynamics of the Madden-Julian Oscillation (DYNAMO) field campaign; improving the understanding and modeling of land surface processes/interactions; global carbon cycle, including variability of carbon sources and sinks and carbon cycle/ecosystem interactions; aerosols, atmospheric chemistry and climate with a focus on aerosol-cloud interactions.
- *Modeling, Analysis, Predictions, and Projections*- Development of next-generation global climate models and evaluate uncertainties in regional-scale climate predictions/projections; advance intra-seasonal to inter-annual prediction through the creation of multi-model ensembles; support community-wide modeling approaches by ensuring the interoperability of model components.
- *Climate and Societal Interactions*- Initiate new RISA programs and advance regional assessment services; climate impacts on urban water resource planning and drought; coastal resource management in a changing climate, with a focus on coastal ecosystems and sea level rise; transition of water resource and coastal information products into operational settings, integration of climate information into resource management and planning models and processes; analyses and communication of uncertainties surrounding climate predictions and projections; improvements to climate impacts models; newsletters containing climate impacts and prediction information and articles on climate impact issues of significance to the region; presentations on research results to resource managers, planners and scientists; and workshops, surveys, focus groups, and ongoing dialogue with decision makers in the region.

## NIDIS

- Develop monitoring gaps analysis, develop improvements in monitoring (e.g. stream flow and snow), perform spatial analysis of water demand for the Pilot basins.
- Develop and improve drought indicators and indices, such as: (1) the NRCS update to the Surface Water Supply Index (SWSI); (2) improve and utilize low flow impacts database; (3) custom drought index server; and (4) water demand projections and revised triggering criteria (threshold for making management decisions).
- Develop state, Federal, tribal and private partnerships through workshops to sustain early warning systems after the pilot stage, including development of drought coordinator capacities (NIDIS Implementation Plan, 2007). For example, develop communities through the Drought Portal that can develop drought early warning processes and can provide input to the Drought Monitor.

<b>NIDIS Milestones</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of soil moisture sensors reporting in real-time	114	114	114	114	114	114
Number of interoperable drought systems accessible through the US Drought Portal	20	24	28	32	36	40

## Assessment Services

- FY 2012/ 2013: Produce limited set of regional scale projections of key climate variables for the United States.
- FY 2013: Incorporation of draft regional and sectoral assessments into National Climate Assessment.
- FY 2013/ 2014: Completion and delivery of the National Climate Assessment synthesis report.
- FY 2014/ 2015: Completion of several regional assessments, reviewable drafts of additional regional updates, reviewable drafts of key sectoral updates with new projections where feasible.
- FY 2015/ 2016: Completion of additional regional and sectoral updates, and draft one key cross-regional and cross-sectoral assessments (e.g. climate impact on "oceans, food and health").
- FY 2017: Completion and publication of National Climate Assessment synthesis.

### Communication and Education

- FY 2013/15: Build out social media tools with sectoral and regional stakeholder communities to facilitate integration of climate data and services into societal decision-making contexts.
- FY 2013/15: Build out geospatial tools that enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting.
- FY 2012-14: Sustain an annotated collection of thoroughly reviewed existing digital educational resources.
- FY 2013-15: Courses, workshops, and training on climate science and adaptation offered for NOAA's and partners' staff and the international community.
- FY 2013-15: Publish narratives and data visualizations that show how NOAA advances climate science understanding, and how those advances benefit society.

### Ocean Observations

Schedule/Milestones	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Ocean Reference Stations deployed (Cum Total #)	11	11	10	10	10	9
Drifting Buoy Array deployed (Total #/year-reseeding the array)	1,000	950	950	950	950	950
Argo Array deployed (Total #/year – reseeding the array)	400	400	400	400	400	400
Deep Argo floats deployed (Cum Total #)	0	0	0	0	0	10
Tropical Moored Buoys (TAO/PIRATA/RAMA) installed (Cum Total #)	86	86	89	89	89	89
Tide Gauge Reference Stations (Cum Total #)	63	63	63	63	63	63
Tide Gauge Reference Stations w/GPS installed (Cum Total #)	110	110	110	110	110	110
Ice Buoys/Stations Operating (Cum Total #) Typically 2-yr life-cycle refresh.	4	4	4	4	4	4
Ocean Carbon Surveys conducted	15	17	18	18	18	18

(Cum Total #)						
Dedicated ship support (Cum Total days at sea)	508	524	524	524	524	524

By FY 2016, NOAA will contribute annually the following to the International Arctic Observing Network (IAON):

- 4 Ice Buoys (7 percent of U.S. total planned contribution to IAON)
- 8 Moorings (20 percent of U.S. total planned contribution to IAON)
- 2 Annual Ship Lines (16 percent of U.S. total planned contribution to IAON)
- 3 International Coastal Observatories with our Canadian, Russian, and Norwegian partners

**Deliverables:**

The value of the ocean observing system can be assessed by the type and quality of products derived from it and from its scientific and operational value. The current observing system was designed with the objective to assess key climate-related parameters. The full implementation of the observing system will lead to better analysis of climate signals and reduction of errors in climate forecasts.

For each of the observational programs the deliverables and outputs are the observational data, quality controlled, and made available on a publically accessible web site. For programs such as Argo, involving measurements by multiple institutions, a single data center web site is typically maintained with the data from all providers available from the single site. The remaining deliverables are scientific papers in the peer-reviewed literature, giving the results of the research done with the data sets and other studies.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of labs that have had formal expert peer reviews in the past 5 years and were rated effective in terms of quality, mission relevance, and performance	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%
<b>Description:</b> This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states “The most effective means of evaluating Federally funded research programs is expert review.”							

**Modeling**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative number of new decadal prototype forecasts and predictions made with high-resolution coupled climate models	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	1	2	3	4	5	6
<b>Description:</b> One of the goals of this activity is to develop new prototype forecasts and predictions on decade time-scales for climate changes and impacts such as sea level rise, Arctic climate impacts, and rapid climate change. These forecasts and predictions are dependent on the development of state-of-the-art climate models.							

### Physical Sciences

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative site-years of data collection for cryospheric, boundary layer mean and turbulent properties, hydrometeorological, and oceanic process studies	8	10	20	30	40	50	60
<b>Description:</b> Process studies in the polar regions, over the ocean, in coastal watersheds, and mountainous terrain depend on precise, robust, routine, and relevant observations of the Earth System at time and space scales to diagnose its behavior and to assess the skill of predictive tools used to forecast its future.							

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of physical science related articles published in the peer-reviewed literature	125	90	90	95	100	105	110
<b>Description:</b> These publications are a measure of the credibility of information, tools, and diagnoses of the Earth system provided to other NOAA partners, other agencies, states, private sector, and various sectoral, societal, and economic interests.							

### Chemical Sciences

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of climate-related articles published in the peer-reviewed literature.	54	70	105	140	175	210	245
<b>Description:</b> The information in these publications provided the information needed by stakeholders and decision-makers to develop effective policies and adaptation strategies for a changing climate.							

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of reports to stakeholders and decision-makers that provide a policy-relevant scientific synthesis of results from intensive field studies, process studies, and analyses.	N/A	1	1	2	3	3	4
<b>Description:</b> Reports provide a distillation of key scientific findings on emissions, transport, atmospheric processing, and impacts of climate forcing agents, their precursors and species related to air quality degradation to inform policy development and emission management strategies for climate and air quality.							

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of substances, proposed as replacements for stratospheric ozone depleting industrial compounds (e.g., solvents; refrigerants) whose ozone	N/A	1	2	2	3	3	4

depleting potential and greenhouse-warming potential (GWP) have been evaluated.							
<b>Description:</b> Provides to industry stakeholders critical information on climate impacts of proposed replacement stratospheric ozone depleting chemicals prior to manufacture.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of individual emission sources and source regions relevant to climate and air quality whose inventories have been evaluated for accuracy via top-down analyses.	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	1	2	2	3	3	4
<b>Description:</b> Provides verification of critical inputs to climate models resulting in reduced uncertainty in model outputs, which provides decision-makers greater confidence in establishing policies and emission management strategies.							

### Global Monitoring and Research

<b>Performance Measure:</b>	<b>FY</b>						
Reduced uncertainty in the magnitude of the North American Carbon Sink (million tons Carbon/year) (Measure 16b)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	400	400	410	420	430	440	450
<b>Description:</b> The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year.							

### Climate Observations and Monitoring

<b>Performance Measure:</b>	<b>FY</b>						
Percent reduction in the error of the observed estimates of ocean and meridional heat transport	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2015</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0.2%	0.5%	0.9%	1.2%	1.6%	1.9%	2.2%
<b>Description:</b> As a result of observations, research, and reports on the state of the ocean, heat storage, and meridional heat transport in the Atlantic Ocean, there will be increased knowledge for scientists creating modeled estimates of heat transport over time, leading to less uncertainty in those models. Accurately describing heat is a key part of climate models, and increased longevity in datasets leads to a more accurate average or mean measurement of these systems. This contributes to developing a framework for future research that promises to improve the ability of climate models to predict summer rainfall and hurricane activity for the Western Hemisphere, helping local communities and economies.							

<b>Performance Measure:</b>	<b>FY</b>						
Percent certainty associated with the carbon dioxide exchange at the ocean surface globally	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	50.5%	51%	51.5%	52%	52.5%	53%	53.5%

**Description:** Based on observations, studies, and publications quantifying the exchange of carbon dioxide (CO<sub>2</sub>) at the ocean surface, there will be improvement in the understanding of the oceans' capacity to sequester CO<sub>2</sub>. This in turn controls the atmospheric CO<sub>2</sub> that is the major greenhouse gas. The resulting changes in ocean chemistry (ocean acidification) will also be better described, providing a framework for determining the impacts of ocean acidification on ecosystems.

### Climate Observations and Analysis

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of data collection platforms deployed by PMEL in support of the Global Ocean Observing System (GOOS)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	495	518	571	620	665	706	741
<b>Description:</b> This measure represents a significant portion of PMEL's contribution to GOOS. The measure identifies each Argo float deployed and each moored buoy from the PIRATA, RAMA, and ocean climate station programs as a unit; TAO is not included as it is maintained by the National Data Buoy Center (NWS). Completion of GOOS is analogous to the global weather observing system since fully-implemented GOOS will provide ocean data that all nations can use to provide improved ocean-related analytical and predictive products (forecasts).							

<b>Performance Measure:</b>	<b>FY</b>						
Number of journal articles published in peer-reviewed literature	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	91	60	60	60	60	60	60
<b>Description:</b> PMEL conducts basic research and reports the results in peer-reviewed journal articles. The annual publication total is a measure of the laboratory climate research output. Past research papers have addressed such topics as describing the predictability of El Niño and La Niña events and describing the negative impacts on marine ecosystems of ocean acidification. These publications document advances in scientific understanding that lead to improved capabilities (analyses, forecasts, etc.) or identify "next steps" for research.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of regions for which a surface flux study has been conducted	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	0	1	2	3	4	5
<b>Description:</b> "Surface flux" refers to the exchange of energy (e.g., heat) and substances (e.g., water) between the land surface and the atmosphere. These fluxes are critical drivers of climate change because they affect air and land temperatures and other important aspects of the climate. These fluxes also drive important climate-related phenomena such as droughts and such weather-related phenomena as the development of storms. Surface fluxes vary significantly with surface and weather conditions. The measurements taken in this work and the related analyses will provide essential information for improving the representation of the fluxes in climate and weather models, improving the accuracy of both weather and climate forecasts.							

### Atmospheric Observations and Monitoring

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative number of studies on the design and evaluation of an international climate-quality observation system for the atmosphere above the surface	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	1	1	1	1	2	2
<b>Description:</b> Sustained observations of Essential Climate Variables (ECV) will (1) ensure that climate scientists will be able to more confidently identify upper-air climate change signals and (2) provide essential calibration data for satellite observing systems so that significant progress can be made in the generation of global climate products and derived information to manage the Nation's response to the climate and climate change. This measure refers to publication of studies to optimize the design and implementation of a reference upper-air observing network.							

### Plume Dispersion

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative number of dispersion prediction system updates provided to NWS	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	3	4	5	6	7	8
<b>Description:</b> The updates of the HYSPLIT dispersion model provided to NWS for operational implementation will contribute to improved outcomes by improving the accuracy and usefulness of NWS dispersion prediction products. The updates will also improve the ease of use and flexibility of the software for meeting NWS needs. NWS uses HYSPLIT for dispersion predictions for applications ranging from local chemical releases to international radiological incidents, providing information to customers ranging from local emergency managers to the World Meteorological Organization.							

### Climate Competitive Research, Sustained Observations and Regional Information Applications

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	27	27	27	27	27	27
<b>Description:</b> Number of peer-reviewed publications and reports published and released in one fiscal year. The publications/reports are developed through interaction with and/or communication to stakeholders. Publications and reports are collected from investigators conducting climate impacts and adaptation research in cooperation with stakeholders. The goal of this research is to better understand and enhance the use of NOAA products and information to meet user requirements for natural resource management information in various sectors (e.g. drought and water resources, fire risk, ecosystem and coastal impacts, sea-level rise, human health, agriculture, etc.)							

### NIDIS Early Warning Systems (to support Regional Services delivery)

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of states and territories working with NIDIS to incorporate drought early warning information into their	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	4	5	7	10	15	22

drought adaptation and mitigation plans. (Cumulative)							
<p><b>Description:</b> The performance measure is based on the number of states and territories that partner with NIDIS to incorporate drought early warning information into their drought planning activities. Activities that count toward this measure include: local or regional drought planning/management groups; use of tailored information from the U.S. Drought Portal to establish drought indicators and set management triggers in state and territory drought adaptation and mitigation plans; and incorporation of information from basin specific drought monitors developed through the drought early warning information systems into either state and territory drought adaptation and mitigation plans or as part of state and territory drought planning and management groups.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Number of U.S. coastal states and territories demonstrating 20% in annual improvement in resilience capacity to climate hazards. (Each Year)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	11	12	14	16	18	20	22
<p><b>Description:</b> As an indicator for this measure, data is used from the existing hazards resilience GPRA Measure 18e “Percentage of U.S. coastal states and territories demonstrating 20 percent or more annual improvement in resilience capacity to weather and climate hazards.” To meet the 20 percent or more improvement in resilience capacity, coastal counties representing at least 20 percent of the state’s coastal population must meet or exceed predefined performance targets for each of the contributing areas of training, technical assistance, and outcomes.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Number of states or territories using new or tailored climate services (tools, information, technical assistance, or products) as a result of regional, state and local interaction with decision makers (Each Year)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	4	5	7	8	9	10
<p><b>Description:</b> The number of products and services, provided or existing products and services that are modified/expanded for new user groups or regions. ‘Products and services’ includes technical assistance, training, and guidance documents to enable planning and decision making. [This measure is partially based on the current GPRA: Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.]</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (Measure 16d)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	22%	22%	24%	25%	27%	29%
<p><b>Description:</b> Number of states and territories where climate information is integrated into state and territory planning and decision making (e.g., changes in policies, plans, and actions), as well as indicators of success such as training and technical assistance. Percentage of improvement in state and territory resilience to climate hazards. This measure is an indicator of</p>							

societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions will lead to better results or improved decisions based on inclusion of this climate information.

**Assessment Services**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of climate-change related impact, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	17	8	8	8	8	8	8

**Description:** This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Information topics are based on the U.S. GCRP report, “Global Climate Change Impacts in the U.S.” This measure will track the extent to which the USGCRP topical information items are used by industry, etc., to inform their key decisions on how to mitigate or adapt to climate change.

**Communication and Education**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percentage improvement in the Quality of Relationship with users in the delivery and communication of climate information and services (Quality of relationship is a formal method of measuring indicators like trust, satisfaction and reliability). Expect growth as a decreasing % relative to previous year’s index value (Measure 16f)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	0%	5%	4%	3%	2%	1%

**Description:** Quality of Relationship is comprised of formal measures of these key indicators: awareness, trust, satisfaction, and usability. The goal is to capture the increasing Quality of Relationship for each of our priority publics as they access, understand, and integrate climate information, products, and services into the tools and algorithms they use for decision-making, ultimately resulting in an increase in the frequency and proficiency with which they use NOAA climate data and services in their lives and livelihoods. The measure will be a combination of surveys and focus groups to establish a baseline measurement and perform annual follow-up measurements to determine the annual percentage improvement in the Quality of Relationship as climate services are increased and improved.

**Ocean Observations**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY 2017</b>
Reduce the error in global measurement of sea surface temperature (°C) (Measure 16c)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>Target</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	
	0.51	0.50	0.51	0.51	0.55	0.55	0.55
<p><b>Description:</b> This measure is intended to document progress in accurately measuring the global sea surface temperature (SST) using in situ drifting buoys to verify that satellite SST data are accurate and representative. This reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean via the transfer of heat either to or from the atmosphere. Since sea surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature will improve our ability to detect changes in the climate system. Success in this performance measure requires the maintenance and increase of in situ ocean sensors. The goal is to reach an indicator value of 0.3 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Increased percentage of global in-situ ocean observing system implementation	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	61%	61%	60%	58%	58%	57%	56%
<p><b>Description:</b> This measure tracks the percentage of global coverage of the Global Ocean Observing System. There are eight (8) individual ocean observing systems and one data management system that make up GOOS. The % completion of the eight systems determines the cumulative total % of this PM. A predictive understanding of the Earth's climate is critically dependent on quantitative measurements of ocean parameters - the ocean is second only to the sun in effecting climate change and variability.</p>							

## **PROGRAM CHANGES FOR FY 2013:**

**Climate Research Laboratories and Cooperative Institutes (Base Funding: 249 FTE and \$53,184,000; Program Change: 0 FTE, \$166,000):** NOAA requests an increase of \$166,000 and 0 FTE for a total of \$53,350,000 and 249 FTE to continue research activities within its Laboratories and Cooperative institutes for monitoring and understanding the Earth's climate system and to predict both the potential long-term changes in global climate as well as shorter-term climate variations that are of societal and economic importance.

### **Proposed Actions:**

NOAA has a long history of key research and observations that have led to greater understanding of the state of the climate including global distributions, trends, sources and sinks of atmospheric constituents that are capable of forcing change in the climate of the Earth. NOAA's climate research works to understand and predict climate variability and change from weeks to decades to centennial timescales and produces information and forecast products, ranging from short-term weather forecasts to longer-term climate forecasts and assessments.

These labs focus their resources on the most productive avenues of research, and will use this increase for conducting advanced mathematical modeling of the climate and Earth systems, including natural climate variability, anthropogenic climate change, weather and hurricane forecasts, El Niño prediction, and stratospheric ozone depletion to improve the prediction of climate phenomena. In addition, these funds will be used to sustain the observing systems essential for climate, oceanographic, monitoring, and data management.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	166
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	166

**Climate Data & Information: Climate Model Data Archive (Base Funding: \$617,000 and 0 FTE; Program Change: +\$1,736,000 and 0 FTE):** NOAA requests an increase of \$1,736,000 and 0 FTE for a total of \$2,353,000 and 0 FTE to generate and safely store model based data records and support an adequate operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets.

**Proposed Actions:**

This project will further develop and implement a Climate Model Data Archive capability for the next generation climate analyses currently running on supercomputers across NOAA and its collaborators (NSF, DOE, and others). NOAA will provide an operational data stewardship and user access capability for the next generation of climate reanalysis products derived for the utilization of major advancements in model physics and coupling across the ocean, air and land interfaces. The Climate Model Data Archive leverages existing supercomputer resources to provide a unified and consistent suite of climate information to users at all levels so that they can make better decisions about their specific management needs. Information will be provided on time scales from days (weather), to months (El Niño), to years and decades (climate variability and change).

These climate model reanalysis products will total over 2 PetaBytes (2,000 TeraBytes) of data and include:

- Coupled Climate Forecast System Reanalysis and Reforecast (CFSRR) dataset, a modern era reanalysis
  - The first coupled 30 year global reanalysis of the atmosphere, ocean, land, and cryosphere (sea ice) ever developed by NOAA
- Climate Prediction Center Reanalysis (CPCR), a long time series historical upper-air reanalysis (1850 to present)
- Surface Pressure historical reanalysis currently underway at NOAA's Earth System Research Laboratory (ESRL)

The architecture is based on 3 main components: the Portal, the Catalog Node, and the Data Repository. The Portal is the users' interface to the system, where they can manage requests, download data, receive user input and browse the catalog. The Catalog Node is the heart of the system and concentrates on connecting partners, metadata, search and discovery and peer-to-peer connectivity. It will integrate fully with the existing NOAA Climate Portal ([www.climate.gov](http://www.climate.gov)) and remove barriers to data format and system incompatibilities.

**Statement of Need and Economic Benefits:**

Decision makers are increasingly seeking information that will help their communities plan and respond to climate variability and change. The Climate Model Data Archive will develop an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis data sets derived from model outputs. Reanalysis output and products will improve our understanding of various climate phenomena, including: verification, detection, and determination of drought severity and location; verification and improvements to forecasts of El Niño occurrence and persistence; and verification and improvements to our understanding of the hydrologic cycle and water resources. The Climate Model Data Archive will be designed to convey key aspects of complex scientific data in a manner accessible to non-specialists and NOAA's climate information user communities.

**Base Resource Assessment:**

The base resources for this activity are described in the Climate Data and Information base narrative.

**Schedule and Milestones:**

FY 2012: Ingest, archive, and access to reanalysis data leading to an on-going analysis of the climate system

FY 2013: Expanded capabilities and products from reanalysis datasets, including toolsets for data intercomparisons, etc, to better understand and evaluate the Climate System

FY 2014: Implementation of access capabilities for new reanalysis datasets and products

FY 2015 - 2017: Ongoing implementation of data access and user capabilities for new reanalysis datasets and products, which will continue to be developed during this period

**Deliverables:**

- NOAA Reanalysis Web Page for collection of user requirements and input.
- Data Stewardship and Access for the next generation reanalysis datasets (CFSRR, CPCRR, SFC Historical), along with other reanalyses, which are generated as follow-on development.
- Customer service support capability and a research quality help desk supporting users of Climate Model Data Archive.
- Re-analysis clearinghouse to provide access to consensus (satellite, in-situ, and radar) datasets for the next series of NOAA reanalysis.
- Toolsets and user capabilities to better utilize and inter-compare model output, in-situ data, etc.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Increased reanalysis data available 24x7 to operational and research users, from the next suite of NOAA's climate weather reanalysis and reforecast datasets in an interoperable Web Service architecture (Increase in TB/year)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	1,250	1,500	1,750	2,000	2,000
<b>Without Increase</b>	500	500	500	500	500	500	500
<b>Description:</b> One of the goals of this activity is to increase the terabytes of data made available to users for the next generation climate analyses by developing and implementing an operational archive and user access capability and interoperable Portal. Data records will be produced from three main current and planned reanalysis projects and will be uploaded to the Portal as they are completed.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic & Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	16
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	1,160
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	410
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	150
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,736

**Climate Data & Information: NOAA Climate Portal (Base Funding: \$958,000 and 0 FTE; Program Change: +\$542,000 and +2 FTE:** NOAA requests an increase of \$542,000 and 2 FTE for a total of \$1,500,000 and 2 FTE to continue supporting development of the NOAA Climate Portal that will facilitate public online access to NOAA's climate data, information, and services.

**Proposed Actions:**

With the funds requested, OAR will work with partners across NOAA to continue to build a comprehensive web-based Climate Portal, transitioning from the current operational phase. The Portal will be a central component of NOAA's commitment to integration and delivery of services by enhancing public access to useful climate data and information. In addition to climate science information and data and decision support tools, the Portal will offer a broad array of climate communications, outreach, and educational materials.

As the public's primary online point of entry into NOAA's climate science and services, the Portal will have audience-focused sections designed to serve four key segments of society: (1) climate science decision makers and policy leaders; (2) scientists and applications-oriented data users (e.g., resource managers and business leaders); (3) educators; and (4) members of the public. Recent developments in web-based technologies make it possible for NOAA to present both existing data and new products in formats that are readily usable by decision-makers in government agencies and businesses (e.g., geospatial tools that enable resource managers to place information on impacts and affected resources in a place-based context relevant to planning or permitting).

With the funds requested, NOAA will include improvements to the Portal's interface, add a new section, called "Climate Conditions," which presents a data-driven digest of recent and near-future climate trends of interested and relevance to society, and hire full-time administrative personnel to manage the system. Additionally, the agency will create an overarching Portal home page that integrates timely and topical content from each of the Portal's sections.

NOAA will work with the authors of such reports as the State of the Climate, Seasonal Climate Outlooks, the Arctic Report Card, the National Climate Assessment, and others to provide easy access for the Portal's audiences, and will work with NSF, NASA, and NOAA grant projects to build an online library of climate science education resources of the highest quality.

The full Portal's scope, product content, and functionality will evolve based on user needs and expectations for climate data and information. User feedback on products and services available through the Portal will also provide important insights into user applications and climate information needs.

**Statement of Need and Economic Benefits:**

Societal interest in climate is growing, as indicated by the rising number and complexity of the questions and requests for climate data and services submitted to NOAA in recent years. From 2009 to 2010, NOAA saw an 86 percent increase in climate-related data provided from its data centers, a 57 percent increase in climate-related website hits, and an 11 percent increase in individual customer requests for climate information via phone calls, emails, and other direct correspondence. Individuals and organizations are seeking easy access to credible climate science information from NOAA at finer geographic and time scales to help them manage climate-related risks and opportunities in their lives, businesses, and communities.

However, users report having difficulty locating and using NOAA's online data products and services. Thus, resolving this online accessibility issue will be one of the Climate.gov Portal's main benefits. The use of portal technology and emerging data integration and visualization tools provide an

opportunity for NOAA to bring together multiple datasets from diverse disciplines and sources to deliver a more comprehensive picture of affected resources, communities and businesses.

**Base Resource Assessment:**

Base resource assessment can be found in the base narrative for Climate Data and Information.

**Schedules and Milestones:**

- FY 2013: Implement global redesign of portal interface
- FY 2013: Add new “Climate Conditions” section
- FY 2014: Expand the scope and refine the functionality of Climate Conditions section
- FY 2014: Increase the size, accessibility, and usability of reviewed climate education resource collections and ensure connectivity to other related portals
- FY 2015-2016: Launch new social media tools for science-based problem solving, designed to foster and facilitate interdisciplinary communities of practice that collaborate to address NOAA’s and its partners’ climate-related societal challenges
- FY 2016-2017: Make user-driven refinements in the Portal’s interface design and functionality

**Deliverables:**

Improved access to NOAA’s climate data and information via a single, comprehensive Web portal with four audience-focused interfaces and a comprehensive assessment and evaluation of the Portal’s overall impacts on our target audiences.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Percentage growth in number of unique visits to NOAA’s Climate Portal over the preceding year’s measure.	<b>Actual</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
		<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	10%	10%	10%	10%	10%
<b>Without Increase</b>	N/A	N/A	5%	5%	5%	5%	5%
<b>Description:</b> This performance measure will show the ongoing increase in the average number of unique visits to the Portal among the four target audiences the CS Portal serves.							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Climate Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
IT Specialist	Charleston, SC	ZP-IV	1	81,823	81,823
IT Specialist	Asheville, NC	ZP-IV	1	81,823	81,823
Physical Scientist	Camp Springs, MD	ZP-IV	1	89,033	89,033
<b>Total</b>			<u>3</u>		<u>252,679</u>
less Lapse		25%	<u>1</u>		<u>63,170</u>
Total full-time permanent (FTE)			2		189,509
2013 Pay Adjustment (0.5%)					948
TOTAL					190,457

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	2
Other than full-time permanent	<u>0</u>
Total	2
Authorized Positions:	
Full-time permanent	3
Other than full-time permanent	<u>0</u>
Total	3

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$190
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	190
12 Civilian personnel benefits	58
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	294
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	542

**Climate Data and Information: Climate Operations (Base Funding: \$908,000 and 0 FTE; Program Change: -\$589,000 and 0 FTE):** NOAA requests a decrease of \$589,000 and 0 FTE for a total of \$319,000 and 0 FTE to maintain support for the transition of regional information applications to operational production and dissemination capabilities.

**Proposed Actions:**

With the remaining funding, NOAA will maintain support for the transition of regional information applications to operational production and dissemination capabilities. As part of that effort, NOAA will focus on development of new seasonal ice prediction products. With the requested decrease, NOAA will no longer develop the Local Climate Analysis Tool, which allows NWS and other NOAA users to operationally identify local climate variability and change impacts and catalogs local climate studies. NOAA will also cease training for local climate services staff and technical users for these products.

Since societal impacts from climate variability and change extend down to sub-seasonal time scales, connections between climate and extreme weather events must be identified to improve the forecast timing and location of extreme weather events, thereby minimizing their impacts on lives and property. By focusing remaining resources on transition of regional information applications to operational products, NOAA will be able to begin to address that issue.

**Base Resource Assessment:**

The base resources for this activity are described in the Climate Research subactivity base narrative.

**Schedules and Milestones:**

- FY 2013: Development of a new seasonal sea-ice prediction product

**Deliverables:**

- Development of one seasonal sea ice prediction product

**Performance Goals and Measurement Data:**

There is no performance measure associated with this decrease.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

**Activity:** Office of Oceanic and Atmospheric Research  
**Subactivity:** Climate Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(35)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	(5)
25.1 Advisory and assistance services	0
25.2 Other services	(544)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(5)
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(589)</u>

**Climate Competitive Research, Sustained Observations and Regional Information: Earth System Modeling for Urgent Climate Issues (Base Funding: \$2,600,000 and 4 FTE; Program Change: +\$8,000,000 and +10 FTE):** NOAA requests an increase of \$8,000,000 and 10 FTE for a total of \$10,600,000 and 14 FTE to enable continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change.

**Proposed Actions :**

Sea level rise and the Arctic constitute two of the most rapidly changing and potentially impactful aspects of the global climate. NOAA will use this funding to expand capacity with a combination of 10 FTE, post-doctoral researchers, contracts and grants managed primarily by its Geophysical Fluid Dynamics Laboratory with assistance from the Earth System Research Laboratory and US academic community. The Climate Program Office will manage the grants for this request. This will allow NOAA to continue development of Earth System Models to:

Reduce uncertainties in sea level rise projections (\$2,750) by incorporating ice sheet dynamics, ocean-ice shelf and ocean-iceberg interactions, ice shelf cavity circulations and processes driving regional variations in sea level rise and inundation into NOAA's Earth System Models. These models will include routine global ocean data assimilation capabilities linked to Global Ocean Observing System observations and innovative approaches to achieving high resolution in regions of interest including coasts, shelves and marginal seas.

Reduce uncertainties in the terrestrial carbon cycle and future biogeochemical feedbacks on climate (\$2,240K) through more realistic model treatment of the terrestrial biosphere including: modeling the nitrogen and phosphorous cycles, biomass burning, wetland and freshwater biogeochemistry, and land-use management. This includes data assimilation.

Address gaps in the understanding of the Arctic climate system, including rapid changes and future projections (\$1,000K). The sea ice component of the NOAA's Earth System Model will be enhanced to include ridging of ice sheets and improved radiation treatment. Influences of soot and dust aerosol on ice albedo will be examined. A new modeling framework for Arctic climate change will be developed for assessing various causes of past Arctic changes.

Augment Decadal Climate Predictions and Abrupt Change (\$2,010K) to complete decadal prediction model evaluation, assess predictability of high-impact climate extremes (heat waves, flooding, etc.) and of ocean ecosystem responses, and assess the causes of past/ongoing decadal climate changes.

**Statement of Need and Economic Benefits:**

Numerical models that simulate the Earth System are the Nation's principal tool for understanding fluctuations in past climate and predicting future climate change. The increased demand for projections of climate change at regional scales and understanding of potential climate impacts requires greater resolution and realism in models, as well as improved scientific understanding of the reliability of models and downscaling techniques for various regional climate applications. This effort to address urgent climate issues by improving Earth System Models, developing decadal prediction systems, and integrating earth system model development with regional ecosystem and coastal process models will be supported directly by recent investments in high performance computing resources for climate modeling in the American Recovery and Reinvestment Act of 2009. Societal benefits include:

- Sea level rise has the potential to be among the most costly consequences of climate change. Coastal states support 81 percent of the U.S. population and generate approximately 83 percent (\$11.4 trillion in 2007) of U.S. gross domestic product (GDP) (National Ocean Economics

Program, "State of the U.S. Ocean and Coastal Economies," 2009). The homes and livelihoods of millions of Americans and infrastructure worth billions would be imperiled by sea level rise of a few feet. Improved models to help narrow uncertainty on future global sea level rise, as well as its regional variations, will help decision-makers form mitigation and adaptation responses to mitigate costs to society and harm to near-shore ecosystems.

- Developing Earth System Models with ocean data assimilation capability and ocean resolutions sufficient to represent shelf, estuarine and coastal processes will greatly enhance NOAA's ability to manage marine ecosystems that are sensitive to climate change. The models will serve ecosystem managers, because many marine ecosystems are sensitive to changes in ocean conditions associated with climate change.
- Reduced uncertainty in climate predictions and projections will help decision makers consider strategies to mitigate or adapt to the impacts of climate variability and change. For example, the absence of an interactive carbon cycle was a serious limitation in the global climate models used for the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4), which will be addressed through improved representation of the terrestrial biosphere to better understand how the carbon cycle and its feedbacks could reduce or amplify anticipated global warming by several degrees by 2100.
- Better understanding and possible prediction of rapid changes in the Arctic will help decision-makers address key impacts on: Arctic citizens and their livelihoods; Arctic ecosystems; shipping; homeland security; fisheries; and strategic energy resources.
- Developing decadal climate predictions of sea surface temperature may lead to skillful decadal predictions of several phenomena of great economic importance, including hurricanes, drought, heat waves, and ecosystems.

#### **Base Resource Assessment:**

The base resources for this activity are described in the Climate Competitive Research, Sustained Observations, and Regional Information base narrative.

#### **Schedule & Milestones:**

FY 2013: Develop new modeling capabilities and initiate synthesis efforts for application to Earth System Models.

FY 2014: Further develop and implement new Earth System Modeling capabilities for use in climate change assessments. Perform initial integrations of new Earth System Models. Continue process studies and report results in peer-reviewed publications.

FY 2015-17: Continue long-term development and refinement of Earth System Modeling capabilities for use in future national and international climate change assessments. Simulate 20<sup>th</sup> and 21<sup>st</sup> century sea level rise using prototype next-generation models of ice sheet dynamics and other physics. Report on Arctic climate change assessment. Communicate Earth System Modeling research findings to policymakers and other stakeholders through assessments, publications and climate services.

#### **Deliverables:**

- Sea level rise projections with improved model physics, representation of physical processes, and reduced uncertainty relative to current projections.
- Global ocean models with data assimilation capabilities that can be run at resolutions sufficient to fundamentally improve our understanding of important ecosystem processes and their responses to climate changes.
- State-of-the-art Earth System Models with improved representation of the terrestrial biosphere and reduced uncertainty in future carbon cycle feedbacks.

- Assessments of the causes of recent and ongoing Arctic climate changes through improvements to sea ice modeling and Arctic climate process models. More confident projections of future climate changes in the Arctic.
- A decadal climate prediction system, including an assessment of the level of predictability realizable from the system, in terms of sea surface temperature predictions, and predictions of related changes in extreme events (hurricane activity, drought, heat waves, flooding, etc.).
- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes & important feedbacks in climate models; greater confidence in projections of regional climate impacts.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of regional scale projections for assessments & decision support (cumulative)	<b>Actual</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
		<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	3	5	7	8	8
<b>Without Increase</b>	0	2	2	2	2	2	2
<p><b>Description:</b> Regional scale projections will contribute to international assessments (e.g. IPCC AR5, scheduled for 2013), national assessments under the U.S. Global Climate Research Program, and other assessments as requested. The number of meaningful regional projections possible will increase as NOAA's Earth System Model increases in realism and complexity. Examples of regional scale projections include: regional sea level rise projections that require explicit representation of the global eddy field in the ocean models; projections of parameters essential to ocean and coastal ecosystem forecasting; assessment of regional carbon budgets; and projections of climate change in the Arctic region that require improved sea ice models.</p>							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Percentage uncertainty in possible 21 <sup>st</sup> century sea level rise (0-1m = 100% uncertainty)	<b>Actual</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
		<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	74%	65%	55%	50%	40%
<b>Without Increase</b>	75%	75%	74%	73%	72%	71%	70%
<p><b>Description:</b> This metric is calculated using the IPCC 4<sup>th</sup> Assessment Report estimates for the range of 21<sup>st</sup> century global-mean sea level rise. Completion of the proposed effort will reduce the uncertainties by almost half as a result of modeling that better captures the more accurate measurements of ice-sheet discharge, thermal expansion, and regional anomalies due to ocean circulation and heat storage. Reducing the uncertainty in sea level rise will allow government and industry to have better information on projected sea level rise and therefore tailor their planning and actions to address the impacts.</p>							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Climate Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Physical Scientist	Princeton, NJ	ZP-IV	10	92,259	922,590
Oceanographer	Princeton, NJ	ZP-III	1	64,729	64,729
Physical Scientist	Boulder, CO	ZP-IV	2	87,815	175,630
<b>Total</b>			<u>13</u>		<u>1,162,949</u>
less Lapse		25%	<u>3</u>		<u>290,737</u>
Total full-time permanent (FTE)			<u>10</u>		<u>872,212</u>
2013 Pay Adjustment (0.5%)					<u>43,611</u>
TOTAL					<u>915,822</u>

**Personnel Data**

Full-Time Equivalent Employment  
 Full-time permanent  
 Other than full-time permanent  
 Total

Number  
  
  
10  
0  
10

Authorized Positions:

Full-time permanent  
 Other than full-time permanent  
 Total

13  
0  
13

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$916
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	916
12 Civilian personnel benefits	275
13 Benefits for former personnel	0
21 Travel and transportation of persons	21
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	360
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	467
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	5,961
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	8,000

**Climate Competitive Research, Sustained Observations, and Regional Information: Climate Science on the Global Carbon Cycle, Aerosols, and Atmospheric Chemistry to Improve Climate Models and Predictions (Base Funding: \$28,709,000 and 2 FTE; Program Change: +\$6,491,000 and 0 FTE):** NOAA requests an increase of \$6,491,000 and 0 FTE for a total of \$35,200,000 and 2 FTE to provide a process-level understanding of the climate system through observation, modeling, analysis, and field studies to support the development of improved climate models for use in climate assessments.

**Proposed Actions:**

NOAA, in collaboration with its academic partners - including Cooperative Institutes - will advance the understanding of the global carbon cycle and the role of aerosols and chemically-active greenhouse gases in the global climate system. Work will be done in collaboration with members of the NOAA ESRL Carbon Tracker team and the GFDL Climate and Ecosystems group to incorporate new models into CarbonTracker and to improve the ocean component of Earth System Models. In addition, analysis of measurements from past field campaigns and preparation for future field campaigns will be done to improve the understanding of atmospheric composition and climate to take advantage of ongoing improvements in modeling capabilities. In particular, the foci will include elements of the nitrogen cycle that are relevant to stratospheric ozone and climate, aerosol-cloud interactions, as well as monitoring and verification of emissions of greenhouse gases.

**Statement of Need and Economic Benefits:**

Understanding the processes that govern the carbon cycle and its variability is vital for decision makers, who are increasingly seeking information that will help their communities plan and respond to climate variability and change. The products of this research will improve society's ability to understand and anticipate the global and regional impacts of climate variability and change.

In addition, man-made chemicals are depleting the stratospheric ozone layer, allowing more UV radiation to reach the ground and leading to more cases of skin cancer, cataracts, and other health and environmental problems. This research will measure and quantify atmospheric species that destroy the stratospheric ozone, as well as monitor its recovery. This research is critical to efforts to monitor, report, and verify regional emissions, including those from fossil fuel use to provide an independent check on emissions accounting based on economic inventories. Without this research, the success of efforts to reduce CO<sub>2</sub> and other greenhouse gas emissions in North America cannot be properly quantified. Decision makers will not have sufficient information on verification and mitigation of the global emissions of CO<sub>2</sub>. In addition, the most recent and future research will address the connection between air quality and climate, informing stakeholders and decision makers on win-win solutions to mitigating air quality and climate together.

**Base Resource Assessment:**

The base activities are described in the Climate Competitive Research, Sustained Observations and Regional Information base narrative.

**Schedule & Milestones:**

FY 2013:

- Employ measurements from past NOAA field campaigns to improve realism of the nitrogen cycle in NOAA Earth System Models, including major feedback on the global carbon cycle.
- Participate (measurements and analysis) in the field campaign in the South East of US where emissions of natural and anthropogenic aerosols are high
- Complete model evaluation of response of the ocean carbon sink to changes in ocean ventilation under increasing atmospheric CO<sub>2</sub> concentrations

- Complete development and analysis of a new "self-assembling" model of marine microbial communities for simulations and sensitivity studies of the changing marine carbon cycle

FY 2014:

- Analysis of measurements taken during the South East US field campaign.
- Complete development of Lagrangian optimization module for CarbonTracker;
- Complete expansion of a prototype regional observing system in the northwest US based on a ground-based network of CO<sub>2</sub> sites;
- Complete provision of new model estimates of the ocean carbon uptake over 1990-present, constrained by WOCE and CLIVAR data;
- Complete an evaluation of the uncertainties in modeled carbon uptake

FY 2015 - 2017:

- Continue supporting studies focusing on air quality – climate interactions that exploit NOAA measurements from recent field campaigns
- Plan and prepare for future NOAA field campaigns
- Complete coupling of a permafrost and soil carbon model, a wetland scheme and simple methane emission model, and a fire module into the present terrestrial biosphere model in CarbonTracker
- Complete development of diagnostic tools to evaluate the performance of global ocean biogeochemical models used in IPCC assessments
- Complete Inter-comparison of ocean heat and carbon uptake in Earth System Model (ESM) simulations conducted for the Coupled Model Inter-comparison Project Phase 5
- Assess the impact of internal variability on estimates of anthropogenic heat and carbon uptake in Earth System Model (ESM) simulations conducted for the Coupled Model Inter-comparison Project Phase 5

**Deliverables:**

- Complete the design, construction, and evaluation of a novel, in-situ carbonate-ion sensor
- Complete development of a robust and cost effective Dissolved Inorganic Carbon (DIC) sensor that can be deployed in combination with the robust moored pCO<sub>2</sub> sensor (MAPCO<sub>2</sub>) previously developed by PMEL
- Peer-review publications from extramural and internal research
- Improved emissions estimates of aerosols precursors, nitrous oxide, methane and other greenhouse gases over California
- Improved understanding of climate-relevant properties of aerosols in South-East US in present and future climate
- Improved estimates of regional CO<sub>2</sub> fluxes over continental US, including the Central Rocky Mountains and Southwestern US
- Explanation of trends in increasing carbon sequestration in the Northeastern US
- Refined estimates of land and ocean carbon sinks
- Reduced uncertainty in the data sets of CO<sub>2</sub> emissions
- Improved estimation of methane emission and uptake in dry Arctic soils and their response to climate variability
- Improved predictions of the responses of the terrestrial ecosystem to changing temperature and precipitation

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Reduced uncertainty in the magnitude of the North American Carbon Sink (million tons Carbon/year) (Measure 16b)							
<b>With Increase</b>	N/A	N/A	405	415	425	435	445
<b>Without Increase</b>	400	400	410	420	430	440	450

**Description:** The provision of NOAA scientific guidance to policymakers concerned with managing emissions of carbon dioxide requires NOAA to assess and quantify the sources of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. The uptake of atmospheric carbon (mainly as carbon dioxide) by the biosphere across North America is of the order of one billion tons (one petagram) per year. That is about 1/2 of the current emissions from burning fossil fuels on the continent. In order to be able to evaluate annual changes in this ecosystem uptake, we must improve our carbon measurements to a level of uncertainty that is about 1/3 of the total or 300 million tons per year. Obtaining this minimum level of uncertainty requires an expanded observation network and improved modeling effort. The basis (flux estimates) for the measure is publicly available on the web (<http://carbontracker.noaa.gov>).

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	10
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	50
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	570
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	25
31 Equipment	25
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	5,811
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	6,491

**Climate Competitive Research, Sustained Observations and Regional Information: Global Ocean Observing System (GOOS) (Base Funding: \$59,213,000\* and 89 FTE; Program Change: +\$4,601,000 and 1 FTE:** NOAA requests an increase of \$4,601,000 and 1 FTE for a total of \$63,814,000\* and 90 FTE to make progress in critical ocean observations and analysis, Arctic monitoring, and more comprehensive deep ocean monitoring with new full ocean depth profiling floats (Argo) within the Global Ocean Observing System.

[\*NOTE: The GOOS base funding of \$59,213,000 includes AOML and PMEL funding and FTE from the Laboratories and Cooperative Institutes PPA.]

### **Proposed Actions:**

Ocean observations serve as the foundation for understanding and forecasting the Earth's climate system, enabling real-time monitoring of ever-changing ocean conditions, and seasonal-to-decadal climate forecasts and analyses for a broad spectrum of societal applications. Although much progress has been made toward development of the Global Ocean Observing System (GOOS), climate requirements still cannot be met satisfactorily. NOAA requests an increase in support for three components of the Global Ocean Observing System: 1) critical ocean observations and analysis; 2) progress in observational efforts in the rapidly changing Arctic; and 3) technology development to improve our understanding of the deep ocean via deployment of Deep Argo Floats that would provide valuable information on sea level rise and the global energy balance.

### ***OCEAN OBSERVATIONS and ANALYSIS***

Specific enhancements to the global ocean observing system (both observations and analysis) that will advance monitoring global sea level rise and its drivers include:

- Tide Gauge Stations: Ten tide gauge stations will be deployed and fifteen enhanced reference tide gauge stations will be equipped with GPS receivers and real-time reporting transmitters to provide measurement of absolute sea level rise and satellite ground truth, and to provide real-time monitoring for tsunamis, El Niño, and storm surge events. Costs associated with the support of these upgrades are requested to meet ongoing operations and maintenance of the systems;
- Ocean Reference Stations: One real-time reporting deep ocean monitoring system will be deployed in a boundary current location important to monitor energy and carbon exchanges between the ocean and atmosphere, upper ocean temperature and salinity, and near-surface currents; and for the Operations & Maintenance associated with development and supporting deployment of the new Ocean Reference Station;
- Ocean Analysis and Assimilation: University and government researchers will be engaged to help NOAA analyze and assimilate ocean data in order to evaluate and improve ocean models to make more reliable projections of climate changes, and additionally, to more efficiently assess adequacy of existing and future observing systems;
- Drifting Buoys: Fifty additional drifters are required to provide a full network of sea surface temperature observations as part of the Global Drifter Array. These observations are critical to support monitoring of sea surface temperature and atmospheric pressure;
- South Atlantic Meridional Overturning Circulation: For deep ocean observations and analysis of the South Atlantic in support of the Atlantic Meridional Overturning Circulation (AMOC) objective.

Due to the complexities of the observations and analysis needed for this program, one new Federal employee position is requested.

## **ARCTIC**

The NOAA Arctic program is necessary for addressing immediate and near-term impacts of a changing climate and supporting NOAA's response capabilities to stakeholders, particularly those in Alaska and the Pan-Arctic region, but also throughout the Nation. Arctic observations produce information and applications-driven research outputs, such as nowcasts and forecasts tailored to Arctic stakeholder needs, and projections for planning and policy.

Many of the necessary components for Arctic observations already exist in varying stages of development and execution. However, a greater investment in analysis of recent ocean and atmospheric observations are critical for allowing NOAA to serve as a key provider and contributor of knowledge and information about changes in the Arctic environment such as sea-ice, marine ecosystems, and atmospheric aerosols. These analyses will lead to improved products and knowledge for decision-making as well as continued research efforts across a range of issues affecting or affected by the Arctic. The NOAA Climate Program Office will lead this effort and will utilize the capabilities of the NOAA Joint and Cooperative Institutes as well as NOAA labs.

## **DEEP ARGO**

Another component of the Global Ocean Observing System involving technology development to measure the deep ocean involves Deep Argo floats. A global array of Deep Argo (0-6000 m) conductivity/temperature/depth profiling floats is needed to supplement the present Argo Program's 3,400 upper ocean floats (<http://www-argo.ucsd.edu>) in order to close global budgets of heat, freshwater, and sea level. Deep Argo floats are presently being developed with the capability of multi-year missions (> 100 cycles) from the sea surface to the ocean bottom. Here we propose to deploy pilot arrays, eventually populating two deep ocean basins. These will be the Southwest Pacific Basin and the Northwest Atlantic, and are selected on the basis of known decadal deep ocean signals. The pilot arrays, together with deep ocean repeat hydrographic surveys will demonstrate the capability of Deep Argo to resolve the spatial and depth distribution of decadal signals in the deep ocean. Elements of the pilot array installation include:

- Evaluation and improvement of float design.
- Integration of Deep Argo data into the Argo Data System, including development of protocols for delayed-mode quality control of Deep Argo data. Deep Argo will adhere to the Argo data policy of public release of near-real time and delayed-mode data.

These elements of Deep Argo will be carried out by the U.S. Argo float consortium (Scripps Institution of Oceanography, Woods Hole Oceanographic Institution, University of Washington, NOAA Pacific Marine Environmental Laboratory, NOAA Atlantic Oceanographic and Meteorological Laboratory) together with management functions provided by the Climate Program Office with specific tasks and responsibilities distributed among the partners similarly to the present U.S. Argo Program. International Argo partners are also contributing to Deep Argo, and the efforts of these partners will increase the number of Deep Argo floats and assist the U.S. effort directly through collaborative float deployment.

## **Statement of Need and Economic Benefits:**

Episodes of devastating coastal inundation over the last decade have emphasized the critical importance of fielding an ocean observing system that can continuously monitor for approaching marine hazards and provide early warnings to the coasts for hazard mitigation. Storm surge, El Niño, tsunamis, as well as gradual sea level rise, all originate in the deep ocean well beyond the coastal zone, where much of our observing capacity currently exists. Gradual sea level rise results from an increase in mass due to melting ice and thermal expansion from ocean heating, which causes an

increase in the amount of sea water. Recent studies suggest that much of the ocean heat driving sea level rise may be stored in the deep ocean, beyond routine observation by current technology. Emerging technology, such as deep Argo floats, will be able to better track this heat exchange.

More broadly, the global ocean observing system must deliver continuous real-time measurements that will allow the modeling community to improve data assimilation and therefore improve the accuracy of climate model projections. It must also be capable of delivering quantitative ocean indicators at a few strategic reference locations that will alert the nation and the world if and when major changes are occurring.

Economists project that investment in observing system technology will be amplified by orders of magnitude in socio-economic advantage to the nation in planning for impacts and responses to climate change generally and sea level rise, in particular. The coupling of climate related sea level change with the high water levels due to extreme events such as hurricanes bring billion-dollar socio-economic impacts and dramatic shifts in our coastal marine ecosystems. Over half of the U.S. population resides in a coastal county, and three quarters of the American economy is generated in coastal states. Sea level rise threatens the stability of our coastal communities, economies, and ecosystems. Improving our understanding of and ability to predict sea level rise will allow for improved planning, informed investments, and the development of targeted risk reduction strategies. Further, US contributions to the global system have been historically more than matched by the contributions of international partners.

The Arctic region is currently undergoing profound atmospheric, terrestrial and oceanic changes related to climate variation and change. In many cases, observed changes far exceed the current model projections. These changes impact human health, infrastructure, fisheries, ecosystems, coastal communities, international maritime activity, and regional to mid-latitude climate shifts. Diminishing sea ice cover contributes to significant changes in weather patterns both within and surrounding the Arctic, modifies ecosystems, opens new shipping channels, and provides access to previously unobtainable natural resources. Additionally, the domestic energy industry has increased interest in the Arctic region as a source for oil and natural gas exploration/extraction and as part of a national energy policy.

**Base Resource Assessment:**

The base resources for this activity are described in the Climate Competitive Research, Sustained Observations and Regional Information base narrative.

**Schedules and Milestones:**

***Ocean Observations***

<b>OUTPUT</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Deliverables</b>						
Ocean Reference Stations deployed (Cum Total #)	11	11	12	12	12	12
Drifting Buoy Array deployed (Total #/year-reseeding the array)	1000	1000	1000	1000	1000	1000
Deep Argo floats deployed (Cum Total #)	0	0	0	8	12	20
Integration of Deep Argo data into the Argo Data Management System	No	Yes	Yes	Yes	Yes	Yes

Tide Gauge Reference Stations w/GPS installed (Cum Total #)	110	110	111	114	117	120
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**Deliverables:**

- One additional Ocean Reference Station
- 50 drifting buoys deployed (maintain at 1000)
- 10 tide gauge stations with 10 upgrades of GPS installed on gauges
- NOAA will contribute annually the international Deep Argo Program, including data transmission, data management, and public distribution of all deep Argo data.

Ocean analysis deliverables to be developed and disseminated include observationally-based and model-based products. Observationally-based products (e.g., global maps of observed ocean heat content, salinity, sea level, currents, etc.) will aid in evaluating and improving ocean and climate models, with a view towards providing improved predictions of climate change (e.g., improved predictions of sea level rise). In addition, model-based products (e.g. ocean state estimated from assimilation of ocean data into ocean models) will be queried to produce targeted products on an “as needed” basis in response to emerging climate priorities. Additionally, the supporting data analysis and delivery infrastructure will be enhanced to facilitate extracting the maximum information from observational data.

**Performance Goals and Measurement Data:**

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Target</b>
Reduce the error in global measurement of sea surface temperature (°C). Measure 16c.	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	0.51	0.50	0.51	0.50	0.50	0.50	0.50
<b>Without Increase</b>	0.51	0.50	0.51	0.51	0.55	0.55	0.55
<b>Description:</b> This measure is intended to document progress in accurately measuring the global sea surface temperature (SST) using in situ drifting buoys to verify that satellite SST data are accurate and representative. This reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean via the transfer of heat either to or from the atmosphere. Since sea surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature will improve our ability to detect changes in the climate system. Success in this performance measure requires the maintenance and increase of in situ ocean sensors. The goal is to reach an indicator value of 0.3 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Climate Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Program Manager	Silver Spring, MD	ZP-IV	1	89,033	89,033
					0
					0
<b>Total</b>			<u>1</u>		<u>89,033</u>
less Lapse		25%	<u>0</u>		<u>22,258</u>
Total full-time permanent (FTE)			1		66,775
2013 Pay Adjustment (0.5%)					334
TOTAL					67,109
<b>Personnel Data</b>			<u>Number</u>		
Full-Time Equivalent Employment					
Full-time permanent			1		
Other than full-time permanent			<u>0</u>		
Total			1		
Authorized Positions:					
Full-time permanent			1		
Other than full-time permanent			<u>0</u>		
Total			1		

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$67
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	67
12 Civilian personnel benefits	20
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	878
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	2,336
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,300
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	4,601

**Climate Competitive Research, Sustained Observations and Regional Information: Regional Integrated Sciences and Assessments (RISA) (Base Funding: \$6,512,000 and 2 FTE; Program Change: +\$3,100,000 and +1 FTE):** NOAA requests an increase of \$3,100,000 and 1 FTE for a total of \$9,612,000 and 3 FTE to expand capability for regional research and information services.

**Proposed Actions:**

With the funds requested, OAR will increase its support of external research teams who work with resource managers and planners to develop and utilize new information about the impacts of climate on communities, natural and managed resources, infrastructure, transportation, and health. A new region would be competitively awarded funding under this augmentation. Furthermore, funds will be used to augment and ensure explicit collaborative partnering with NOAA's regional information system components (e.g. NIDIS, NESDIS Regional Climate Service Directors, NOS Coastal Services Centers, NWS Regional offices, NMFS regional offices) as well as other federal, state and private providers. RISAs will develop a new suite of applied research products specifically to inform regional networks of information providers, assess the extent to which the regional network is providing "actionable science" able to be taken up into practical decision making, and provide research-based decision support for adaptation (e.g. understanding economic costs benefits).

**Statement of Need and Economic Benefits:**

RISA scientists provide information that decision makers can use to cope with drought, understand climatic influences on wildfire, and assess climate impacts on the transportation sector, coastal communities and human health. Stakeholders can use such information to evaluate potential climate change impacts on water supplies and hydroelectric power and support disaster management planning. RISAs are helping farmers, ranchers, and fishermen use climate information to produce the nation's foods and fibers, and Pacific Islanders to figure out how to weave climate information into their quest for sustainability.

With each passing year, the impacts of climate variability and change on water availability, wildfire regimes, public health, agriculture, energy issues, and coastal communities become more acute. At the same time, climate sciences are making great strides in producing knowledge that could aid decision makers dealing with these issues.

As climate prediction skill improves, much of the nation stands to benefit from regional RISA activities. The RISA goal is to conduct the kinds of research and product development needed to help society make decisions in the face of climate variability and change, using experts from NOAA and other partner institutions.

**Base Resource Assessment:**

The base resources for this activity are described in the Climate Competitive Research, Sustained Observations and Regional Information base narrative.

**Schedules and Milestones:**

- FY 2013: RFP for new proposals to develop the research products that will contribute to and deepen partnerships with regional information providers
- FY 2013: RFP for a new RISA in partnership with USDA in an area of major agricultural productivity and climate sensitivity
- FY 2014: Launch new RISA
- FY 2014/FY 2015: Initiate 1-2 new research partnerships between RISA and NOAA information providers

- FY 2016/FY 3017: Initiate 1-2 new research partnerships between RISA and NOAA information providers

**Deliverables:**

- In four or five new states located in the Midwest and Great Plains, expand applied research support of local, state, and regional decision makers (i.e. state and city governments, coastal managers, farmers, private and public water utilities and more) with two new, five-year cooperative agreement centers who focus on:
  - Development of new and/or enhance existing climate science for use in risk management (records of past climate and projections of seasonal, interannual, and decadal climate variability)
  - New approaches for analyzing and assessing environmental change, risk, impacts, and for developing response options (per the U.S. Global Change Research Act)
  - Socio-economic research on human impacts from climate variability and change
  - Scenarios of environmental change integrating climate, land use, water, sea level and vegetation
  - Tools (including trainings, guidebooks, websites, etc) to support ongoing decision-making to manage and respond to climate risks
  - Expansion of drought early warning systems in priority areas of the National Integrated Drought Information System
- In partnership with the US Department of Agriculture and the Department of the Interior, develop or enhance research priorities for regional climate science and services.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	27	28	29	29	30
<b>Without Increase</b>	N/A	27	27	27	27	27	27
<p><b>Description:</b> Number of peer-reviewed publications and reports published and released in one fiscal year. The publications/reports are developed through interaction with and/or communication to stakeholders. Publications and reports are collected from investigators conducting climate impacts and adaptation research in cooperation with stakeholders. The goal of this research is to better understand and enhance the use of NOAA products and information to meet user requirements for natural resource management information in various sectors (e.g. drought and water resources, fire risk, ecosystem and coastal impacts, sea-level rise, human health, agriculture, etc.). Actuals are not available for FY 2011 due to the baselining of this new performance measure in that year.</p>							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of states or territories using new or tailored climate services (tools, information, technical assistance, or products) as a result of regional, state and local interaction with decision makers (Each Year)	<b>Actual</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
		<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	5	8	9	11	12
<b>Without Increase</b>	N/A	4	5	7	8	9	10
<p><b>Description:</b> The number of products and services, provided or existing products and services that are modified/expanded for new user groups or regions. 'Products and services' includes technical assistance, training, and guidance documents to enable planning and decision making. Actuals are not available for FY 2011 due to the baselining of this new performance measure in that year. [This measure is partially based on the current GPRA: Number of regionally and sectorally focused climate impacts and adaptation studies communicated to decision makers.]</p>							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Climate Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Physical Scientist	Silver Spring, MD	ZP-IV	<u>1</u>	89,033	<u>89,033</u>
<b>Total</b>			<u>1</u>		<u>89,033</u>
less Lapse		25%	<u>0</u>		<u>22,258</u>
Total full-time permanent (FTE)			1		66,775
2013 Pay Adjustment (0.5%)					334
TOTAL					67,109

**Personnel Data**

Full-Time Equivalent Employment  
 Full-time permanent  
 Other than full-time permanent  
 Total

Number
1
<u>0</u>
1

Authorized Positions:

Full-time permanent  
 Other than full-time permanent  
 Total

1
<u>0</u>
1

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$67
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>67</u>
12 Civilian personnel benefits	20
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	413
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,600
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>3,100</u>

### **Climate Competitive Research, Sustained Observations and Regional Information**

#### **Applications: Assessment Services (Base Funding: \$5,081,000 and 0 FTE; Program Change**

**+\$2,619,000 and 0 FTE)**: NOAA requests an increase of \$2,619,000 and 0 FTE for a total of \$7,700,000 and 0 FTE to support a permanent capability to produce climate assessments at national and regional scales. In particular, this increase will support ongoing regional and sectoral assessment activities, the development of regional model and scenarios resources from new Global Climate Model output, and support for the Global Change Information System to increase access and usability of the National Climate Assessment.

#### **Proposed Actions:**

As part of a sustained assessment process, NOAA requests funding for ongoing regional and sectoral activities leading to the development of relevant and authoritative regional assessments targeted to regional stakeholders. Funding will also support coastal and nascent ocean 'sectoral' assessment activities that will build on the initial work done in FY 2011 and FY 2012 analysis with new observed and modeled data.

NOAA, in conjunction with its partners, will also develop regional, national and sectoral-focused model and scenario output. In particular the availability of new model results through the international Coupled Model Intercomparison Project Phase 5 (CMIP5) program will need to be evaluated and manipulated for regional assessments and decision support. A key aspect of this effort will be to assess model validity in regions and at the coastal margin and ocean regions of interest to the United States economy. This output will constitute core data in the development of the regional assessments discussed above, and NOAA's regional partners will be heavily engaged in the production of appropriate climatologies and scenarios as well as regional data and information access associated with the regional assessments.

In addition, to support access to the National Climate Assessment and its data and source information, NOAA will lead and further contribute to the interagency Global Change Information System (GCIS). Initial investment has been made in FY 2011 and FY 2012, and in FY 2013 this investment will support the development of a robust data access infrastructure for assessment datasets, prototyping the NCA's commitment to transparency and traceability for assessment data and conclusions. In addition a user-focused interface, linking foundational assessment information with other tools and applications across the Government is planned.

#### **Statement of Need and Economic Benefits:**

The Global Change Research Act of 1990 (GCRA) calls for the President (through a Federal interagency body) to prepare and submit to the Congress, on a periodic basis (not less frequently than every 4 years), an assessment which: 1) integrates, evaluates, and interprets the findings of the Federal interagency research effort and discusses the scientific uncertainties associated with such findings; 2) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and 3) analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years. The last two of these assessments have been completed under existing NOAA scientific leadership. NOAA is taking the lead role through the U.S. Global Change Research Program in the next National Assessment, which is due in 2013. More information about the National Climate Assessment, including a list of participating Federal agencies, can be found at: <http://www.globalchange.gov/what-we-do/assessment>.

Regional and national assessments will meet an increasing range of demands for climate change decision support across the Nation. Building on the past two decades of experience,

and pairing existing expertise with emerging capacity, NOAA will support a collaborative, participatory assessment process that engages scientists, government officials, businesses, and communities in the investigation of climate impacts and effective mitigation and adaptation.

Cumulatively, the assessments will contribute to ongoing efforts to understand what climate change means for the United States and what services are necessary to allow for informed decision-making. This information will provide an objective basis for adaptation and mitigation strategies at a variety of temporal and spatial scales. These assessments will also contribute to the legislatively mandated National Climate Assessment and future international assessments, including those of the Intergovernmental Panel on Climate Change.

Climate assessments will involve both operational and research elements of NOAA, and will build upon many existing NOAA resources and functions including research in the physical, biological, and social sciences, observing, data management, modeling and forecasting, education and outreach. NOAA will also enhance its capabilities and tailor its products through partnerships with other Federal agencies, and the academic, public and private sectors.

#### **Base Resource Assessment:**

The base resources for this activity are described in the Climate Competitive Research, Sustained Observations and Regional Information base narrative.

#### **Schedule & Milestones:**

- FY 2012 - 2013: Produce regional scale projections for key climate variables from existing projections. Begin to develop regional analysis of new CMIP5 projections.
- FY 2012 - 2013: First reviewable draft of approximately 2 additional regional assessments for a total of 8 and one sectoral assessment
- FY 2013: Completion of 2 additional regional chapters, for a total of 8 and one sectoral chapter. (First reviewable draft of the National Climate Assessment.) Prototype version of the Global Change Information System.
- FY 2013 - 2014: Public deployment of the prototype Global Change Information System. (Completion and delivery of a National Climate Assessment synthesis report.)
- FY 2014: Updates of regional projections from new model results.
- FY 2014 - 2015: Draft updates of 2 additional regional assessments for a total of 8, and improve and update Global Change Information System.
- FY 2015 - 2016: Complete updates of existing regional and sectoral assessments.
- FY 2016: Reviewable draft of the National Climate Assessment, update of assessment content online.
- FY 2017: Completion and publication of National Climate Assessment synthesis.

#### **Deliverables:**

- FY 2012/FY 2013: Produce regional scale projections of key climate variables for the United States.
- FY 2012/FY 2013: First reviewable draft of two additional regional assessments for a total of 8 and one sectoral assessment.
- FY 2013: Completion of two additional regional assessments for a total of 8 and one sectoral assessment; first reviewable draft of the National Climate Assessment; draft of prototype Global Change Information System
- FY 2014: Public deployment of the prototype Global Change Information System. Completion and delivery of the National Climate Assessment synthesis report

- FY 2015: First reviewable draft of regional assessments (with updated projections)
- FY 2016: Completed regional assessments; first reviewable draft of National Climate Assessment synthesis report
- FY 2017: Completion and delivery of the National Climate Assessment synthesis report

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of climate-change related impact, vulnerability, adaptation, or mitigation information topics addressed in the Assessments	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	14	14	14	14	14
<b>Without Increase</b>	17	8	8	8	8	8	8
<p><b>Description:</b> This performance measure will demonstrate the role of formal climate change assessments in decisions to address climate change impacts by identifying the number of topics addressed in the assessments that are considered by business, government, or the public that affected decisions related to improved climate resilience. Information topics are based on the U.S. GCRP report, "Global Climate Change Impacts in the U.S." This measure will track the extent to which the USGCRP topical information items are used by industry, etc., to inform their key decisions on how to mitigate or adapt to climate change. The FY 2011 actuals were, in part, a result of more rapid progress than anticipated on initial products and significant, unexpected collaboration.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	500
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	2,119
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	2,619

**Climate Competitive Research, Sustained Observations and Regional Information: National Integrated Drought Information System's Regional Drought Early Warning Information Systems (Base Funding: \$8,363,000\* and 1 FTE; Program Change: +\$1,500,000 and 0 FTE):**

NOAA requests an increase of \$1,500,000 and 0 FTE for a total of \$9,863,000 and 1 FTE to develop Regional Drought Early Warning Information Systems (RDEWS) by providing focused drought impacts research and applications development to underserved regions of the country. Extending products, tools and knowledge to areas outside of the NIDIS Pilots is the final stage of implementing a national early warning information system for drought.

[\*NOTE: The NIDIS program also includes an additional \$3,753,000 of base funding from the Climate Data and Information program, for a total request of \$13,616,000 in FY 2013]

**Proposed Actions:**

NOAA requests an increase for additional competitive research grants and contracts to develop and expand the Regional Drought Early Warning Information System (RDEWS) to the Pacific Northwest; as identified by NOAA partners including through a Memorandum of Understanding with the Western Governors; and in the Mid-west agricultural belt. Additional resources will be applied to the Carolinas, especially in collaboration with the Coastal Services Center on early warning of low flow conditions from major streams, such as the Catawba and Yadkin Pee-Dee, into the near-shore environment that affects water supply in large population centers, as well as increasing salinity intrusion into near-shore coastal ecosystems with important economic value to those states.. With the new resources NOAA will develop ongoing drought information outlook products (information sheets on drought conditions that improve on the national drought monitor by emphasizing local conditions, impacts assessments, and inputs into federal, state and tribal plans).

Currently, the Upper Colorado early warning's system is operational with ongoing impacts assessment feeding to weekly webinars. The Southeast pilot in the Apalachicola-Chattahoochee-Flint is near completion, and the California pilots are underway in four locations (including southern California) selected by NOAA partners (Federal and state) in the state. In addition, drought information outlooks involving NOAA, federal and state and private sector partners, led by NIDIS, have been created in response to the ongoing severe drought in Texas, Oklahoma, and New Mexico. Planning and design workshops are also being developed for the Chesapeake Bay.

**Statement of Need and Economic Benefits:**

Economic, environmental, and societal drought impacts are severe. The 1988 drought cost the United States \$40 billion in that year alone (in 1988 dollars) (The Geological Society of America, (2006) Managing Drought and Water Scarcity in Vulnerable Environments: Creating a Roadmap for Change in the United States.)” Factors that will continue to increase this cost include: population growth and shifts into areas at risk from severe drought impacts (especially in the west, mid-west, and southeast); land use changes; increased water resource demands from sectors such as agriculture, energy, recreation, and ecosystems; increasing aridity in specific regions; etc. Implementing a national DEWS addresses the requirements of the 2006 NIDIS Act, the 2007 NIDIS Implementation Plan: (“Foster and support a research environment focusing on risk assessment, forecasting, and management... [and] Provide a framework for public awareness and education about droughts”), and the 2004 Western Governors’ report on Creating a Drought Early Warning System for the 21st Century. Implementing the DEWS is particularly critical now because of the recent severe drought in California and the continued drought in SW U.S. and other regions. This research supports: planning activities in anticipation of impacts of El Niño Southern Oscillation; early warning system design, development of decision support tools; and evaluation to meet demands from constituents (e.g., watershed managers, partner states, and agencies).

NIDIS will create a network of partners to assess and adopt innovations in drought warning and planning including, RISAs, Regional Climate Centers, State Climatologists, USDA Extension Offices, and others. It will increase the Nation's capacity to use climate forecasts and data in decision making in key regions and within prime socioeconomic sectors. This funding will provide new tools, models and methodologies to enhance decision makers' ability to plan for climate variability and change. The results from these studies will be key inputs into early warning systems that will serve NIDIS partners in Federal, state, tribal and private sectors.

**Base Resource Assessment:**

The base resources for NIDIS are described in both the Climate Data and Information and the Climate Competitive Research, Sustained Ocean Observations and Regional Information base narratives.

**Schedule and Milestones:**

Research must be conducted before outputs can be quantified, which creates a lag between research and product delivery.

- FY 2013 – FY 2015: Award grants and or contracts for regional and sectoral drought impacts research and transition projects that have been identified as critical by NOAA's regional partners (e.g., socio-economic, agriculture, urban, and water resource management).
- FY 2013: Produce and deliver drought impacts research and products to regionally-specific information products on the U.S. Drought Portal. Use products to develop regionally specific drought monitors and early warning system indicators and triggers in three areas above. Identify research gaps and further user communication and awareness of drought information and its integration into drought planning processes in support of NIDIS.
- FY 2013: Identify drought decision support tools (e.g., to assess impacts) and drought research including forecasts that contribute towards preparedness and coordination methods developed and tested in pilots and other regions. Transition drought decision support tools to the U.S. Drought Portal and to these new regions. Integrate modeling, forecasting and GIS-based products from the Climate Prediction Center and the Climate Test-beds into NOAA River Forecast Centers and promote governmental drought training and scenario development.
- FY 2013-2014: Evaluate value of drought impacts research undertaken and revisit priorities in light of progress made on NIDIS implementation. Continue transition of drought decision support tools and methodologies to the U.S. Drought Portal. Test application of tools in new areas. Assimilate drought impacts data and information into a database for use with different types of drought conditions across climate timescales into drought and water management plans. This database will assist users to identify high risk and potential hotspots at the watershed scale within sectors (e.g., agriculture, energy, ecosystem and water management).
- FY 2014 – FY 2015: Award new grants and or contracts to address research gaps and user needs identified in FY 2013. Continue transition of drought decision support tools, methodologies and related research and products to the Drought Portal and to new regions.

**Deliverables:**

Drought products (assessments, forecasts, tools, and scenarios) incorporated into stakeholder drought planning and decision-making would be developed in new geographic regions (the Pacific Northwest, the Upper mid-West and the Carolinas). These would be conducted in direct coordination with existing NIDIS pilots and be incorporated into the drought portals (as subset of the U.S. Drought Portal) at region-specific scales.

Activities that could result from additional funding include: dynamic drought indices; fire outlooks; paleo-climate web-tools for water managers; guidance tools for planning and management of urban drainage systems such as the Carolinas coasts; closer engagement and reduced vulnerability of the tribes in the Great Plains; development of a decision support system specifically designed to help forage producers; forecasts and GIS products from the CPC and the Climate Test-beds used by NOAA River Forecast Centers, U.S. Geological Survey (USGS), U.S. Army Corps of Engineers, and Bureau of Reclamation; and full integration of regional NIDIS Early Warning Systems into RISAs, Regional Climate Centers, and NWS field and State Climatologist offices as focal points for NIDIS in new geographic regions to produce a fully sustainable national drought early warning system.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Number of states, and territories working with NIDIS to incorporate drought early warning information into their drought adaptation and mitigation plans. (Cumulative)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	4	6	8	12	17	24
<b>Without Increase</b>	N/A	4	5	7	10	15	22
<p><b>Description:</b> The performance measure is based on the number of states and territories that partner with NIDIS to incorporate drought early warning information into their drought planning activities. Activities that count toward this measure include: local or regional drought planning/management groups; use of tailored information from the U.S. Drought Portal to establish drought indicators and set management triggers in state, watershed, and territory drought adaptation and mitigation plans; incorporation of information from basin specific drought monitors developed through the drought early warning information systems into either state and territory drought adaptation and mitigation plans or as part of state and territory drought planning/management groups.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Climate Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	250
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	25
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	1,225
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>1,500</u>

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**  
**SUBACTIVITY: WEATHER AND AIR CHEMISTRY RESEARCH**

NOAA proposes a change in the title of the subactivity from "Weather and Air Quality Research" to "Weather and Air Chemistry Research." This change reflects NOAA's focus on the research and monitoring of chemical processes in the atmosphere that impact the NOAA mission, including atmospheric composition, natural and human-caused emissions of gaseous and particle (aerosol) pollutants and their precursors, and deposition of nutrients and acidic compounds on coastal and other ecosystems.

The objectives of the Weather and Air Chemistry Research subactivity are to:

- Support R&D that provides the Nation with more accurate and timely warnings and forecasts of high impact weather events and their broader impact on issues of societal concern such as weather and air quality; and
- Support research that provides the scientific basis for informed management decisions about weather, water, and air quality.

Researchers at the labs and CIs have been key players in the modernization of the NWS through research to better understand severe weather events and through technological advancements in weather modeling and observing. OAR scientists strive to continually improve upon NOAA's capabilities to provide more accurate and timely warnings and forecasts of various high-impact weather, water and air quality events, such as floods, droughts, heat waves, severe storms, tsunamis and deposition of nutrients, heavy metals, and toxic organic substances to the surface of the earth. More information on this sub-activity is available at <http://www.research.noaa.gov/weather/>.

**LABORATORIES AND COOPERATIVE INSTITUTES**

**Hurricane Research**

OAR's Hurricane Research, within the Atlantic Oceanographic and Meteorological Laboratory (AOML), focuses on improving the understanding and prediction of hurricane track and intensity change through directed research with the goal of eventual transfer of these improved capabilities to NOAA's operational hurricane forecast components. AOML's hurricane research supports NOAA's long-term goal of a weather-ready nation by reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities. NOAA research and transition efforts include:

- Coordination of NOAA's annual hurricane field program, the Intensity Forecast Experiment (IFEX), a partnership among AOML, NWS Environmental Prediction and Tropical Prediction Centers, and NESDIS, and supported by the NOAA Aircraft Operation Center's research/reconnaissance aircraft;
- Theoretical and numerical modeling research to improve hurricane forecast guidance, including the preparations of storm surge atlases and wind field diagrams;
- Analysis of data from models and field programs to improve understanding of physical processes that effect hurricane track and intensity changes;
- Providing leadership and critical assistance to the NOAA Hurricane Forecast Improvement Project (HFIP); and
- Active participation in and support of the Joint Hurricane Testbed.

**Severe Storms Research**

OAR's Severe Storm Research seeks to improve the accuracy and timeliness of forecasts and warnings of hazardous weather events such as thunderstorms, tornadoes, flash floods, lightning, and

winter weather. NSSL accomplishes this goal through a balanced research program that conducts research in three general areas, including severe and hazardous weather research, storm-scale hydrometeorology research, and weather radar research development. These programs aim to:

- Advance the understanding of weather processes;
- Improve and develop new forecast and warning techniques and applications and evaluate them for operational use in the Hazardous Weather Testbed (HWT);
- Transfer knowledge, techniques, and applications to NWS and other agencies;
- Develop enhancements for the NEXRAD Doppler weather radar, the cornerstone of the radar network now operated by NWS offices across the United States;
- Develop new radar technologies (e.g., dual-polarization and phased-array radar); and
- Conduct field programs that use mobile, in-situ, and remote observational capabilities to collect data that support theoretical research.

### **Air Chemistry Research**

NOAA proposes a change in the title of this activity from "Air Quality Research" to "Air Chemistry Research." This change will eliminate confusion between the missions of NOAA and the Environmental Protection Agency (EPA). The EPA regulates air quality, whereas NOAA conducts research and monitoring to better understand the chemical processes in the atmosphere that have an impact on the NOAA mission, such as atmospheric composition, natural and human-caused emissions of gaseous and particle (aerosol) pollutants and their precursors, and deposition of nutrients and acidic compounds on coastal and other ecosystems.

OAR's air chemistry activities respond to significant societal needs. Air pollutants are a primary cause or significant contributor to a number of important societal issues. These include health impacts such as illness and/or premature death due to respiratory effects, permanent neurological damage (affecting tens of thousands of newborns annually), and environmental degradation caused by exposure to air pollutants and deposition of nutrients, mercury, and other toxic substances.

### **Air Resources Laboratory**

ARL conducts field studies and long-term measurements and develops numerical models to address a wide range of critical air chemistry and deposition issues. ARL addresses pollutants including mercury, nitrogen oxides, smoke, and volcanic ash, which can have significant impacts on and implications for human and ecosystem health and for industrial and transportation activities. Field activities include development and evaluation of new measurement approaches, short-term field experiments to characterize key chemical and physical processes, and long-term monitoring of selected trends. ARL develops to forecast selected pollutants over the U.S. and to better understand sources and receptors of pollution. As the recent Icelandic volcano eruption demonstrated, accurate volcanic ash predictions have very large economic impacts and are essential to safe operation of aircraft. Accurate information about air chemistry trends and sources of pollution affecting key ecosystems is also required to optimize the resources spent on current and potential future air pollution controls, to inform international regulations, and to help managers assess nutrient loadings to coastal ecosystems.

### **ESRL – Chemical Sciences Division**

The goal of the Chemical Sciences Division's research is to understand and quantify the chemical emissions of gaseous and particle (aerosol) pollutants and their precursors and the processes responsible for their transport and transformation in the atmosphere, with the aim of understanding the impacts on US air quality and ultimately climate. An integrated program of laboratory studies, intensive field experiments, and analyses is used to develop linkages between emissions and air

quality and climate impacts. The information developed provides the scientific underpinning for policy development and management decisions related to air quality.

### **Weather Models and Advanced Technologies**

Next-generation weather model development on global and regional domains is conducted at the ESRL Global Systems Division (GSD). To improve medium-range to interseasonal forecasts, new coupled global model capabilities are developed with atmospheric, ocean, and inline chemistry components using an icosahedral horizontal grid. This global model effort improves forecasts of hurricanes and other tropical phenomena and better characterizes stratospheric-tropospheric interactions. Collaborations in this effort include research organizations and operational services such as the National Weather Service and the Navy. GSD's global modeling capability is also designed to provide an improved research tool for dynamical-chemical-hydrological-ocean-land-surface interactions. For regional domains, GSD leads in the development of very short-range, storm-resolving modeling and advanced data assimilation capabilities for severe weather watches and warnings, heavy precipitation events, water management, renewable energy production, aviation safety, transportation efficiency, and wildfire management. Next-generation ensemble-based assimilation methods at global and regional scales will result in clear improvements in global model forecast skill. GSD also investigates, develops and applies advanced technologies to optimize the high performance computing of models, to provide advanced visualization and decision aids that allow faster and more comprehensive access to critical weather information, to assess the forecast impact of meteorological observations and observing systems, and to educate current and future generations about Earth system science.

GSD is exploring alternative high-performance computing architectures to increase both computing capability and significantly reduce the cost of producing high-resolution models due to the enormous computing resources required for such models. To promote efficiency and effectiveness, high-resolution models are being developed to serve multiple purposes and users, providing significant value to commercial aviation, civilian, and military weather forecasting, energy generation, regional air and global pollution prediction, and emergency preparedness.

### **Tsunami Research**

OAR's Tsunami Research supports the NWS Tsunami Warning Centers by conducting R&D to improve NOAA's tsunami forecasting capabilities. PMEL's Tsunami Program seeks to mitigate tsunami hazards in all the coastal states and territories through improved tsunami warnings using state-of-the-art instrument systems developed by NOAA's Center for Tsunami Research (NCTR). NCTR works closely with partner agencies, such as NWS, who has operational responsibility for the observational network of Deep-ocean Assessment and Reporting of Tsunamis (DART) systems and NESDIS, who conducts extensive data searches to construct the digital elevation models used by NCTR to develop the tsunami forecast models. The Tsunami Research Program is linked to stakeholders in coastal states through the National Tsunami Hazard Mitigation Program (NTHMP), created in 1995 to provide improved tsunami warning services to coastal communities. All states and territories, NOAA, FEMA, and the U.S. Geological Survey (USGS) are members of the NTHMP.

PMEL-developed engineering technology and numerical models have greatly improved the delivery of reliable and accurate tsunami forecasts to citizens in coastal communities. The integration of observational data from these technologies and output from the numerical models in the NOAA Tsunami forecast system has been proven effective in seventeen tsunami events since testing of this system began. During the Honshu, Japan tsunami in March 2011, the system provided very accurate forecasts of wave amplitude as shown by comparison with coastal tide gauge observations available on the PMEL tsunami webpage. R&D efforts to expand the coverage to additional communities, to improve the cost-effectiveness of tsunami-measuring buoys, and to enhance the

utility of tsunami-related products all strive to make the government a more effective service provider and helps to keep communities safe.

### **Unmanned Aircraft Systems**

OAR's Unmanned Aircraft Systems (UAS) program is an initiative that accelerates the research, development, and transition of innovative new observational platforms and forecast tools to advance NOAA's Earth-system product, service, and information enterprise. UAS platforms represent a collaborative effort of several organizations within NOAA, including NOAA laboratories and cooperative institutes, NWS, NOS, and OMAO; as well as partnerships with NASA, DOE, and other agencies. This initiative is linked closely to the needs of multiple federal, state, and local agencies. Specific UAS applications in weather research are hurricane reconnaissance and research to help improve hurricane track and intensity forecasts; and monitoring of Pacific atmospheric river moisture transport and characteristics to help improve West Coast winter precipitation and flood forecasts.

### **Modeling**

As part of its weather research activities, modeling activities centered at Geophysical Fluid Dynamics Laboratory (GFDL) focus on long lead-time research to understand the predictability of weather on both large and small scales and to translate this understanding into improved numerical weather prediction models. These activities improve our understanding of atmospheric circulations ranging in scale from hurricanes to extra-tropical storms and the general circulation, with an emphasis on extreme weather events and the interplay between weather phenomena and climate variability and change, using high resolution atmospheric modeling as the central tool. This effort is augmented by research to improve our understanding of the interactive three-dimensional structure of the climate system from the surface and troposphere to the upper stratosphere and mesosphere on various time and space scales. With an emerging focus on understanding the relationship between the physical climate and the Earth's biogeochemical cycles, GFDL works to understand the interactions and feedback of the earth's biosphere with its climate and assess the impact of natural variability and past, present, and future human activities, including the interplay of sea-level rise, coastal physical processes, and ecological processes and the Earth System's hydrologic cycle accounting for the interactions between the atmosphere and biosphere. This research is a key aspect of developing comprehensive Earth System models that extend current climate predictive capability to land and ocean ecosystems.

### **Physical Sciences**

The Physics Science Division (PSD) provides NOAA with the essential core capability to conduct physical science research across time and space scales with an emphasis on extreme events in the Earth system that lead to floods, droughts, and heat waves. Examples include: (1) the role of the Hydrometeorological Testbed in elucidating the role of Atmospheric Rivers that can create flooding conditions in U.S. coastal areas and deliver water to inland basins; and (2) improving surface parameterizations in hurricane models to better represent the role of surface process such as sea spray in hurricane intensity changes. In the conduct of this research, the program advances NOAA's abilities to observe, understand, and improve the credible prediction of the behavior of the atmosphere, ocean, cryosphere, hydrosphere, land, and related impacts on global-to-local and days-to-decades timescales.

### **Global Monitoring and Research**

The Global Monitoring Division (GMD) conducts long term observations by balloon-borne, cryogenic frost point hygrometers launched from Boulder, Colorado; Hilo, Hawaii; and Lauder, New Zealand to obtain vertical profiles of water vapor in the upper troposphere and lower stratosphere (to ~30 km). Water vapor soundings over Boulder (since 1980) provide a unique long-term data record that may reveal changes in atmospheric dynamics resulting from climate change. Water vapor is a natural and

very important component of the Earth's atmosphere. Its distribution influences many physical and chemical properties of the atmosphere, including weather, clouds, precipitation, lightning generation, convective uplift, and the Antarctic ozone hole.

### **Schedule and Milestones:**

FY 2013

- Complete study assessing methods of providing severe weather forecast uncertainty.
- Perform case studies with Warning on Forecast/High-Resolution Rapid Refresh (WoF-HRRR model) nesting design, including new data assimilation techniques at HRRR and WoF scales.
- Determine which data assimilation methods are most accurate and cost-effective when applied to radar data at convection-resolving scales.
- Complete specification of basic components of a complete WoF system, including data conversion and quality control, ensemble initialization, storm-scale forecast model, data assimilation system, display, and diagnostic software, along with all needed computer communication packages.
- Transition Mobile Atmospheric River Monitoring System /Quantitative Precipitation Estimation (MARMS/QPE) to the National Climatic Data Center (NCDC).
- Further investigate and utilize the Dual Polarization data from the WSR-88D.
- Evaluate and document performances of the operational Dual Polarization WSR-88D radar quantitative precipitation estimation from different seasons and different geographical regions.
- High quality observations from a yearly Intensity Forecast Experiment in partnership with NWS, NESDIS, and AOC to improve hurricane track and intensity forecasts (FY 2013 – FY 2015)
- Develop and test new instrumentation, in particular a scanning microwave radiometer (HIRAD) for surface wind field estimation in partnership with NASA.
- Complete HYSPLIT-Hg model development, testing, and configuration.
- Conduct intensive field study in the southeastern United States to advance understanding of the production of secondary organic aerosol from biogenic hydrocarbon emissions.
- Conduct laboratory evaluation of ozone-depletion and greenhouse-warming potentials of an industry-proposed replacement compound.
- Validate and improve emission inventory for species important for climate and air chemistry using data from CalNex study.
- Develop and conduct two tests of observing system sensitivity analysis in each active storm using ensemble Kalman filter data assimilation system and NOAA's operational Hurricane Weather Research and Forecasting (HWRF) model. Focus will be on developing synthetic airborne Doppler radar and Lidar observations from high-resolution nature runs of hurricanes (FY 2013 – FY 2015)
- Two tests of the advanced nesting capability in each active storm for possible implementation into HWRF to enable simulations at resolutions down to 1 km with a focus on coupling the new nests with the operational ocean and wave models.
- WoF/Hazardous Weather Testbed, and Renewable Energy forecasts.
- Test one WoF component in the Hazardous Weather Testbed.
- Complete a field study of ammonia exchange between the air and agricultural land.
- Maintain current hydrometeorological testbeds in meteorologically distinct regions of the Nation (FY 2013 – FY 2016)
- Continue development of HRRR weather model using advanced data assimilation methods (FY 2013-FY 2017)
- Perform model analysis and evaluate the meteorological models (FY 2013–FY 2017)

- Upgrade GFDL Hurricane Prediction System (FY 2013 – FY 2015)
- Robust stimulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model.

#### FY 2014

- Complete a demonstration within the Hazardous Weather Testbed of a WoF system during the severe weather season with WoF nested inside the HRRR.
- Complete report documenting major findings from VORTEX2.
- Develop a statistically-based algorithm from the WSR-88D historical reanalysis severe weather detections to identify uncertainty parameters and produce a probabilistic warning guidance prototype for severe weather.
- Incorporate Dual Polarization radar data to improve QPE
- Continue evaluation and documentation of the operational Dual Polarization WSR-88D radar QPE from different seasons and different geographical regions (FY 2014 – FY 2017)
- Integrate environmental data and develop advanced multi-sensor Dual Polarization radar QPEs for warm season.
- Perform radar data analysis to improve understanding of convective weather systems through comparisons among various radar systems and partnering with data assimilation experts.
- Continue the analyses of aerosol-cloud interactions using data from the Caribbean and the Amazon.
- Provide to stakeholders a scientific synthesis report of results from southeastern U.S. study.
- Continue analyses of climate-stratospheric chemistry interactions.
- Provide assessment of effects of complex terrain on boundary layer transport and processes.
- Incorporate surface hydrometeor types and their liquid equivalents from dual polarization radar and modify prototype flash flood system to account for different precipitation phases and their interaction with surface conditions (e.g., rain-on-snow events).
- Develop and test new instrumentation, in particular a Doppler wind Lidar (DWL) in partnership with NASA.
- Tests of advanced physics packages in each active storm for possible implementation into a HWRF to enable simulations at resolutions down to 1 km. Focus will be on air-sea fluxes and boundary layer.
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improved sea ice models essential to developing a predictive understanding of Arctic climate change.

#### FY 2015

- Complete a report documenting the readiness of WoF technology and utility of transitioning WoF functionality to operations.
- Assess the use of frequently updated national scale and local ensembles for probabilistic forecasts in the WoF context and determine methods for best communicating uncertainty in warnings to both forecasters and non-NOAA customers with help from social scientists.
- Test and evaluate a Probabilistic Hazard Information grid in the HWT based on the results of the historical reanalysis of WSR-88D and other sensor data.
- Expand HL-RDHM and QPE testbeds to other seasons/regions.
- Conduct intensive field study to advance understanding of climate-air chemistry interconnections - region TBD.
- Provide scientific assessment of the impact of aerosols on cloud systems.

- Conduct laboratory evaluation of ozone-depletion and greenhouse-warming potentials of an industry-proposed replacement compound.
- Perform radar data analysis to improve data quality and usability through signal processing improvements. Signal processing improvements may be used to identify and mitigate Wind-farm clutter and to detect tornado signatures using spectral analysis.
- Evaluate the impact of dual polarization radar data on flash flood forecasts.
- Demonstrate improved QPE accuracy for flash flood events in warm season.
- Collect ground truth data for cool season precipitation events.
- Begin integration of space-borne radar data from Global Precipitation Mission (GPM) with ground-based radar QPE to improve the QPE accuracy in the U.S. mountainous west.
- Tests of advanced physics packages in each active storm for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.
- Testing of HRRR Ensemble model and data assimilation system.
- Testing of an hourly-updated global Rapid Refresh data assimilation and model in preparation for NextGen mid-operational capability.
- Expand number of scientific dataset visualizations for NOAA Science On a Sphere for use by government and museum partners.
- Complete a field study of ammonia exchange between the air and agricultural land in a coastal region.
- Complete HYSPLIT-Hg simulations of the atmospheric fate and transport of mercury from global sources.
- Provide scientific synthesis report from intensive field study.
- Continue analyses of climate-stratospheric chemistry interactions.
- Improved realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle.

#### FY 2016

- Develop the initial data mining applications to identify severe weather signatures in model analyses.
- Demonstrate and test a probabilistic warning system using model assimilation analyses as a prototype for WoF.
- Improve temporal/spatial resolution of MARMS/QPE.
- Continue to maintain and develop research radar systems (NO-XP, KOUN, mobile radars) to support scientific inquiry. Maintenance and development activities include the hardware and software required to collect data, as well as the software needed to perform data analysis and display.
- Utilize storm-scale precipitation forecasts from high-resolution NWP models that assimilate radar data into flash flood forecast systems to increase lead-time.
- Continue evaluation and documentation of the operational Dual Polarization WSR-88D radar QPE from different seasons and different geographical regions.
- Transfer to operations the advanced multi-sensor Dual Polarization radar QPE techniques for warm season.
- Continue integration of space-borne radar data from GPM with ground-based radar QPE.
- Develop advanced multi-sensor Dual Polarization radar QPEs for cool season.
- Coordinate and conduct yearly Intensity Forecast Experiment in partnership with NWS, NESDIS, and AOC to collect high quality observations in support of operations and HFIP need to improve hurricane track and intensity forecasts. Continue development and testing of new instrumentation.

- Continue tests of ensemble Kalman filter data assimilation system for possible implementation in NOAA's operational HWRF. Test impact of assimilation of satellite microwave radiance data using OSSE and OSE approaches.
- Develop and test advanced physics packages for possible implementation into HWRF to enable simulations at resolutions down to 1 km. Focus will be on microphysics and aerosol.
- Complete post-HYSPLIT-Hg source-receptor analysis, GIS analysis, model evaluation ("ground-truthing")
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer (FY 2016 – FY 2017)

#### FY 2017 and Beyond

- Expand the number of stations feeding observations data to the Meteorological Assimilation Data Ingest System to 100,000
- Address fundamental science questions that may limit WoF utility, including effects of model error on thunderstorm evolution, needed accuracy of storm environmental conditions, and errors in conversions from model data to observational data. VORTEX2 data will assist this evaluation (2018).
- Provide NOAA management with information needed to decide whether to make WoF operational, including the total costs of going forward (2018). Conduct real-time tests of WoF system in HWT in collaboration with NWS forecasters and collect data needed to verify WoF predictions. Collaborate with NWS forecasters to evaluate WoF and develop new display capabilities for use in warning operations. Evaluate WoF predictions using rigorous verification measures and use knowledge gained to further improve WoF system (2020).
- Evaluate accuracy and lead-time improvements through the use of inputs from quantitative precipitation forecasts.
- Continue development of advanced multi-sensor Dual Polarization radar QPEs for cool season.
- Demonstrate improved QPE accuracy for flash flood events in cool season.
- Transfer to operations the advanced multi-sensor dual-polarization radar QPE techniques for cool season.
- Complete biennial regional field studies of ammonia exchange between the air and agricultural land.
- Conduct intensive field study to advance understanding of climate-air chemistry interconnections - region TBD.
- Conduct laboratory evaluation of ozone-depletion and greenhouse-warming potentials of an industry-proposed replacement compound.

#### Water Cycle

- Assess and document the ability of gap filling radars to augment legacy observing systems (e.g. NEXRAD) in the west to provide better precipitation and water supply information.
- Conduct field experiments (Hydrometeorology Testbed & CaWater) focused on extreme precipitation events and their role in the water cycle - required for better climate projections and forecasts for flood and water supply.
- Couple ensemble precipitation forcing to hydrological models for two key watersheds.
- Deliver a preliminary report on quality of precipitation and runoff forecasts.
- Document and coordinate model development and operations plan to increase number of communities served by stream and river forecasts for the CERIS region.

## Weather and Climate Physics

- Bring SEARCH Tiksi observatory to 30 percent capacity and maintain Alert BSRN/Aerosol with GMD.
- Make public version 10 of the PSD hurricane flux algorithm.
- Generate data archive of ship and aircraft observations from participation in the NOAA/NSF DYNAMO field program in the Indian Ocean.
- Repackage W-band radar for future installation on NOAA P-3.

## **Deliverables:**

- Report documenting the relative value of different data sources, new data assimilation and modeling techniques appropriate for use in WoF and a design to optimize WoF via nesting inside the HRRR. Report assessing the ways of providing weather forecast uncertainty.
- Report documenting the major components of a WoF system with demonstration in the Hazardous Weather Testbed of some WoF components in the pseudo-operational environment of the HWT.
- Hold a major workshop on future directions in flash flood warnings research.
- Recommendations for improvements to address seasonal biases in particulate matter forecasts.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.
- Observing system sensitivity analysis capability utilizing the ensemble Kalman filter data assimilation system and the improved nesting for HWRF.
- Fully coupled advanced nesting capability for testing and evaluation in the operational HWRF model system.
- Report documenting major findings of the VORTEX2 field phase.
- Report documenting the assessment of flash flood warnings effectiveness and future directions using high-resolution (<1km) and rapid update (<5min) grid of CONUS (Continental United States) mosaic QPE.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.
- Report documenting the impact of improved physics for air-sea fluxes and boundary layer on hurricane track and intensity forecasts using regional HWRF model system.
- Report documenting the impact of assimilating DWL and radar on hurricane track and intensity forecasts using the regional HWRF model system
- Deliver code for the Flow-following finite-volume Icosahedral Model (FIM) to NWS National Centers for Environmental Prediction as a member of a global ensemble model
- Preliminary development of a tornado debris signature algorithm using Dual Polarization radar data.
- High-quality hurricane observations from airborne experiments for use in hurricane regional model data assimilation and evaluation, in particular dropsondes, Doppler radar, in-situ, and stepped frequency microwave radiometer.
- Report documenting the impact of improved physics for microphysics and aerosol on hurricane track and intensity forecasts using the regional HWRF model system.
- Report documenting the impact of assimilation radar reflectivity on hurricane track and intensity forecasts using the regional HWRF model system.

- High Resolution Rapid Refresh (HRRR) model at NWS/National Centers for Environmental Prediction (NCEP) depending on availability of necessary high performance computing resources
- Complete evaluation of WoF predictions using rigorous verification measures and use knowledge gained to further improve the WoF system (2020).

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of labs that have had formal expert peer reviews in the past 5 years & were rated effective in terms of quality, mission relevance, & performance	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%
<b>Description:</b> This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states “The most effective means of evaluating Federally funded research programs is expert review.”							

**Hurricane Research**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Reduction in uncertainty of hurricane processes that drive track and intensity change based on high-quality observations from airborne experiments	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	4%	6%	8%	10%	12%	14%
<b>Description:</b> Data collected about the hurricane environment from hurricane hunter flights during the annual field program is invaluable to increasing knowledge of how hurricanes develop, move, and intensify. As a result of research and publications based on these observations, there will be increased knowledge that will be incorporated by the hurricane modeling community, resulting in increased accuracy in hurricane models. This observation program serves as the foundation for meeting NOAA’s weather ready nation goal of reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative percent reduction in error of track and intensity guidance of the HWRF model system	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	15%	20%	25%	30%	35%	40%
<b>Description:</b> As a result of new and exciting hurricane observing systems, improved nesting capability, and advanced physics packages applicable at 1-km horizontal resolution, hurricane track and intensity forecasts using regional HWRF model system will see a reduction in error. This improved incorporation hurricane data directly addresses NOAA’s weather ready nation goal of reducing forecast uncertainty and unnecessary evacuations that result in economic impacts to communities.							

### Severe Storms Research

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of severe weather events for which Warn-on-Forecast numerical predictions of tornado lead time exceeds 20 minutes	0	1	1	2	3	3	4

**Description:** The Warn-on-Forecast program is working to combine high resolution models with high resolution data (from radars and other observations), advanced data assimilation and quality control techniques, and high-end computing to produce a forecast of a tornado that would effectively extend tornado warning lead times well beyond the current national average of 13-14 minutes. This NWS GPRA goal shows the amount of warning the public is given for tornadoes (national average, in minutes) by NWS. NSSL conducts research that leads to improved warning skill scores (higher probability of detection, increased lead times, and reduced false alarms) through the Hazardous Weather Testbed (HWT) experiments.

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Historical re-analysis of CONUS WSR-88D data	2	6	10	14	18	22	26

**Description:** This performance measure shows the cumulative number of years of the CONUS WSR-88D network that have been processed and analyzed with the MRMS system (WRDD). The re-analysis of WSR-88D data will provide storm statistics (probabilistic guidance) that can be used to better inform the public. The probabilistic guidance available from the re-analysis will also set the baseline performance measure for evaluation of Warn-on-Forecast guidance products.

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Improvement of flash flood warning skill scores of a prototype national flash flood guidance tool	0.34	0.35	0.36	0.38	0.40	0.42	0.46

**Description:** This performance measure shows the improvement of the Critical Success Index (CSI) skill score (higher CSI scores show a combined higher probability of detection and reduced number of false alarms) of the prototype flash flood guidance tool compared to the operational flash flood guidance during a demonstration and evaluation in the Hazardous Weather Testbed. Improved flash flood guidance will result in more precise and timely Flash Flood warnings and benefit the public.

### Air Chemistry Research

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative number of regional assessments of atmospheric mercury source-receptor relationships	0	1	1	1	1	2	2

**Description:** This provides key information for air quality and environmental policy-makers and managers and for negotiators for international agreements—enabling them to effectively target mercury emissions reductions.

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Cumulative number of completed field studies of ammonia exchange between the air and land	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	1	1	2	2	3	3
<p><b>Description:</b> This provides essential information for air quality, agriculture, and environmental policy-makers and managers to inform federal and state decisions regarding coastal water quality and habitat. It also addresses a key uncertainty in air quality models. Each study addresses different regions/land uses (e.g., fertilized farm fields, concentrated animal feeding operation) and contributes to the scientific understanding of ammonia exchange in peer-reviewed journal publications. Publications are a measure of program depth, quality, and credibility.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Cumulative number of updates provided to NWS for the volcanic ash forecast system	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	7	8	9	10	11	12	13
<p><b>Description:</b> This provides improvements to a forecast system used to inform pilots where volcanic ash is located, enabling them to avoid in-flight catastrophes. Examples of improvements include better use of satellite observations to estimate volcano source strength and improved flexibility for configuring simulations for various types of eruptions.</p>							

#### Weather Models and Advanced Technologies

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Cumulative percentage improvement in accuracy (probability of detection of ceiling <1000 ft) of the 3-hour cloud ceiling for aviation forecasts	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0%	2%	3%	4%	5%	6%	7%
<p><b>Description:</b> Better awareness of expected cloud ceiling over the next 3-hour period is critical to airline safety and aircraft take-offs and landings. Cumulative percentage improvements (approx. 1% per year) will be derived from operational implementation of a new short-range, rapidly updated model called the Rapid Refresh at NWS/NCEP and continuous updates.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Cumulative number of major tests and evaluations of numerical weather prediction forecast system component improvements for transitioning to operational numerical weather prediction systems	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	5	10	20	30	40	50	60
<p><b>Description:</b> The multi-agency Developmental Testbed Center conducts major tests and evaluations of improvements to NWP forecast system components provided by the NWP research and operational communities. These tests and evaluations are critical for selecting proposed changes that need to be transitioned to operational centers. For example, DTC evaluations will be critical for selection of the optimal physics package used for the Weather Research and Forecast (WRF) model and the Hurricane WRF in particular.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of formal expert peer-reviewed publications (from FY 2011 baseline) (Tsunami Research)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	10	17	18	19	20	21	22
<b>Description:</b> The number of peer-reviewed publications is widely recognized as being critically important to the advancement of science. It reflects success in conducting research with recognized value and quality and the transfer of scientific information to the public.							

### **Unmanned Aircraft Systems**

<b>Performance Measure:</b>	<b>FY</b>						
Conduct Unmanned Aircraft Systems (UAS) field tests – number of field tests: number of operational transition plans	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2:1	2:1	2:1	2:1	2:1	2:1	2:1
<b>Description:</b> This measure reflects the ratio of the number of field tests conducted to the number that are transitioned to operational applications. Field tests (with NASA, DOE, & other agencies) focus on data collection over vast, remote areas, including the Gulf of Mexico & Atlantic (e.g., hurricane tests), Central Pacific (e.g., endangered species at the Papahānaumokuākea Marine National Monument), and Arctic (e.g., measuring changes in pack ice).							

### **WEATHER & AIR CHEMISTRY RESEARCH PROGRAMS**

Research Programs encourage cooperation with external experts in critical fields of research. NOAA’s external partners include federal, state, and local government entities, universities, and industry. Currently two primary research programs are supported under this line.

#### **Tornado/Severe Storm Research (Multi-Function Phased-Array Radar)**

NOAA is developing new technologies for detecting and forecasting severe and hazardous weather, including thunderstorms, tornadoes, flash floods, lightning, and winter storms, and for disseminating this information to emergency managers, the media, and the general public for appropriate action. Multi-function Phased-Array Radar (MPAR) has the potential to significantly extend lead times for detecting tornadoes and other forms of severe and hazardous weather. Electronically steered beams and faster scan rates can reduce the time it takes to make a complete Doppler radar observation from 4.5 minutes to less than one minute. Coupled with artificial-intelligence-based decision-support systems, tornado lead times could be increased from the current 14 minutes to over 20 minutes. By 2020 more than 350 FAA radars and by 2025 nearly 150 weather radars will need to be either replaced or have their service life extended. If MPAR is successful and implemented as a replacement radar, estimated multi-agency savings could total \$4.8 billion in acquisition costs (\$1.8 billion if replacing all existing radars with similar technology) and life cycle costs over 30 years (\$3.0 billion due to fewer radars) (Federal Research and Development Needs and Priorities for Phased Array Radar FCM-R25-2006).

The MPAR program is jointly funded by NOAA and the FAA, and both agencies are coordinating their budget requests. Polarization is not currently available on phased array radars, but is a requirement for NWS to ensure no degradation of service. FAA contributes funding to joint effort to fulfill its requirement for airport terminal weather and aircraft tracking. It is important that the leading agencies continue a joint risk-reduction R&D program given the potential for savings, complexity of

the mission, the technology involved, agency go/no-go decision points, and the long lead times required for interagency acquisition times. Congress established a joint R&D program for NOAA, DOD, and FAA to investigate the feasibility and benefits of using military phased- array radars for improving severe weather forecast and warning systems.

### **U.S. Weather Research Program (USWRP)**

Through its U.S. Weather Research Program (USWRP), NOAA seeks to improve weather and air chemistry forecast information and products by funding, facilitating, and coordinating cutting-edge research to improve weather and air chemistry predictions to protect lives and property of the American public and inform weather sensitive U.S. industry. USWRP works in close collaboration with NWS scientists and OAR academic partners to transition this research into useful weather and air chemistry applications. The USWRP supports societal impact studies in weather and a set of related program projects to provide outreach, linkage, and coordination among NOAA, other government agencies, and the academic and private sectors, both in the U.S. and abroad. Within NOAA, the Office of Weather and Air Quality (OWAQ) Program manages the overall USWRP effort in support of research for air quality forecasting, societal benefits, and related weather research through projects with such internal and external partners as the National Center for Atmospheric Research (NCAR) and NOAA's cooperative institutes. USWRP project activities include weather testbeds, high-resolution numerical model development, weather research partnership projects, and socio-economic research.

- Testbeds provide an infrastructure where the latest research findings and techniques are continuously tested by scientists and evaluated by operational weather forecasters. Testbed funding provides support for managing the testbed activities as well as research conducted within the testbed. Testbeds serve as an effective means of demonstrating the value of research results to operational forecasters at the NWS by providing an environment in which the computer hardware and software used by forecasters is used in evaluating the utility of research results. These testbeds allow for an accelerated transfer of research results into operations.
- High-resolution numerical models are required to support better weather and flood forecasting. OWAQ supports Federal and university partnerships that are needed to develop techniques to quickly incorporate observations from radar (both operational and experimental), satellite, and other sources into models. USWRP will improve existing computer models and develop techniques to produce detailed, probabilistic forecasts in collaboration with the NWS so the users of this information understand the uncertainty associated with the forecast and can make more informed decisions.
- Partnership Projects ensure that research is specifically focused on the needs of forecasters at the NWS. USWRP funds competitive two-year academic-NOAA research partnership projects. The projects often take place outside of the testbed environment because of geographical limitations of the forecaster and/or the researcher. The requirement of an academic-NOAA forecaster partnership ensures that the project will benefit from the expertise in the academic community as well as the experience of NOAA forecasters, and have a direct pathway into NWS operations.
- Socioeconomic Research is necessary to ensure that USWRP research incorporates societal needs for weather forecasts. This research provides information about the economic value of weather research, as well as understanding how society uses and interprets weather information. Socioeconomic research also provides information about improving the communication of weather information to the public.

## **Schedule and Milestones:**

### **FY 2013**

- Complete FY 2013 weather data collection with the National Weather Radar Testbed phased-array radar (NWRT PAR) to increase the sample size of tornadic and non-tornadic storms in support of PAR research.
- Complete test of components needed to display full-temporal and degraded temporal resolution PAR data in AWIPS-2 using both real time and simulated data.
- Complete fabrication, testing, and connection of 1-dimensional array consisting of dual pol panels or complete simulation of multi-panel array (up for negotiation with FAA).
- Continue the Phased-array Radar Innovative Sensing Experiment (PARISE) in the NOAA Hazardous Weather Testbed. During PARISE, data will be collected on forecaster decision making in a simulated real-time environment to assess the impact of radar sampling time on the warning decision process.

### **FY 2014**

- Complete FY 2014 weather data collection with the National Weather Radar Testbed phased-array radar (NWRT PAR) to increase the sample size of tornadic and non-tornadic storms in support of PAR research.
- Complete fabrication, testing, and connection of 2-dimensional array of dual pol panels or complete simulation of 2-dimensional multi-panel array (up for negotiation with FAA).

### **FY 2015**

- Complete FY 2015 weather data collection with the National Weather Radar Testbed phased-array radar (NWRT PAR) to increase the sample size of tornadic and non-tornadic storms in support of PAR research.
- Complete study indicating the MPAR can support both weather surveillance and aircraft tracking functions (Multi-function) simultaneously.

### **FY 2016**

- Complete FY 2016 weather data collection with the National Weather Radar Testbed phased-array radar (NWRT PAR) to increase the sample size of tornadic and non-tornadic storms in support of PAR research.
- Complete research with social scientist on the Phased-array Radar Innovative Sensing Experiment (PARISE) in the NOAA Hazardous Weather Testbed. Complete submission of findings for publication in refereed journal.
- Complete observational case studies of tornadic storms to investigate the importance of sampling time on understanding storm evolution to be submitted for publication.

### **FY 2017**

- Simulation of full array using computer-based models.

## **Deliverables:**

- Joint Hurricane Testbed will evaluate 5 scientific findings per year through FY 2016 for possible inclusion in the tool kit for operational forecasters to use in the forecasting of hurricanes.
- Hydrometeorology Testbed will conduct one field study per year through FY 2016.
- Improved Numerical Weather Models – Test two or more major capability changes in the numerical weather model physics, data set assimilation, or model resolution reduction per year in one of NOAA’s research or operational centers.
- Test/evaluation of dual-polarization panel characteristics and performance.
- Report summarizing MPAR’s potential service improvements.
- Contract out design and fabrication of dual-polarized PAR sub-array antenna with FAA.
- Test/evaluation of dual-polarization sub-array antenna characteristics and performance.
- Participate in FAA’s Investment Analysis Readiness Decision (IARD)

- Define requirements for joint FAA/NOAA MPAR Prototype.
- Publication of research results demonstrating improved tornado warning decision performance produced in collaboration with NWS forecasters within the NOAA hazardous weather testbed (HWT).
- Studies completed to assess MPAR dual-polarized antenna array configurations for both weather (NOAA weather and FAA airport terminal weather mission) and air surveillance operations (FAA mission)

**Performance Goals and Measurement Data:**

**MPAR**

<b>Performance Measure:</b>	<b>FY</b>						
Number of major milestones completed to support NOAA and FAA decision point.	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	3	7	9	11	14	15
<b>Description:</b> Cumulative number of successfully completed major milestones within Phased Array Radar Risk Reduction Activity such that NOAA and FAA have the information needed to make a Go/No-Go decision on whether to replace existing radar systems with MPAR.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of events demonstrating improved tornado warning decision performance.	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	2	3	3	5	5	7
<b>Description:</b> Cumulative number of events demonstrating improved tornado warning decision performance (e.g. longer lead-times, fewer missed events, fewer false alarms, etc.) using the NWRTP Phased Array Radar data compared to the WSR-88D-like data in matched studies within the Hazardous Weather Testbed.							

**USWRP**

<b>Performance Measure:</b>	<b>FY</b>						
Joint Hurricane Testbed (JHT) Evaluations	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	10	10	4	4	4	4	4
<b>Description:</b> Evaluation of new scientific findings or development of forecaster tools for potential use in operations that will lead to improved tropical cyclone analysis and prediction. Annually, university and federal scientists receive competitive funding to conduct research that will improve tropical cyclone forecasts. In collaboration with NOAA scientists, the knowledge and tools obtained from these studies are tested and transitioned into NOAA forecast operations.							

<b>Performance Measure:</b>	<b>FY</b>						
Hydro – meteorology Testbed (HMT) Field Studies	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	1	1	1	1	1	1
<b>Description:</b> Conduct a field study with experimental data collections, scientific evaluation, and consult with operational forecasters on how to improve flood forecasting.							

<b>Performance Measure:</b>	<b>FY</b>						
Improved Numerical Weather Model Changes or Tests	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	2	1	1	1	1	1
<b>Description:</b> Make changes to the physical parameterization of experimental forecast models and address the uncertainties in numerical weather predictions. This contributes to the improvement of the 1-5 day weather forecasts for the U.S.							

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## PROGRAM CHANGES FOR FY 2013:

**Weather & Air Chemistry Research Labs & Cooperative Institutes: Wind Boundary Layer Research to Support Improved Forecasts (Base Funding: \$0 and 0 FTE; Program Change: +\$855,000 and 0 FTE):** NOAA requests an increase of \$855,000 and 0 FTE for a total of \$855,000 and 0 FTE for wind boundary layer research to advance weather forecast quality and accuracy and to provide essential information to the clean energy industry.

### Proposed Actions:

NOAA proposes to improve the Nation's understanding of the atmospheric phenomena driving and determining boundary layer winds. Much of what we know now about wind is very low to the ground and at altitudes where aircraft fly and storms occur. Very little is known about the wind at mid-altitudes, the heights in which we deploy wind turbines. A better understanding of those mid-level altitudes will allow us to advance weather forecast quality and accuracy and allow for more accurate predictions of wind power production. To achieve this end, the following two actions are proposed:

1. Deploy wind test beds. To improve short-term operational predictions, NOAA will deploy wind test beds in different regions of the Nation. Regional testbeds are needed because different factors that influence weather, including wind speeds and wind direction, can vary by region. Testbeds will be deployed in two of the following regions, to be determined based on priority and lease availability: the Pacific Northwest, offshore along the Atlantic Coast, the Appalachian region, the inter-mountain west, and California. These test beds will help determine the optimal mix of instrumentation needed for wind resource characterization and forecast improvement. NOAA will perform scientific analyses and develop Numerical Weather Prediction (NWP) models using the data collected at the test beds.

These test beds will be comprised of standard instruments for obtaining wind measurements, such as wind profiling radars and sodars (sound detection and ranging to measure wind profiles). In addition, a pulsed Doppler-lidar (light detection and ranging technology) system will be purchased and adapted for remote operation and read-out. The lidar data will be especially valuable in the post-project analysis of times when the forecasts were wrong, for model initialization during research model runs to diagnose and improve model performance, and for verification of model output.

2. Improve the HRRR weather model. Additional operational observations will be obtained and assimilated into the High-Resolution Rapid Refresh (HRRR) weather model. NOAA will leverage high performance computing investments that the agency has already made to facilitate improved NWP forecasts. The additional observations collected at the test beds will be used to initialize the HRRR model and equip it with more accurate initial values of weather parameters so that it can produce a more accurate forecast of wind speeds and direction. Even a small improvement in wind *speed and direction* forecast accuracy will result in a very large improvement in the accuracy of our wind *power* prediction because an increase in wind speed increases the amount of wind power produced that is equal to the cube of the wind speed.

Funding in FY 2013 will go toward leases; deploying, maintaining and operating the instruments; modeling, data analysis and forecast verification; and high performance computing. Specifically, \$300,000 will be used for purchasing instrumentation, and the remaining \$550,000 will be used to get site leases and to deploy, maintain and operate the first test bed.

NOAA will provide key information to assess the operational observations needed for wind resource characterization and forecast improvement. Recognizing that advances are being made in observing system simulation experiments (OSSEs), NOAA will review the state of the art in OSSEs and will assess the viability of using OSSEs to inform our assessment of an adequate observing system.

**Statement of Need and Economic Benefits:**

Improved weather predictions will allow the Nation to obtain larger amounts of energy from renewable resources, use current energy sources more efficiently (i.e., fossil fuels and nuclear energy), reduce the cost of renewable energy, and improve grid stability. There are two main reasons that more accurate forecasts of winds will save money. First, improved wind predictions will reduce the “wind-integration cost” levied on wind energy that is based primarily on the fact that wind is a variable energy source (not dispatchable) and there are inaccuracies in predictions of wind energy across given time periods. Improved forecasts of winds and the resulting increases in accuracy of predicting wind energy production will lower wind-integration charges. Second, improved forecasts of winds will allow grid operators to use smaller amounts of fossil fuel reserves. Once grid operators have more confidence that wind farm operators can deliver the amount of wind energy they schedule (promise) to provide in the next few hours and in the next 24 hours, operators will not have to keep as many spinning and operational reserves on-line and ready to compensate for errors in wind energy forecasts. These improvements in observations and predictions are necessary before renewable energy can provide a significant portion of the total U.S. energy supply. Providing weather observations and predictions is a core NOAA mission, and OAR is well positioned to perform this research to develop improved operational forecasts that will benefit the renewable energy industry.

Additionally, this initiative will contribute to improvements in other weather applications, such as aviation forecasts, as well as fire weather, air quality, severe weather, and dispersion predictions for the release of hazardous materials into the atmosphere.

**Base Resource Assessment:**

Currently no base resources are dedicated to this effort.

**Schedule and Milestones:**

- Purchase a pulsed Doppler-lidar (light detection and ranging technology) system and adapt for remote operation and read-out (FY 2013).
- Deploy and operate test bed in meteorologically distinct regions of the nation (FY 2014 and FY 2016).
- Improve HRRR weather models (FY 2014-FY 2017).
- Perform model analysis and evaluate the meteorological models (FY 2014-FY 2017). This work continues in FY 2015 and FY 2017 without additional test beds in those years.
- Ingest and assimilate additional observations, e.g., from wind farms, to improve weather forecast model output (FY 2013-FY 2017).

**Deliverables:**

- Improved research-grade weather forecast capability designed for transition to operations.
- An assessment of the optimal mix of instrumentation needed for wind resource characterization and forecast improvement, for consideration in developing a national network for wind energy.

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY</b>						
Number of Wind Test Beds Established (yearly)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	0	1	0	1	0
<b>Without Increase</b>	N/A	N/A	0	0	0	0	0

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative improvement in accuracy of forecasted wind speed and direction and accuracy of forecasted timing, amplitude, and duration of wind-ramp events (in test bed regions)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	0%	2%	3%	4%	5%
<b>Without Increase</b>	N/A	N/A	0	0	0	0	0

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic & Atmospheric Research  
Subactivity: Weather and Air Chemistry Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	5
22 Transportation of things	5
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	6
23.3 Communications, utilities and miscellaneous charges	4
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	5
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	275
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	300
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	255
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	855

**Weather and Air Chemistry Research Laboratories and Cooperative Institutes (Base Funding: 201 FTE and \$54,285,000; Program Change: 0 FTE, \$171,000):** NOAA requests an increase of \$171,000 and 0 FTE for a total of \$54,456,000 and 201 FTE to continue research activities within its Weather and Air Chemistry Research Laboratories Cooperative Institutes program.

**Proposed Actions:**

NOAA has a long history of key discoveries and development of better models and more accurate predictions and observing systems, most of which ultimately make critical contributions to the operations of the National Weather Service and private forecast groups. It is no exaggeration to say that, in large part, our Nation's improvement in weather forecasts and warnings over the past several decades has its origin within the NOAA weather and air chemistry labs and their extramural partners.

These labs continually focus their resources on the most productive avenues of research, and will use this increase for weather and air chemistry activities, including improving hurricane track and intensity forecasts, monitoring and modeling the transport of airborne pollutants, creating advances in global positioning system meteorology data, improving the NEXRAD radar, researching storm-electrification and hydrometeorology, implementing NOAA's "Warn-on-Forecast" program, and using unmanned aerial systems for weather data collection.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Weather and Air Chemistry Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	\$171
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	171

The following exhibit shows the summary object class detail for the Weather and Air Chemistry program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Weather and Air Chemistry Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	45
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	45

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**  
**SUBACTIVITY: OCEAN, COASTAL, AND GREAT LAKES RESEARCH**

The objectives of the Ocean, Coastal, and Great Lakes Research subactivity are to:

- Improve the protection, restoration, and management of coastal and ocean resources;
- Monitor ocean, coastal, and Great Lakes ecosystems, including coral;
- Support ecosystem modeling and forecasting;
- Encourage technology transfer and efficient resource management; and
- Increase the pace of discovery in unknown and poorly known areas of the world's oceans.

To achieve these objectives, OAR conducts research and monitoring activities that support ecosystem management. This includes research to analyze ecosystem management decisions; integrated observing and data management systems; outreach and education to improve public understanding and use of coastal and marine resources; partnerships for place-based ecosystem approaches to management; and international diplomacy, negotiation, and partnerships. More information on research in this sub-activity is available at <http://www.research.noaa.gov/oceans/>.

Ocean, Coastal and Great Lakes Research develop innovative management tools through a better understanding of our ocean, coastal, and Great Lakes habitats and resources. The research serves to increase understanding of coastal and marine processes for the purpose of protecting and restoring ecosystems. Efforts include predicting, monitoring, and mitigating the effects of change on ecosystems over time (e.g., invasive species, human activities such as energy production, land-based sources of pollution, climate change) and gaining a better understanding of the current state of those systems in order to help decision makers manage the resources.

**LABORATORIES AND COOPERATIVE INSTITUTES**

**Great Lakes Research** consists of integrated, interdisciplinary environmental research in support of resource management and environmental services in coastal and estuarine waters with a primary emphasis on the Great Lakes. The Great Lakes Environmental Research Laboratory (GLERL) performs field, analytical, and laboratory investigations to improve understanding and prediction of biological and physical processes in estuaries and coastal areas and their interdependencies with the atmosphere and sediments, such as water level changes, erosion, etc. GLERL emphasizes a systematic approach to problem-oriented research to develop environmental service tools. Included in the research conducted at GLERL is Long-Term Ecological Research (GLERL-LTER), which integrates a core set of long-term observations on biological, chemical, and physical variables with process-based studies that will be used as the foundation for developing new concepts and modeling tools to explore impacts of environmental stressors (e.g., invasive species, climate change, nutrient loading, overfishing) on the Great Lakes ecosystem. The program is built around: (1) long-term observations of ecosystems and their dynamics; and (2) focused process studies that allow understanding of the impacts of stressors such as climate and invasive species on ecosystem structure and function. The observations and process studies are being used for the development of models and forecasting capabilities, and to inform management decisions.

GLERL has collected over 30 years of biological, chemical, and physical data from sites in southern Lake Michigan. These databases and active observation networks provide a means to understand changes in the physical environment, and to evaluate biological trends in the context of natural variation. In addition, the Great Lakes Earth System Model (GLESIM), developed at GLERL, is a series of coupled models to explore the interactions and impacts of five subsystems: regional climate, surface hydrology, hydrodynamics, lake ice, and aquatic ecosystems. The model will be

used for ecological forecasting which predicts the effects of biological, chemical, physical, and human-induced changes on ecosystems and their components. The GLESM can inform decisions about how to respond to extreme natural events like storms, how to deal with human impacts from such things as storm water runoff and oil spills, and how best to manage resources such as recreational fisheries. Finally, the GLERL Observation Systems (GOS) team is developing new remote sensing products, observing platforms, and instrumentation to continuously improve NOAA's observational capabilities in the Great Lakes region. New and innovative sensors, sensor deployment systems, and data management techniques are providing data and information needed to improve our understanding of regional ecosystems in all of the Great Lakes, in order to provide decision support for regional resource managers. The observation systems also contribute to forecast model research and support NOAA goals under the U.S. Integrated Ocean Observing System (IOOS).

The **Vents Program** at PMEL conducts ocean exploration and research directed toward understanding and predicting large-scale oceanographic processes and consequences of submarine volcanism and hydrothermal activity. Since the chemistry of the ocean is a result of these processes, they affect all marine ecosystems to some degree. The Vents Program seeks to understand how submarine volcanic and hydrothermal processes create and sustain both living and non-living marine resources. Understanding natural, large-scale ocean environment forcing functions that impact marine ecosystems leads also to discovering and quantifying how such processes are involved in the creation of both biological (e.g., enzymes and metabolites derived from microorganisms living in extreme environments), mineralogical (e.g., rare and precious metals), and process-driven marine resources (e.g., sources and sinks for critical ocean nutrients). A new discovery has led to a third programmatic emphasis: understanding how submarine volcanic and hydrothermal activity contributes to the budgets and cycles of CO<sub>2</sub> in the marine environment. These processes may be relevant factors in ocean acidification and air-sea exchanges of this CO<sub>2</sub>.

**Ecosystems Fisheries Oceanography Coordinated Investigations (Eco-FOCI)** is a collaborative research effort by scientists at PMEL and the Alaska Fisheries Science Center to improve the understanding of the productive ecosystems in the Gulf of Alaska, Bering Sea, and Arctic waters, which support economically valuable fisheries (e.g. pollock, shellfish, and salmon). This research provides predictions and forecasts to the North Pacific Fishery Management Council (NPFMC) which is responsible for allocating fish landings by commercial fishermen. EcoFOCI is part of the Eastern Bering Sea Ecosystem Synthesis Team that provides an annual ecosystem assessment report card, including 10 key ecosystem indicators for the Bering Sea, to the NPFMC. EcoFOCI research supports two integrated ecosystem research programs in the Bering Sea and Gulf of Alaska (physics through human dimensions) that form the basis for two Integrated Ecosystem Assessments (IEAs). EcoFOCI supports other agency missions by providing a platform on biophysical moorings for equipment such as CO<sub>2</sub> sensors and passive listening devices for marine mammals.

The **Integrated Coral Observing Network (ICON) Program** at AOML acquires and integrates near real-time data from in situ, satellite, radar and other data sources at important U.S. and international coral reef ecosystems. These integrated data are utilized to compose ecological forecasts for Marine Protected Area (MPA) managers and researchers to understand and predict coral reef ecosystem response to environmental change, such as coral bleaching, ocean acidification, harmful algal blooms, ocean current shifts, spawning, migration, and other marine phenomena. These growing and highly intensive temporal (hourly) data sets, currently collected from over 120 sites from around the world, are being utilized to establish status and long-term trends against which to measure climate change, and provide information essential for sound management decisions and long-term planning. With a diverse scientific staff of oceanographers and marine biologists, AOML is able to use multi-disciplinary approaches to improve NOAA's management activities and support NOAA's

goals for healthy oceans and the generation of resilient coastal communities, thereby maximizing ecosystem health and economic yield.

**Ecosystem Research and Modeling** conducts observational research and modeling to assess the impact on marine ecosystems, and human and animal health from land-based sources of pollution and water use practices. Efforts include analysis of oceanographic, nutrient, and microbiological data in order to enable management decisions that protect coastal and marine ecosystems. Scientists work in cooperation with other NOAA Line Offices, other Federal, state, and local authorities (including the EPA and U.S. Army Corps of Engineers), and academia to maximize research capability and results. For example, research and modeling efforts contribute to an integrated ecosystem assessment (IEA) for the South Florida ecosystem restoration that will evaluate remediation efforts and continue to guide the management process for that critical habitat restoration. NOAA's ecosystem research includes development of sensors for ocean chemistry, nutrient detection, microbial species identification (particularly for pathogen detection), and development of data and models that can be used in coastal marine spatial planning, assessment of biodiversity, and in advanced water quality monitoring programs. NOAA's work with regional, national, and international partners is aimed at integrating ecosystem data into management decisions and improving the representation of biological and chemical properties in the suite of parameters included in ocean observation systems.

#### **Schedule and Milestones:**

FY 2013

- Conduct ecological forecasts and compile long-term data sets for 120 sites in the ICON (annually through 2017).
- Conduct monthly cruises for monitoring of nutrients and microbes in the coastal zone impacted by treated wastewater and inlet discharges in coastal Florida waters (annually through 2017).
- Establish long-term complementary data sets coincident with each reef-based ocean acidification observing platform (annually through 2017).
- Develop a watershed-coupled Great Lakes Ice-circulation Model that includes all five lakes, and both biological and nutrient components.
- Develop and test community and food web models to assess the potential future biological invaders on Great Lakes ecosystems.
- Conclude synthesis phase of the Bering Sea Integrated Ecosystem Research Program and begin development of an integrated ecosystem assessment.
- Complete field research in the Chukchi Sea (sponsored by DOI/BOEM) consisting of moorings and hydrographic surveys of the water column to determine the relationships among climate change, ice thickness, and biological productivity.
- Complete second field year for the Gulf of Alaska Integrated Ecosystem Research Program in coordination with the North Pacific Research Board and State of Alaska.
- Perform data analysis and evaluation of models for IPCC Assessment Report on Arctic (including Bering Sea) sea ice and temperature, and complete Fifth Assessment Report (IPCC AR5) (annually through 2017).
- Incorporation of NeMO seafloor observatory sensors and systems into the NSF-sponsored Ocean Observatories Initiative cabled observatory.
- Initiate collaboration to acquire time series, *in situ* data from CO<sub>2</sub> venting systems at Eifuku Volcano, Mariana Arc using the site as a natural laboratory for ocean acidification research.
- Partner with the OER for the purpose of conducting the fourth year of the US/Indonesia INDEX partnership. The principal activity will be OER-sponsored Vents participation in an

exploratory expedition to an area contingent on results from the FY2012 expedition (annually through 2014).

#### FY 2014

- Publish first Synthesis of Arctic Research theme section/special issue.
- Analysis and synthesis of field work in the Chukchi Sea (sponsored by DOI/BOEM) consisting of moorings and hydrographic surveys of the water column to determine the relationships among climate change, ice thickness, and biological productivity (annually through 2016).
- Analysis and synthesis of Gulf of Alaska Integrated Ecosystem Research Program in coordination with the North Pacific Research Board and State of Alaska.

#### FY 2015

- Ecosystem assessment for the Gulf of Alaska synthesis phase.
- Produce a synthesis of deep volcanic eruption results to provide NOAA and the ocean science community with a quantitative global perspective of both short- and long-term marine ecosystem impacts of deep volcanic, and associated hydrothermal, activity.

#### FY 2016

- Publish second Synthesis of Arctic Research theme section/special issue.

#### **Deliverables:**

- A continuous annual hourly data compilation at Laolao Bay, Saipan for utilization by Saipan's Coastal Resources Management division in characterizing the bay's ecosystem dynamics.
- Four annual characterizations of coastal marine ecosystem sites to support management needs.
- Low-oxygen warning systems will be deployed and real-time results provided to water intake managers, protecting the drinking water quality of over two million coastal Lake Erie residents.
- Vessel-based measurements and other observing systems in the Great Lakes will provide data for satellite ground-truthing. GLERL modeling and ecosystems research, regional resource management, and public safety and recreation.
- Improved forecast of timing for next eruption at the NeMO seafloor observatory site.
- Data and results from numerical models from the Ecosystem Observations in the Chukchi Sea made available to stakeholders and the general public for the purpose of understanding climate change, ecosystem shifts, and potential impacts on oil-development in the Chukchi Sea. (2013, 2014)
- An annual, synthetic, ecosystem-based assessment of the eastern Bering Sea published in the Ecosystem Considerations Chapter of the Stock Assessment and Fishery Evaluation reports delivered to the NPFMC.
- Bering Sea Integrated Ecosystem Research Program special issue, with at least 5 papers authored or co-authored by EcoFOCI scientists, published in an appropriate peer-reviewed journal. (2013)
- Gulf of Alaska Integrated Ecosystem Research Program special issue published in an appropriate peer-reviewed journal. (2014, 2015)
- Two special issues on the Synthesis of Arctic Research (SOAR) published in peer-reviewed journals and information delivered to stakeholders via internet, media, and Native village outreach. (2014, 2016)

- Annual Arctic Report Card and outreach video: <http://www.arctic.noaa.gov/reportcard/>
- Fifth Assessment Report for the Intergovernmental Panel on Climate Change (IPCC) and annual analysis of IPCC data. (2013)
- Coupled trophic model for use in ecosystem assessments for the Bering Sea. (annual)
- Maintenance of the Bering Sea Climate and Ecosystem Observational Network including daily, year-round data contributed to long-term time series from 4 moored arrays in the Bering Sea and at least 5 arrays in the Chukchi Sea. (Annual)
- New/improved ship, seafloor *in situ*, and autonomous systems and sensors
- Updated and more precise forecast of timing for the next eruption at the NeMO and OOI seafloor observatory site in the caldera of Axial Volcano.
- Interdisciplinary quantitative data pertaining to short- and long-term impacts of submarine volcanic activity on marine ecosystems.
- Synthesis of results from Vents contributions to the US/Indonesia INDEX partnership (which will be integrated with an OER synthesis).
- Annual data and results from NOAA's exclusive access to the US Navy's SOSUS arrays as well as the deployable arrays of NOAA hydrophone assets.
- Data from NOAA Vents physical and chemical sensors deployed on the OOI NE Pacific cabled observatory made available in real-time to users.
- Annual data and scientific results Vents sensors and systems on the OOI cable to Axial Volcano.
- Annual data and science results ocean acidification measurements and experiments at Eifuku Volcano
- Automated and validated ecological forecasts of coral bleaching as a result of data integration through the ICON program. Historical field observations and ecosystem forecast models will be used to develop web-based products that forecast coral bleaching events.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of labs that have had formal expert peer reviews in the past 5 years and were rated "effective" in terms of quality, mission relevance, and performance	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%
<b>Description:</b> This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> , which states that "The most effective means of evaluating federally funded research programs is expert review."							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of decision support tools developed and effectively implemented to routinely inform ecosystem-based management decisions	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	4	8	10	14	16	18
<b>Description:</b> This performance measure is used to determine the efficacy of incorporating the most up-to-date science into ecosystem-based management decisions made to guide south Florida ecosystem restoration. These decision support tools are developed primarily from routinely collected oceanographic and meteorological data. This includes the use of data collected by regular							

monitoring cruises to characterize the following four sites: FL Bay, FL Keys Reef Tract, SW FL Shelf and the SE Florida Coral Reef Tract. This performance measure helps to fulfill NOAA's mandates with respect to the South Florida Ecosystem Restoration Program and the Comprehensive Everglades Restoration Plan as mandated by the Water Resources Development Acts of 1996, 2000, and 2007.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of coral bleaching events successfully forecasted at monitored sites that support management decisions	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	78%	80%	82%	84%	86%	88%

**Description:** This performance measure is for the continued improvement and production of coral bleaching forecasts used to identify events and support management decisions. Forecasts are developed using oceanographic data from in-situ sensors at US sites and validated in the field by host site collaborators. By comparing observations of bleaching with predictions made, the hit rate and false alarm rate of predictions can be calculated. The hit rate and false alarm rate are used to compute the Peirce Skill Score (PSS), a quantitative and objective metric. This metric can be used to compare different predictive techniques and measure improvements.

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	5	7	9	10	12	14	15

**Description:** This performance measure is for development and validation, by GLERL, of a harmful algal bloom warning system from real-time results provided to water intake managers protecting the drinking water of over 2 million coastal Lake Erie residents. *Microcystis aeruginosa* is the dominant bloom-forming, toxic cyanobacterium occurring in the Great Lakes. Preliminary studies have verified the presence of the cyanotoxin, microcystin in Lake Erie near water intake systems. In particular, microcystin concentrations have exceeded the recommended limit of 1 µg/L for drinking water (World Health Organization, 1998).

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	2	4	6	8	10	12

**Description:** This performance measure is for development and validation of food-web forecasts used to identify impacts of invasive species on Great Lakes ecosystems and to support management decisions for state and regional resource managers. Recent dramatic changes have alarmed water quality and fishery managers, including: a return of nearshore blooms of *Microcystis* (a hazardous cyanophyte); proliferation of nuisance *Cladophora* (a benthic, filamentous alga); reductions in offshore water-column phosphorus and chlorophyll *a* levels; enhanced water clarity; precipitous declines in *Diporeia*, an important benthic prey for many fishes; reductions in native cladoceran zooplankton in offshore lakes Michigan and Huron; low forage fish biomass in lakes Huron and Michigan; and emaciated commercial fish stocks in lakes Huron, Michigan, and Ontario. When taken together, these observations indicate that many of the Great Lakes (especially Huron,

Michigan, and Ontario) have experienced enhanced benthic biomass and nuisance/hazardous algal blooms in the nearshore, accompanied by the virtual “desertification” of the offshore (save for invasives). This effort will culminate in the creation of the Great Lakes Ecosystem Management Model (GLEMM), consisting of a linked set of lake-specific ecosystem models, allowing the dynamics of upstream lakes to influence downstream lakes.

<b>Performance Measure:</b>	<b>FY</b>						
Number of peer-reviewed papers published in the scientific literature each year documenting research that supports Great Lakes management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	46	38	38	38	38	38	38
<b>Description:</b> Peer-reviewed publications are a recognized benchmark of scientific productivity and research quality and significance supporting the decisions of managers and policy makers in the Great Lakes including regulation of water levels, siting of freshwater intakes for city water supplies, forecasts of beach contamination, and the forecast of environmental parameters used for recreation and shipping.							

<b>Performance Measure:</b>	<b>FY</b>						
Number of papers published highlighting research results at hydrothermal vent sites	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	35	28	28	28	28	28	28
<b>Description:</b> Peer-reviewed publications are a recognized benchmark of scientific productivity related to PMEL/Vents and Fisheries-Oceanography Coordinated Investigations (FOCI) research. The Vents-related publications will advance our understanding of deep sea ecosystem and those of the EcoFOCI will increase knowledge of the North Pacific, Bering Sea, and Arctic ecosystems that will improve our current understanding, predictive ecosystem models, and management decisions in the face of climate change.							

<b>Performance Measure:</b>	<b>FY</b>						
Number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	3	3	3	3	3	3	3
<b>Description:</b> Vents interdisciplinary exploration and research will discover and characterize the ocean’s still largely unknown deep micro- and macro-ecosystem diversity as well as provide new scientific data for understanding their critical relationships with ecosystems in the upper ocean’s sunlit zone. Emphasis will be on discovery and characterization of deep ecosystem relationships to important NOAA goals including understanding ocean acidification, discovery and understanding of sources and sinks for carbon (particularly CO <sub>2</sub> ) in the deep sea, and deep ocean nutrient sources and cycles. Because of their high potential resource value, particular attention will be directed toward ecosystems in extreme environments associated with submarine volcanic and hydrothermal activity. All of these efforts are essential to enable NOAA to achieve its holistic, global ecosystem mission.							

## **NATIONAL SEA GRANT COLLEGE PROGRAM** (<http://www.seagrants.noaa.gov/>)

The National Sea Grant College Program (Sea Grant) was established by Congress in 1966 (reauthorized in 2008) to enhance the practical use and conservation of coastal, marine, and Great Lake resources to create a sustainable economy and environment. The 32 state Sea Grant programs, located in every coastal and Great Lakes state and Puerto Rico and Guam, form a dynamic national network of more than 300 participating institutions represented by more than 3,000 scientists, engineers, outreach experts, educators and students. As a non-regulatory program, Sea Grant focuses on generating and disseminating science-based information to a wide range of groups who require scientific information to make daily decisions including commercial and recreational fishermen, educators, fish farmers, state and local planning officials, port and harbor commissioners, seafood processors and retailers, and natural resource, water and environmental quality managers. Sea Grant personnel are both trusted community residents and coastal experts charged with providing balanced and reliable science-based information to help stakeholders identify locally relevant solutions to critical coastal issues.

The Sea Grant model integrates research, outreach, and education. On-the-ground experts, located in every coastal and Great Lakes state, translate sound scientific information into tools, products and services that benefit coastal residents and their communities every day. Sea Grant experts implement national priorities at the local and regional level, while also identifying citizens' needs in order to inform state, regional, and national research agendas. This two-way flow of services and information ensures that Sea Grant solutions meet demonstrated needs, help support businesses, and enable policy-makers to make balanced, well-informed decisions.

In accordance with the goals of NOAA's strategic plan, Sea Grant's program activities fall into the following four focus areas and two cross-cutting efforts:

### Focus areas:

- Sea Grant *Hazard Resilience in Coastal Communities* objectives are to: (1) Promote widespread understanding of risks to coastal residents and businesses; (2) Increase capacity by helping communities reduce risk, pinpoint vulnerabilities and use technologies to prepare for and mitigate hazards; and (3) Ensure an effective response to coastal catastrophes that allows for the earliest possible recovery.
- Sea Grant *Sustainable Coastal Development* objectives are to: (1) Strengthen local working waterfront economic activities while sustaining the natural coastal environment; (2) Enhance public access to the Nation's beaches and waterfronts; (3) Support sustainable planning processes that identify and pursue economic development policies and programs; and (4) Assist fishing-dependent coastal communities.
- Sea Grant *Safe and Sustainable Seafood Supply* objectives are to: (1) Engage harvesters, recreational fisherman, producers and managers of seafood to minimize threats to, and enhance the productivity and management of, wild fisheries; (2) Support a viable domestic seafood industry through both sustainable wild-caught and farm-raised fisheries, and assist the communities that depend upon them; and (3) Ensure the health and safety of seafood.
- Sea Grant *Healthy Coastal Ecosystems* objectives are to: (1) Support ecosystem-based approaches to managing the coastal environment; (2) Restore the function and productivity of degraded ecosystems; and (3) Promote stewardship of healthy ecosystems.

#### Cross-Cutting Efforts:

- Sea Grant *Climate Adaptation and Resilience* objectives are to: (1) Assist citizens and decision-makers in understanding climate processes and effects on coastal resources and communities; and (2) Increase capacity of coastal communities to respond to climate impacts.
- Sea Grant *Education* objectives are to: (1) Provide national leadership in ensuring public literacy in marine and coastal issues; and (2) Develop professionals who understand marine and aquatic science.

#### **Aquatic Invasive Species Program (AIS)**

Aquatic invasive species can disrupt the function of coastal ecosystems, thereby impairing recreational, economic, and other beneficial uses of coastal resources. They constitute a major threat to coastal ecosystems and economies, and they have been responsible for dramatic fishery losses. Hundreds of millions of dollars are spent each year to mitigate the effects of invasive species and to prevent new invasions. The AIS program provides support to national, regional and state efforts to develop cutting edge control technologies and transfer those technologies into operational use.

The AIS Program cooperates and coordinates with state and local governments, NOAA and other Federal agencies, the academic community, and other organizations and individuals to target the highest priority issues. The AIS program responds to the mandates identified in the National Aquatic Nuisance Prevention and Control Act, the National Sea Grant College Program Act, and Executive Order 13112. This program is proposed for termination in FY 2013.

#### **Marine Aquaculture Program**

The United States faces an annual \$8 billion seafood trade deficit, importing more than 80 percent of our seafood, of which half is from foreign aquaculture. Domestic marine aquaculture has the potential to reduce this trade deficit. Sea Grant is at the forefront of efforts to grow the U.S. marine aquaculture industry through an integrated program of research, education, and technology transfer that is focused on key scientific, engineering, environmental, and socioeconomic challenges facing this industry. Sea Grant works with other NOAA line offices (NMFS, NESDIS, NOS) to support NOAA's efforts to increase the domestic production of safe and sustainable seafood via aquaculture in ocean, coastal, Great Lakes areas. Environmentally and economically sustainable aquaculture helps meet the increasing demand for seafood, creates and sustains jobs and stabilizes economies in coastal working waterfronts, and supports efforts to manage and rebuild wild fish stocks.

#### **Schedule and Milestones:**

FY 2013 – FY 2017

- National and state program strategic plans aligned and complete.
- State programs hold local and regional requests for proposals.
- Completion of ecological and social science research projects targeted to support production of an invasive species transport vector management model or guidance to help the mid-Atlantic region control the live bait invasion vector.
- Create and transfer at least 175 decision-support tools/technologies to coastal managers.
- Review all 32 programs with external Program Review Panels.
- Complete training of more than 3,000 seafood processors in Hazard Analysis Critical Control Point (HACCP).
- More than 2,800 acres of degraded ecosystems are restored due to Sea Grant activities.

- Engage more than 550 coastal communities in activities (e.g. visioning, resource inventories, analysis of development policies) that address the sustainability of economic and environmental resources.
- Provide 150,000 coastal resource managers with information/training in local hazard resiliency, and hazard mitigation tools, techniques, and best practices.
- Assist 200 coastal communities to adopt smart growth principles.
- Reach more than 1 million students through educators.
- Evaluate all 32 Sea Grant programs against their program plan.

**Deliverables:**

- An oyster aquaculture industry in one state adopts production and harvesting techniques that increase the delivery of safe oysters to market; twenty oyster aquaculturists adopt appropriate food cost effective harvest restrictions and production methods that reduce Vibrio in oysters that result in improved public safety.
- One major aquaculture company will implement new approaches to seafood production that benefits from Sea Grant research and extension on integrated multi-trophic aquaculture.
- 2.4 million resource managers, decision-makers, and the general public will have attended Sea Grant sponsored/organized conferences, workshops and meetings.
- Sea Grant will have leveraged nearly \$200 million from state and other partners.
- 4,200 peer-reviewed journal articles/book chapters will have been published.
- 3,600 graduate students supported.
- 900 students will have received PhD or MS/MA degrees with Sea Grant assistance.
- 100 coastal communities will have implemented climate adaptation measures.
- 15,600 conferences, workshops and meetings will have been sponsored /organized by Sea Grant.
- A domestic aquaculture industry finds alternative sources of feed materials to reduce pressure on wild harvested feed fish species and to ensure that fishing limits on menhaden and anchovy do not limit the growth of the industry.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of Sea Grant College Programs that have had formal expert peer reviews in the past 5 years and were rated "effective" in terms of quality, mission relevance, and performance	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%
<b>Description:</b> This performance measure is recognized by the National Academy of Sciences report <i>Evaluating Federal Research Programs</i> that states "The most effective means of evaluating federally funded research programs is expert review."							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Cumulative economic and societal benefits derived from Sea Grant activities since 2008	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Jobs created/retained	8,370	12,000	16,000	20,000	24,000	28,000	32,000

Businesses created/retained	1,415	2,000	2,600	3,200	3,800	4,400	5,000
Economic benefit (millions of dollars)	240	320	400	480	560	640	720

**Description:** Society benefits from Sea Grant's assistance in developing new businesses/jobs and retaining existing businesses/jobs. This measure includes dollars that communities or businesses save due to Sea Grant assistance (i.e., providing information to help businesses make better decisions and avoid mistakes). This measure also tracks economic (market and non-market) benefits from the development of new ocean, coastal, and Great Lakes resources and technology.

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of coastal communities that adopt/implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	190	150	150	150	150	150	150

**Description:** This metric tracks Sea Grant's contribution to individuals, businesses, and communities that develop comprehensive emergency preparedness and response plans to increase their resiliency and enable them to respond effectively. Sea Grant will contribute to this by building a sound knowledge base to improve forecasting capabilities, by identifying development and best management practices that reduce the vulnerability of people, buildings, and businesses to coastal hazards, and by advancing ways communities can manage and recover from these events when they occur.

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvements in resilience capacity to weather and climate hazards (%/yr) (Measure 18e)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	43%	34%	43%	49%	54%	60%	66%

**Description:** This measure tracks a range of contributions to address coastal community risk, vulnerability, and resilience to coastal hazards. It quantifies NOAA's contributions to this important goal across NOAA's coastal programs, measuring how NOAA is improving the nation's capacity for resilience to hazards and is contributing significantly to NOAA's efforts to improve integration of its coastal programs, and expanding beyond the three coastal integration programs providing inputs to the measure (CSC, OCRM, and Sea Grant).

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of coastal communities that have adopted/implemented sustainable development practices and policies as a result of Sea Grant activities	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	368	220	220	220	220	220	220

**Description:** This metric tracks communities that have made strides in sustainable development

with Sea Grant aid – moving beyond analysis and planning and into implementation.

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of fishermen, resource managers, consumers, and seafood businesses (harvesters, aquaculturists, processors, and recreational fishermen) who modify their practices using knowledge gained in fisheries sustainability, seafood safety, and the health benefits of seafood	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	37,000	37,000	37,000	37,000	37,000	37,000	37,000
<b>Description:</b> This measure tracks Sea Grant success in having stakeholders adopt responsible fishery practices. For example, Sea Grant efforts to educate fishermen on the benefits of using circle hooks as an alternative to j-hooks has decreased by-catch and increased the survival of hooked and released fish. Responsible harvesting and processing techniques and practices include measures to minimize by-catch and habitat destruction, ensure seafood safety, and support sustainability.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal emergency management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	2	5	7	8	10	12
<b>Description:</b> This measure tracks the cumulative number of regionally-focused climate impacts and adaptation studies, tools, and capacity-building utilized by coastal and emergency management. The use of these products will improve management responses to climate change.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of tools, technologies, and information services that are used by NOAA partners/customers to improve ecosystem-based management (2010 baseline)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	485	725	925	1125	1325	1525	1725
<b>Description:</b> This measure tracks success in translating research findings into tools, technologies and information services that improve the use and management of coastal, ocean, and Great Lakes ecosystems. Examples of tools include: land cover data, benthic habitat maps, and environmental sensitivity index maps. Technologies refer to the transfer of new or underused approaches for addressing coastal management (e.g., remote sensing, biosensors, AUVs, genetic markers for fishery stocks) and resource development (e.g. culture systems for aquaculture, marine pharmaceuticals). This includes the application of technology to coastal resource management through synthesis, integration, training, and the development of new management tools.							

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of coastal communities that have restored degraded ecosystems as a result of Sea Grant activities	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	225	125	125	125	125	125	125
<b>Description:</b> The number of coastal communities (including cities, municipalities, small towns even if unincorporated, and neighborhoods if they have a cohesive identity) that have undertaken activities for the purpose of restoring degraded ecosystems, and have succeeded in the goals of that activity. A community that undertakes a project with the goal of partial restoration of an ecosystem, and that significantly meets its goals, would count toward this PM even though the ecosystem was not completely restored.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of tools, technologies, and information services created for controlling Aquatic Invasive Species	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	4	6	8	10	12	14	16
<b>Description:</b> This work supports the EO 13112-mandated National Invasive Species Management Plan. A variety of control and management tools is needed to assess, remove and contain invasive species populations and guide management decisions." These tools may be informational, educational or administrative practices, or chemical, biological, or mechanical systems. Both research and outreach will play key roles in developing these tools, and in putting them in the hands of the resource managers who need them.							

### **OCEAN EXPLORATION AND RESEARCH (OER) (<http://explore.noaa.gov/>)**

OER was originally created in 2007 by integrating two established programs: the National Undersea Research Program (NURP, formed in 1982) and the Office of Ocean Exploration (OE, formed in 2001). The creation of OER recognized and emphasized that exploration and research are a scientific continuum and are most productive when linked by common objectives and supported by targeted technology development.

OER develops and uses leading-edge technology and sensors to explore and study poorly-known and unknown areas and phenomena in the ocean. It manages the information acquired and generates the knowledge necessary to educate the public and inform environmental resource managers and policy makers on the use and preservation of ocean resources. OER contributes significantly to important NOAA focus areas such as Arctic exploration, global climate change, ocean acidification, biodiversity, new ocean resources such as discovery of new medicines, and coastal and marine spatial planning. OER collects information on new ecosystems, habitats, and resources, and conducts the research necessary to gauge their health, determine how they function and change over time, and to understand how human activities affected their long-term stability. In addition, OER investigates newly observed ocean phenomena such as underwater volcanic eruptions, and ensures that data and information are made available to scientists and decision-makers working on significant environmental challenges such as climate change and ocean acidification. OER core activities includes: (1) supporting interdisciplinary expeditions to characterize new ocean areas and phenomena; (2) conducting cutting edge transformational research to address National priorities and to identify new and emerging issues; (3) working with partners to develop new underwater technologies focused on increasing the pace and efficiency of ocean exploration and research; and (4) engaging a broad spectrum of stakeholders and audiences through education and outreach.

The FY 2013 request proposes to continue funding for the Ocean Exploration Program within OER, but terminate funding for the National Undersea Research Program.

### **Ocean Exploration Program (OE)**

OE efforts focus on the first step of the scientific process – initial investigation of the unknown to characterize natural features and phenomena. Areas to be explored are identified by working with other NOAA programs and Federal agencies, as well as the academic community, and emphasis is given to areas where there is consensus that the potential for discovery is high.

Results from OE efforts include a variety of products such as maps and geospatial databases and models, inventories and samples of living and non-living marine resources, oceanographic and atmospheric data, multimedia products such as video and still images, and peer-reviewed reports and journal articles. These results provide a critical baseline of knowledge which serves to catalyze new lines of research and inquiry, supports management decisions at multiple scales, and improves ocean literacy and stewardship through education and outreach. OE accomplishes its mission in the following distinct ways:

- Core Exploration Program: OE provides funding through competitive grants and intra- and interagency transfers to interdisciplinary teams of scientists, explorers and educators focusing on exploring natural environments and phenomena, searching for and identifying shipwrecks and submerged paleo-landscapes once inhabited by humans, and development of advanced underwater technologies.
- NOAA Ship *Okeanos Explorer*: In FY 2005, Congress directed the U.S. Navy to transfer the 224-foot survey vessel USNS *Capable* to NOAA for conversion to the nation's first vessel dedicated to systematically exploring the ocean. Renamed the *Okeanos Explorer*, the vessel is outfitted with three primary capabilities: (1) deep-ocean high-resolution multibeam sonar mapping; (2) deep-water high-definition videotaping, sensing and sampling using a sophisticated dual-body remotely-operated vehicle (ROV); and (3) a satellite-based broad-band transmission "telepresence" capability, to allow teams of scientists to lead expeditions from shore-based "Exploration Command Centers" (ECC) and to engage students and the general public in the real-time ocean exploration and discovery with live transmissions from the seafloor. *Okeanos Explorer* Program discovery data has been used by scientists and managers for follow-up research on targeted habitat, species and ecosystems, geologic features, natural resource and hazards identification; oceanographic research and modeling; hydrographic mapping and nautical chart development; fisheries management; damage assessment; discovery and preservation of maritime heritage resources; and extension of the U.S. continental shelf (see "Extended Continental Shelf Mapping" below). The program of exploration aboard the ship also serves as a test-bed for developing advanced exploration sensors and technology, new data products, and data processing and management.
- Education: A component of OE's mission is to enhance understanding of science, technology, engineering, and mathematics used in exploring the ocean; and build interest in careers that support ocean-related work. Education materials are developed to encourage educators and students to become personally involved with the voyages and discoveries of the NOAA Ship *Okeanos Explorer* and other expeditions supported by the program. Educator professional development is designed to increase understanding of deep-sea exploration and discoveries and the technologies that enable these discoveries, and improve the teaching about ocean science and the importance of knowledge in the supporting disciplines of technology, engineering and mathematics.

- **Partnership Projects:** OE invests in a variety of small- and large-scale projects with Federal and non-Federal partners who have a shared interest in ocean exploration, as well as funding they can apply to leverage the OE investment. The following three examples highlight large-scale, multiyear exploration partnerships:
  - *Telepresence:* In June 2009, the University of Rhode Island established the “Inner Space Center” (ISC) to: receive data and information from the *Okeanos Explorer* and transmit it to the shore-based ECCs; and conduct live events during expeditions and develop post-event processed videos and other products. Further, the University of New Hampshire also partnered to acquire, process, and develop products from the multibeam mapping system on the *Okeanos Explorer*.
  - *Extended Continental Shelf Mapping (ECS):* In FY 2007, OE joined an interagency task force formed under the Interagency Committee on Ocean Science and Resource Management (ICOSRMI) to plan and prepare for new investments in field surveys to identify potential extensions of the U.S. Exclusive Economic Zone (EEZ) using criteria set forth in Article 76 of the U.N. Convention on the Law of the Sea, which defines how coastal States may define their ECS. In collaboration with several federal agencies, OE invests funds to support bathymetric mapping, geophysical and seismic surveys, data management and analysis, and the development of products to help define the ECS. In addition to mapping unknown territory, information on habitat and resources is also collected.
  - *National Ocean Partnership Program (NOPP):* Through NOPP, OE partners with the Bureau of Ocean Energy Management (BOEM) to investigate and characterize offshore lease blocks for decision support on permitting oil and gas exploration and development in the Gulf of Mexico. Under this partnership, OE provides the ships and a submersible to BOEM-funded peer-reviewed scientific investigations. OE and BOEM are now applying this approach to investigating and characterizing deep water canyons located on the continental shelf and slope in the Mid-Atlantic Bight, and have engaged in discussions concerning extending these investigations into the Arctic Ocean.

### **National Undersea Research Program (NURP)**

NURP was created in 1982 following the recommendations of a 1980 National Academy of Sciences Report. The report recommended the creation in NOAA of a network of regional undersea science and technology centers located at major universities and other oceanographic facilities to focus its research on NOAA’s mission responsibilities and to advance underwater technologies. Through this model, NURP leveraged the skills and resources of its academic partners to meet NOAA undersea research objectives. The NURP mission was to place scientists underwater to support underwater research necessary to further our understanding of ocean ecosystems, their resources, how they function, and the impacts of natural changes and human activities.

In FY 2012, the NURP network consists of an East Coast Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT), the Aquarius Reef Base (University of North Carolina, Wilmington), the Hawaii Undersea Research Laboratory (HURL), and the West Coast and Polar Regions (WCPR) Undersea Research Center.

- CIOERT focused on identifying and investigating habitats on the eastern continental shelf and slope from the Great Lakes to the Caribbean, developing new sensors and systems to support underwater research, and works closely with the NOAA Coral Reef Conservation

Program on research efforts associated with deep and shallow water coral ecosystems in response to management needs.

- The University of North Carolina, Wilmington, operated the NOAA-owned Aquarius Undersea Laboratory, the world's only research saturation facility, to conduct marine ecosystem and coral research, undersea technology testing, training and outreach.
- HURL operated the Pisces IV and the NOAA-owned Pisces V, which are 2000m depth capable submersibles to support studies on the effect of invasive species on black coral habitats, assess Pacific monument and fisheries habitats, and survey marine cultural heritage resources.
- The WCPR at the University of Alaska, Fairbanks supported development of sensors for extreme environment (undersea and high latitude) studies, development and use of miniature oceanographic data recorders carried by marine mammals and other pelagic species and supports technologically innovative undersea research in the polar waters of the Arctic and Antarctic, including the Bering, Beaufort and Chukchi Seas, and in offshore and nearshore waters of Alaska, California, Oregon and Washington and the northeastern Pacific Ocean.

#### **Schedule and Milestones:**

- One to two BOEM-NOAA Partnership joint expeditions per year to explore and characterize habitats and ecosystems in deep water areas.
- The *Okeanos Explorer* will explore unknown and poorly known regions in the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea beginning in FY 2012.
- Develop annual extramural competition for OER exploration and discovery missions.
- Develop annual extramural competition for an OER Marine Archaeology program.
- Develop peer-reviewed and approved professional education products for use in local, regional, and national curricula for Ocean Exploration Signature Mission.
- During FY 2012 - 2017, release funds when available after the annual OER Marine Archaeology program announcement of opportunities.
- During FY 2012 - 2017, Conduct 10 professional development workshops for educators annually using educational materials expressly tied to OER's mission to bring authentic science, mathematics, engineering and technology into classrooms.
- Close out the National Undersea Research Program.

#### **Deliverables:**

- Complete BOEM-NOAA Partnership Joint expeditions to explore and characterize habitats and ecosystems in deep water areas.
- Conduct Autonomous Underwater Vehicle (AUV) mapping and habitat characterization surveys.
- Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship *Okeanos Explorer* and provide information and products to multiple users through telepresence links and publicly accessible web sites and data archives.
- Develop peer-reviewed and approved professional education products for use in local, regional, and national curricula for Ocean Exploration Signature Missions.
- Transition results of exploration expeditions and projects to catalyze targeted research and to support management decisions.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Annual number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	2	1	2	2	2	2
<b>Description:</b> Conduct joint expeditions with DOI's BOEM to explore and characterize habitats and ecosystems in deep water areas of the Gulf of Mexico and the Mid-Atlantic Bight.							

<b>Performance Measure:</b>	<b>FY</b>						
Develop undersea technology tools (to advance exploration, research, and measurement of ocean characteristics)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	1	1	1	2	2	2	2
<b>Description:</b> OER is a NOAA and national focal point for the design, development, deployment, testing, evaluation, application, and transition to operational status of new marine technologies including instrument systems, sensors, and platforms.							

<b>Performance Measure:</b>	<b>FY</b>						
Conduct targeted research to follow-up and transition discoveries to management and operations	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	7	6	0	0	0	0	0
<b>Description:</b> Research within OER conducted by the National Undersea Research Program (NURP).							

<b>Performance Measure:</b>	<b>FY</b>						
Conduct mapping and ecosystem surveys per ECS task force directives	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	1	2	2	2	2	2
<b>Description:</b> The Extended Continental Shelf mapping (ECS) effort is a high-level interagency multi-year effort to define the potential extension of the US continental shelf under international law. The ECS mapping effort is expected to conclude by 2017. Within NOAA, OER intends to use this information strategically to make informed decisions regarding comprehensive exploration and research.							

<b>Performance Measure:</b>	<b>FY</b>						
Conduct regional analysis of potential ECS based on data collected during surveys	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	0	1	1	1	1	1	1
<b>Description:</b> The ECS effort is a high-level interagency multi-year effort to define the potential extension of the US continental shelf under international law.							

<b>Performance Measure:</b>	<b>FY</b>						
Explore, map and visualize maritime wrecks and paleo-landscapes	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	2	2	2	2	2	2
<b>Description:</b> OER Marine Archaeology program explores and discovers maritime heritage sites significant to American and World history using the latest in advanced technology. Sites include shipwrecks, prehistoric submerged landscapes, and other maritime cultural sites. The program supports the research and protections standards enumerated in the UNESCO Convention on the Protection of the Underwater Cultural Heritage.							

<b>Performance Measure:</b>	<b>FY</b>						
Conduct systematic exploration, mapping and characterization of unknown areas in national and international waters using the NOAA Ship <i>Okeanos Explorer</i> Program and provide information and products to multiple users through telepresence links (Number of unknown areas characterized, mapped, and explored)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	7	8	8	8	8	8	8
<b>Description:</b> The <i>Okeanos Explorer</i> offers a new approach to discovery: systematic exploration. This approach includes: (a) telepresence, the ability to bring scientific expertise virtually to the vessel through live connections between shore and sea, (b) a next-generation multi-beam sonar system, and (c) a highly sophisticated, ROV. The ship's telepresence system delivers live images from the ship's ROV and maps from its multi-beam sonar to support live interactions between dedicated centers located throughout the world and the <i>Okeanos Explorer</i> .							

<b>Performance Measure:</b>	<b>FY</b>						
Conduct AUV mapping and habitat characterization surveys	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	1	2	2	2	2	2
<b>Description:</b> Autonomous Underwater Vehicles (AUVs) provide NOAA with a capability that significantly improves on its ability to collect marine observation data for all of its mission areas. AUVs provide a broad and synoptic view of our ocean and marine environments to meet the needs of government, environmental managers, scientists, business, and the public. OER utilizes and manages AUVs through its extramural partners, and supports the development of new technologies and approaches for the efficient use of NOAA AUVs.							

<b>Performance Measure:</b>	<b>FY</b>						
Annually prepare education products expressly tied to OER's mission for use by formal and informal educators to enhance ocean science literacy	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	8	8	8	8	8	8	8
<b>Description:</b> The goal of OER's education product development is to increase formal and informal							

educator access to, understanding of, and appreciation for systematic deep-ocean exploration and its importance in forming the baseline for ocean research, management, and policy decisions.

## **OTHER ECOSYSTEMS PROGRAMS**

### **Integrated Ocean Acidification (OA)**

NOAA's investment in the research described in the NOAA Ocean and Great Lakes Acidification Research Plan will accelerate understanding to a pace that can adequately inform national and international mitigation and adaptation decision-making that will best conserve marine ecosystems and sustain the critical services that oceans, coastal, and Great Lakes ecosystems provide to the national economy. OA activities will include: (1) develop and deploy of advanced technologies and sensors on mooring platforms in the Pacific, Atlantic, and Gulf of Mexico to track chemical changes in open and coastal waters relevant to potential ecosystem impacts; (2) establish a coral reef monitoring network, as well as carbon parameter analytical capabilities to ensure consistent sampling and measuring methods; (3) conduct in-house (NMFS) and extramural field and laboratory organism response experiments to assess physiological vulnerability of commercial and recreational important species to OA which will lead to modeling of ecosystem level and socioeconomic impacts as identified in the NOAA Ocean and Great Lakes Acidification Research Plan; (4) development of new technologies for geochemical and ecosystem monitoring (5) coordination of OA monitoring and impacts research with other Federal, academic, national and international ocean science bodies including (6) if possible, coordinated, multi-agency supported, competitively awarded grants under the National Oceanographic Partnership Program.

The value of ocean acidification research is evident in the Pacific Northwest where oyster hatcheries on the verge of collapse just a few years ago are again major contributors to the \$111 million West Coast shellfish industry. Beginning in 2005, production at some Pacific Northwest oyster hatcheries began to decline at an alarming rate, posing severe economic impacts and challenging a way of life held by shellfish growers for over 130 years. Oyster production represents 76 percent of the West Coast shellfish industry, which supports more than 3,000 jobs. A \$500,000 investment in monitoring coastal seawater, which enables hatchery managers to schedule production when water quality is good, is helping to restore commercial hatcheries and expected to reap an estimated \$35 million for coastal communities in Oregon and Washington. This example highlights the urgency of this problem and the value of ocean acidification research and monitoring.

### **Schedule and Milestones:**

FY 2013 – FY 2017

- Deploy and maintain OA moorings
- Deploy and maintain coral reef monitoring sites.
- Instrument and maintain OA sensors on NOAA Research and Volunteer Observing Ships
- Ocean Acidification summer cruise--Alaska Coast
- Single species experiments (vulnerable economically-important and protected species)
- Multi-species and mesocosm experiments
- Test/evaluate existing global and regional models
- Develop high-resolution physical-biogeochemical-ecosystem models
- Develop coastal early-warning system
- Coordination through OA data management with archival center
- Data Synthesis
- Integrated synthesis workshops and reports
- Education and outreach planning

- Develop curricula and outreach products

**Deliverables:**

- NOAA established as the lead agency for ocean acidification research and monitoring (as mandated in the Federal Ocean Acidification Research and Monitoring Act of 2009) coordinated through a NOAA Ocean Acidification Program office and the Joint Subcommittee on Ocean Science and Technology (JSOST) Interagency Working Group on Ocean Acidification;
- Integrated assessments of the ecological and societal impacts of ocean acidification in each U.S. coastal region and the Great Lakes to identify vulnerable communities where mitigation and adaptation strategies may be needed;
- Improved public understanding of the threats of ocean acidification and the solutions to preserving our ocean and Great Lakes ecosystems via public lectures and web-based information;
- Standardized chemical and biological monitoring protocols for the measurement of CO<sub>2</sub> system parameters and physiological effects on marine organisms;
- Predictions of pH and carbonate saturation in the future ocean using global climate change model projections;
- Comprehensive evaluation and characterization of the threat ocean acidification poses by resolving the direct and indirect ecological impacts to economically-important species and NOAA-managed protected species;
- Regional biogeochemical and ecological models developed through the synthesis efforts of existing models and the incorporation of new knowledge gained on the impact of ocean acidification;
- Recommended atmospheric limit for CO<sub>2</sub> based on projected losses of marine resources, ecosystem services, and economic losses due to the degree of ocean acidification at different CO<sub>2</sub> emission scenarios;
- Decision support tools and requisite scientific knowledge for understanding and responding to ocean acidification in support of ecosystem based management and other related management schemes, such as fisheries management and coastal and marine spatial planning;
- Educational and outreach products and services (e.g., aquarium and museum exhibits, interactive website, K–12 curriculum, informational and training workshops, short web documentaries, summary literature, community lecture series, and interpretive signage) to increase the dialogue among scientists, policy-makers, teachers, and the public.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Percent of U.S. coastal and open ocean ecosystems for which there is high confidence (with low uncertainty) in the understanding of the impacts of ocean acidification. (IPCC reports* % Low - High ratings)							
	5%	10%	10%	15%	20%	25%	30%
<b>Description:</b> The uncertainty is a designated level of understanding assessed by a panel of NOAA investigators with regards to the anticipated impacts of ocean acidification on each of the ten Large Marine Ecosystems (LME) based upon the IPCC criteria (including likelihood and confidence). This designation is evaluated on an annual basis and expresses an aggregate of the uncertainties							

associated with each of the critical LME's facets posited to be impacted by ocean acidification.

*\* From the IPCC Third Assessment Report: "An explicit uncertainty range is a likely range. Estimates of confidence are: very high (95 %); high (67-94 %); medium (33-66 %); low (5-32 %); very low (< 5 %).*

<b>Performance Measure:</b>	<b>FY</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Percent of U.S. coastal and open ocean ecosystems where there are in situ-based fixed platforms that are accurately measuring the carbon parameters needed to calculate mean annual ocean acidification index (Aragonite Saturation State) determined to be within 0.2 units of the actual mean	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	6	11	12	14	16	18	18

**Description:** This measure represents an annual inventory of in situ-based fixed and underway observing platforms dedicated to monitoring the magnitude, and rate of biogeochemical changes in response to increasing atmospheric carbon dioxide. Monitoring sites will be located in ecologically and economically important marine ecosystems. These ocean acidification observing platforms are defined by their inherent ability to fully constrain the carbonic acid system and must be capable of resolving decadal changes in ocean chemistry in response to ocean acidification. The data provided will be used by federal and state regulatory agencies and commercial fisheries organizations.

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**PROGRAM CHANGES FOR FY 2013:**

**Ocean, Coastal and Great Lakes Research Laboratories and Cooperative Institutes: Ocean Research Advisory Panel (Base Funding: \$0 and 0 FTE; Program Change: + \$300,000 and 0 FTE)**

NOAA requests an increase of \$300,000 and 0 FTE for a total of \$300,000 and 0 FTE to support the activities of the Ocean Research Advisory Panel (ORAP). The Administration will submit legislation to transfer ORAP responsibly from the Department of Defense to NOAA. As the nation's premier ocean research agency, NOAA is the appropriate place to support this organization. ORAP's role is to advise the National Ocean Research Leadership Council (NORLC) and to provide independent recommendations. ORAP members include individuals from the National Academies, state government, academia, and ocean industries, representing marine science, marine policy, and other related fields.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic & Atmospheric Research  
Subactivity: Ocean, Coastal, & Great Lake Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	300
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>300</u>

**Ocean Coastal and Great Lakes Research Laboratories and Cooperative Institutes (Base Funding: 119 FTE and \$23,490,000; Program Change: -0 FTE, -\$1,000,000):** NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$22,490,000 and 119 FTE to reflect a reduced need for Cooperative Institute support for planned research projects in FY 2013.

**Proposed Actions:**

NOAA will narrow the focus of funding for research, broadly spread across its Cooperative Institutes partners, to particular key areas in FY 2013 such as:

- Improved protection, restoration, and management of coastal and ocean resources;
- Monitoring of ocean, coastal, and Great Lakes ecosystems, including coral;
- Supporting ecosystem modeling and forecasting; and
- Encouraging technology transfer and efficient resource management.

Research in areas such as the following is considered lower priority and will be delayed or reduced, as NOAA focuses on the high priority initiatives mentioned above:

- (1) Ecosystem management – characterization and modeling of coastal wetland and fisheries habitats;
- (2) Geospatial data integration and visualization in environmental science – development of data visualization techniques and tools for inland/watershed-coastal waters and resources, with a particular focus on the research, development, prototype testing and transition of scientifically-based geospatial observations;
- (3) Climate change and climate variability effects on regional ecosystems - climate assessments and impact models in the Gulf of Mexico and other areas; and
- (4) Coastal hazards - integration of storm surge and wetland erosion models

NOAA will continue its traditional relationships with the Cooperative Institutes in accomplishing the above objectives. However, rather than a dedicated pool of funding available for such efforts, the NOAA research labs will continue to involve CI researchers using their base resources and making awards to the CI's in those instances where they can make significant advances through such partnerships.

**Base Resource Assessment:**

The base resources for this activity are described in the above Ocean, Coastal, and Great Lakes Research Laboratories and CI's base narrative.

**Schedule and Milestones:**

Most of the work under this line item will continue with the funding requested. Listed below are only those schedule and milestones that are impacted. See the Base narratives for a complete list of schedule and milestones that will be accomplished under this program:

- Develop and test a coupled wave, surge, and sediment transport model system for coastal wetlands
- Test three-dimensional flood visualization software package in the operational environment of a river forecasting center
- Complete integrated ecosystem assessments for select estuaries in the northern Gulf Mexico

**Deliverables/Outputs:**

Most of the work under this line item will continue with the funding requested. Listed below are only those deliverables that are impacted. See the Base narratives for a complete list of deliverables that will be provided under the larger line item.

- Coupled wave, surge, and sediment transport model system for coastal wetlands
- Next generation flood visualization software package for testing in a broader operational environment
- Ecosystem model incorporating pressures and drivers of ecosystem change in select estuaries in the northern Gulf of Mexico

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Complete beta testing for next generation flood visualization software package (cumulative).	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	0	0	0	0	0	0	0
<b>Without Decrease</b>	0	0	1	1	1	1	1
<b>Description:</b> Beta testing is testing of software with a limited user audience, in this case, one National Weather Service River Forecasting Center. Once beta testing is complete, testing with a wider operational audience is the next step.							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of estuaries and bays in the northern Gulf of Mexico with a completed integrated ecosystem assessment and an ecosystem model.	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	0	0	0	0	0	0	0
<b>Without Decrease</b>	0	0	1	2	3	4	4
<b>Description:</b> The ecosystem assessment and ecosystem model will be ready for use by resource managers.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Ocean, Coastal, and Great Lakes Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	-1,000
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	-1,000

**Ocean, Coastal, and Great Lakes Laboratories and Cooperative Institutes: Great Lakes Environmental Research Laboratory (GLERL) (Base Funding: \$10,000,000 and 57 FTE; Program Change: -\$1,665,000 and -2 FTE):** NOAA requests a decrease of \$1,665,000 and -2 FTE for a total of \$8,335,000 and 55 FTE to scale back GLERL research operations.

**Proposed Actions:**

While EPA has a greater overall investment in the Great Lakes under its Clean Water Act mandates, NOAA's unique mission as the primary forecasting agency in the region positions the science conducted at GLERL as important to NOAA's stakeholders as well as interagency and bi-national partnerships in the Great Lakes. With this decrease, GLERL will continue to focus on NOAA's priorities and activities most relevant to its statutory responsibilities, including characterizing Great Lakes ecosystem sites for management through long-term integrated observations; developing ecosystem models; assessing the impact of aquatic invasive species such as zebra and quagga mussels; and providing Great Lakes environmental and ecosystem research products (including, for example, forecasts of toxic harmful algal blooms, wind, waves, fog, ice, water levels, channel depths, rip currents, and delivery of harmful bacteria to beaches).

NOAA proposes to scale back operations at GLERL by 17 percent in FY 2013, in order to focus on the above higher priority research activities. Specifically, NOAA will:

1. Focus on analysis of existing data, development of models, and execution of in-house laboratory experiments rather than collection of new field data in FY 2013.
2. Suspend GLERL's small vessel operations, including those provided in-kind for partner organizations (e.g., for Thunder Bay National Marine Sanctuary), while maintaining fleet capabilities for future years.
3. Reduce other in-kind contributions to NOAA's research partners, such as the use of technical equipment such as sampling gear and survey instruments without additional charges and mechanical troubleshooting and consulting by GLERL engineers or scientists.
4. Reduce administrative costs, specifically by reduced travel, and by delaying the filling of vacancies after attrition of the workforce.

These actions will allow GLERL to continue to make scientific contributions to important resource management decisions in the Great Lakes during FY 2013 and beyond.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean, Coastal, and Great Lakes Research base narrative.

**Schedule and Milestones:**

FY 2013 – FY 2017

- Storage of GLERL's 14 research vessels and data buoys in FY 2013
- Completion of analysis of existing data and model development for several research products, such as beach water quality and rip current forecasting tools

**Deliverables:**

- Data provided by other NOAA and non-NOAA organizations will be used, as appropriate, to continue forecasting of changes in Great Lakes water levels, ice cover, and harmful algal blooms.

- GLERL scientists' support for NOAA-related projects within the Great Lakes Restoration Initiative Action Plan will only be diminished to the extent that the work was based on GLERL direct appropriations, including limits on travel, new analyses, and major field work.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	8	8	9	9	10
<b>Without Decrease</b>	5	7	9	10	12	14	15
<p><b>Description:</b> This performance measure is for development and validation of a harmful algal bloom warning system from real-time results provided to water intake managers protecting the drinking water of over 2 million coastal Lake Erie residents. <i>Microcystis aeruginosa</i> is the dominant bloom-forming, toxic cyanobacterium occurring in the Great Lakes. Preliminary studies have verified the presence of the cyanotoxin, microcystin in Lake Erie near water intake systems. In particular, microcystin concentrations have exceeded the recommended limit of 1 µg/L for drinking water (World Health Organization, 1998). This research will provide predictive models using baseline environmental data. This NOAA-wide performance measure is highlighting only one GLERL component. NOAA will continue to expand the number of ecosystems characterized for management.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Cumulative number of coastal, marine, and Great Lakes ecosystem sites adequately characterized for management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	4	4	4	4	4
<b>Without Decrease</b>	2	2	4	6	8	10	12
<p><b>Description:</b> This performance measure is for development and validation of food-web forecasts used to identify impacts of invasive species on Great Lakes ecosystems and to support management decisions for state and regional resource managers. Recent dramatic changes have alarmed water quality and fishery managers, including: a return of nearshore blooms of <i>Microcystis</i> (a hazardous cyanophyte); proliferation of nuisance <i>Cladophora</i> (a benthic, filamentous alga); reductions in offshore water-column phosphorus and chlorophyll <i>a</i> levels; enhanced water clarity; precipitous declines in <i>Diporeia</i>, an important benthic prey for many fishes; reductions in native cladoceran zooplankton in offshore lakes Michigan and Huron; low forage fish biomass in lakes Huron and Michigan; and emaciated commercial fish stocks in lakes Huron, Michigan, and Ontario. When taken together, these observations indicate that many of the Great Lakes (especially Huron, Michigan, and Ontario) have experienced enhanced benthic biomass and nuisance/hazardous algal blooms in the nearshore, accompanied by the virtual “desertification” of the offshore (save for invasives). This effort will culminate in the creation of the Great Lakes Ecosystem Management Model (GLEMM), consisting of a linked set of lake-specific ecosystem models, allowing the dynamics of upstream lakes to influence downstream lakes. This NOAA-wide performance measure is highlighting only one GLERL component. NOAA will continue to expand the number of ecosystems characterized for management.</p>							

<b>Performance Measure:</b>	<b>FY</b>						
Number of peer-reviewed papers published in the scientific literature each year documenting research that supports Great Lakes management	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	32	30	30	30	30
<b>Without Decrease</b>	46	38	38	38	38	38	38
<b>Description:</b> Peer-reviewed publications are a recognized benchmark of scientific productivity and research quality and significance supporting the decisions of managers and policy makers in the Great Lakes including regulation of water levels, siting of freshwater intakes for city water supplies, forecasts of beach contamination, and forecasts of environmental parameters used for recreation and shipping.							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Ocean, Coastal and Great Lakes Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Ecologist	Ann Arbor, MI	GS-15	-1	123,628	(123,628)
Physical Scientist	Ann Arbor, MI	GS-15	-1	123,628	(123,628)
<b>Total</b>			<u>-2</u>		<u>(247,256)</u>
less Lapse		25%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-2		(247,256)
2013 Pay Adjustment (0.5%)					0
<b>TOTAL</b>					<b>(247,256)</b>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employmen	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2
Authorized Positions:	
Full-time permanent	-2
Other than full-time permanent	<u>0</u>
Total	-2

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Ocean, Coastal, and Great Lakes Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent (by attrition)	(247)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(247)
12 Civilian personnel benefits	(101)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(150)
22 Transportation of things	(35)
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(352)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(200)
31 Equipment	(300)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(280)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(\$1,665)

**Marine Aquaculture Program: Marine Aquaculture Research: (Base Funding: 1 FTE and \$4,309,000; Program Change: 0 FTE, +\$247,000)**: NOAA requests an increase of \$247,000 and 0 FTE for a total of \$4,556,000 and 1 FTE to enhance Sea Grant's support of national grant competitions for marine aquaculture research and technology transfer. Sea Grant facilitates the transfer of aquaculture research and technology into business operations, as well as informs the public and practitioners about key issues and information related to aquaculture. Environmentally and economically sustainable aquaculture helps meet the increasing demand for seafood, creates and sustains jobs, stabilizes economies in coastal working waterfronts, and supports efforts to manage and rebuild wild fish stocks.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Ocean, Coastal & Great Lakes Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	247
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	247

**National Sea Grant College Program (Base Funding: 27 FTE and \$56,911,000; Program Change: 0 FTE, +\$181,000):** NOAA requests an increase of \$181,000 and 0 FTE for a total of 27 FTE and \$57,092,000 to enhance Sea Grant's support of coastal communities. Sea Grant research and outreach will help coastal communities maintain working waterfronts and enhance tourism and recreation in order to create jobs and sustain the coastal economy through economic diversification, community development, and preservation of coastal and marine environments.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Ocean, Coastal & Great Lakes Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	181
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	181

**Aquatic Invasive Species Program: Program Closure: (Base Funding: \$999,000 and 3 FTE; Program Change: -\$999,000 and -3 FTE):** NOAA requests a decrease of \$999,000 and 3 FTE for a total of \$0 and 0 FTE to terminate the Aquatic Invasive Species Program.

**Proposed Actions:**

NOAA proposes to eliminate grants for national research and outreach competitions in Aquatic Invasive Species, given the EPA’s more significant efforts in this issue. However, aquatic invasive species research will continue through the efforts of NOAA’s state Sea Grant partners and the current tools, technologies, and information services to control invasive species will be maintained.

**Base Resource Assessment:**

The base resources for this activity are described in the Ocean, Coastal & Great Lakes Research base narrative.

**Schedule and Milestones:**

FY 2013

- Completion of ecological and social science research projects targeted to support production of an invasive species transport vector management model or guidance to help the mid-Atlantic region control the live bait invasion vector.

**Deliverables:** None

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY11 Actual</b>	<b>FY 12 Target</b>	<b>FY 13 Target</b>	<b>FY 14 Target</b>	<b>FY 15 Target</b>	<b>FY 16 Target</b>	<b>FY 17 Target</b>
Cumulative number of tools, technologies, and information services created for controlling Aquatic Invasive Species							
<b>With decrease</b>	N/A	N/A	6	6	6	6	6
<b>Without decrease</b>	4	6	8	10	12	14	16

**Description:** This work supports the Executive Order 13112-mandated National Invasive Species Management Plan. From the Plan: "Strategic goal 3: Contain and reduce the spread and populations of established invasive species to minimize their harmful impacts...A variety of control and management tools is needed to assess, remove and contain invasive species populations and guide management decisions." These tools may be informational, educational or administrative practices, or chemical, biological, or mechanical systems. Both research and outreach will play key roles in developing these tools, and in putting them in the hands of the resource managers who need them.

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Office of Oceanic and Atmospheric Research  
 Subactivity: Ocean, Coastal and Great Lakes Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Marine Scientist	Silver Spring, MD	ZT-III	-2	51,630	(103,260)
Marine Scientist	Silver Spring, MD	ZT-IV	-1	62,467	(62,467)
<b>Total</b>			<u>-3</u>		<u>(165,727)</u>
less Lapse		25%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		(165,727)
2013 Pay Adjustment (0.5%)					0
<b>TOTAL</b>					<b>(165,727)</b>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	0
<b>Total</b>	<u>-3</u>

Authorized Positions:

Full-time permanent	-3
Other than full-time permanent	0
<b>Total</b>	<u>-3</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Ocean, Coastal & Great Lakes Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(166)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(166)</u>
12 Civilian personnel benefits	(55)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(778)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(999)</u>

**Ocean Exploration and Research: National Undersea Research Program (NURP) (Base Funding: \$3,985,000 and 6 FTE; Program Change: -\$3,985,000 and -6 FTE):** NOAA requests a decrease of \$3,985,000 and 6 FTE for a total of \$0 and 0 FTE to complete the termination of the National Undersea Research Program (NURP).

**Proposed Actions:**

In order to ensure an orderly transition, fund any associated costs, and appropriately dispose of the technologies owned by NOAA, including the Aquarius Undersea Habitat and the Pisces V submersible, notification and transition will be initiated in FY 2012. NURP's academic partners may have the opportunity to continue their efforts through other funding sources.

**Schedule & Milestones:**

By FY 2013:

- Transition activities, including disposal of the technologies that are part of NURP.
- Begin procedures to close down the centers and CI and properly and safely dispose of and/or transfer of all the equipment within.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Conduct targeted research to follow-up and transition Ocean Exploration discoveries to management and operations	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	0	0	0	0	0
<b>Without Decrease</b>	7	6	6	6	6	6	6
<b>Description:</b> This performance measure specifically captures research done by the National Undersea Research Program laboratories to further investigate discoveries made during the course of ocean exploration. OAR will continue to ensure the results of exploration are well organized and widely disseminated, making them available to other NOAA programs and other Federal agencies in order to stimulate follow-on research.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Develop undersea technology tools (to advance exploration, research, and measurement of ocean characteristics)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	N/A	N/A	0	0	0	0	0
<b>Without Decrease</b>	1	1	1	1	1	1	1
<b>Description:</b> This performance measure specifically captures technological tool development done by the National Undersea Research Program laboratories to further investigate discoveries made during the course of ocean exploration. OAR will continue to ensure the results of exploration are well organized and widely disseminated, making them available to other NOAA programs and other Federal agencies in order to stimulate follow-on research.							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Ocean and Atmospheric Research  
 Subactivity: Ocean, Coastal and Great Lakes Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Program Support Specialist	Silver Spring, MD	ZA-II	-1	42,209	(42,209)
Physical Scientist	Silver Spring, MD	ZP-III	-1	62,467	(62,467)
Physical Scientist	Silver Spring, MD	ZP-IV	-3	89,033	(267,099)
Supervisory Physical Scientist	Silver Spring, MD	ZP-V	-1	123,758	(123,758)
<b>Total</b>			<u>-6</u>		<u>(495,533)</u>
less Lapse		25%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-6		(495,533)
2013 Pay Adjustment (0.5%)					0
TOTAL					(495,533)

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employmen	
Full-time permanent	-6
Other than full-time permanent	0
Total	<u>-6</u>
Authorized Positions:	
Full-time permanent	-6
Other than full-time permanent	0
Total	<u>-6</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research

Subactivity: Ocean, Coastal, and Great Lakes Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(496)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	(124)
11.8 Special personnel services payments	0
11.9 Total personnel compensation	(620)
12 Civilian personnel benefits	(155)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(37)
22 Transportation of things	0
23.1 Rental payments to GSA	(64)
23.2 Rental Payments to others	(316)
23.3 Communications, utilities and miscellaneous charges	(5)
24 Printing and reproduction	0
25.1 Advisory and assistance services	(103)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	(13)
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(2,672)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(3,985)

The following exhibit shows the summary object class detail for the Ocean, Coastal, and Great Lakes Research program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic and Atmospheric Research  
Subactivity: Ocean, Coastal & Great Lakes Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	95
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	95

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES  
SUBACTIVITY: INFORMATION TECHNOLOGY, RESEARCH & DEVELOPMENT**

The objective of the Information Technology R&D subactivity is to accelerate the adoption of advanced computing, communications, and information technology throughout NOAA. Information Technology R&D supports OAR's High Performance Computing and Communications (HPCC) Initiative. The HPCC program supports OAR through major improvements in weather and climate forecasting, ecosystem and ocean modeling, and environmental information dissemination. These improvements are heavily dependent on major advances in high-end computing power, advanced information technology, and the availability of environmental data and information. These critical investments allow NOAA to meet its mission to deliver vital services and science education.

Through this program, NOAA participates as a mission agency in the Networking and Information Technology Research and Development (NITRD) program. NOAA participates on several NITRD Interagency Working Groups including:

- High End Computing
- Large Scale Networking
- Software Design and Productivity
- Human Computer Interaction and Information Management.

**HIGH PERFORMANCE COMPUTING INITIATIVES**

HPCC supports a number of objectives in NOAA's Strategic Plan through support of IT research targeted at improving NOAA's mission and services which expands the global understanding of environmental science. The purpose of the HPCC program is to make major improvements in the Nation's ability to forecast the weather and climate, and to disseminate environmental information. At the same time, the program is aimed at stimulating the modernization of NOAA's computationally intensive services through the use of evolving high performance computing and high-speed networking technologies. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecast improvements, as well as regional and global climate predictions are heavily dependent on major advances. These advances would include high-end computing power, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies. This program provides NOAA's focus for coordinating with external organizations and programs impacting the HPCC Program, through NITRD and its Interagency Coordinating Groups on Information Technology Research and Development (IT R&D), and by establishing agreements with other federal agencies to obtain additional computational cycles to support NOAA's environmental research activities.

The activities that are currently being conducted with program resources and how those resources are allocated are as follows:

<i>Activity</i>	<i>Dollars</i>	<i>FTE</i>
Program Management	\$1.3M	6
HPCC R&D IT Proposals	\$0.0M	0
Environmental Modeling Software Development	\$4.0M	3
R&D HPC Contract	\$3.0M	3

Acquisition Support	\$0.7M	1
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The HPCC program provides NOAA with necessary computational and network resources required to support continued advances in environmental modeling capabilities. Benefits of the HPCC program include:

- Improvements in short term warning and weather forecast systems and models,
- Enabling scientists to attack long-lead time problems associated with the physical processes that govern the behavior of the atmosphere and ocean,
- Maintaining NOAA's leadership position in understanding climate with applications towards critical issues such as hurricanes, drought, sea-level rise, and ice-free arctic, and
- Accelerating modeling and simulation activities and providing relevant decision support information on a timely basis for programs such as the multi-agency Climate Change Science Program.

**Schedule and Milestones:**

FY 2013

- Update Flow-following finite-volume Icosahedral Model (FIM) global model and updates for operations

FY 2014

- Make decision on whether or not to exercise next 4 year contract option for R&D HPC support services
- Update FIM global model for operations
- Develop 1 km non-hydrostatic Atmospheric General Circulation Model (AGCM)
- Develop 1/50° Ocean General Circulation Model (OGCM)
- Develop high resolution climate/carbon/ice model for Polar Regions for decadal prediction capability for Arctic, assessment of potential for Arctic feedbacks to accelerate global warming, and more accurate estimates of sea level rise rates

FY 2015

- Update FIM global model and updates for operations

FY 2016

- Update FIM global model and updates for operations

**Deliverables:**

- HPC System availability – Maximum number of computational hours made available to scientists.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
HPCC / R&D System Availability	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99%	96%	96%	96%	96%	96%	96%
<b>Description:</b> Maintaining high system availability translates into providing NOAA scientists, researchers, and collaboration partners with the maximum number of computational hours available enabling them to conduct important R&D on an almost 24X7 basis. The HPCC program provides NOAA researchers with a reliable computing resource which allows them to plan, with a high degree							

of confidence, their project milestones and deliverables. System outages can adversely affect NOAA initiatives such as meeting the Intergovernmental Panel on Climate Change milestones or cause delays in implementing operational improvements for hurricane track and intensity predictions. Ensuring high system availability enables NOAA to maximize its investment in these resources.

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## PROGRAM CHANGES FOR FY 2013:

### **Information Technology Research and Development: High Performance Computing and Communication (HPCC) (Base Funding: \$8,946,000 and 13 FTE; Program Change:**

**+\$3,432,000 and 0 FTE)**: NOAA requests an increase of \$3,432,000 and 0 FTE for a total of \$12,378,000 and 13 FTE to fund advanced networking R&D projects and increase the number of software development projects.

#### **Proposed Actions:**

This increase will allow the HPCC program to resume funding advanced networking R&D projects after suspending all funding for networking R&D projects in FY 2012 to accommodate the FY 2012 spend plan funding level. OAR also estimates that the requested funding will allow the program to double the number of software development projects that can be completed. In FY 2013, OAR plans to:

- Incorporate the Flow-following finite-volume Icosahedral Model (FIM) as a member of the operational global ensemble system;
- Incorporate the operational global ocean model (HYCOM) into the NOAA Environmental Modeling System which will allow NCEP to begin coupled atmospheric/ocean testing for numerical weather prediction medium range predictions;
- Continue development and testing of neural networks within the Global Forecast System;
- Continue development and testing of advanced numerical methods in the operational Global Forecast System to achieve higher resolution with minimal computational cost;
- Continue development and testing of a global non-hydrostatic unified modeling system for next generation NOAA operational application;
- Increase quality control levels for data used in the National Climate assessment and international assessments for Ozone and Intergovernmental Panel on Climate Change assessments; and,
- Release new coupled climate models and the component models which they comprise which include the Modular Ocean Model which is used in the operational climate forecast system.

Increased funding will also allow the program to make investments in the R&DHPCS computational infrastructure, facility, and network resources.

The table below shows the allocation of funding that includes the budget increase:

<b><i>Activity</i></b>	<b><i>Dollars</i></b>	<b><i>FTE</i></b>
Program Management	\$1.3M	6
HPCC R&D IT Proposals	\$1.4M	1
Environmental Modeling Software Development	\$5.4M	3
R&D HPC Contract	\$3.6M	2
Acquisition Support	\$0.7M	1

#### **Statement of Need and Economic Benefits:**

HPCC supports a number of objectives in NOAA's Strategic Plan through support of IT research targeted at improving NOAA's mission and services which expands the global understanding of

environmental science. The purpose of the HPCC program is to make major improvements in the Nation's ability to forecast the weather and climate, and to disseminate environmental information. At the same time, the program is aimed at stimulating the modernization of NOAA's computationally intensive services through the use of evolving high performance computing and high-speed networking technologies. Improvements in the accuracy and timeliness of NOAA's short-term weather warnings, seasonal forecasts, hurricane forecast improvements, as well as regional and global climate predictions are heavily dependent on major advances. These advances would include high-end computing power, advanced information technology, and the widespread availability of environmental data and information. Timely and responsive dissemination of NOAA's services and information requires full use of modern network and communication technologies. This program provides NOAA's focus for coordinating with external organizations and programs impacting the HPCC Program, through NITRD and its Interagency Coordinating Groups on Information Technology Research and Development (IT R&D), and by establishing agreements with other federal agencies to obtain additional computational cycles to support NOAA's environmental research activities.

**Base Resource Assessment:**

The base resources for this activity are described in the Information Technology Research & Development base narrative.

**Schedule and Milestones:**

FY 2013

- Fund approximately 11 HPC and advanced networking R&D projects
- Update Flow-following finite-volume Icosahedral Model (FIM) global model and updates for operations
- Parallelization of FIM dynamics for Intel MIC (type of GPU) to evaluate this technology
- GPU parallelization of WRF physics used in the NIM model
- Integrate global ocean model (HYCOM) into FIM using the NOAA Environmental Modeling System
- Develop and test the use of neural networks with the GFS
- Development and testing of advanced numerical methods in the operational Global Forecast System to achieve higher resolution with minimal computational cost development and testing of a global non-hydrostatic unified modeling system for next generation NOAA operational application
- Continued Quality Control of model data used in the National Climate assessment and international assessments for Ozone and Intergovernmental Panel on Climate Change assessments
- Release new coupled climate models

FY 2014

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model for operations
- Develop 1 km non-hydrostatic Atmospheric General Circulation Model (AGCM)
- Develop 1/50° Ocean General Circulation Model (OGCM)
- Develop high resolution climate/carbon/ice model for Polar Regions for decadal prediction capability for Arctic, assessment of potential for Arctic feedbacks to accelerate global warming, and more accurate estimates of sea level rise rates

FY 2015

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model and updates for operations

FY 2016

- Fund approximately 11 HPC and advanced networking R&D projects
- Update FIM global model and updates for operations

FY 2017

- Fund approximately 11 HPC and advanced networking R&D projects

**Deliverables:**

- HPC System availability – Maximum number of computational hours made available to scientists.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of software development projects completed for climate, weather and water environmental R&D	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With increase	N/A	N/A	8	8	8	8	8
Without increase	8	4	4	4	4	4	4

**Description:** Each year the HPCC program funds software modeling development projects supporting NOAA’s environmental scientists. These models run on NOAA’s R&D supercomputers. These modeling efforts are focused on many different disciplines including climate change supporting the IPCC, hurricane forecast improvement, and advances in models supporting weather forecasting. Other OAR performance measures have direct dependencies on these modeling efforts.

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of R&D Information technology innovation projects initiated and completed.	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With Increase	N/A	N/A	11	11	11	11	11
Without increase	17	0	0	0	0	0	0

**Description:** Each year the HPCC program sponsors a program to promote innovation in information technology across all elements of NOAA supporting NOAA’s many missions. The goal in the program is identify promising new and innovative technologies or uses for existing technologies that can rapidly be adopted into operational settings supporting NOAA. See <http://www.cio.noaa.gov/HPCC/innovation/index.html> for more details about this program and its results over the years. More funding was available in FY 2011 than in FY 2012, resulting in more projects being supported that year.

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of Networking and Information Technology Research and Development (NITRD) interagency activities that NOAA actively participates in	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With Increase	N/A	N/A	5	5	5	5	5

Without increase	5	3	3	3	3	3	3
<p><b>Description:</b> NOAA has traditionally been an active participant in the White House Office of Science and Technology NITRD program. Funding from HPCC allows NOAA to participate in several NITRD interagency working groups including High End Computing, Human computer interaction and information management, Large scale networking, Software Design &amp; Productivity. The NITRD activity has resulted in many benefits for NOAA including obtaining millions of additional hours of computing on other agency supercomputers as well as facilitating improvements to NOAA's wide area networking capabilities.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Oceanic & Atmospheric Research  
Subactivity: Information Technology R&D

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	3,432
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	3,432

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**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION**  
**SUBACTIVITY: OAR SYSTEMS ACQUISITION**

The objective of this sub-activity is to provide sustained capability of the NOAA Research and Development High Performance Computing System in order to advance climate science and accelerate the development of regional and sub-regional information products and services.

NOAA's Research & Development High Performance Computing System (R&D HPCS) provides computational resources to support advances in environmental modeling crucial for understanding some of the most critical climate issues of today. This investment includes the supercomputing systems, associated storage devices, advanced data communications, security, and necessary data center space. NOAA's R&D HPCS leverages world-class research staff and modeling capabilities now in place at NOAA to address important research problems in climate and weather research. NOAA's on-going model development is advancing the climate research program through NOAA computational research and collaboration with the inter-agency and academic climate research community. The American Recovery and Reinvestment Act funding enhanced NOAA's R&D HPCS, accelerating NOAA's capabilities to provide climate information to decision-makers at regional and state levels.

**Schedule and Milestones:**

FY 2013

- Improved understanding decadal-to-centennial climate change, variability and predictability, and increasing confidence in climate projections, using coupled-climate model (CM2.5) at 4 times the resolution of recent IPCC-class coupled climate models.

FY 2014

- Robust simulations of regional climate change around the world (including tropical storms) using 25-km resolution global atmospheric model.

FY 2015

- Upgrade Gaea R&D HPCS system at Oak Ridge National Laboratory
- Improved realism of the NOAA Earth System Models by closing the nitrogen cycle, and major feedback on the global carbon cycle.
- Reduction in percentage uncertainty in possible twenty-first century sea level rise

FY 2016

- Upgrade storage capacity of climate model data archive
- Development of initial physical formulations to incorporate soot and dust aerosol impacts on snow and ice albedo in climate models, and improved sea ice models essential to developing a predictive understanding of Arctic climate change.

FY 2017

- Enhanced contributions to assessments of human impacts on climate through inclusion of more realistic physical processes & important feedbacks in climate models, and analysis of causes of past climate change; greater confidence in projections of regional climate impacts.

**Deliverables:**

- Sustained high availability of the NOAA R&D High Performance Computing system
- Improved credibility of projections of changes of important climatic quantities, such as regional climate change and extreme events, to allow society to efficiently plan for and adapt to climate change.
- Major contributions of model data to the Program for Climate Model Diagnosis and Inter-comparison, in support of national and international climate assessments.

- Capability to develop and provide decadal prototype forecasts and predictions made with high-resolution coupled climate model.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
<b>HPCC / R&amp;D System Availability</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99%	97%	97%	97%	97%	97%	97%

**Description:** Maintaining high system availability translates into providing NOAA scientists, researchers, and collaboration partners with the maximum number of computational hours available enabling them to conduct important R&D on an almost 24X7 basis. The HPCC program provides NOAA researchers with a reliable computing resource which allows them to plan, with a high degree of confidence, their project milestones and deliverables. System outages can adversely affect NOAA initiatives such as meeting the Intergovernmental Panel on Climate Change milestones or cause delays in implementing operational improvements for hurricane track and intensity predictions. Ensuring high system availability enables NOAA to maximize its investment in these resources.

**Outyear Funding Estimates**

<b>Research Supercomputing</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>CTC</b>	<b>Total</b>
	<b>2012 &amp; Prior</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>		
<b>Change from FY 2013 Base</b>		83	83	83	83	83	N/A	
<b>Total Request</b>	284,677	10,379	10,379	10,379	10,379	10,379	N/A	Recurring

**PROGRAM CHANGES FOR FY 2013:**

The following exhibit shows the summary object class detail for the Information Technology R&D program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS  
(Dollar amounts in thousands)**

Activity : Office of Oceanic & Atmospheric Research PAC  
Subactivity: Information Technology R & D

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	83
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>83</u>

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## **BUDGET ACTIVITY: NATIONAL WEATHER SERVICE**

For FY 2013, NOAA requests a net decrease of \$29,776,000 and 101 FTE below the FY 2013 base program for a total of \$972,193,000 and 4,548 FTE for the National Weather Service (NWS). The requested funding includes \$10,095,000 and 0 FTE in inflationary adjustments.

### **BASE JUSTIFICATION FOR FY 2013**

The NWS Operations, Facilities, and Research base (\$910,859,000 and 4,623 FTE) includes the following subactivities:

- Operations and Research (\$808,807,000 and 4,435 FTE) includes the operations of 122 Weather Forecast Offices (WFO) and 13 River Forecast Centers (RFC) which provide up-to-date and accurate weather forecasts, warnings, and outlooks to the Nation.
- Systems Operation and Maintenance (\$102,052,000 and 188 FTE) includes the operation of systems such as the Advanced Weather interactive Processing System (AWIPS), the Next Generation Radar (NEXRAD), the Automated Surface Observing System (ASOS) and others that collect and process the observations necessary to provide weather forecasts, warnings, and outlooks.

Procurement, Acquisition, and Construction (PAC) activities (\$91,110,000 and 26 FTE) include the following subactivities:

- Systems Acquisition (\$87,960,000 and 26 FTE) includes the AWIPS II Extended which will add new capabilities and improve ways for forecasters to access and visualize meteorological information and NWS' operational High Performance Computing (HPC) capability, which is used to run all of NOAA's operational weather models.
- Construction (\$3,150,000 and 0 FTE) includes upgrades and improvements to NOAA's WFO's and Weather Service Offices (WSO).

The NWS (<http://www.weather.gov/>) provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure, which can be used by the public, other governmental agencies, the private sector, and the global community.

NWS is a world-class science-based team of professionals who work together to provide the best weather, water, and climate information in the world by:

- Producing and delivering reliable information;
- Incorporating proven advances in science and technology;
- Measuring, reporting, and evaluating our performance;
- Issuing forecasts to help reduce weather- and water-related fatalities; and
- Working with others to make the weather, water, and climate enterprise more effective.

NWS is dedicated to serving the American public by providing a broad spectrum of weather, climate, and hydrological forecast guidance and decision support services. NWS strives to meet society's need for weather and hydrological forecast information. As more sectors of the economy recognize the impacts of weather and water on their businesses, they are becoming more adept at using sophisticated weather and water information to improve commerce. According to the American Meteorological Society, weather is directly linked to public safety,

and a significant portion of the United States economy is weather-sensitive. Concern for public safety drives NWS to improve the timeliness and accuracy of warnings for all weather-related hazards.

NWS is committed to enhancing observation capabilities by: (1) improving data assimilation that effectively uses all the relevant data NWS and others collect; (2) improving collaboration with the research community through creative approaches such as community modeling; by rapidly transforming scientific advances in modeling into improved operational products; (3) improving the techniques used by our expert forecasters; (4) making NWS information available quickly, efficiently, and in a useful form (e.g., the National Digital Forecast Database); (5) including information on forecast uncertainty to help customers make better-informed decisions; (6) taking advantage of emerging technologies to disseminate this information; and (6) maintaining an up-to-date technology base and a workforce trained to use all of these tools to maximum effect.

The weather and water enterprise is larger than NWS. NWS depends on partners in the private, academic, and public sectors, starting with other line offices within NOAA to acquire data, conduct research, provide education and training, help disseminate critical environmental information, and provide advice to make best use of NWS information. NWS strives to work more closely with existing partners. NWS also seeks to develop new partnerships to achieve greater public and industry satisfaction with our weather and water information and to honor our commitment to excellent customer service.

#### *NWS Weather and Hydrological Activities*

- Increased accuracy in forecasting and lead time in warning for severe weather.
- Saved lives and property through more accurate and timely severe weather prediction.
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.
- Improved effectiveness of NOAA's current observing systems.
- Increased number of observations obtained and used from partners, both international and domestic.
- Increased number of observations archived, available, and accessible.
- Increased number of new multi-use observing systems deployed.
- Increased number of forecasters trained in the newest techniques.
- Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water and weather forecasts).
- Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.
- Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather and water related conditions.
- Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.
- Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of severe weather.
- Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs.
- Increased assistance to international partners to improve response capabilities to weather and water predictions.

NWS places an increasing emphasis on severe weather-related events, which significantly affect people, their livelihoods and the economy. NWS strives to promote the Nation's commerce by providing information supporting society's ability to take preventive actions so that people remain safe; less damage is done to communities, businesses, and the environment; and economic productivity is maximized. NWS services are critical to the safe and efficient transportation of people and goods by sea, air and over land. The transportation and public utility sectors are a vital component of the U.S. economy and are highly vulnerable to weather and climate events. NWS will work to provide aviation forecast improvements to help mitigate air traffic delays and reduce weather-related aviation accidents; improve precipitation and water resource forecasting, which affects surface transportation; and improve ocean and wind forecasting, which affects sea-borne transport from the high seas to our coasts and the Great Lakes. NWS is committed to working with our partners to continue improving weather information services in support of all modes of transportation and commerce.

#### *NWS Activities in support of commerce*

- Increased safety and productivity of transportation systems by providing relevant observations, warnings and forecasts of weather events impacting the transportation sector.
- Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.
- Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water and air transportation systems.

NWS operates and maintains critical infrastructure, which enables the provision of NOAA's services to the Nation. NWS manages a distributed network of offices that span the Nation, delivering essential NOAA services, especially those related to high-impact events, at the local level where critical, life-saving decisions are made. This includes the management of all major weather observing systems, from software engineering and communications to facilities and logistical planning. NWS also ensures worldwide acquisition and delivery of weather and water data through the Telecommunications Gateway and the Office of Operational Systems Network (OPSnet). In support of NOAA's operational forecasting mission, NWS develops, improves and monitors data assimilation systems and models of the atmosphere and oceans, using advanced methods developed internally as well as cooperatively with scientists from universities, NOAA laboratories, other government agencies, and the international scientific community.

#### *NWS' enabling infrastructure*

- Ensure the reliability and integrity of NOAA's operational weather and water observing and prediction systems and services.
- Determine the optimal mix of observations, in terms of spatial and temporal resolution and data type, to advance NOAA's numerical modeling capabilities.

#### **Research and Development Investments:**

The NOAA FY 2013 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements based strategic planning process and subject to on-going budget constraints. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NWS requests \$21,637, 000 for investments in R&D and infrastructure to support R&D in the FY 2013 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY2013- 2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests a net increase of \$10,095,000 and 0 FTE to fund adjustments to current programs for NWS. The increase will fund the estimated 2013 Federal pay raise of 0.5 percent. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NWS also requests the following transfers for a net change to NOAA of \$0 and 0 FTEs.

From Office	Line	To Office	Line	Amount (\$000)/ FTEs
NWS	NEXRAD Product Improvement (PAC)	NWS	Local Warnings & Forecasts (ORF)	\$0/ 5 FTE

NWS requests a technical adjustment to move 5 FTE from the NEXRAD Product Improvement program in PAC to the Local Warnings & Forecasts program in ORF. This adjustment refocuses the FTE working on the NEXRAD Product Improvement (PI) program to other LWF activities, following the planned termination of that program.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on NWS' administrative savings planned for FY 2012 (\$13.3 million), an additional \$9.7 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$23.1 million.

**Headquarters Administrative Costs:**

In FY 2013, NWS Line Office headquarters will use \$21,653,700 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NWS will use headquarters administrative funds to support the following:

<b>Headquarters Program Support Type</b>	<b>Description</b>	<b>FY 2013 Amount</b>	<b>FY 2013 FTE associated with NWS HQ</b>
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$8,248,400	37.0
Budget & Finance	Includes Budget, Finance and Accounting	\$5,165,700	22.0
Information Technology	Includes IT-related expenses and other CIO related activities	\$2,867,000	17.0
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$3,673,400	6.0
Human Resources	All HR services, including EEO	\$1,699,200	14.0
<b>TOTAL</b>		<b>\$21,653,700</b>	<b>96.0</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

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## **APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**

### **SUBACTIVITY: OPERATIONS AND RESEARCH**

The objectives of the Operations and Research subactivity are to:

- Provide up-to-date and accurate weather forecasts, warnings, and outlooks to the Nation
- Support the emergency management community
- Engage in outreach and education activities to support public decisions

NOAA's NWS serves the people of the United States 24 hours each day. NWS is the sole, official and authoritative United States voice for issuing warnings during life-threatening weather situations. NWS forecasters issue public, aviation, marine, fire weather, climate, space weather, river and flood forecasts and warnings every day for the U.S., its territories, adjacent waters and ocean areas, to protect life and property and enhance the national economy.

NWS has over 4,600 employees in 122 Weather Forecast Offices (WFO), 13 River Forecast Centers (RFC), 9 National Centers for Environmental Prediction (NCEP), and other support offices around the country. In addition, NWS supports a national infrastructure to gather and process data worldwide from the land, sea, and air. This infrastructure collects data from technology such as Doppler weather radars, satellites operated by NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), data buoys for marine observations, surface observing systems, and instruments for monitoring space weather. This data feeds sophisticated models running on high-speed supercomputers. A highly trained and skilled workforce uses powerful workstations to analyze all of these data and issue forecasts and warnings. High-speed communications tie this entire information infrastructure together and disseminate forecasts and warnings to the public.

NWS staff also use trained community volunteers to enhance weather service operations. Cooperative observers collect weather data that become part of the Nation's climate records and citizen storm spotters provide NWS with visual confirmation of severe weather events. As environmental information becomes more sophisticated, complete, and available to all, the environmental literacy of the public becomes more important. NWS outreach and education activities are aimed at making sure the public understands the information we provide and can use it effectively in the decisions they make.

### **LOCAL WARNINGS AND FORECASTS BASE**

Local Warnings and Forecasts Base includes the following activities:

***Cooperative Observer Program (COOP):*** The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the Nation's weather and climate observing network of, by and for the people. More than 11,000 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data are truly representative of where people live, work and play. The COOP was formally created in 1890 under the Organic Act. The observational data obtained from the network is critical for snow forecasts for amount, liquid to water equivalence, snow depth, precipitation type forecasts, flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The COOP network continues to be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages. Operations costs for the COOP network, such as labor, travel, and expendable materials, are funded within the Local Warnings and Forecasts Base. Sustainment and modernization activities for the COOP, such as

precipitation gauge and temperature sensor improvements, are funded within the Sustain Cooperative Observer Network PPA.

**Upper Air (UA) Observations Program** (<http://www.ua.nws.noaa.gov>) provides meteorological data to support NWS forecast operations. NWS operates 92 radiosonde stations in the United States and supports 10 additional stations in the Caribbean and launches over 78,000 radiosondes from these sites each year. A radiosonde is a small, expendable instrument package that is launched by a large hydrogen or helium gas filled balloon. During its flight, the radiosonde measures and transmits profiles of pressure, temperature, and relative humidity. Winds are measured by the instrument drift over the flight path. Pressure, temperature, wind and humidity data are significant sources for NWS weather prediction models and NWS forecaster operations, which are used to support severe storm, aviation and marine forecasts, and climate and other research uses. Radiosondes also serve to correct biases in satellite sounding data and as verification data for operational forecasts .

**Marine and Coastal Weather Services** (<http://www.nws.noaa.gov/om/marine/marine.shtml>) encompass a vast area from inter-coastal waterways to near-shore bays and inlets to the open oceans that span much of the Northern and Western Hemispheres. The program aims to promote safe and efficient transportation in support of both commercial and recreational interests and commercial and recreational fishing industry. Forecasts, analyses, watches, warnings and advisories of maritime conditions, as well as coastal and tropical hazards are provided by forty-seven coastal WFOs and three components of NCEP, including the Ocean Prediction Center, the Hydrological Prediction Center, and the National Hurricane Center (<http://www.ncep.noaa.gov>). These services are provided for the coastal waters, offshore, high seas waters, and Great Lakes nearshore and open lake waters.

Using observational data sources such as buoy observations and satellite imagery, numerical model forecast guidance provided by various sources such as NCEP and the NOAA Office of Oceanic and Atmospheric Research's (OAR) Great Lakes Environmental Research Laboratory, as well as analyses of ice from the National Ice Center (NIC) (<http://www.natice.noaa.gov>), the forecasters at tropical and marine centers and coastal and Great Lakes offices maintain a continuous monitoring of weather conditions over marine zones. Routine forecast products and analyses, watches, warnings and advisories are disseminated in alphanumeric, gridded, and graphical formats to describe maritime conditions and tropical and coastal hazards. Marine and coastal products describe wind, waves, visibility, icing, coastal flooding, severe weather, high surf, and rip currents. Tropical products describe hazards associated with tropical cyclones such as storm surge, wind, waves, and inland impacts.

NWS is focused on enhanced forecaster training, increased customer outreach, and implementation of new products. One area of focus is to educate emergency managers and all users on the strengths, limitations, and application of new tropical cyclone probabilistic wind speed products. Enhanced customer outreach and training is provided for coastal hazards such as rip currents and high surf.

Over the next several years NWS plans to expand the National Digital Forecast Database (NDFD) to support new marine and tropical gridded products in the coastal, offshore and high seas zones. Ocean and marine gridded products in the NDFD include 6 separate Probabilistic Tropical Cyclone Surface Wind Speed grids, and Wind speed and Significant Wave Height grids in the coastal zone.

**National Data Buoy Center (NDBC)** (<http://www.ndbc.noaa.gov>) operates a global network of over 200 observing platforms to provide marine meteorological, oceanographic and geophysical observations accurately and in real-time to assist warning centers, marine forecasters, the U.S. Coast Guard, ocean platform operators and the public in making sound decisions to safely operate in the marine environment.

NDBC's Weather and Ocean Platform network includes 101 moored buoys and 48 land-based coastal marine stations. They are deployed in the coastal and offshore waters from the western Atlantic to the Pacific Ocean around Hawaii, and from the Bering Sea to the South Pacific. This network provides forecasters with frequent, high-quality marine observations for forecast preparation and to verify forecasts after they are produced. Other users rely on the observations and forecasts for commercial and recreational activities.

All stations measure wind speed, direction, and gusts; barometric pressure; and air temperature. In addition, all buoy stations, and some Coastal Marine Automated Networks (C-MAN) stations, measure sea surface temperature and wave height and wave period. Conductivity and water current are measured at some stations as well.

NDBC operates and maintains the Tropical Atmosphere Ocean (TAO) array, designed for the study of year-to-year climatic variations related to El Niño and the Southern Oscillation (ENSO). The array consists of 55 moored ocean buoys and 4 Acoustic Doppler Current Profilers (ADCP) in the equatorial Pacific. The buoys collect real-time air temperature; relative humidity; wind speed and direction; ocean temperature and pressure; however some buoys collect shortwave radiation; rainfall amounts; and ocean currents.

To support the buoy network, NDBC's Industrial Operations and Engineering Complex has specialized equipment and provides NDBC with the environment needed to support the assembly and service of Weather and TAO buoys and C-MAN stations. Buoy hulls are refurbished in the onsite sandblast and painting facility. Equipment integration and testing aboard the buoys are accomplished in high bays. Sensors are calibrated in wind tunnels or environmental chambers, and later tested with the onboard station microprocessors, called payloads, on test stands at the outside sensor test facility. Final calibration and testing of the completed buoy systems are accomplished in the onsite canal.

**Fire Weather Services** (<http://weather.gov/fire>) support national, regional and local land management agencies such as the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). NWS issues a complete Fire Weather Forecast twice daily, with updates as needed. The forecast contains weather information relevant to fire control and smoke management for the next 36-48 hours. Once per day, NWS meteorologists issue forecasts for specific wildland observation sites for input into the National Fire Danger Rating System (NFDRS). NFDRS determines land use restrictions and informs the public of the daily fire danger via the Smokey Bear awareness campaign. The WFOs issue Fire Weather Watches or a Red Flag Warnings based upon a prescribed set of criteria. These products alert not only the public, but other agencies that conditions are creating the potential for extreme fire behavior.

On the national level, the NWS Storm Prediction Center issues assessments for one, two, and 3-8 days in advance of the development of critical fire weather patterns. These include large-scale areas that may experience critical fire weather conditions including the occurrence of "dry thunderstorms." These thunderstorms, containing little precipitation, are responsible for thousands of fires annually.

Upon request, NWS also provides on-scene assistance at large wildfires or other disasters, including HAZMAT incidents. Incident Meteorologists (IMETs) are NWS forecasters specially trained to work with Incident Management Teams during severe wildfire outbreaks or other disasters requiring onsite weather support. IMETs travel quickly to the incident site and then assemble a mobile weather center capable of providing continuous meteorological support for the duration of the incident. IMETs can be deployed anywhere a disaster strikes. There are 87 IMETs nationally with IMET equipment.

**Climate Services Division (CSD)** (<http://www.nws.noaa.gov/om/csd/>), at NWS headquarters, provides the strategic vision for climate services within NWS and oversees the NWS regional and local climate services programs. The regional and local offices deliver short-term climate products, information, and services, which in many cases are based on products and guidance from the Climate Prediction Center. At the NWS Headquarters level, the division also sets NWS regional and local policies and procedures for climate prediction products, defines service and mission needs, solicits user feedback to evaluate new products and services, and approves final product design. CSD provides internal training for NWS operational field personnel, and external user targeted training and outreach on climate variability and change. CSD coordinates across NOAA lines; with federal agencies; the university community; and the private sector, and encourages collaborative arrangements among various regional, state and local climate stakeholders.

**Water Resource Forecast Services** extend basic NWS hydrologic forecasting services to include a Community Hydrologic Prediction System (CHPS) and provide water resource managers with localized water and soil condition forecasts. CHPS, the backbone NOAA's national water information strategy, will allow NOAA's research and development enterprise and operational service delivery infrastructure to be integrated and leveraged with other federal water agency activities and the private sector. Through CHPS, NOAA will deliver a new suite of high-resolution forecasts, including estimates of uncertainty, for stream flow, soil moisture, soil temperature, and many other variables directly related to watershed conditions, via collaboration and sharing of data and algorithms with university and private sector research groups. Furthermore, these activities will enable NOAA to deliver a national database of hydrologic analyses and predictions, and generate user-friendly Geographic Information Systems (GIS) products for monitoring floods and drought. This activity contributes to the National Integrated Drought Information System (NIDIS).

**River & Flood Forecast Services** are provided in the form of daily river forecasts by the 13 NWS River Forecast Centers (RFC) (<http://water.weather.gov/ahps/rfc/rfc.php>) using hydrologic models based on rainfall, soil characteristics, precipitation forecasts, and several other variables. Some RFCs, especially those in mountainous regions, also provide seasonal snow pack and peak flow forecasts. These forecasts are used by a wide range of users, including those in agriculture, hydroelectric dam operation, and water supply resources. The information is also the basis for local flood and flash flood warnings, watches, and advisories issued by the WFOs that emphasize flooding impacts depending on geographic area, land use, time of the year, and other factors.

**The Aviation Weather Center (AWC)** (<http://aviationweather.gov/>), located in Kansas City, Missouri, is the mechanism by which the U.S. disseminates its weather forecasts to the aviation community under an international agreement through the International Civil Aviation Organization. The AWC provides wind, temperature, and flight hazard (e.g., icing and turbulence) forecasts for flight planning and en route aircraft operations for the U.S., the North Atlantic and north Pacific routes, and some routes in the Southern Hemisphere. In addition to

the en route weather support provided for the aviation industry, the AWC also produces guidance products for use by WFOs in support of the airport terminal forecast function. Thus, the AWC discharges large-scale, global aviation functions which can be sensibly centralized, while the WFOs discharge local aviation functions based on centralized guidance provided by the AWC.

**The Space Weather Prediction Center (SWPC)** (<http://www.swpc.noaa.gov>) in Boulder, CO, provides real-time monitoring and forecasting of solar and geophysical events and develops techniques for forecasting solar and geophysical disturbances. The SWPC operates the national civilian space weather operations center. Forecasts, alerts, and warnings are provided to customers on a 24 hour-per-day, seven day a week basis. SWPC products are synthesized from over 1,400 data streams providing observations of the solar terrestrial environment. The center serves many industries and private-sector clients, such as: the power industry, the airline industry, and satellite operators. SWPC also provides services to numerous government agencies including: the Federal Emergency Management Agency (FEMA), the Department of Defense (DoD), the Federal Aviation Agency (FAA), the Department of Energy (DOE), the Department of Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA).

With a rapidly growing customer base and expanding interest in critical areas (airline safety, dependability and accuracy of GPS, reliability of electric power, and emerging commercialization of space), new demands for space weather information and services are emerging, modeling capabilities are critical to the meet these increasing demands. This investment will support the scientific development necessary to improve data assimilation, enhanced prediction tools, and model development capabilities for key components of the coupled earth-system modeling effort that will ultimately link weather phenomena, both space weather and terrestrial weather, into one unified modeling framework.

The AWC and the SWPC are managed by NCEP, which is described under the Central Forecast Guidance (CFG) subactivity.

#### **Schedule & Milestones:**

##### FY 2013

- Develop integrated fire weather/incident response training curriculum, and conduct annual IMET Type 1 and IMET Types II/III Workshops.
- Maintain FX-Net operations to assure remote data access for IMETs

##### FY 2014

- Space Weather products transitioned and operational on NWS AWIPS II
- Benchmark of user needs for NOAA's fire weather products and services and identify needed improvements
- Refine performance metrics for fire weather forecasts elements and make this information available to land management partners

##### FY 2015

- Geospace model fully operational
- Cyclical replacement of IMET equipment

##### FY2016

- Steady state

##### FY 2017

- Whole Atmosphere Model (WAM) transitioned into operations
- Steady state

**Deliverables:**

- All NWS space weather products and data displays available through AWIPS II
- Improved geomagnetic disturbance forecasts available for the management of the Nation's electric power grid
- Improved forecasts of space weather conditions leading to communication and GPS outages
- CHPS fully operational
- Augment NWS fire weather distance learning suite by at least one new course annually to fully train workforce on Incident Command System
- Provide a real-time verification database of fire-weather forecast elements to land management partners
- Develop wildland fire observing system and strategy for improving observations and data management

**Performance Goals and Measurement Data:**

<b>Performance Measure<sup>1</sup></b>	<b>FY 11 Actual</b>	<b>FY 12 Target</b>	<b>FY 13 Target</b>	<b>FY 14 Target</b>	<b>FY 15 Target</b>	<b>FY 16 Target</b>	<b>FY 17 Target</b>
Tornado Warnings Lead Time, Measure 15a	15	13	13	13	13	13	13
Tornado Warnings Accuracy, Measure 15a	75	72	72	72	72	72	72
Tornado Warnings False Alarm Ratio, Measure 15a	74	72	72	72	71	71	71
Flash Flood Warnings Lead Time, Measure 15b	73	42	45	46	47	48	48
Flash Flood Warnings Lead Accuracy, Measure 15b	79	74	74	74	76	76	76
Winter Storm Warnings Lead Time, Measure 15f	20	19	20	20	20	20	20
Winter Storm Warnings Accuracy, Measure 15f	88	90	90	90	90	90	90
Marine Wind Speed Forecast Accuracy, Measure 15g	75	71	72	72	72	72	72
Marine Wave Height Forecast Accuracy, Measure 15g	77	75	75	75	76	76	76
Aviation Forecast IFR Accuracy, Measure 15h	63	65	65	65	65	65	65
Aviation Forecast IFR False Alarm Ratio, Measure 15h	39	40	38	38	38	38	38
Geomagnetic Storm Forecast Accuracy, Measure 15i	-	-	40	40	40	40	40

<sup>1</sup> Descriptions of these GPRA measures are provided on pages 60-62.

### **AIR QUALITY FORECASTING**

In FY 2013, NOAA proposes to discontinue the development of the National Air Quality Forecasting Capability. Remaining funding will sustain on-demand dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases, supporting aviation affected by volcanic activity.

**The schedule, milestones, and deliverables for Air Quality Forecasting are provided with the program change requested for this activity.**

### **ALASKA DATA BUOYS**

This program was instituted to expand the Alaskan coastal buoy network. The buoys report hourly marine weather information including wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information such as swell height, significant wave height, period, and steepness. These buoys provide data which result in more accurate weather forecasts and warnings by providing routine near real-time meteorological and oceanographic information that was not otherwise available. Weather information transmitted by the buoys is added to the computer models that help meteorologists with long range outlooks in addition to short term forecasts and warnings.

#### **Schedule & Milestones:**

- Maintain Alaska Data Buoy array (FY 2013 – 2017)

#### **Deliverables:**

- Hourly marine weather wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information

### **SUSTAIN COOPERATIVE OBSERVER NETWORK**

This continued investment maintains and modernizes the nationwide network of volunteer-operated weather observing sites, funding activities such as precipitation gauge and temperature sensor improvements. Operational costs, such as labor, travel, and expendable materials, for the COOP network are funded under the Local Warnings and Forecasts Base. The COOP network began with the Organic Act of 1890. The observational data obtained from the network is critical for snow forecasts for amount, liquid to water equivalence, snow depth, precipitation type forecasts, flood outlooks, flood forecast guidance modeling, monitoring of droughts, issuing local weather forecasts, and declaration of disasters by government officials. The data from the COOP program is the primary data utilized in the NWS model forecasts guidance for snowfall predictions. The COOP network continues to be used by NOAA to prepare national, regional, and local climate forecasts and is critical in the development of climatological normals and averages. The network's instruments require continued refreshment to ensure sustainability and accuracy. Base funding provides for maintenance activities, sustaining and modernizing equipment, as recommended by the National Research Council in 1998. In FY 2002, NWS began network refurbishment with the replacement of rain gauges and temperature sensors. Rain gauge refurbishment is estimated to be complete by the end of 2013.

**The schedule, milestones, and deliverables for Sustain Cooperative Observer Network are provided with the program change requested for this activity.**

### **NOAA PROFILER NETWORK (NPN)**

NPN is a network of 35 operational and two non-operational support Wind Profilers that were installed starting in 1988. Wind Profilers, vertical looking radars, are used across the Nation to track upper air wind profiles that detect the potential development of severe convective weather. The Wind Profilers also provide information that leads to improved forecasts of other types of dangerous weather, such as tornadoes and winter storms, and provides useful information for issuing aviation advisories, volcanic ash plumes tracking and wildfire predictions. Due to frequency interference that will occur when the European Galileo satellites become operational and the cost to refresh and convert the frequency of the NPN, by FY 2013 NOAA will only sustain three NPN sites located in Alaska that are operating outside of the interfered frequency band.

**The schedule, milestones, and deliverables for NPN are provided with the program change requested for this activity.**

### **STRENGTHEN U.S. TSUNAMI WARNING PROGRAM**

Strengthen U.S. Tsunami Warning Program (SUSTWP) is supported by the Pacific Tsunami Warning Center (PTWC) (<http://www.prh.noaa.gov/ptwc>) at Ewa Beach, Hawaii and the West Coast/Alaska Tsunami Warning Center (WC/ATWC) (<http://wcatwc.arh.noaa.gov>) at Palmer, Alaska. These centers issue tsunami watches and warnings for all U.S. communities at risk. NWS collects and analyzes observational data from an international network of seismological observatories and sea level observing stations that operate on a cooperative basis. Observational data is also collected from the NOAA Deep Ocean Assessment and Reporting of Tsunamis (DART) Buoy Network. The DART Buoy Network consists of 39 deep-water buoys located throughout the Pacific Ocean, Atlantic Ocean, and Caribbean. The centers use these data to prepare watches and warnings covering all U.S. territories and states bordering on the Pacific and Atlantic Ocean Basins and disseminate them to WFOs, federal and state disaster agencies, military organizations, private broadcast media, and other facilities that can furnish warning information to the public.

In FY 2004, NWS assumed operational responsibility for the National Tsunami Hazard Mitigation Program (NTHMP) (<http://nthmp.tsunami.gov/>). The goal of the NTHMP is to ensure adequate advance warning of tsunamis along all U.S. coastal areas and appropriate community emergency response to a tsunami event. In response to the destructive Indian Ocean Tsunami, the U.S. Tsunami Warning Program (including the NTHMP) was upgraded and expanded to enhance the monitoring, detection, warning, and communications designed to protect lives and property for all U.S. communities at risk. In FY 2008, the U.S. Tsunami Warning Program achieved full operating capability.

**The schedule, milestones, and deliverables for Strengthen U.S. Tsunami Warning Program are provided with the program change requested for this activity.**

### **PACIFIC ISLAND COMPACT**

The U.S. maintains a Compact of Free Association (COFA) or agreement with the Republic of the Marshall Islands (RMI), the Federated States of Micronesia (FSM), and the Republic of Palau (ROP) to provide basic government and commerce services including weather services to these island nations. The Compact provides the necessary funding to support the NWS Weather Service Offices (WSO) and associated weather warning, forecast, and observation services for these islands including WSO Majuro, RMI; WSOs Pohnpei, Yap and Chuuk of the FSM, and WSO Koror of ROP. This continued investment will also preserve critical weather

observation infrastructure and services in the Pacific necessary to support core NOAA mission responsibilities in the Pacific such as aviation, typhoon, and marine forecasts; climate monitoring; and support to U.S. Navy operations.

**Schedule & Milestones:**

FY 2013 - 2017:

- Provide weather warning, forecast, and observation services

**Deliverables:**

N/A

**ADVANCED HYDROLOGIC PREDICTION SERVICE (AHPS)**

AHPS is a web-based suite of river-forecast products providing new information on the magnitude and certainty of occurrence of floods or droughts, from hours to days and months before an event. Prior to AHPS, river forecasts were text products with 1-, 2-, and 3-day lead times and were delivered via the weather wire. Congressional funding for AHPS began in FY 2000. When implementation is complete, advanced river forecast information will be provided at 4,011 locations throughout the United States to assist emergency managers, water managers, and the general public in making decisions based on improved forecasts and the certainty of a hydrologic event.

**AHPS Objectives:**

- Produce more accurate forecast information incorporating advanced hydrologic science in NWS models
- Provide more specific and timely information on fast-rising floods with increased lead time
- Create new formats, including graphics, for products that are easier to understand and use
- Create more information to assess the risk to flooding, including forecast probability
- Provide products with forecast horizons two weeks or further into the future
- Increase the distribution of products using advanced information technologies (such as web-based GIS formats and the internet) to provide broader and more timely access and delivery of information
- Implement partnered flood forecast inundation mapping
- Expand outreach and engage partners and customers in all aspects of hydrologic product improvement

The NWS has the primary responsibility among the federal agencies to provide advanced alerts via flood warnings and forecasts in the United States (in accordance with the Weather Service Organic Act, 15 USC 313; Inland Flood Forecasting and Warning System Act of 2002, 15 USC 313c; and NOAA Reorganization Plan No. 4 of 1970 as amended, 5 USC 1557-61, 1994). Through AHPS, the NWS provides forecasts to all users of hydrologic predictions and meets AHPS Objectives (see above).

**Schedule & Milestones:**

- See Program Performance Measures and Deliverables below

**Deliverables:**

- Incorporate advanced hydrologic science into NWS models

- Provide more specific and timely information on fast-rising floods with increased lead time
- Deliver graphic forecast products that are easier to use
- Provide probabilistic forecasts useful to assess river level and flood risk
- Provide products with forecast horizons two weeks or further into the future
- Increase the distribution of products using advanced information technologies (such as the internet and web-based GIS formats) to provide broader and more timely access to and delivery of information; and
- Provide partnered flood forecast inundation mapping at selected locations
- Expand outreach and engage partners and customers in all aspects of hydrologic product improvement

**Performance Goals and Measurement Data:**

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Total Forecast Locations with AHPS (#)	3,003	3,413	3,739	4,011	4,011	4,011	4,011
<b>Description:</b> Number of forecast locations that will have AHPS capability to assist emergency managers, water managers, and the general public to make decisions based on the probability of a hydrologic event taking place.							

**AVIATION WEATHER**

The Aviation Weather Program is focused on improving the accuracy, timeliness and consistency of aviation weather products and services to improve the safe and efficient flow of air traffic in the National Airspace System (NAS). The program supports the Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), and the World Meteorological Organization (WMO), as well as the aviation industry and stakeholders. In response to the requirements of the international community and FAA, aviation weather products issued by NWS span the globe.

The Aviation Weather Program serves as the focal point for NOAA's role in the multi-agency Next Generation Air Transportation System (NextGen) and is the lead for NOAA's development of the NextGen 4-D Weather Data Cube Services. This virtual repository of weather information will integrate observed and forecast weather information into an automated, multi-agency, coordinated air traffic management system. Planned NextGen 4-D Weather Data Cube Services activities consist of development of the operational NextGen 4-D Weather Data Cube Services systems, establishing connectivity between legacy NWS datasets and the NextGen 4-D Weather Data Cube Services prototype, to meet NextGen Weather Initial Operational Capability (IOC) requirements.

Numerous programs contribute to NWS's aviation weather forecast and service capabilities. NWS maintains an extensive surface, upper air, and radar weather observing program and a nationwide aviation weather forecasting service capability. Aviation services are provided to FAA and other NWS customers in two general categories, which include Terminal Area Forecast (TAF) and en route area forecasts and advisories. GPRA targets for ceiling and visibility accuracy and false alarm ratio are derived from information in TAFs generated by 122 WFOs for more than 630 specific airports. Numerous area forecast products are provided for both domestic and international airspace, including text area forecasts, collaborative convective

forecast products, AIRMETs (AIRman's METeorological Information), SIGMET (Significant Meteorological Information) weather advisories, and en route pilot guidance.

The acquisition of data from aircraft-based water vapor sensors and a variety of product enhancements and training activities are also managed from this program. All aviation weather projects support increasing and improving observation capabilities, improved forecast products and techniques, outreach and training, operational adaptation of applied research, and verification of forecast products.

Economic activity attributed to civil aviation-related goods and services totaled \$1.3 trillion in 2009, generating 10.2 million jobs with \$394.4 billion in earnings. Aviation accounted for 5.2 percent of America's Gross Domestic Product. (See FAA's *The Economic Impact of Civil Aviation on the U.S. Economy*, August 2011). The Congressional Joint Economic Committee estimates that air traffic delays cost the U.S. Economy over \$41 Billion in 2007, of which 70% are related to adverse weather. The FAA has determined that two thirds of these weather delays are avoidable with better, more integrated weather information, reducing the number of delays by 46% and saving \$19 Billion annually (See FAA's Research, Engineering and Development Advisory Committee (REDAC), in its "*Report of the Weather-ATM Integration Working Group* (3 Oct, 2007)). As the demand for air traffic grows, air traffic delays and the associated economic toll will only increase.

The multi-agency NextGen Joint Planning and Development Office (JPDO) developed a plan to achieve these required improvements and accommodate the expected growth in demand. A critical component of the NextGen plan is the integration of weather information into air traffic operations. To enable this integration, JPDO is calling for the creation of rapidly updated, high-resolution probabilistic weather information consistent across space and time and accessible to all NAS managers and users through a network-enabled infrastructure. This information will be produced by an enhanced forecast process, where meteorologists use automated, rapidly updated gridded datasets to add value to guidance. This capability does not presently exist within the Federal government, and the JPDO partner agencies are depending on NOAA, as the Federal experts in the provision of weather information, to deliver it.

NOAA is legislatively mandated by Title 49 of the U.S. Code to provide weather information to the FAA. In addition, Public Law No 108-176 directs DOT, FAA, DOC, NASA and JPDO to conduct integrated planning for research to operations to support NextGen. This investment represents a coordinated effort spanning two line offices and three NOAA programs. It will result in a significant increase in weather prediction and dissemination capabilities with wide-ranging benefits across NOAA.

#### **Schedule & Milestones:**

FY 2013

- Award contract for NextGen 4-D Weather Data Cube development and implementation contractor
- Plan for enhanced aviation forecast processes to meet emerging NextGen forecast performance requirements
- Implement the World Area Forecast Centers gridded forecast products for icing
- Acquire additional water vapor data via aircraft observation
- Meet WMO requirement for certification of aviation weather forecasters
- Develop automated and gridded aviation weather elements including ceiling, visibility, and convection

#### FY 2014

- NextGen 4-D Weather Data Cube Critical Design Review
- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training
- Implement gridded aviation weather elements

#### FY 2015

- OT&E and deployment of NextGen 4-D Weather Data Cube
- Implement high resolution models in NWS operations with available High Performance Computing resources
- Implement digital aviation services to provide consistent operational forecast products from gridded weather elements
- Develop improved volcanic ash modeling to enhance aviation safety
- Acquire additional water vapor data via aircraft observation

#### FY 2016

- Deploy Network Enabled Verification Service (NEVS) Phase 1
- Enhance ensemble and probabilistic modeling techniques for aviation parameters
- Develop prototype of dynamic Single Authoritative Source generation
- Complete implementation of Traffic Flow Management weather support solutions
- Acquire additional water vapor data via aircraft observation
- Improve skill in aviation weather forecasting through training

#### FY 2017

- Extend NEVS technology for access to real-time verification information
- Optimize 4-D Weather Data Cube to accommodate additional data providers, users and increase data throughput

#### **Deliverables/Outputs:**

- NextGen Weather Capability IOC
- Network Enabled Verification System Phase 1 for NWS products
- Impact-based performance measures for weather forecast impact on air traffic
- Operational aviation advisory and forecast product generation from grids to improve forecast consistency for aviation products
- Operational WAFC icing gridded forecast product
- Distance Learning Aviation Course (DLAC) modules 3 and 4
- Acquire water vapor data from aircraft for increased granularity and greater accuracy in numerical models

#### **WEATHER FORECAST OFFICE MAINTENANCE**

This continued investment allows NWS to fund recurring maintenance contracts and address priority maintenance repairs. WFOs provide forecasters with modernized facilities, supporting the advanced technology systems and the provision of weather service to the public. As WFOs continue to age, the facilities require recurring and cyclic maintenance. This investment allows NWS to protect the \$250 million capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards.

**The schedule, milestones, and deliverables for WFO Maintenance are provided with the program change requested for this activity.**

### **NOAA WEATHER RADIO TRANSMITTERS BASE**

NOAA Weather Radio (NWR) was designed to be used as a reliable, inexpensive means of communicating weather related warnings directly to the public. The existing infrastructure of NWR has tremendous potential for use communicating warnings and information about non-weather related hazards and emergencies. NOAA has had extensive meetings with the Department of Homeland Security, discussing the use of NWR as an all hazards warning system. NWS received an appropriation of \$5.4 million in FY 2004 to make NWR an all hazard warning network. NWR infrastructure as a national warning network consists of over 1000 existing broadcast stations; broadcast coverage that reaches 98 percent of the nation's population; and the ability to deliver the broadcasted message to individuals monitoring their own NWR receivers as well as the ability to reach millions of listeners and viewers since NWR signal enters the Emergency Alert System, which is monitored by television and radio license holders.

Program resources are used to fund management and contract costs for the NWR sites maintained under the National Maintenance Contract. No FTEs are associated with this program.

NWR is the only NWS dissemination system capable of reaching individuals at nominal cost (individual purchase of NOAA weather radio) and is the only system the Federal Communications Commission mandates that broadcast media outlets monitor as a source of public safety announcements. The United States Federal Response Framework, Emergency Support Function Annex #2 – Communications, tasks NOAA/NWS to provide public dissemination of critical pre and post event information on the All Hazards NWR.

### **Schedule & Milestones:**

**FY 2013 – FY 2017:** Maintain NWR services

### **Deliverables:**

- 405 Sites x 3/year Preventative Maintenance and/or Corrective Action Visits
- 841 Sites Logistics and Spare Parts Provisioning and Line Replaceable Unit Repair Support

### **CENTRAL FORECAST GUIDANCE**

The Central Forecast Guidance (CFG) Program provides an integrated suite of weather and environmental forecast guidance from the short-term through seasonal, inter-annual, decadal, and centennial time frames and specific tailored forecast products. CFG consists of seven National Centers for Environmental Prediction (NCEP) (<http://www.ncep.noaa.gov>) and also funds NOAA's Hurricane Forecast Improvement Project (HFIP). NCEP provides the backbone of NOAA's Weather Ready Nation goal by providing expert analysis and prediction services to the local weather forecast office infrastructure. Forecasters use these services as the basis for local forecast products. The total forecast process depends critically on both NCEP products and local forecast efforts to enhance both accuracy and uniformity of service across the country.

NCEP also provides the principal means through which NOAA provides operational weather, ocean, coastal, and climate prediction services for large areas, up to and including the entire globe, to a vast assortment of domestic and international users. These services typically

exceed the domain of a single WFO, and require a large supercomputer; efficiency demands that these forecasts be generated centrally. Users include numerous private weather providers, airlines, government research laboratories, media outlets, energy companies, the military, insurance and safety organizations, academic institutions, storm spotters and chasers, and various American Meteorological Society listservs.

NCEP's science-based, service-oriented complementary centers generate environmental prediction products and three central activities supporting those services. Each center depends on the observational infrastructure, data assimilation systems, numeric modeling function, and application of model output statistics to produce value-added forecast guidance products for NWS field offices and direct users. The seven centers that are proposed to be funded through CFG in FY 2013 are described below. NCEP's two additional science-based centers, the Aviation Weather Center and the Space Weather Prediction Center, are funded through Local Warnings and Forecasts Base.

**Climate Prediction Center (CPC)** (<http://www.cpc.noaa.gov/index.php>), located in Camp Springs, Maryland, includes a broad range of climate products and services related to climate monitoring, short-term climate fluctuation forecasts, and information on the impacts of climate patterns on the nation. Their product suite spans time scales from a week to seasons, extending into the future as far as technically feasible, and covers the land, the ocean, and the atmosphere, extending into the stratosphere. These climate services are available for users in government, the public and private industry. Applications include the mitigation of weather-related natural disasters and uses for social and economic good in agriculture, energy, transportation, water resources, and health. Continual product improvements are supported through diagnostic research, increasing use of models, and interactions with user groups.

Additionally, WFOs issue daily and monthly climate reports for their areas, providing localized information about temperature and precipitation records and extreme events such as droughts. WFOs serve as the local NOAA user interface for climate services, including outreach and education in this area. They are also the stewards for the integrity and continuity of the historical climate record in their area of responsibility.

The **Storm Prediction Center (SPC)** (<http://www.spc.noaa.gov/>), located in Norman, Oklahoma, provides timely and accurate forecasts and watches for severe thunderstorms and tornadoes over the contiguous United States. The SPC also monitors heavy rain, heavy snow, and fire weather events across the U.S. and issues specific products for those hazards. The forecast products cover time scales ranging from a few hours out to eight days. Products issued from the SPC supply specific guidance to WFOs about the probability and intensity of hazardous weather occurrences.

The **Hydrometeorological Prediction Center (HPC)** (<http://www.hpc.ncep.noaa.gov/>), located in Camp Springs, Maryland, is responsible for preparing quantitative precipitation forecasts (QPF) that are used by WFOs to develop local rainfall, snow, and ice forecasts and by the Regional Forecast Centers (RFC) to develop local river and flood forecasts. The HPC provides special QPFs and coordinates with other federal agencies such as the Federal Emergency Management Agency (FEMA) during major flood events. The HPC also provides an array of analysis and forecasts of frontal systems, pressure patterns, temperature, and precipitation for use by WFOs and the private weather community.

The **Ocean Prediction Center** (OPC) (<http://www.opc.ncep.noaa.gov/>), located in Camp Springs, Maryland, discharges domestic and international meteorological products to marine interests under the International Convention for Safety of Life at Sea, to which the U.S. is a signatory. It is a central resource for marine interests operating outside the domain of coastal WFOs. The OPC provides weather and sea state warnings and forecasts for the offshore waters and high seas of the Northern Hemisphere for planning and operational purposes. Its warnings and products go directly to ships at sea via several dissemination methods, and are vital for the protection of life and property. The OPC also provides guidance for WFOs with coastal responsibilities, which extend out to nearly 100 nautical miles. Coastal WFOs have responsibility for forecasts and warnings out to that limit, while the centralized OPC has responsibility for offshore and high seas waters.

The NCEP experts in the area of tropical meteorology are concentrated at the **National Hurricane Center** (NHC) in Miami, Florida (<http://www.nhc.noaa.gov/>). Services provided by the NHC include advisories, watches, and warnings for tropical cyclones in the North Atlantic and eastern North Pacific oceans, the Caribbean Sea, and the Gulf of Mexico, including the portions of the U.S. coastline threatened by such storms. In addition, forecasters provide aviation and marine analyses and forecast products for the same areas of responsibility. The NHC functions both to provide guidance, coordination, and tropical weather expertise to WFO forecasters and to serve users of centrally generated products.

NCEP also maintains two critical support organizations to facilitate the central forecast guidance process:

**NCEP Central Operations** (NCO) (<http://www.nco.ncep.noaa.gov/>) operates the NOAA Weather and Climate Operational Supercomputer, manages the model production suite upon which all NCEP services are based, the communications linking the several parts of NCEP, and NOAA's Climate Service provides operational quality assurance of incoming observations and outgoing products. NCO staff also provides central support for software development for data processing, display, interaction, and product generation. NCO is the technical transition point between the development of numerical weather and climate prediction models and their operational use by forecasters at NCEP and the WFOs. NCO staff also provides central support for software development for data processing, display, interaction, and product generation. NCO consists of computing, communications, and software specialists, as well as meteorologists with special knowledge of numerical modeling operations. The NCO organization provides system support and maintenance, administration and other user support services on a 24-hour basis for NCEP operational computing and communications systems ensuring a secure and reliable "system of systems" infrastructure that comprises radar imaging, satellite imaging, model guidance, and sounding media used in the visualization and analysis of weather and climate information.

**NCEP's Environmental Modeling Center** (EMC) (<http://www.emc.ncep.noaa.gov/>) develops, enhances, and maintains complex data assimilation and numerical modeling software systems that span the globe. The computer models and other numerical forecast products developed by the EMC provide the basic guidance that meteorologists at NCEP and the WFOs use in making weather and climate predictions. EMC serves as the integrator of numerical modeling research and development performed from universities and research laboratories. EMC conducts model impact studies to validate data sets that lead to new data requirements from observing technologies (e.g., satellites, radar, etc.).

**NOAA Center for Weather and Climate Prediction** (NCWCP) in College Park, Maryland, is a new facility that will replace the current World Weather Building (WWB) with a new state-of-the-art facility to meet the operational requirements of NCEP, NOAA's NESDIS Center for Satellite Applications and Research and Satellite Services Division, and NOAA's OAR Air Resources Laboratory. NWS demonstrated positive results of co-locating its Forecast Offices with research laboratories and universities in the form of improved weather forecast performance scores; NWS hopes to see similar improvements by co-locating these NOAA offices. NOAA intends to use this model to accelerate the transfer of weather and climate research into operations, improve forecast models, and provide a focus for improving environmental satellite data assimilation. Further, co-locating the new facility in a scientific, academic setting will increase the recruitment and retention of top scientists as needed to advance NOAA's programs.

Another critical program activity within CFG is the **Hurricane Forecast Improvement Project** (HFIP). HFIP's goals include improving the accuracy and reliability of hurricane track and intensity forecasts; extending lead time for hurricane forecasts with increased certainty; and increasing confidence in hurricane and storm surge forecasts.

#### **Schedule & Milestones:**

##### **NCEP Centers**

FY 2013-2017

- Implement model upgrades routinely
- Update model access and display websites
- Conduct regular customer/partner outreach forums
- Update product suite based on customer requirements
- Engage in training activities with international partners
- Energize testbeds at all centers to accelerate research into operations
- Integrate NextGen aviation weather program into NCEP operations, including contributions to the weather cube
- Expand availability of climate products through the climate portal
- Work with National Ocean Service to expand into ecological forecasting

##### **HFIP**

FY 2013 – FY 2017

- Demonstrate performance impact of accelerated research and development

#### **Deliverables:**

- Approximately 28 million model fields a day for every forecast hour; including temperature, winds, humidity as a function of pressure
- 100 to 200 products and services from each of NCEP's service centers per day
- Continuous improvement to NOAA's operational forecast suite
- High frequency aircraft observation data sets made available to research community
- Additional improved modeling techniques delivered for evaluation at Developmental Testbed Center
- Issue over a thousand extended and long-range climate outlooks yearly

**Performance Goals and Measurement Data:**

Performance Measure	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Actual	Target	Target	Target	Target	Target	Target
Accuracy (%) (Threat score) of Day 1 precipitation forecasts, Measure 15e	34	31	31	32	32	33	33

**Description:** This performance measure tracks the ability of the weather forecasters of NOAA's Hydrometeorological Prediction Center (HPC) to predict accurately the occurrence of one inch or more of precipitation (rain or the water equivalent of melted snow or ice pellets) twenty-four hours in advance across the contiguous U.S. Through this measure, the HPC focuses on relatively heavy amounts of precipitation, usually a half inch or more in a 24-hour period (short-term flood and flash flood warnings), because of the major safety and economic impacts such heavy precipitation can have in producing flooding, alleviating drought, and affecting river navigation.

Performance Measure	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Actual	Target	Target	Target	Target	Target	Target
US Seasonal Temp. Forecast Skill, Measure 16a	22	21	22	23	24	25	26

**Description:** This is a measure of skill of NOAA's operational seasonal temperature forecasts where a higher numerical value for the measure implies an ability to better predict surface temperature variability over the U.S. Continued improvements in NOAA's ability to predict climate variability are reflected in an increasing positive value for this measure. For each three month period, seasonal outlooks for U.S. surface temperature are produced by NWS' Climate Prediction Center (CPC) and reported as either above normal, near normal, below normal or, where no definite seasonal guidance can be provided, equal chances. These forecasts are verified using a 48-month running mean of Heidke Skill scores computed for seasonal outlooks for each 3-month seasonal mean (e.g., January-February-March mean; February-March-April mean; March-April-May mean; and so on). It is calculated as follows: Heidke skill score:  $S = ((c-e)/(t-e)) \times 100$ , where c = number of grid points where forecast was correct and e = number of grid points expected to be correct by chance alone and t = total number of grid points where the forecast was made. The GPRA score is computed via an automated grid-based verification procedure. This technique verifies a gridded objective analysis of the forecast field against a gridded analysis of the observed verification field. This process treats the entire area of the lower 48 states objectively. The skill score varies from -50 to +100, representing perfect forecast skill.

Performance Measure	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Actual	Target	Target	Target	Target	Target	Target
500 mb height anomaly for NCEP Global Forecast System	0.869	0.866	0.872	0.875	0.875	0.900	0.900

**Description:** The weather forecast skill is assessed using a scientifically accepted measure, called 500 millibar (mb) anomaly correlation at 5 days. This measure serves as a very sensitive proxy for overall forecast of lead times and accuracy of severe weather events. The Global Forecast System serves as the underpinning of NCEP's modeling suite and NCEP's services to the Nation.

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Timeliness of Delivery for NCEP's model guidance	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%

**Description:** NCEP EMC delivers over 28 million model output fields including temperature, winds, humidity as a function of pressure per day. This model guidance is disseminated to NWS Regions and WFOs and external users. Timeliness of delivery impacts WFOs' ability to develop the forecasts with sufficient lead times to warn the public of severe weather events.

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Timeliness of Delivery for NCEP Centers' products and services	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	98%	98%	98%	98%	98%	98%	98%

**Description:** NCEP Centers interpret model based guidance and observational information to develop a suite of forecasts and outlooks at a rate of approximately 100-200 products per day per center. Users rely on these services to inform decisions for protection of life and property and enhancement of the economy.

The schedule, milestones, and deliverables for HFIP are provided with the program change requested for this activity.

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## **PROGRAM CHANGES FOR FY 2013:**

**Local Warnings and Forecasts Base: Tropical Atmosphere Ocean Array (Base Funding: \$4,291,000 and 0 FTE; Program Change: +\$2,400,000 and +0 FTE):** NOAA requests an increase of \$2,400,000 and 0 FTE for a total of \$6,691,000 and 0 FTE to increase the operations and maintenance of Tropical Atmosphere Ocean (TAO) buoys, to achieve an 80% data availability standard.

### **Proposed Actions:**

NOAA proposes to increase ongoing operations and maintenance (O&M) of the TAO array to meet full O&M needs. With this increase, NOAA will be able to maintain a data return rate of 80%. The current budget profile does not support the full O&M cost of the 55 NWS TAO buoys, including parts, labor, and services for replacement and spare equipment, sensor calibration, equipment preparation, data analysis and distribution, field service, and logistics.

Without this increase, NOAA will be at 50 percent data availability in FY 2013 for the TAO network with a continual decrease annually while optimal data availability is 80 percent annually. The inability to maintain the array and provide optimal observations will affect NOAA's ability to produce accurate forecasts and predictions related to El Niño and La Niña phenomena.

### **Statement of Need and Economic Benefits:**

Data provided via the TAO network directly contributes to the prediction of El Niño and La Niña. Accurate prediction of the onset of El Niño and La Niña allows mitigation actions to be taken in agriculture, fishing, and human health. Mitigating the economic and health impacts of these events and anticipating increases in other weather-related disasters associated with them, such as landslides, flooding, brush and forest fires, tornados, and hurricanes, can have consequences in terms of dollars and lives and are of vital concern to constituents. The societal and economic benefits of prediction of El Niño and La Niña include reduction in loss of life and property from disasters; improved understanding of the effects of environmental factors on human health and well being; improved understanding, assessment, prediction, mitigation and adaption to climate variability and change; improved protection and monitoring of ocean resources; improved monitoring and management of energy resources; further protection and monitoring of water resources; improved weather information, forecasting, and warning; further development of the capacity to make ecological (terrestrial, coastal, and marine) forecasts; and increased support for sustainable agriculture and tools to combat land degradation. Important operational decisions made within industries such as agriculture and utilities can be improved based on seasonal El Niño/Southern Oscillation (ENSO) forecasts (NOAA Economics). Research estimates that ENSO forecasting may benefit agriculture decision-making in the U.S., resulting in a net economic value between \$507-\$959 million/year (Chen et al. 2002). In addition, improved long-range weather forecasts of ENSO and the Pacific Decadal Oscillation (PDO) has been valued at \$161 million/year, as derived from more efficient reservoir operations and hydropower sales on spot markets of electric, gas, and sanitary services (Hamlet et al., 2002).

### **Base Resource Assessment:**

The base resources for this activity are described in the Local Warnings and Forecasts base narrative.

### **Schedule and Milestones:**

- Conduct routine buoy operations and maintenance.

<b>Milestones</b>	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Operational Refreshed TAO stations deployed (Total #/yr)	11	11	11	11	0	0
Refreshed TAO stations deployed (Cum Total #)*	26	37	48	59	59	59

\*includes 4 moored Acoustic Doppler Current Profilers (ADCPs) refreshed at the end of FY 2011

**Deliverables:**

- Reach and maintain data availability level of 80 percent

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Observational Data Availability of TAO Network (% Annually)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	-	-	80%	80%	80%	80%	80%
<b>Without Increase</b>	82%	62%	50%	45%	45%	45%	45%
<b>Description:</b> This measure captures the data return from the TAO array expressed as percent available annually. This measure assumes the approximately 278 ship days needed for TAO servicing and maintenance.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
% Complete Refresh of TAO Stations (cum %)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	-	-	54%	69%	100%	100%	100%
<b>Without Increase</b>	20%	40%	40%	40%	40%	40%	40%
<b>Description:</b> This measure captures the completion of the TAO buoy network refresh expressed as a cumulative percentage. This measure assumes approximately 278 ship days for TAO servicing and maintenance.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations and Research

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	64
22 Transportation of things	250
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	65
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,071
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	450
31 Equipment	500
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>2,400</u>

**Local Warnings & Forecasts Base: Operational and Organizational Efficiencies in Information Technology (Base Funding: 4,093 FTE and \$639,905,000; Program Change: - 0 FTE and -\$2,000,000):** NOAA requests a decrease of 0 FTE and \$2,000,000 for a total of \$637,905,000 to reduce organizational costs through Information Technology (IT) consolidation and related efficiencies.

**Proposed Actions:**

NWS is implementing a consolidation and re-architecture initiative across its IT enterprise. NWS is in the midst of several significant IT efforts including: the re-architecture of its Telecommunications Gateway; ground system preparation for new satellite systems; the Next Generation Air Transportation System (NextGen); the Advanced Weather Interactive Processing System (AWIPS); and the re-compete of the Weather and Climate Operational Supercomputing System (WCOS) contract. With these major IT efforts, NWS has the unique opportunity to address and implement a more effective and cost conscious enterprise architecture which will lead to lower IT Operations & Maintenance (O&M) costs.

In FY 2013, NWS will implement various cost savings initiatives through streamlining requirements, elimination of redundant and duplicative requirements and use of proven, best practices from the IT community. NWS will execute these approaches with flexibility in order to meet the targeted reduction. NWS programs and activities will pay for enterprise IT solutions, rather than each organization independently purchasing to support their needs, resulting in savings for NOAA.

In the near term, these efficiencies will result in operations less dependent on contractor work and IT equipment requiring fewer replacements in the near-term and outyear service levels.

**Base Resources Assessment**

The base resource assessment is provided in the Operations & Research base narrative.

**Schedule & Milestones:**

FY 2012

- Assess best industry practices
- Finalize consolidation plans

FY 2013

- Initiate implementation of consolidation

**Deliverables:**

- Streamlined enterprise architecture
- Reduced replacement needs

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Operations, Research, and Facilities  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(500)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(1,500)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,000)</u>

**Local Warnings & Forecasts Base: National Data Buoy Center (NDBC) Sustainment (Base Funding: 40 FTE and \$28,272,000; Program Change: -0 FTE and -\$2,000,000):** NOAA

requests a decrease of 0 FTE and \$2,000,000 for a total of \$26,272,000 to reduce the Coastal Data Buoy sustainment program within the NDBC. The program includes Coastal Weather Data Buoys (CWB) and Coastal-Marine Automated Network (C-MAN) stations.

**Proposed Actions:**

NWS proposes to reduce funding for buoy sustainment to a level that will achieve and sustain 73 percent data availability by FY 2014 - a four percent increase in data availability compared to FY 2011. Reduced funding will delay routine operations and maintenance and failure response, and slow design and procurement of environmentally-safe moorings. At this level, NDBC will continue to provide marine meteorological, oceanographic and geophysical observations accurately and in real-time to assist warning centers, marine forecasters, the U.S. Coast Guard, ocean platform operators and the public in making sound decisions to safely operate in the marine environment.

**Base Resources Assessment:**

The base resources for this activity are described in the Operations & Research base narrative.

**Schedule & Milestones:**

FY 2013 - 2017

- Conduct buoy operations & maintenance
- Engineering and design activities for new moorings and components
- As funding permits, address backlogged buoy maintenance

**Deliverables:**

- Reach and maintain data availability level of 73 percent
- Procure new moorings and components

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Data availability of C-MAN and weather buoys	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With decrease</b>	-	65%	70%	73%	73%	73%	73%
<b>Without decrease</b>	69%	65%	70%	75%	80%	80%	80%
<b>Description:</b> Perform deferred maintenance in order to prevent additional performance degradation and to maintain the network performance to its required operating capacity.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of quality controlled marine observations (millions)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With decrease</b>	-	1.70	1.82	1.90	1.90	1.90	1.90
<b>Without decrease</b>	1.80	1.70	1.82	1.95	2.10	2.10	2.10
<b>Description:</b> Observations from all weather buoys and C-MAN Stations.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**

**(Dollar amounts in thousands)**

Activity: Operations, Research, and Facilities  
 Subactivity: Operations & Research

<b>Object Class</b>		<b>2013 Decrease</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	(200)
25.2	Other services	(800)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	(1,000)
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(2,000)</u>

**Local Warnings and Forecasts Base: Establishment of Regional Information Technology (IT) Collaboration Units (Base Funding: 122 FTE and \$12,126,550; Program Change: -98 FTE and -\$9,741,000):** NOAA requests a decrease of 98 FTE and \$9,741,000 for a total of \$2,385,550 and 24 FTE to reflect the transition to a new IT service delivery model to the NWS forecast offices.

**Proposed Actions:**

In FY 2013, the National Weather Service (NWS) will consolidate 122 Information Technology Officer (ITO) FTEs from each WFO into NWS's regional offices. With technological improvements, such as with Advanced Weather Interactive Processing System (AWIPS), NWS has gained the ability to fulfill much of the ITO responsibilities remotely, including systems analysis and software modifications and updates. These technology efficiencies enable NWS to reduce its workforce without impact to its mission to protect lives and property and enable the agency to provide a higher degree of consistency of service delivery.

Through this consolidated approach NWS will eliminate all ITO positions currently located at each WFO. In turn, 24 equivalent positions will be established across all NWS regions to form the IT collaboration units. NWS will make every effort to reduce ITO staffing through attrition across the entire organization. Many current ITOs can qualify for other NWS positions, such as meteorologists or electronics systems analysts. In addition, NWS will explore opportunities for early out and voluntary separation incentives for interested individuals.

The regional IT collaboration units will have responsibility in the three primary areas which the ITOs currently manage: enterprise compatible application development and integration; information technology management; and systems analysis. These units will ensure the working order of all computer applications and software, including regular maintenance and installation of new software. The IT collaboration units will be available to each WFO as a source of software and information technology expertise.

**Base Resources Assessment**

The base resource assessment is provided in the Program Summary for Local Warnings & Forecasts.

**Schedule & Milestones:**

FY 2012

- Finalize consolidation plans
- Begin ITO consolidation

FY 2013

- Complete ITO consolidation
- Staff IT collaboration units

**Deliverables:**

- 4 contiguous United States IT collaboration units
- 2 outside the contiguous United States IT focal points

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: National Weather Service

Subactivity: Operations & Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Information Technology Officer	Various*	GS-13	-98	-81,823	8,018,654
<b>Total</b>			<u>-98</u>		<u>8,018,654</u>
less Lapse		25%	0		0
Total full-time permanent (FTE)			<u>-98</u>		<u>8,018,654</u>
FY 2012 Pay Adjustment (0%)					0
FY2013 Pay Adjustment (0.5%)					0
<b>TOTAL</b>					<u>8,018,654</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-98
Other than full-time permanent	0
<b>Total</b>	<u>-98</u>
Authorized Positions:	
Full-time permanent	-98
Other than full-time permanent	0
<b>Total</b>	<u>-98</u>

\*Based on "Rest of US" pay scale

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$8,019)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(8019)</u>
12 Civilian personnel benefits	(1,722)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(9,741)</u>

**Air Quality Forecasting: Reduction to the National Air Quality Forecasting Capability (Base Funding: \$3,987,000 and 0 FTE; Program Change: -\$3,122,000 and 0 FTE):** NOAA requests a decrease of \$3,122,000 and 0 FTE for a total of \$865,000 and 0 FTE to discontinue the National Air Quality Forecasting Capability (NAQFC). Remaining funding will sustain on-demand dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases, supporting aviation affected by volcanic activity.

**Proposed Actions:**

NOAA proposes to terminate the NAQFC, which provides air quality forecasts of ozone and particulate matter, and redirect funding to other priorities in the National Weather Service that are more aligned to NOAA's core mission. The Environmental Protection Agency (EPA) and state and local agencies use the NOAA model guidance in conjunction with data and models generated at the local level to provide air quality health alerts to the public. Remaining funding will sustain the on-demand, operational dispersion forecasts of volcanic ash, transport of smoke, and forecast of emergency releases. Funding will support operational maintenance of a radiological and volcanic ash plume pollution dispersion model, called the Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT).

The EPA, through the Office of the Air Quality Planning and Standards and Office of Air Radiation, has the legislative mandate to implement the Clean Air Act (CAA). In 2008, NOAA entered into a five year agreement to provide air quality research and operational modeling in support of CAA requirements for the National Ambient Air Quality Standards and State Implementation Plans. This agreement expires in 2013.

The National Weather Service proposes the following:

- Discontinue national numerical air quality forecast guidance including ozone prediction, currently operational in 50 states, which is used by EPA for health-based air quality index summaries, and by state and local agencies who issue Air Quality Index (e.g. code orange) forecasts
- Discontinue support for continued research and development of air quality models and chemical data assimilation including those efforts focused on aerosol, dust, and particulate matter prediction

**Base Resources Assessment:**

The base resources for this activity are described in the Local Warnings and Forecasts base narrative.

**Schedule & Milestones:**

- Direct NWS support for air quality forecast guidance will be terminated in FY 2013
- Direct NWS support for Air Quality Index will be terminated in FY 2013
- Forecast operations for Alaska volcanic ash, Alaska smoke, and emergency releases nationwide maintained (2013 – 2017)

**Deliverables:**

- Volcanic ash forecast in Alaska
- Smoke predictions in Alaska
- On demand forecast of emergency releases nationwide

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(42)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	(913)
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(2,167)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(3,122)</u>

**Sustain Cooperative Observer Network (Base Funding: \$1,865,000 and 0 FTE; Program Change: -\$867,000 and 0 FTE):** NOAA requests a decrease of \$867,000 and 0 FTE for a total of \$998,000 and 0 FTE to Sustain the Cooperative Observer Network.

**Proposed Actions:**

In FY 2013, NWS will complete the installation of the Fischer & Porter Rain Gauge Replacements (FPR). NWS will delay by one year the purchase of wireless thermometer systems and air and water temperature sensors required to complete the network modernization. In addition, NWS will delay the conversion of Network data into a digital format for archiving at the National Climatic Data Center. However, all data will continue to be preserved.

The requested funding provides required sustainment and modernization activities, as recommended by the National Research Council in 1998.

**Base Resources Assessment:**

The base resources for this activity are described in the Operations and Research base narrative.

**Schedule & Milestones:**

FY 2013

- Final Fischer & Porter Rain Gauge Replacements (FPR) installed
- Purchase and install replacement Cotton Region Shelters for field use until wireless sensors are deployed

FY 2014

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

FY 2015

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

FY 2016

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

FY 2017

- Purchase and installation of 200 wireless thermometer systems
- Purchase 50 pan evaporation water temperature sensors
- Purchase 100 soil temperature sensors

**Deliverables:**

- FPR project complete – total installed 2,298 – project completed with spares in stock
- Install 800 of needed 3,000 wireless thermometer systems
- Install 200 of needed 330 pan evaporation water temperature sensors
- Install 400 of needed 1,600 soil temperature sensors

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(867)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(867)</u>

**NOAA Profiler Network (Base Funding: \$4,228,000 and 7 FTE; Program Change: - \$2,417,000 and -3 FTE):** NOAA requests a decrease of \$2,417,000 and 3 FTE for a total of \$1,811,000 and 4 FTE in its NOAA Profiler Network (NPN) Program to continue operations and maintenance support of three profilers located in Alaska.

**Proposed Actions:**

Given current plans to turn off wind profilers that will experience operating frequency interruptions once the European Galileo satellites are launched, less funding is needed for NPN Operations and Maintenance (O&M). Thus, NOAA proposes to significantly decrease its NPN O&M, using remaining funds to support three critical profilers located in Alaska that have been converted to new frequencies to avoid interference with the Galileo satellites. The cost to support these three profilers in Alaska is as follows:

Labor (4 FTE):	\$0.68 million
Operations:	\$0.69 million
Maintenance:	\$0.43 million
<b>Total annual cost:</b>	<b>\$1.8 million</b>

Originally developed and deployed by NOAA's Office of Atmospheric Research, the Alaska NPN consists of three Doppler radar sites that provide vertical wind profile data. This data is utilized as a forecast tool to validate numerical weather model information and to provide fidelity in forecast parameters which support public and aviation weather warnings in Alaska. The most critical use of the Alaska profiler network is to support the production of aviation warnings of volcanic ash, as ash can cause catastrophic engine failure for aircraft in flight; there are over 100 volcanoes in Alaska - 40 of which are considered active.

The data are also used to evaluate the strength and timing of down-slope wind events along the Alaska Range (e.g., major fire weather and aviation hazards, as well as impacts to the Valdez Oil Terminal) and determine the potential for heavy snow events and blizzards affecting the Anchorage area, the largest population center in the state. The data are also used in the preparation of weather forecasts for Mt. McKinley (elevation ~21,000 ft) that are used to support search and rescue missions in Denali National Park, as visitors from around the world attempt to climb North America's highest peak.

**Base Resources Assessment:**

The base resources for this activity are described in the Operations and Research base narrative.

**Schedule & Milestones:**

- Steady State

**Deliverables:**

- Operational NPN in Alaska

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: National Weather Service

Subactivity: Operations & Research

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Electronics Engineer	Boulder, CO	GS-14	-1	105,211	(105,211)
Physical Scientist	Boulder, CO	GS-14	-1	105,211	(105,211)
IT Specialist	Boulder, CO	GS-14	-1	105,211	(105,211)
<b>Total</b>			<u>-3</u>		<u>(315,633)</u>
less Lapse		25%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		(315,633)
FY 2012 Pay Adjustment (0%)					0
FY2013 Pay Adjustment (0.5%)					0
<b>TOTAL</b>					<u>(315,633)</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$316)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	(7)
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(323)</u>
12 Civilian personnel benefits	(127)
13 Benefits for former personnel	0
21 Travel and transportation of persons	(2)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(1,411)
25.2 Other services	(554)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,417)</u>

**Strengthen U.S. Tsunami Warning Program (Base Funding: \$23,466,000 and 19 FTE; Program Change: -\$4,554,000 and 0 FTE):** NOAA requests a decrease of \$4,554,000 and 0 FTE for a total of \$18,912,000 and 19 FTE. This reduction terminates NOAA's partner funding for education and awareness programs to the National Tsunami Hazard Mitigation Program (NTHMP) within the Strengthen U.S. Tsunami Warning Program (SUSTWP) and reduces funding for maintenance of the DART buoy network.

**Proposed Actions:**

NOAA proposes to terminate grant funding supporting local education, awareness, and inundation and evacuation map development within the National Tsunami Hazard Mitigation Program (NTHMP). In addition, NOAA proposes to increase the time between scheduled maintenance intervals for the DART buoy network, which is expected to lower network data availability from 80 percent to 72 percent. NOAA will continue to fund critical components within the SUSTWP in order to ensure timely and accurate tsunami advisories and warnings. This includes:

- Support for the operation of Tsunami Warning Centers (Pacific Tsunami Warning Center and West Coast and Alaska Tsunami Warning Center, \$3.0M);
- The operations, maintenance, and lifecycle management of the Deep-Ocean Assessment and Reporting of Tsunamis (DART) buoy network (\$11.5M);
- The sustainment of critical observing system networks and the operations and maintenance of (tsunami-reporting) seismic sensors and sea-level stations (\$1.3M);
- The NOAA TsunamiReady Program (\$0.8M)
- The continued transition of Tsunami inundation forecast models to operations (\$1.8M);
- And the O&M support for NOAA's International Tsunami Information Center (ITIC) and archiving of tsunami data (\$0.5M).

The lower data availability of the DART network will not impact the issue of warnings; however, without these data, warnings may extend to a larger area than necessary and for a longer time. NOAA will continue to provide support to the NTHMP by: setting standards of accuracy for NTHMP-developed inundation models; promoting community outreach and education networks to ensure community tsunami readiness; promoting the adoption of tsunami warning and mitigation measures by Federal, State, tribal, and local governments and non-government entities; conducting tsunami research; and operating the U.S. Tsunami Forecasting and Warning Program.

**Base Resources Assessment:**

The base resources for this activity are described in the Operations and Research base narrative.

**Schedule & Milestones:**

FY 2013 - 2017

- Operate Tsunami Warning Centers (Pacific Tsunami Warning Center and West Coast and Alaska Tsunami Warning Center)
- Operate, maintain, and conduct lifecycle management of DART buoy network
- Sustain critical observing system networks and the operations and maintenance of (tsunami-reporting) seismic sensors and sea-level stations
- Recognize TsunamiReady Communities

**Deliverables:**

- Operational Tsunami Warning Centers
- Operational DART buoy network
- Operational observing system network
- TsunamiReady Communities

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Tsunami Ready Communities</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With decrease	-	100	103	106	109	112	115
Without decrease	90	100	108	116	124	132	140

**Description:** This measure represents the cumulative number of communities that NOAA designates as being adequately prepared for a tsunami. As a voluntary program, the communities earn the designation through spreading awareness of tsunamis, educating community members, and improving emergency evacuation plans. NOAA has identified 784 communities that would benefit from becoming TsunamiReady.

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Observational Data Availability of DART Network (% Annually)</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With Decrease	-	-	72%	72%	72%	72%	72%
Without Decrease	84%	80%	80%	80%	80%	80%	80%

**Description:** This measure captures the data return from the DART network expressed as average percent available annually.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(554)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(4,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(4,554)</u>

**National Mesonet Network (Base Funding: 0 FTE and \$10,965,000; Program Change: 0 FTE and -\$10,965,000):** NOAA requests a decrease of 0 FTE and \$10,965,000 for a total of 0 FTE and \$0 for the congressionally directed use of funds for the National Mesonet Network. NWS will be using congressionally directed FY 2012 funding as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012 to convene a peer-reviewed study to create a national mesonet program plan within NOAA with recommendations for implementation as appropriate. NOAA will also continue to develop the Meteorological Assimilation Data Ingest System (MADIS) for validation and quality control of mesonet data, and to continue to ingest data from mobile observational systems. NOAA will continue to pursue ways to improve forecasting of severe weather within local NWS field offices, including collaboration with non-NOAA partners.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(10,965)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(10,965)</u>

**Advanced Hydrologic Prediction Service: Flood Forecasts (Base Funding: 0 FTE and \$8,173,000; Program Change: -0 FTE and -\$1,964,000):** NOAA requests a decrease of 0 FTE and \$1,964,000 for a total of \$6,209,000 for the Advanced Hydrologic Prediction Service (AHPS) program. NWS will use FY 2012 funding to support increased flood forecasts as indicated in the Commerce, Justice, Science, and Related Agencies Appropriations Act, 2012. The FY 2013 dual polarization advancements to the NEXRAD radar is expected to dramatically improve quantitative precipitation forecasts, which inform flood prediction. NOAA will continue to collaborate with river commissions to ensure that critical data is coordinated and incorporated in accurate and timely flood forecasts.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(693)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	(1,271)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,964)</u>

**Weather Forecast Office Maintenance (Base Funding: 0 FTE and \$7,422,000; Program Change: -0 FTE and -\$834,000):** NOAA requests a decrease of 0 FTE and \$834,000 for a total of \$6,588,000 to the National Weather Service (NWS) Weather Forecast Office (WFO) Maintenance program.

**Proposed Actions:**

The WFO Maintenance program allows NWS to protect the capital investment in its previously modernized facilities in accordance with NWS operational standards along with GSA and private industry standards. As WFOs continue to age, the facilities require continued routine maintenance. NWS will continue to prioritize routine maintenance and will extend the time between preventative maintenance actions. NOAA will reduce its effort to address backlogged repairs.

**Base Resources Assessment**

The base resource assessment is provided in the Program Summary for Local Warnings & Forecasts.

**Schedule & Milestones:**

FY 2013-2017

- Conduct routine WFO maintenance

**Deliverables:**

- Routine WFO maintenance

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**

**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>		<b>2013 Decrease</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	(834)
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(834)</u>

**Central Forecast Guidance: Hurricane Forecast Improvement Project (Base Funding: \$13,004,000 and 1 FTE; Program Change: -\$371,000 and 0 FTE):** NOAA requests a decrease of \$371,000 and 0 FTE for a total of \$12,633,000 and 1 FTE.

**Proposed Actions:**

The proposed reduction will have minimal impact on NOAA’s efforts to improve hurricane forecasting. Under this funding level, NOAA will maintain the already-achieved 15-20 percent improvement in hurricane track and intensity forecast error in a research environment and continue to pursue further improvements in hurricane track and intensity forecasts.

Researchers will continue to make progress toward reducing hurricane track error and will focus particularly on hurricane intensification and its prediction, all within a demonstration environment. HFIP will limit the number of hurricane models processed according to supercomputing availability; models that show promise will be provided to NOAA hurricane forecasters for operational use.

Proposed actions:

- Evaluate and assess hurricane research advances to identify improvements to current NWS operational NWP suite
- Engineer and validate upgrades to NWP suite
- Develop and engineer a new hurricane forecast system based on improved models from HFIP
- Sustain community software architecture to ensure effective and efficient use of NOAA’s suite of numerical weather prediction models and effective leveraging of research advancements
- Sustain the National Unified Operational Prediction Capability Partnership between Department of Commerce and Department of Defense including ensemble global weather modeling system

**Base Resources Assessment:**

The base resources for this activity are described in the Operations and Research base narrative.

**Schedule & Milestones:**

- FY 2013 – 2017 Annual upgrades to operational hurricane models at NCEP
- FY 2013 – 2017 Upgrades to operational data assimilation systems for weather and hurricane forecast

**Deliverables:**

- Experimental real-time forecast guidance to NHC from running the experimental Hurricane Forecast System on the HFIP R&D Computing
- New data assimilation system prototype for hurricane forecast
- Operational implementation of a high resolution advanced data assimilation system focusing on the hurricane core

**Performance Goals and Measurement Data:**

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
48 hour Hurricane Track Error 15c	Actual	Target	Target	Target	Target	Target	Target

<b>With decrease</b>	-	84	82.5	81	79.5	78	76.5
<b>Without decrease</b>	70.8	84	82	80	78	76	74

**Description:** The public, emergency managers, government institutions at all levels in this country and abroad, and the private sector use NOAA hurricane and tropical storm track forecasts to make decisions on life and property. This goal measures the difference between the projected location of the center of these storms and the actual location in nautical miles (nm) for the Atlantic Basin. The goal is computed by averaging the differences (errors) for all the 48-hour forecasts occurring during the calendar year. This measure can show significant annual volatility. Projecting the long-term trend and basing out-year goals on that trend is preferred over making large upward or downward changes to the targets on an annual basis. These targets, developed from an analysis of performance over a roughly 15-year period, are therefore not affected by year-to-year natural variability in actual forecast errors.

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
48 hour Hurricane Intensity Error 15d	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With decrease</b>	N/A	15	14	14	13.5	13.5	13
<b>Without decrease</b>	14.4	15	14	14	13	13	12

**Description:** The public, emergency managers, government institutions at all levels in this country and abroad, and the private sector use NOAA hurricane intensity forecasts to make decisions on life and property. This goal measures the difference between the projected intensity of these storms and the actual intensity in knots (kt) for Atlantic Basin tropical cyclones (i.e., tropical depressions, tropical storms, and hurricanes). The goal is validated by computing the average difference (error) for all the 48-hour forecasts occurring during a calendar year. Because tropical cyclones are relatively rare events, this measure can show significant annual volatility. As a consequence, projecting the long-term trend (over a decade or more) and basing out-year goals on that trend is preferred over making upward or downward changes to the targets on an annual basis.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	(10)
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(351)
25.2 Other services	(10)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(371)</u>

The following exhibit shows the summary object class detail for Operations & Research program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Research

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	6
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>6</u>

## Descriptions of Performance Measures for Local Warnings & Forecasts Base

GPRA Performance Measure	Description
Measure 15a, Tornado Warnings Lead Time, Accuracy, and False Alarm Ratio	<p>The lead time for a tornado warning is the difference between the time the warning was issued and the time the tornado affected the area for which the warning was issued. The lead times for all tornado occurrences within the U.S. are averaged to get this statistic for a given fiscal year. This average includes all warned events with zero lead times and all unwarned events. Accuracy is the percentage of time a tornado actually occurred in an area that was covered by a warning. The difference between the accuracy percentage figure and 100 percent represents the percentage of events occurring without warning. The false alarm rate is the percentage of times a tornado warning was issued but no tornado occurrence was verified.</p> <p>Tornado Warning Lead Time for an individual event is not available to an accuracy of half a minute of a report indicating a tornado has touched down. Although we record the timing of the warning transmission to the nearest second, we rarely have more than an estimate to the nearest minute of the time a tornado touches down. While we can compute the average tornado warning lead time to a precision of 30 second increments or less, the reporting of this value implies greater accuracy in the data than currently exists.</p> <p>The annual variation of tornado warning lead time is more closely tied to the variation in storm type than in the performance. Generally, long track tornadic supercell storms are easier to detect and track than tornadoes that develop in squall lines or tropical storms. Changes in performance can be detected over a period of several years, and are better measured to an accuracy of minutes. The natural variability associated with tornado activity will not let us incorporate incremental improvements into this performance measure.</p>
Measure 15b, Flash Flood Warnings Lead Time and Accuracy	<p>The lead time for a flash flood warning is the difference between the time the warning was issued and the time the flash flood affected the area for which the warning was issued. The lead times for all flash flood occurrences within the continental United States are averaged to get this statistic for a given fiscal year. This average includes all warned events with zero lead times and all unwarned events. Accuracy is measured by the percentage of times a flash flood actually occurred in an area that was covered by a warning. The difference between the accuracy percentage figure and 100 percent represents the percentage of events without a warning.</p>
Measure 15f, Winter Storm Warnings Lead Time and Accuracy	<p>A winter storm warning provides NOAA customers and partners advanced notice of a hazardous winter weather event that endangers life or property, or provides an impediment to commerce. Winter storm warnings are issued for winter weather phenomena like blizzards, ice storms, heavy sleet, and heavy snow. This performance indicator measures the accuracy and advance warning lead time of winter storm events. Improving the accuracy and advance warnings of winter storms enables the public to take the necessary steps to prepare for disruptive winter weather conditions.</p>

<p>Measure 15g, Marine Wind Speed and Wave Height Forecast Accuracy,</p>	<p>This performance indicator measures the accuracy of wind speed forecasts, which are important for marine commerce. The measure represents the Percentage of Accurate Forecasts, and accuracy is defined in terms of error. For the marine wind forecast, if the error is less than 5 knots, the forecast is accurate. This measure uses a complex skill score to analyze individual wind speed and wave height components.</p>												
<p>Measure 15h, Aviation Forecast IFR Accuracy and False Alarm Ratio,</p>	<p>Visibility and cloud ceiling forecasts are critical for the safety of aircraft operation. Accurately forecasting the occurrence of Instrument Flight Rule (IFR) conditions significantly improves general and commercial aviation flight planning capabilities, improving both flight safety and efficiency. IFRs are rules and regulations established by the Federal Aviation Administration that govern flight under conditions where pilots navigate primarily through instrument guidance. Performance statistics recalculated for the past few years of data (FY05-FY10) uncovered a direct relationship between the ratio of IFR accuracy to false alarm rates and the frequency of occurrence of IFR conditions. For this measure, the false alarm ratio represents the number of times IFR does not occur to the number of times predicted.. Greater accuracy and minimized false alarm rates result in safer flights and fewer flight delays; and conversely, poorer accuracy and increased false alarm rates result in a greater incidence of unnecessary flight delays. The forecast frequency of IFR occurrence and the observed frequency of IFR occurrence are within 0.5% of each other, indicating that forecast errors are likely in the timing of onset and duration rather than solely event occurrence. Because the direct relationship exists, aviation services correlated likely performance levels to the percent frequency of IFR occurrence, and recommends performance metrics that account for IFR frequency and creates a logical performance standard for those areas with very little IFR occurrence and the warm or cool seasons. Performance metric goals for the accuracy and FAR are tied to the frequency of IFR occurrence as shown in the following table.</p> <table border="1"> <thead> <tr> <th>% Frequency Occurrence of IFR</th> <th>National Goals for: Probability Of Detection (POD)/ False Alarm Rate (FAR)</th> </tr> </thead> <tbody> <tr> <td>&gt;10</td> <td>65/38</td> </tr> <tr> <td>10</td> <td>63/39</td> </tr> <tr> <td>8</td> <td>58-62/42-45</td> </tr> <tr> <td>6</td> <td>57-60/42-45</td> </tr> <tr> <td>4</td> <td>56-59/44-46</td> </tr> </tbody> </table> <p>For those % Frequency Occurrence of IFR goals with multiple values the lower value Accuracy and higher value FAR are for the warm season and the higher accuracy and lower FAR values are for the cool season. An annual performance metric derives from an average of the monthly performance results anticipated from the latest climate forecast at the start of the measured year.</p>	% Frequency Occurrence of IFR	National Goals for: Probability Of Detection (POD)/ False Alarm Rate (FAR)	>10	65/38	10	63/39	8	58-62/42-45	6	57-60/42-45	4	56-59/44-46
% Frequency Occurrence of IFR	National Goals for: Probability Of Detection (POD)/ False Alarm Rate (FAR)												
>10	65/38												
10	63/39												
8	58-62/42-45												
6	57-60/42-45												
4	56-59/44-46												

<p>Geomagnetic Storm Forecast Accuracy, Measure 15i</p>	<p>Geomagnetic Storm Forecast Accuracy is the percentage of days that a geomagnetic storm event at Earth was correctly forecasted by the Space Weather Prediction Center (SWPC). The annual goal represents a minimum percentage of events for which a Geomagnetic Storm Forecast was successfully issued within the previous 48 hours of the event.</p> <p>One cause of geomagnetic storming is the occurrence of Earth-directed Coronal Mass Ejections (CME) from the sun which interacts with and disturbs the geomagnetic field of the Earth. The majority of CMEs reach the earth within 36-72 hours after they occur at the sun. Extreme events can arrive in as short as 18 hours and minor events can arrive in at most 96 hours. A NASA satellite, the Advanced Composition Explorer (ACE), provides a lead time of 20 to 50 minutes from the moment of detection. The geomagnetic storms associated with shorter CME transit times generally have the most significant effect at Earth. For that reason, this measure focuses on the accuracy of forecasts between 0 and 48 hours, narrowing the performance measure to the most significant geomagnetic storm events.</p> <p>For Solar Cycle 23 (May 1996 – December 2008), the Geomagnetic Storm Forecast Accuracy was 30%. During this cycle, SWPC forecasters issued approximately 30 Geomagnetic Storm Forecasts per year during the most active periods and few or no Geomagnetic Storm Forecasts during the solar minimum years.</p> <p>In FY 2012 SWPC will be transitioning a physics-based solar wind model which will provide guidance to forecasters as to the size, location, and speed of CME's. This guidance is expected to improve estimates of CME arrival times at Earth over what is possible today with current forecasting techniques, leading to increased accuracy of the Geomagnetic Storm Forecasts.</p> <p>For this metric a geomagnetic storm is defined as an event equal to or exceeding the Minor Storming level as defined by the Daily Geomagnetic A-index <math>\geq 30</math> (equivalent to Geomagnetic K-index <math>\geq 5</math> or <math>\geq G1</math> Level on the NOAA Space Weather Scales). The NOAA G-scale indicates CME events between a minor level of plasma emission (G1), causing weak power fluctuations in the power grid and an extreme level of plasma emission (G5) where in affected areas, transformers are severely damaged, the electric grid collapses, pipeline currents corrode, and satellites experience orientation difficulties. To account for solar cycle variability and to maintain statistical significance, this metric will be assessed over either a minimum of a fiscal year or the 30 most-recent geomagnetic storms (during periods of solar minimum).</p>
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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: SYSTEMS OPERATIONS AND MAINTENANCE**

The objectives of the Systems Operations and Maintenance subactivity are to:

- Maintain the operations of systems that collect observations necessary to provide weather forecasts and warnings
- Maintain processing systems

This subactivity reflects the costs of on-going operations and maintenance of major NWS observing and processing systems.

**NEXT GENERATION WEATHER RADAR (NEXRAD)**

NEXRAD (<http://www.roc.noaa.gov/>) is the joint NWS/FAA/DOD weather radar system consisting of 160 operational radars. NEXRAD utilizes Doppler technology and hydrometeorological processing to provide significant improvements over the previous generation of weather radars for tornado and thunderstorm warnings, air safety, flash flood warnings, and water resources management. The system is modular in design, upgradeable, has long lifecycle expectancy, and provides its principal users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. In FY 2013, NWS will continue to operate and maintain its network of 122 operational NEXRAD systems and 12 non-operational support radars. These non-operational support radars are used for training and maintenance.

The NEXRAD operations and maintenance budget is funded at FY 2012 at \$45.9million and 103 FTEs. Resources are allocated to continuous operations, maintenance and sustainment activities that result in a reliable and secure National radar network. Logistics and Sustaining Engineering ensure adequate sparing levels and address component obsolescence through fleet-wide modifications. Radar Repairs are performed by both on-site and dispatched Radar Operations Center technicians, while National Reconditioning Center reconditions failed components and returns the parts to inventory stock. Utilities provides for commercial electricity services for the radars. Training is provided for radar operators/forecasters and electronics technicians. Hardware/Software Maintenance provides for technology refresh of IT components to address obsolescence and maintain IT Security compliance, and provides routine software releases to integrate improved radar science and security patches. Telecommunications provides for telecommunications services to transmit continuous radar data to/from Weather Forecast Offices, to archive and to servers for public access. NWS headquarters support provides Configuration Management, Logistics Management and Telecommunications Management.

**THE AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)**

ASOS (<http://www.weather.gov/asos/>) is the Nation's primary surface weather observing network supporting aviation operations and weather forecasting. It was designed to replace manual observations in support of weather forecast activities, aviation operations, and the needs of the meteorological, hydrological, and climatological research communities. ASOS operates 24x7, significantly increasing the amount of information available to forecasters and the aviation community. ASOS is a joint NWS/FAA/DOD automated surface observation system consisting of 1,001 operational systems. ASOS provides reliable, continuous surface weather observations. Implementation of ASOS into NWS field operations provides continuous weather watch and yields improved staff productivity. NWS operates and maintains 315 NWS ASOS units. NWS also maintains 572 FAA ASOS units under a reimbursable funding arrangement. In FY 2013 NWS will continue operations and maintenance of its 315 ASOS

systems, continue work on Phase 1 of ASOS Sustainment, and continue deployment of interim IT security improvements to bring the system into compliance with Federal, DOC, NOAA, and NWS Information Technology (IT) security policies and procedures.

### **ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM (AWIPS)**

AWIPS (<http://www.crh.noaa.gov/lmk/?n=awipsoverview>) is a technologically advanced information processing, display, and telecommunications system that is the cornerstone of the modernized NWS. This system is required to integrate and display all meteorological and hydrological data, and all satellite and radar data at NWS field offices. AWIPS acquires and processes data from modernized sensors and local sources, provides computational and display functions at operational sites, provides an interactive communications system to interconnect NWS operational sites, and disseminates weather and flood warnings and forecasts in a rapid and highly reliable manner. This system integrates satellite and NEXRAD Doppler weather radar data and provides to the local field forecaster capabilities to significantly improve forecasts and warnings. AWIPS provides the only display for the NEXRAD Doppler weather radar at NWS WFOs and RFCs. The AWIPS satellite broadcast offers the communications capability to provide internal and external users with open access to much of NOAA's real-time environmental data.

The AWIPS operations and maintenance budget currently consists of \$39.1 million, including 41 FTE. This budget provides critical operational support for forecast operations at all 122 WFOs, 13 RFCs, 6 National Centers and numerous other test systems and special purpose systems. These investments include the maintenance and support of the critical IT software, hardware, communications and data that all forecasters use to prepare their daily forecast products. The Network Control Center (and offsite backup NCF or BNCF), operated 24 hour a day, 365 days a year, provides contract staff for help desk and system administration and IT support to all offices, as well as centralized network, data storage and satellite uplink services. The Satellite Broadcast Network (SBN) (primary and backup) transmits most of the critical weather data from satellites, NCEP models, observations systems and other sources, to all field office forecasters in a timely manner to support. A continuous technology refresh program replaces all AWIPS servers, workstations and other IT components at all sites, at regular intervals. Contract staff provide regular software updates to the forecast decision support software (AWIPS) as well as bug fixing capability, security patching and operating system upgrades. Routine replacement of failed equipment through a spares program at the National Logistics Support Center (NLSC) and National Reconditioning Center (NRC) and also some on-site contractor support for hardware replacement is also included. O&M costs include communications circuits between the NCF and the BNCF and the SBN Master Ground Station (MGS) and backup MGS (BMGS). A turnkey on-call mobile satellite based communications serves as backup for any office in case of emergency communications failures (via Very Small Aperture Terminal wide area network backup, a small two-way satellite ground station).

### **NATIONAL WEATHER SERVICE TELECOMMUNICATION GATEWAY (NWSTG) BACKUP**

NWSTG (<http://www.weather.gov/tg/>) is the Nation's hub for the collection and distribution of weather data and products. NWSTG provides national and global real-time exchange services using automated communication resources to collect and distribute a wide variety of environmental data such as observations, analysis, and forecast products. These time-perishable products are distributed as received to ensure the fastest availability of the information. NWSTG ensures that the delivery of critical meteorological data necessary for the protection of life and property and the economic well-being of the Nation continues uninterrupted, providing increased operational availability and reducing risk vulnerability in the event of lost access to NWSTG for whatever reason.

The NWSTG Backup eliminates the NWSTG as a single point of failure by providing backup operations for the primary systems within 12 hours of a failure. This capability reduces the vulnerability of the NWSTG to extended outages and the risks to NWS operations. Thousands of customers worldwide use data distributed by NWSTG, and these data affect a wide range of economic and emergency management decisions. Without this backup capability, NWSTG is a single point of failure, vulnerable to natural disasters, human error, computer viruses, hacker attacks, and terrorism.

In conjunction with NWSTG Backup, the Legacy Replacement Project replaced the legacy NWSTG core mainframe-based message switching system with server-based technology, and upgraded the facility support infrastructure. Full operational capability of the Legacy Replacement was achieved in 2006 and full operational capability of NWSTG Backup was achieved in 2007. With the utility of the current hardware now waning and expected increased demand for processing capacity due to the demand for higher resolution weather products, planning for the next generation NWSTG architecture is underway.

The NWSTG Backup, with a current budget of \$5.3 million and 0 FTE, will continue operations and maintenance of 169 fielded systems under a new, performance-based operations and maintenance contract. In addition, NWS will continue in-service engineering to ensure the system is available 24 hours per day, 365 days per year, to support the NWS mission of providing climate, water, and weather forecasts and warnings to protect life and property, enhance the national economy, and prevent system obsolescence.

#### **Schedule & Milestones:**

##### **NEXRAD**

###### **FY 2013**

- RDA LAN Switch and Remote Access Server – complete engineering tests and begin procuring modification kits

###### **FY 2014**

- RPG CPU and Peripheral I/O Devices – complete engineering tests and begin procuring modification kits

###### **FY 2015**

- RPG LAN Switch and Console Servers – complete engineering tests and begin procuring modification kits

###### **FY 2016**

- RDA Signal Processors and RPG Routers – complete engineering tests and begin procuring modification kits

##### **ASOS**

###### **FY 2013**

- Continue work on Phase 1 of ASOS Sustainment.
- Demonstrate ASOS functionality with a modern operating system

###### **FY 2014**

- Complete Phase 1 of ASOS Sustainment
- Initial Operating Capability (IOC)

##### **AWIPS**

- Steady State (FY 2013 – 2017)

NWSTG Backup

- Steady State FY 2013 – 2017)

**Deliverables:**

ASOS

- Deployment of interim ASOS IT security improvements
- Improved auditing, incident reporting (through the system log), password management, and account management

NEXRAD

- RPG Software Build 12B deployed in support of Dual Polarization modification at radars with redundant RDAs
- RPG and RDA Software Build 13 deployed to provide new signal processing science and Dual Polarization enhancements
- Begin deploying Pedestal Servo Power Amplifier modification kits to replace obsolete components to maintain 96 percent availability and control sustainment/maintenance costs
- Begin deploying Master System Control Function Processors and RDA Routers to replace obsolete components and maintain IT Security compliance

AWIPS

- Continue 24/7 support of operational system
- Continue to refresh hardware based on expected life and warranties
- Continue correction of Discrepancy Reports on the baseline software application suite

NWSTG Backup

- Continue 24/7 support

**Performance Goals and Measurement Data:**

Performance Measure: NEXRAD	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Mission & Business Results: Network availability of 96%	96%	96%	96%	96%	96%	96%	96%
Customer Results: Archived data available to customers in 24 hours 96% of the time	96%	96%	96%	96%	96%	96%	96%
<b>Description:</b> Measure tracks the uptime of the radars, but excludes planned preventive maintenance. Archived data availability metric tracks the 24-hr availability of radar data directed from the sites to NCDC to archive.							

Performance Measure: AWIPS	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Customer Satisfaction Surveys	88%	88%	88%	88%	88%	88%	88%
Workstation	86	86	86	86	86	86	86

Performance Ratings	seconds						
<b>Description:</b> Measures contribute to a high performance IT system in support of high level of forecaster skill and decision making ability, leading to faster, more accurate and more precise weather watches, warnings, and advisories that will save more lives and property.							

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**PROGRAM CHANGES FOR FY 2013:**

**Next Generation Weather Radar (NEXRAD) : Operations and Maintenance: (Base Funding: \$46,101,000 and 103 FTE; Program Change: \$146,000 and 0 FTE):** NOAA requests an increase of \$146,000 and 0 FTE for a total of \$46,247,000 and 103 FTE for the continued operations and maintenance (O&M) of NEXRAD. This funding will support on-going O&M at the National Weather Service's 122 operational NEXRADS.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Maintenance

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	146
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>146</u>

**Advanced Weather Interactive Processing System (AWIPS): Operations and Maintenance (Base Funding: \$39,370,000 and 41 FTE; Program Change: \$125,000 and 0 FTE):** NOAA requests an increase of \$125,000 and 0 FTE for a total of \$39,495,000 and 41 FTE for the continued operations and maintenance (O&M) of AWIPS. This funding will support on-going maintenance of the critical IT software, hardware, communications and data that all forecasters use to prepare their daily forecast products.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Operations & Maintenance

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	125
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	125

The following exhibit shows the summary object class detail for Operations & Maintenance program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
(Dollar amounts in thousands)

Activity: National Weather Service  
Subactivity: Operations & Maintenance

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	53
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	53

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**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION  
SUBACTIVITY: SYSTEMS ACQUISITION**

The objectives of the Systems Acquisition subactivity are to:

- Upgrade NOAA's operational suite
- Process all of NOAA's operational weather models

**AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)**

ASOS serves as the Nation's primary surface weather observing network. ASOS provides reliable, 24-hour, continuous surface weather observations which are vital to aviation safety and are important data points for numerical models and weather forecasting and warning services. The product improvement portion of this acquisition program is developing new ASOS sensor capabilities to meet changing user requirements and decrease maintenance costs for NOAA, DOD, and FAA in this tri-agency program.

The ASOS Product Improvement Sensors are crucial for aviation safety and continued support to numerical modeling and weather forecasting and warnings services. While ASOS is designed to support weather forecast and warning activities and aviation operations, at the same time it supports the needs of the meteorological, hydrological, and climatological research communities. ASOS works non-stop, continuously updating observations minute-by-minute, every day of the year, ensuring the critical surface observations are available to forecasters, Air Traffic Controllers, and the aviation community. Getting more accurate information on the atmosphere more frequently and from more locations is vital to improving forecasts and warnings. The ASOS Product Improvement Program will implement new beneficial technologies, replace sensors no longer in production, and reduce maintenance costs. Improved performance in solid and liquid/solid mixes of precipitation and in icing conditions will promote increased aviation safety, better weather forecasting, and better climatology. Higher reliability designs will decrease maintenance and logistics costs, and improve availability of critical surface observations and weather information as the U.S. moves into the NextGen era.

The Automated Surface Observing System (ASOS) serves as the nation's primary surface weather observing network. ASOS is designed to support weather forecast activities and aviation operations and, at the same time, support the needs of the meteorological, hydrological, and climatological research communities. With the largest complement of weather sensors, ASOS significantly expands the information available to forecasters and the aviation community. ASOS works non-stop, updating observations every minute, 24 hours a day, every day of the year. Getting more information on the atmosphere, more frequently and from more locations, is the key to improving forecasts and warnings. ASOS information helps NWS increase the accuracy and timeliness of its forecasts and warnings - the overriding goal of the NWS modernization.

The ASOS Product Improvement program has an annual appropriated budget of \$1,635,000 and 9 FTEs. This funding level is currently being used to complete full-scale production and deployment of replacement Ceilometers for the logistically unsupportable legacy sensors.

**Schedule & Milestones:**

FY 2013

- Production and deployment of 6 Enhanced Precipitation Identifier sensors

FY 2014

- Production and deployment of final 6 EPI sensors

FY 2015-2017

- Product Improvement complete

**Deliverables:**

- Deployment of EPI sensors

**Performance Goals and Measurement Data:**

Performance Measure	FY						
	2011 Actual	2012 Target	2013 Target	2014 Target	2015 Target	2016 Target	2017 Target
ASOS sites with enhanced precipitation sensing capability	0	6	12	18	18	18	18
<b>Description:</b> Measure tracks the deployment of EPI to NWS ASOS sites.							

**Multi-Year Budget Information (BA in thousands):**

ASOS Product Improvement	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Changes from FY 2013 Base	48,203	0	(321)	(1,635)	(1,635)	(1,635)		
<b>Total Request</b>	48,203	1,635	1,314	0	0	0	0	51,152

**ADVANCED WEATHER INTERACTIVE PROCESSING SYSTEM (AWIPS) TECHNOLOGY INFUSION**

The Advanced Weather Interactive Processing System (AWIPS) is the cornerstone of a modernized NWS. AWIPS hardware and software was deployed to Weather Forecast Offices (WFOs), River Forecast Centers (RFCs), and other NWS sites throughout the United States from 1996 to 1999. The system has been in its Operations and Maintenance phase of its lifecycle since 1999, and is critical to NWS mission related to the preservation of life and property from severe weather and flooding events, and the enhancement of the national economy.

Sustained investments in the AWIPS hardware, communications, and software infrastructure, are necessary for realizing return on NOAA investments in many other programs such as NEXRAD, weather satellites, other weather radars, sensors, and instruments. NWS Government Performance and Results Act goals are based on the effective use of these technology investments along with advanced decision assistance tools, forecast preparation and advanced database capabilities. Improvements in NWS Tornado Warning Lead Time, Flash Flood Warning Lead Time and Winter Storm Warning Lead Time goals can only be realized with continued support of, and improvements to AWIPS using new and improved science, and exploiting more accurate and higher resolution data and weather forecast model information.

To measure current and projected AWIPS system performance, NWS uses the Workstation Performance Rating (WPR). WPR shows the latency or inherent processing delay in seconds within the AWIPS system. A higher WPR means more latency, and therefore more delay, in processing and in getting forecasters the products they need when they need them. WPR benchmark analysis shows that without planned hardware improvements, AWIPS performance will decrease, resulting in degradation in Tornado Lead Time and other warning products.

In 2006 a major software re-architecture (AWIPS II) was begun using the AWIPS prime contractor through a series of task orders. AWIPS II development was completed in late 2011 and deployment began with the first operational site (the Omaha Weather Forecast Office) running on the new software in December 2011.

AWIPS has been designated an NWS National Critical IT system. As such it was required to be certified and accredited using the National Information Assurance Certification and Accreditation Process (NIACAP) in FY 2011. System acquisition funds provided in this PAC program are critical to providing adequate security for this National Critical system. When the AWIPS II migration is complete, the National Critical IT system designation will require a new NIACAP certification. The certification and accreditation (C&A) update will be performed prior to the new software being released for operational use.

AWIPS II Extended is a multi-phase program to add new and improved functionalities and capabilities for NWS field forecasters, NOAA partners and the public. These capabilities include the National Centers AWIPS (NAWIPS) integration with AWIPS, remote access capabilities to support Incident Meteorologists mission requirements, and training capabilities. In addition, AWIPS II Extended will add new capabilities to more effectively access data providers (data delivery), improve collaboration capabilities to support collaboration among NWS operational units and NOAA trusted partners, improve means to generate information to support decision makers, and improve ways for forecasters to access and visualize meteorological information.

AWIPS II Extended, Phase II implements additional infrastructure enhancements to address existing and emerging NWS mission requirements, including

- Ingest numerous new and enhanced datasets, advanced decision assistance systems
- Improve system robustness to support more agile infusion of new science and technology into the system and to improve collaborative development across the hydrometeorological community.

Forecast Tools & Applications infuses new science and applications to improve forecast accuracy and consistency and Forecast Verification is collaboration with NOAA OAR to develop real-time, net-enabled verification systems to monitor and improve the forecast process.

NWS is extending the AWIPS architecture to address specific shortcomings as it is extended to the entire weather enterprise (AWIPS II Extended):

- NAWIPS Migration:
  - During FY 2011, the NAWIPS software has been integrated into the AWIPS II baseline and is being tested. Deployment began in early FY 2012.
- Thin Client:
  - Production development in progress during FY 2011. Deployment is targeted for third quarter FY 2012.
- Data Delivery:
  - During FY 2011, technical requirements and a high level architecture design have been developed. In addition, exploratory software development (e.g., prototyping) is being conducted. Production development began in the fourth quarter of FY 2011.
- Collaboration:

- During FY 2011, technical requirements for phase I of this project were gathered. The production development of Phase I began in FY 2012.
- Information Generation:
  - Technical requirements and prototyping were executed during FY 2011. Production development began in FY2012.

<b>FY 2012 Activity</b>	<b>Dollars</b>	<b>FTE</b>
AWIPS II Migration	\$2,520	0
AWIPS II Extended	\$8,825	0
AWIPS II Extended – Phase 2	\$5,746	0
Forecast Tools & Apps	\$3,427	0
Forecast Verification System Development	\$1,280	0
Government FTE Costs	\$2,336	15

AWIPS has been operational since 1999 and needs to transform its service delivery to better align itself with the emerging needs of the Department of Homeland Security, Federal Aviation Administration (FAA), emergency managers, decision makers, the American public and industry. Emergency managers, DHS, and industry are demanding increased lead time and more precision and consistency in weather, flood, and hurricane forecasts to improve their decisions for resource planning, evacuation planning, and business operations. These decisions are potentially lifesaving and can have multi-billion dollar impacts on the economy and livelihoods. Customers and users of NWS products and services will fully exploit NOAA investments through this transformation.

**The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.**

**NEXT GENERATION WEATHER RADAR (NEXRAD)**

The NEXRAD Doppler weather system is the single most important element in NOAA’s capability to warn for severe weather such as tornados, hail, and damaging thunderstorm induced-high winds. NEXRAD is a Doppler weather radar system that provides automated signal processing, computerized data processing by sophisticated meteorological software algorithms, and a high-capacity, processor-driven communications capability. The system is modular in design, upgradeable, has long life-cycle expectancy, and provides both governmental and commercial sector weather users with a wide array of automated weather information that will increase their capability to meet their respective operational requirements. For NWS, the system uses Doppler technology and hydro-meteorological processing to provide significant improvements compared to previous radars, both in functional capability and in performance, including improved tornado and thunderstorm warnings, increased air safety, improved flash flood warnings, and improved water resources management.

NEXRAD, initially developed as a tri-agency Program (NWS, FAA, and the United States Air Force Weather Agency) has evolved into NEXRAD Product Improvement (NPI) Program, focusing on shared agency requirements to effect synergistic solutions. For example, external FAA radar data are provided to NWS forecast offices to address coverage issues and provide backup data sources. Near-term plans include the continued execution of the Dual Polarization project, currently in the test phase of a five-year development/implementation contract.

Recent NPI achievements include:

- Awarded a contract for the Dual Polarization of the NEXRAD Fleet
- Prototype Dual Polarization modification completed on Radar Operations Center radar
- Conducted Beta Test Readiness Review
- Completed pre-beta Dual Polarization modification on one radar (Vance AFB)
- Completed Beta Dual Polarization beta modification on one radar (Phoenix AZ)
- Entered Beta Testing

NPI Science Improvements have made significant improvements in NEXRAD performance, products, and data that led to improvements such as increased warning lead time for tornados, lower false alarm rate for severe weather warnings, and more accurate hail and precipitation amount forecasts. Because of problems in the Dual Polarization acquisition effort which jeopardize the deployment schedule, base resources for lower priority non-dual polarization activities within the program have been redirected to the dual polarization effort beginning in FY 2010.

NPI is managing the Dual Polarization modification to NEXRAD. Dual Polarization transmits and receives signals in two dimensions, resulting in a significant improvement in precipitation estimation; improved ability to discriminate rain, snow, and hail; and a general improvement in data quality. Precipitation estimates, currently within 30 percent of ground-truth estimates, will improve to 12.5 percent as demonstrated in a study conducted by National Severe Storms laboratory (NSSL) in 2003. The improved precipitation estimates from the national network of radars will be used as input to weather models with a concomitant improvement in model outputs. The Dual Polarization capability will allow other improvements in severe weather detection, including improvements in snow storm detection and warnings, icing conditions for air and ground transportation, and continued support for improved modeling data input. NWS plans to upgrade all 122 NWS NEXRAD systems with the Dual Polarization capability, as well as 26 United States Air Force NEXRADs and 12 FAA systems under reimbursable agreements.

The Dual Polarization modification contract was awarded in September 2007. Initial deployment began in FY 2011 and is scheduled for completion in FY 2013. The program was accelerated in FY 2009 using funds from the American Reinvestment and Recovery Act.

Doppler weather radar is the primary tool for issuing local storm warnings for flash floods, tornados and severe thunderstorms. Currently, NEXRAD only transmits and receives a horizontally polarized signal. Dual Polarization adds a vertically polarized component. The addition of a vertical component greatly improves accuracy in estimation (quantity) and differentiation (rain, hail, snow, freezing rain, etc.) of precipitation. The outcome will be improved flash flood warnings; improved identification of, and warnings for tornadoes, severe hail, dangerous freezing rain, snow; and enhanced water management capability. Expected benefits include:

- NEXRAD enhanced precipitation estimate capability will improve flash flood warnings and water management.
- The Dual Polarization modification to NEXRAD has been demonstrated to greatly improve the probability of hail detection and reduce the false alarm rate which will improve severe weather warnings.
- NSSL dual polarization data have been shown to identify specific tornado debris clouds, a capability which will support greater areal specificity in tornado warnings for rain-wrapped and nighttime tornadoes. This improved accuracy in tornado warnings will increase public confidence in tornado warnings.

- The capability of dual polarization to distinguish between non-meteorological scatterers (e.g., birds) and meteorological scatterers (precipitation) results in higher quality data used across the NWS enterprise and more accurate weather products.

**The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.**

### **NWS TELECOMMUNICATIONS GATEWAY (NWSTG) LEGACY REPLACEMENT**

The NWSTG (<http://www.weather.gov/tq/>) is the NWS communications hub for collecting and distributing weather information to its field units and external users. Replacing the NWSTG system with up-to-date technology will reduce the current delays in collecting and disseminating data by reducing transit time through the NWSTG. The replacement will ensure reliable delivery of NWS products to users and will fully capitalize on better observation data and prediction models to improve services.

Base resources are currently being used for the maintenance and operations of the NWSTG and backup to ensure the continuous dissemination of weather data and products. Base funding currently pays for operational FTE's, telecommunication charges, and software licenses. Base funding also provides for the operation of the NWSTG's web servers and file servers that store and provide browser access to and retrieval of all nationally-generated forecast products and observational data. Base funding does not have the resources to take advantage of future new products and data coming into NWS. Beginning in FY 2011, NOAA began a technology re-alignment of NWSTG. This two year effort will replace aging and unsupportable infrastructure while increasing backup capabilities.

Timely, available, and accurate weather forecasts and warnings are critical to the health and well-being of the citizens and businesses in the United States and around the world. The NWSTG is the Nation's hub for the collection and distribution of weather data and products and provides national and global collection and distribution of environmental data and forecast products. As such, the NWSTG facilitates every NWS GPRA goal including: Tornado Warning Lead Time, Flash Flood Warning Lead Time, Winter Storm Warnings Lead Time, and Hurricane Track Forecasts. The lack of weather forecasts and warnings undermine human health and sustainability of national security and other federal systems. Weather and environmental disturbances have the potential to disrupt virtually every major public infrastructure system including transportation systems, power grids, telecommunications, and emergency response systems that protect the public. If any of the above were to occur, the effect on government would most probably come in the form of denial of service to the users of the services. Minutes count in saving lives and the performance of the NWS dissemination systems to supply information needed is crucial.

In FY 2002, the NWS received funding to modernize the NWSTG legacy systems and to establish the backup facility. In FY 2008, NWS received an additional \$700,000 for capacity expansion and initial technology refresh of both systems. By FY 2012, the NWSTG will require a complete re-architecture and technology refresh to ensure its continued viability. Projected data processing requirements (10 terabits per day by FY 2014) dictate a new, scalable system architecture with the inherent design flexibility to expand to process increased environmental products resulting from programs including Geostationary Operational Environmental Satellite-R Series (GOES-R), Joint Polar Satellite System (JPSS), Next Generation Air Transportation System (NextGen), and Dual Polarization Radar. The aging infrastructure, along with the significant increase in processing requirements, represent a major threat to disrupt or degrade

the availability, accuracy, and timeliness of critical products and services that emergency managers and the public rely on during a severe weather, hydrometeorological, and electromagnetic events. Failure to make this investment in a timely manner will halt the utilization of improved data.

**The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.**

### **RADIOSONDE REPLACEMENT SYSTEM**

The NWS radiosonde network is the primary real-time upper air observation system for NOAA prediction models for severe weather, aviation, and marine prediction models and forecasts for day two and beyond. Observations of temperature, pressure, humidity, and wind speed/direction are taken twice a day at locations nationwide and in the Caribbean and Pacific using radiosondes. Radiosondes are balloon-borne instruments that transmit observational data to a ground receiving and processing station as they fly from the originating Upper Air (UA) Observing Site to up to 30km away. The network's observations are also used to benchmark the satellite and ground-based thermodynamic profiler measurements of temperature and moisture. Additionally, accumulated radiosonde data fill portions of the climate record and is the foundation of other atmospheric research.

Radiosondes are a primary data source for NWS weather prediction models that support severe storm, aviation and marine forecasts. Radiosonde data is also used by DHS and EPA in modeling the dispersion and mixing of hazardous materials and pollutants that are released into the atmosphere and by policy-makers to set regulations for industrial emissions and to protect public health from hazardous levels of pollution. FAA uses radiosonde data to analyze the effects of freezing precipitation on aircraft which may be used in aircraft design and improved safety measures for air transportation.

The legacy Radio Direction Finding (RDF) radiosonde network is currently being replaced by a Global Positioning System (GPS) radiosonde network. The replacement ground-receiving and GPS-based radiosonde system installed at 86 of 102 locations has already provided a six-fold increase in independent vertical observing. In addition, the replacement system has virtually eliminated data losses due to physical obstructions. Additionally, GPS radiosondes prevent the loss of both wind speed and direction readings due to low antenna angle observations caused by the jet stream carrying RDF radiosondes slightly beyond the radio horizon.

The transition to GPS technology has resulted in significantly more-accurate data from each flight. The RDF radiosondes transmit a complete observation (wind, humidity, temperature, pressure and altitude) every 6 seconds or 90 feet or more resulting in approximately 1,100 observations per flight compared to GPS radiosondes which transmit a complete observation every second or 15 feet providing approximately 6,700 observations per flight, a 6-fold increase. Today's powerful computers and higher resolution models are capable of processing the increased number of observations producing more accurate forecasts.

In addition, the replacement network meets NOAA's legislative mandate under the Omnibus Budget Reconciliation Act (OBRA) to vacate radio frequency spectra for auction and telecommunication utilization and to reduce bandwidth and interference on the frequencies used to transmit data from the radiosonde to the ground receiving station.

Activities are centered in two areas: deployment of Radiosonde Replacement System (RRS) to field sites and procurement of GPS radiosondes.

RRS GPS Radiosonde Acquisition: \$2,649  
 RRS GPS Radiosonde Network Deployment: \$1,365

GPS radiosondes, meeting requirements for reduction of radio-frequency spectrum usage, required deployment of new ground station equipment. This ground equipment provides compatibility with more spectrum efficient radiosonde instruments, while replacing obsolete equipment in service for more than 30 years. By the end of FY 2012, 86 of 102 sites (84 percent) will have been deployed in the Continental US, Alaska, and Pacific region. Currently, no FTE's are allocated to these activities.

**Schedule & Milestones:**

FY 2013

- Deploy 6 radiosonde replacement sites for a total of 92 GPS sites

FY 2014

- Transition 10 CHUAS sites to GPS for a total of 102 GPS sites

FY 2015-2017

- Steady State

**Deliverables:**

- 102 GPS site network

**Performance Goals and Measurement Data:**

Performance Measure	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
	Actual	Target	Target	Target	Target	Target	Target
Number of UA observing sites launching GPS radiosondes	80	86	92	102	102	102	102
<b>Description:</b> The radiosonde replacement program was initiated as a result of the 1993 OBRA in which the Government reallocated 5 MHz (1670-1675 MHz) to the private sector effective January 1, 1999 requiring the NWS to vacate this part of the spectrum. The GPS radiosonde complies with this requirement and this output measure demonstrates full compliance with the OBRA. This profile assumes full funding of FY 2012 LWF GPS Radiosonde request.							

**Multi-Year Budget Information (\$ in thousands):**

Radiosonde Replacement Program & Supercomputing Changes from FY 2013 Base	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Prior	67,368	0	0	0	0	0		
<b>Total Request</b>	67,368	4,014	4,014	4,014	4,014	4,014	N/A	Recurring

## **WEATHER AND CLIMATE SUPERCOMPUTING**

The NWS NCEP Weather and Climate Operational Supercomputing System (WCOSS) is composed of primary and backup operational supercomputing systems, development computing systems, and the wide area network, which collectively perform a wide range of computational tasks. These tasks include data analysis, data assimilation, execution of complicated prediction models, post processing, and product generation. The WCOSS provides support resources for (a) weather and climate forecasting capabilities 24 hours a day, 7 days a week, (b) numerical environmental prediction model development and testing, and (c) dissemination of NCEP operational products using the wide area networks. NCEP's operational products include national and global weather, water, climate and space weather guidance, forecasts, warnings and analyses to a broad range of users and partners (within NOAA, with other government agencies, military and the general public).

NWS maintains a backup supercomputer system, which is a clone of the primary supercomputer system and is located in an offsite facility. This system is used to thoroughly test pre-production weather and climate forecasting applications when it is not being used to run the Production Suite during a backup system test or actual emergency. The backup supercomputer system is capable of handling 100 percent of the operational workload should the primary supercomputer system be disrupted. Implementation and maintenance of a redundant WCOSS architecture ensures uninterrupted flow of essential weather and climate data and products, continuity of storm watch and warning services to the public, and compliance with NOAA Critical Infrastructure Protection (CIP) plans.

The increased need for NWS products for air quality, ecosystem, coupled modeling, and short-range ensemble forecasts has increased demands on the infrastructure support required to deliver them. The cyclical upgrade of WCOSS capability is intended to procure the computing and communications equipment needed to receive and process the increasing wealth of environmental data acquired by modernized observing systems, process improved and more sophisticated numerical weather prediction models, and stay current with the supercomputing technology the market has to offer. Execution of this program promotes public safety and the protection of property by providing NCEP with the computer systems that are capable of producing more accurate NWS climate and numerical weather prediction (NWP) guidance products for hurricanes, severe thunderstorms, floods, and winter storms. Additionally, the upgraded supercomputing system will more accurately forecast large-scale weather patterns in the medium (3 to 10 days) and extended range (30 days), as well as forecasts of major climate events such as El Niño and La Niña. In addition, the computer upgrades will improve the delivery of products to the field and provide system users with enhanced productivity. These products and services will lead to significant economic benefits for all users and sectors, including the agriculture, construction, and transportation industries.

The High Performance Computing and Communications Act of 1991 Section 204(a) (2) (P.L. 102-994, 15 U.S.C. 5501-5528) states: "the National Oceanic and Atmospheric Administration shall conduct basic and applied research in weather prediction and ocean sciences, particularly in development of new forecast models, in computational fluid dynamics, and in the incorporation of evolving computer architectures and networks into the systems that carry out agency missions." NOAA Administrative Order 216-110 establishes a policy for managing high performance computing resources as a corporate asset in support of NOAA's mission. The WCOSS investment supports NOAA's objectives of: (1) Serving society's needs for weather and water information; (2) Supporting the nation's commerce with information for safe, efficient, and environmentally sound transportation; and (3) Providing critical support for NOAA's mission. The WCOSS supports strategic use of information technology including integrated high

performance computing resources and data archival/retrieval capabilities, as needed to support NOAA's observation systems, data management, and modeling needs for operational service delivery.

NOAA provides environmental monitoring, assessment, and prediction services in order to protect life and property by ensuring an uninterrupted flow of critical forecast products. This program ensures the continued generation of NWS/NCEP products from operational forecast models and provides support for operating the NOAA's R&D supercomputer which serves as the meteorological and climate testbeds. Moreover, it supports the climate development work and the Joint Center for Satellite Data Acquisition (JCSDA) efforts.

During FY 2013, NOAA will continue deploying and transferring to a new WCOSS as a result from the contractual re-competition conducted in FY 2011.

### **Schedule & Milestones:**

#### **FY 2013**

- Port, test and verify operational models and other applications from the current to new systems delivered by the new WCOSS Indefinite delivery/indefinite quantity task order
- Insert new WCOSS vendor provided facilities into the Wide Area Network (WAN)
- Achieve IT Security Authority to Operate for new operational supercomputing systems
- Go live with new systems and close out Bridge contract
- Execute task order to exercise WCOSS growth option to increase WCOSS computing capacity including storage

#### **FY 2014**

- Upgrade WCOSS computing capabilities and storage with "built-in" contractual upgrade requirements using steady-state funding
- Go live with WCOSS computing and storage upgrades

#### **FY 2015**

- At the Government's discretion, exercise the WCOSS 3-year option period task order for execution in FY 2016

#### **FY 2016**

- If the WCOSS 3-year option period is exercised, initiate the period of performance for the WCOSS 3-year option period
- Upgrade WCOSS computing capabilities and storage with "built-in" contractual upgrade requirements using steady-state funding
- Go live with WCOSS computing and storage upgrades

#### **FY 2017**

- If the WCOSS 3-year option period is exercised, execute the second year of the WCOSS 3-year option period

### **Deliverables:**

- Approximately 28 million model fields a day for every forecast hour; including temperature, winds, humidity as a function of pressure

**Performance Goals and Measurement Data:**

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
NCEP Production Suite (NPS) On-Time Product Generation	<b>Actual</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%
<b>Description:</b> Sustain NPS on-time product generation within 15 minutes of target completion times at a rate of 99 percent or better.							

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Operational Use Time	<b>Actual</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99.9%	<b>Target</b> 99.9%	<b>Target</b> 99.9%
<b>Description:</b> Operational Use Time (OUT) is defined as the percentage of time the NCEP Production Suite (NPS) can run on the WCOSS. OUT is determined by considering all WCOSS resources in which a subset of this total resource is necessary to execute the entire NPS. The NPS executes on either the Primary or Backup WCOSS.							

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Development Use Time	<b>Actual</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%	<b>Target</b> 99%
<b>Description:</b> Development Use Time (DUT) is defined as the percentage of time development jobs can run on the WCOSS. DUT is determined by considering all WCOSS resources minus the resources necessary to execute the entire NCEP Production Suite (NPS). The Transition to Operations (T2O) executes within the DUT and the T2O will execute on the Primary and Backup WCOSS.							

**Outyear funding estimates are provided with the program change requested for this activity.**

**COOPERATIVE OBSERVER NETWORK-MODERNIZATION (NOAA's ENVIRONMENTAL REAL-TIME OBSERVATION NETWORK)**

The US Historical Climatology Network—Modernization (USHCN-M) (also known as the Regional Climate Reference Network (USRCRN), and formerly referred to as the Cooperative Observer Network-Modernization (COOP/Mod and NOAA's Environmental Real-time Observation Network (NERON), will provide and maintain long term, high quality observations of temperature and precipitation to meet the stringent data quality and continuity requirements of the climate science community. When fully implemented, the USHCN-M will consist of approximately 438 newly installed stations, strategically located to a nationwide, 538 grid map. USHCN-M will capture the representative temperature and precipitation records of the nine climate regions of the contiguous U.S. The Southwest Region was completed and commissioned in 2011. The West and Northwest Regions are in progress.

The USHCN-M will introduce automated systems with greater temporal resolution (5-minute observations) which will be made available only hours after measurement. The sites will be deployed against an evenly dispersed grid to ensure exceptional geographical coverage. The new sites will have a triple configuration of high-quality sensing equipment that allow for early

identification and correction of errors – leading to higher confidence in the regional climate signal. The new sites will be rigorously selected as ideal for climate monitoring and free of artificial influences. The station infrastructure will be expandable to allow for additional data sets (soil temperature, soil moisture, snow fall, snow depth, etc.)

The USHCN-M will improve NOAA’s ability to detect regional-scale changes in annual precipitation (as small as 10% per century) and annual averages surface air temperature changes (as small as 0.2 degrees C per century) at the 95<sup>th</sup> percentile in the lower 48 states (Cumulative Total percent confidence of detection). Climate change and variability occur on multiple time scales: decades, centuries, millennia.

Recurring funds will be required to provide adequate maintenance and replenishment to maintain stations at a high level for climate needs.

**Schedule & Milestones**

FY 2013-2017

- 2013 Complete/Commission West Region (total installed 2 Regions 128)
- 2014 Complete/Commission Northwest Region (total Installed 3 Regions 158)
- 2015 Total installed 188
- 2016 Total installed 218
- 2017 Complete/Commission South Region (total installed 4 Regions 248)

Deliverables

- Programmatic Environmental Assessment
- Station Acceptance and Commissioning Package—West Climate Region
- Station Acceptance and Commissioning Package—Northwest Climate Region
- Station Acceptance and Commissioning Package—South Climate Region
- O&M Acquisition Analysis and Recommendation for the Completed HCN-M System

**Multi-Year Budget Information (\$ in thousands):**

<b>Cooperative Observer Network Modernization (NERON) Changes from FY 2013 Base</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
	27,620	0	0	0	0	0		
<b>Total Request</b>	27,620	3,700	3,700	3,700	3,700	3,700	N/A	Recurring

## **COMPLETE AND SUSTAIN NOAA WEATHER RADIO**

NWS faces challenges in its efforts to sustain a high level of reliability and maintainability of NOAA Weather Radio (NWR), due to equipment obsolescence and degraded reliability. Four hundred (400) NWR station transmitters employ 1970's-installed vacuum tube technology from four different manufacturers. These older stations are less reliable than newer ones using solid-state transmitters. Older stations demonstrate mean time between failure (MTBF) rates of 6,000 hours, or one failure every 250 days. In comparison, newer solid-state transmitters demonstrate MTBF of over 10,000 hours, a 67 percent improvement. Furthermore, stations have single points of failure due to configurations that include single, instead of dual, transmitters and lack of backup power generators to ensure continued service in the event of primary electrical service failure. Combined, these factors significantly decrease reliability and availability and increase logistics and maintenance costs. Refurbishing these older stations and adequately funding operations and maintenance costs will allow NWR to meet expectations of availability as the Nation's weather and all hazard warning system.

NWS will continue deployment of the NWR Broadcast Management System (BMS) as a replacement for the Console Replacement System (CRS) at each of the 122 Weather Forecast Offices (WFOs). The CRS is a main component of NWR that converts text warning messages into digital voice, which gives the NWS the ability to quickly disseminate Severe and High Impact Weather Warnings, Watches and forecasts and Non-Weather Emergency Messages to the public.

### **Schedule & Milestones:**

FY 2013-2017

- Transmitter refurbishment installation
- WRIP O&M
- Transmitter O&M

### **Deliverables:**

- NWR Steady State
- WRIP Steady State

### **Performance Goals and Measurement Data:**

<b>Performance Measure</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Sustain NWR Service Availability</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	96%	96%	96%	96%	96%	96%	96%

**Description:** This measure reflects NOAA's ability to maintain and operational readiness including necessary equipment modernization to ensure overall NWR system reliability and availability. This NWR system consists of console replacement systems at each WFO, dedicated leased commercial phone lines to NWR transmitters, and the distributed NWR transmitters.

**Multi-Year Budget Information (\$ in thousands):**

<b>Complete and Sustain NWR</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Changes from FY 2013 Base</b>	54,467	0	0	0	0	0		
<b>Total Request</b>	54,467	5,594	5,594	5,594	5,594	5,594	N/A	Recurring

**NOAA PROFILER CONVERSION**

The current wind profiler network, referred to as NOAA Profiler Network (NPN) consists of 35 operational and two support vertical looking radars that observe wind direction and velocity at various altitudes. This observational data are used in weather models that predict clouds, precipitation, and temperature. The data provides indicators of severe weather, such as tornadoes and winter storms formation. The data is also used for issuing aviation advisories, tracking volcanic ash plumes and predicting the spread of wildfires. NPN data has improved probability of detection, decreased false alarm rate, and improved lead time for tornado warnings, severe thunderstorms, flash floods, and winter storms. Wind profiler data also improves warnings related to aviation and fire weather.

Thirty-two of the existing 37 wind profilers use an experimental transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers' deployment. These 32 profilers using the 404Mhz frequency must cease transmitting on this frequency to avoid interference with the European Union's Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation. Thirty of the 32 wind profilers operating at 404MHz are located in the central U.S. along Tornado Alley.

Beginning in FY 2013, due to the cost of the conversion and higher priorities within NOAA, NOAA will no longer convert or refresh any systems not already operating on the 449 MHz frequency.

**The schedule, milestones, deliverables, and outyear funding estimates are provided with the program change requested for this activity.**

**PROGRAM CHANGES FOR FY 2013:**

**Advanced Weather Interactive Processing System Tech Infusion (Base Funding: \$24,134 and 15 FTE; Program Change: -\$3,542,000 and 0 FTE):** NOAA requests a decrease of 0 FTE and \$3,542,000 for a total of 15 FTE and \$20,592,000 for Advanced Weather Interactive Processing System (AWIPS) Tech Infusion.

**Proposed Action:**

With this reduction, NOAA will slow the implementation of new tools and capabilities aimed at improved decision support services including improved data delivery, collaboration and visualization of meteorological information, and eliminate the Forecast Verification Development work currently being executed by Office of Oceanic and Atmospheric Research /Global Systems Development (OAR/GSD).

Remaining funds support AWIPS II Extended, a multi-phase program to add new and improved functionalities and capabilities for NWS field forecasters, NOAA partners and the public. These capabilities include the National Centers for Environmental Prediction integration with AWIPS (NAWIPS), remote access capabilities to support Incident Meteorologists mission requirements, and training capabilities. In addition, AWIPS II Extended will add new capabilities to more effectively access data providers (data delivery); improve collaboration capabilities among NWS operational units and NOAA trusted partners; improve means to generate information supporting decision makers; and improved access and visualization of meteorological information.

This reduction will also defer improvements to data delivery processes of higher resolution, timely and more precise weather data, such as the generation and visualization of usable weather sensor information. AWIPS management will re-prioritize planned improvements based on the operational utility the improvement provides users, thereby minimizing the effects on users.

<b>FY 2013 Activity</b>	<b>Dollars</b>	<b>FTE</b>
AWIPS II Extended	\$7,337	0
AWIPS II Extended – Phase 2	\$6,902	0
Forecast Tools & Apps	\$4,017	0
Forecast Verification System Development	\$0	0
Government FTE Costs	\$2,336	15

**Base Resources Assessment:**

The base resources for this program are described in the Systems Acquisitions base narrative.

**Schedule & Milestones:**

FY 2013-2017

- Continue to implement new forecast tools and capabilities, though at a slower rate
- Suspend forecast verification development efforts at OAR/GSD

**Deliverables:**

- Full deployment of AWIPS II

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Annual number of new capabilities or products introduced into field operations							
<b>With decrease</b>	N/A	N/A	20-30	20-30	20-30	20-30	20-30
<b>Without decrease</b>	N/A	N/A	50-60	50-60	50-60	50-60	50-60
<b>Description:</b> AWIPS II Extended will add new capabilities and products to sustain operations and more effectively access and process data, resulting in better forecasts and warning. This performance measure reflects the number of products and capabilities the NWS transitions into field operations per year. In FY 2011 and FY 2012, AWIPS capabilities were frozen during the migration to AWIPS II.							

**Outyear Funding Estimates (\$ in thousands):**

<b>AWIPS Tech Infusion</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Changes from FY 2013 Base</b>		(3,542)	(3,542)	(3,542)	(3,542)	(3,542)	N/A	Recurring
<b>Total Request</b>	220,599	20,592	20,592	20,592	20,592	20,592	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(3,542)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(3,542)</u>

**Next Generation Weather Radar: NEXRAD Product Improvement: (Base Funding: \$5,819,000 and 0 FTE; Program Change: -\$5,819,000 and 0 FTE):** NOAA requests a planned decrease of \$5,819,000 and 0 FTE for a total of \$0 and 0 FTE for the planned completion of the NEXRAD Product Improvement Program (NPI).

**Proposed Action:**

NOAA proposes to close out this program, as prior year funding will complete the NEXRAD systems upgrade with the Dual Polarization capability. NWS anticipates full deployment of Dual Polarization to the NEXRAD array by the end of 2013.

**Base Resources Assessment:**

The base resources for this program are described in the Systems Acquisitions base narrative. The Dual Polarization modification to the NEXRADs, when fully fielded and with proper NEXRAD Product Improvement investments and algorithm improvements, will improve Precipitation Estimation accuracy from +/- 35 to +/- 20 percent. Hail false alarm rates will drop from ~39 to ~8 percent.

**Outyear Funding Estimates (\$ in thousands):**

<b>NEXRAD Product Improvement</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Changes from FY 2013 Base</b>		(5,819)	(5,819)	(5,819)	(5,819)	(5,819)	0	114,191
<b>Total Request</b>	114,191	0	0	0	0	0	0	114,191

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(5,819)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(5,819)</u>

**NWS Telecommunications Gateway Legacy Replacement: NWS Telecommunications Gateway (TG) and Backup Telecommunications Gateway (BTG): (Base Funding: \$1,195,000 and 0 FTE; Program Change: +\$6,990,000 and 0 FTE):**

NOAA requests an increase of \$6,990,000 and 0 FTE for a total of \$8,185,000 and 0 FTE to design and implement a re-architected Telecommunications Gateway (NWSTG) and its backup to accommodate future data volumes driven by increased climate and satellite observations and other requirements, and to maintain system reliability.

**Proposed Action:**

The funding requested here will support the next phase of the Re-Architecture during FY 2013-16: the *Build, Test, and Deploy phase*. During this phase, NWS will:

- Award implementation services contracts;
- Implement and transition the new architecture into operations, allowing the revamped NWSTG to begin ingesting additional observational data; and
- Deploy fully re-designed NWSTG and backup into operational steady state in FY 2017.

NWS has been collaborating closely with NESDIS to ensure relevant satellite requirements are incorporated into the functional and technical requirements for the NWSTG Re-Architecture initiative. NWSTG received approved baselined Geostationary Operational Environmental Satellite-R Series (GOES-R) requirements and all external requirements, such as Suomi National Polar-orbiting Partnership (Suomi NPP). If any of these programs makes changes to their program baseline requirements, NWSTG requirements will be updated accordingly throughout the project life cycle. As a result of continuous collaboration with NESDIS on relevant satellite data processing requirements, NWS has a high level of confidence in the current cost estimates. However, the outyear budget profile may require some revisions in the FY 2014 budget submission, as finalized satellite requirements will affect final design specifications for the Re-Architecture.

**Statement of Need and Economic Benefits:**

The NWSTG is the Nation's hub for the collection and distribution of weather data and products. The NWSTG is a central collection center and communications data switching system for millions of hydrometeorological observations and products each day for NOAA's internal use as well as other user communities, including other Federal Agencies; international organizations; commercial partners; academia; and the Public. NWSTG operates twenty-four hours a day to acquire data, process observations, construct messages, and disseminate messages and files of observations, model analysis, and forecast products. The NWSTG has been identified as an essential government resource in Presidential Decision Directive 67 – Enduring Constitutional Government and Continuity of Government Operations.

The last NWSTG re-design and significant technology refreshment was completed in 2006. In addition, the planned implementation of Geostationary, Operational Environmental Satellite (GOES) R series, Joint Polar Satellite System (JPSS), and the recently launched Suomi NPP will each place additional data flow requirements on the NWSTG. The projected volumes of observational and weather forecast and warning information cannot be managed with the current system architecture. The aging infrastructure, along with the significant increase in processing requirements, require an upgrade to the infrastructure providing the availability, accuracy, and timeliness of critical products and services that emergency managers and the public rely on during severe weather and electromagnetic events.

**Base Resources Assessment:**

The base resources for this program are described in the Systems Acquisition base narrative.

**Schedule & Milestones:**

FY 2013

- Acquire implementation services and infrastructure

FY 2014

- Build development environment
- Acquire and provision facilities
- Develop Test Plan and Test Scripts
- Build and test staging environment

FY 2015

- Build production environments
- Conduct system and operations test & evaluation
- Obtain Certification and Accreditation

FY 2016

- Cutover -architecture into operations (primary and backup systems)
- Conduct knowledge transfer from Technology Re-architecture IT support contract to Operations and Maintenance IT Support staff

FY 2017

- Maintain NWSSTG and backup using best practices and establish equipment lifecycle refreshment

**Deliverables:**

- Redesigned NWSSTG is operational and scalable to meet increased data flow requirements
- NWSSTG is processing data without decrement to either availability or latency
- NWSSTG backup is fully aligned and capable of failover

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>System Availability</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With increase</b>	-	96.6%	98%	98%	99.0%	99.9%	99.9%
<b>Without increase</b>	99.8%	96.6%	98%	98%	96.6%	95.6%	94.6%
<b>Description:</b> This metric is a measure of the effectiveness and robustness of the system. It measures the amount of time the system is on-line and available to support the primary mission.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Backup Capability</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With increase</b>	-	4	6	6	19	19	19
<b>Without increase</b>	2	4	6	6	6	6	6

**Description:** This metric is the number (19) of mission functions (defined by the Gateway Impact Assessment as the essential business functions of the NWSTG that must be up and running within 12 hours after an emergency) supported by our backup system. Currently, NWSTG is capable of supporting the following business functions via the backup system: HAZCollect, GCOM, NDBC, and EMWIN. By FY 2013, the Technology Re-alignment will increase the backup capabilities by 2 additional business functions with the end goal to implement all 19 functions by FY 2016 via the Technology Re-architecture project. The purpose of ensuring all 19 functions are successfully implemented via the backup system within 12 hours is to limit mission interruption and mission degradation to ensure NWS can meet its mission providing timely forecast, watches, and warnings to its customers.

**Outyear Funding Estimates (BA in thousands):**

<b>NWSTG</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Changes from FY 2013 Base</b>		6,990	15,020	20,020	9,050	2,000	N/A	Recurring
<b>Total Request</b>	16,239	8,185	16,215	21,215	10,245	3,195	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Systems Acquisition

<b>Object Class</b>		<b>2013 Increase</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	6,990
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>6,990</u>

**Weather and Climate Supercomputing: Hurricane Forecast Improvement Project (HFIP) Research & Development Supercomputer (Base Funding: 0 FTE and \$4,000,000; Program Change: -0 FTE and -\$2,000,000):** NOAA requests a one year decrease of 0 FTE and \$2,000,000 for a total of \$2,000,000 for Weather and Climate Supercomputing to continue operations and maintenance (O&M) on the Hurricane Forecast Improvement Project (HFIP) research and development (R&D) supercomputer located in Boulder, Colorado.

**Proposed Action:**

NWS will continue to operate the HFIP R&D supercomputer located in Boulder, Colorado. This reduction will defer routine FY 2013 hardware replacements. NWS will prioritize computing resources to accommodate the most promising models. This supercomputer will run HFIP models in real-time and results will be provided to the National Hurricane Center (NHC) forecasters as a basis for official hurricane forecasts and warnings.

This is a one-year reduction and continued support for the HFIP supercomputer will be addressed in the FY 2014 budget.

**Base Resources Assessment:**

The base resources for this program are described in the Systems Acquisitions base narrative.

**Schedule & Milestones:**

FY 2013-2015

- O&M on HFIP R&D supercomputer

**Deliverables:**

- Available R&D HPC capacity to provide current development models to the NHC through FY 2015

**Performance Goals and Measurement Data**

<b>Performance Measure:</b>		<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
		<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>Capacity of HFIP R&amp;D Supercomputer</b>								
<b>With decrease</b>	<b>Cores</b>	N/A	N/A	23,050	26,000	33,000	40,000	47,000
	<b>Tflops</b>	N/A	N/A	251	288	366	444	522
<b>Without decrease</b>	<b>Cores</b>	16,648	23,050	30,000	37,000	43,500	51,000	57,500
	<b>Tflops</b>	182	251	335	413	490	570	640

**Description:** The performance measure shows the capacity and power in number of cores and teraflops for the NWS HFIP R&D supercomputer. Cores refer the number of central processing units; teraflops are a measure of computing capacity in trillions of floating point operations per second. The table describes the impact that changes in the funding cycle will have on the computer system. Currently, \$1M per year is dedicated to O&M and labor costs while the remaining budget is allocated for system refresh, storage, and the purchase of new equipment. A decrease in funding will defer maintenance activities for the current system, which will be addressed in the FY 2014 budget.

**Multi-Year Budget Information (BA in thousands):**

<b>Weather &amp; Climate Supercomputing Changes from FY 2013 Base</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016*</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
		(2,000)	0	0	0	0		
<b>Total Request</b>	10,000	2,000	4,000	4,000	4,000	4,000	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service

Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(2,000)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,000)</u>

**NOAA Profiler Conversion: (Base Funding: \$1,700 and 0 FTE; Program Change: -\$1,700 and 0 FTE):** NOAA requests a decrease of \$1,700,000 and 0 FTE for a total of \$0 and 0 FTE to terminate the NOAA Profiler Conversion Program (NPN).

**Proposed Actions:**

NOAA proposes to terminate the conversion and tech refresh of 32 profiler sites from 404 to 449 MHz. Thirty-two of the existing 37 wind profilers use a transmitter frequency of 404 MHz issued by the National Telecommunications and Information Administration (NTIA) upon the profilers' deployment. These 32 profilers using the 404Mhz frequency will be required to cease transmitting on this frequency to avoid interference with the new European Union's Search and Rescue Satellite Tracking (SARSAT) transponders aboard the (Galileo) GPS satellite constellation.

NOAA proposes to terminate the conversion and tech refresh program in FY 2013 and will continue to pursue improvements in detecting tornadoes and other severe weather through other programs. NOAA will continue to use existing observing systems, such as Dual Polarized radar, radiosondes and aircraft observations to the fullest extent to mitigate the loss of profiler data. Three (3) profiler sites in Alaska already operating on the 449 MHz frequency will continue to operate. Additionally, NOAA expects improvements in tornado lead time when GOES-R becomes operational. These profilers will allow NOAA to continue to provide volcanic forecast products to preserve a safe Alaska airspace.

**Base Resources Assessment:**

The base resources for this program are described in the Systems Acquisition base narrative.

**Outyear Funding Estimates (\$ in thousands):**

NOAA Profiler Conversion	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Changes from FY 2013 Base		(1,700)	(1,700)	(1,700)	(1,700)	(1,700)		
<b>Total Request</b>	24,943	0	0	0	0	0	N/A	24,943

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: Systems Acquisition

<b>Object Class</b>		<b>2013 Decrease</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	<u>0</u>
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	(1,700)
25.2	Other services	0
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	<u>(1,700)</u>

**Ground Readiness Project: (Base Funding: \$0 and 0 FTE; Program Change: +\$12,400,000 and 0 FTE):** NOAA requests an increase of \$12,400,000 and 0 FTE to ensure utilization of the substantial increase in environmental satellite observations that will help to improve weather warnings and forecasts.

**Proposed Action:**

NWS must update its information technology (IT) infrastructure to ensure adequate processing, delivery and exploitation of new environmental satellite data. In order to improve the fidelity and accuracy of weather warnings and forecasts, NOAA has invested billions of dollars in new satellite sensing systems and data sets within NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) that will come online over the course of FY 2013-2017. These systems and their launch dates are as follows:

Satellite System	Launch Date Estimate
Suomi National Polar-orbiting Partnership (Suomi NPP)	1Q FY 2012 (launched October 2011)
Joint Polar Satellite System (JPSS)	FY 2017
Geostationary Operational Environment Satellites - R & S series (GOES-R/S)	1Q FY 2016 and 2Q FY 2017 respectively

The investment will prepare NOAA for the three-fold increase in data volume expected from these new systems, which would far exceed the capacity of NWS's current IT infrastructure to transmit the data to NWS forecast offices and between systems. To fully exploit and benefit from these new observations and products, NWS's IT infrastructure must be enhanced.

With this funding, NWS will take a holistic, enterprise-based approach to managing and integrating the necessary IT redesign and upgrades. NWS will boost both data-processing and dissemination capabilities. NWS' primary dissemination capabilities will include delivering data over a satellite broadcast network via Direct Readout (DRO) antennas and terrestrial telecommunication circuits.

Provided below is detailed information on the activities that will be conducted in FY 2013-2017.

- Providing Consolidated Distribution Services (CDS) functionality: NWS will develop a CDS functionality to sectorize, composite, integrate and manipulate the large volumes and types of new data and metadata. This effort will allow NWS to significantly improve current methods of processing and distribution of data by developing smart distribution logic and software (smart push/pull), which ensures that data users receive only the data they request from the system, omitting extraneous data and reducing cost and demands on bandwidth. The system architecture includes the Environmental Satellite Processing Center (ESPC), Advanced Weather Interactive Processing System (AWIPS), NWS Telecommunications Gateway (NWSTG), and National Centers for Environmental Prediction (NCEP).
- Direct Readout (DRO) and Satellite Broadcast Network (SBN) Upgrades: Select NWS sites require direct receipt of satellite observations in order to minimize data delays and to obtain all raw products for meeting timelines to issue severe weather warnings to emergency managers and the general public. Without timely receipt of this data, services are degraded, potentially increasing risk to life and property. Specifically, these

sites require upgrades to direct readout satellite systems to receive GOES-R Rebroadcast (GRB) satellite data. Due to projected changes in future data transmission format, existing GOES-Variable data (GVAR) systems will be upgraded to GRB. In this case, utilization of the direct readout antenna solution is more cost effective than redistribution of a large amount of satellite data through the current terrestrial communication system. GRB antenna upgrades will be provided at the Aviation Weather Center, National Hurricane Center, Space Weather Prediction Center, and the Storm Prediction Center, as well as NWS's Alaska and Pacific Regional Headquarters.

The Satellite Broadcast Network (SBN) is a key component of the AWIPS communication network that sends data from the AWIPS Network Control Facility (NCF) to the public and each Weather Forecast Office (WFO), River Forecast Center (RFC), and National Center. This one-way communication link is the primary delivery mechanism for essential observations, model and warning information to NWS users and the public. Current SBN services will require an approximately three-fold increase in capacity to allow for the transmission of new data. This new satellite data consists of geographically sectorized and re-sampled imagery from GOES-R and Suomi NPP and is compressed and loaded with headers prior to transmittal via terrestrial fiber to the satellite uplink station. It differs from the DRO by being a subset of the full resolution; full disk imagery directly from the satellite. Master ground station, uplink and downlink equipment, and associated satellite provider services will be upgraded.

- Increasing terrestrial telecommunications, processing and interagency peering capabilities: NOAA's three primary systems which produce/disseminate data to internal and external users (NCEP, NWSTG, and AWIPS) must ingest and distribute new satellite observations and products. NOAA will lease terrestrial telecommunications equipment to transmit the data between the various processing and dissemination systems to make products available to NOAA stakeholders.

Additional processing capabilities are required to ingest and process the data into model forecasts and weather products. A phased bandwidth augmentation will be executed with oversight of a centralized project team. Increasing the terrestrial telecommunications capacity in a phased approach will ensure NWS does not incur sustainment costs before the increased capacity is required. The terrestrial telecommunications capacity will include implementation of all Federal Information Security Management Act (FISMA) requirements. Each link will be analyzed for information exchange requirements, data path efficiency and volume of data required. These improvements will comply with Office of the Federal Coordinator for Meteorology Committee for Operational Processing Centers (COPC) agreements to improve NOAA's peering capabilities with the Department of Defense (DoD). This peering capability will provide the network architecture direct connectivity to DoD for sharing large volumes of data at high data rates between its partners.

**Statement of Need and Economic Benefits:**

This investment will enable NWS to better meet the requirements of local, state, and federal first responders, emergency managers and decision-makers for significantly refined warnings and forecasts. In particular, new satellite data and processing capabilities will improve forecasts from the county/multi-town scale to the neighborhood scale, and in some cases, even street level. The activities proposed in this initiative will ensure that NWS is able to exploit new satellite observations, resulting in higher fidelity, more accurate weather prediction models. This will also result in more refined, reliable, and advanced notice of deadly weather events by improving tornado lead time and reducing false alarm rates, which helps to save lives.

This funding profile covers the costs needed to acquire and sustain the IT infrastructure (hardware, software and telecommunications) required to maintain mission continuity and exploit the increased satellite observations. The funding requested is not duplicative of other NWS funding requests. However, the outyear budget profile may require some revisions in the FY 2014 budget submission, as finalized satellite requirements and schedule will affect final design specifications for the IT redesign.

**Base Resources Assessment:**

This is a new initiative and does not have any base funding.

**Schedule & Milestones:**

FY 2013

- Deploy and test NCEP’s additional processing capability in support of GOES-R launch
- Support GOES-R Data Operations Test
- Prototype and test CDS functionality
- Augment COPC network for GOES-R data

FY 2014

- Buy, deploy and test terrestrial telecommunications bandwidth for NCEP, AWIPS in support of GOES-R deployment
- Buy, deploy and test SBN bandwidth in support of GOES-R deployment

FY 2015

- GOES-R launch and post-launch checkout
- Direct readout antenna upgrades at six sites
- CDS operational (supporting post-launch tests)

FY 2016

- Increase terrestrial telecommunications bandwidth for NCEP, AWIPS and NWSTG in support of GOES-S deployment
- Increase SBN bandwidth in support of GOES-S deployment
- GOES-S launch and post-launch checkout
- Direct readout antenna upgrades at 2 sites

FY 2017

- Direct readout antenna upgrades at five sites
- Conduct needed refresh and operation and maintenance activities as new satellite system launches

**Deliverables:**

- Increased telecommunications bandwidth for NOAA and COPC architecture
- Operational CDS functionality
- Three-fold increase in AWIPS SBN capacity
- Replacement of 13 DRO antennas

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent (%) of NOAA-managed satellite data processed and distributed within	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>

targeted time								
<b>With increase</b>	N/A	N/A	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
<b>Without increase</b>	N/A	N/A	98%	98%	70%	50%	30%	

**Description:** The without increase targets reflect the reduction in availability of satellite data. Suomi NPP data would need to be reduced to legacy sizes with full legacy GOES starting in FY 2013. GOES-R data would be reduced to legacy GOES sizes in FY 2015 due to only 1 legacy satellite being fully available with the reduced availability of the new GOES-R data. JPSS and GOES-S will have reduced availability by FY 2017 if NWS remains at legacy capability. The without increase target data are high level estimates based upon the ratio of legacy data to the full data set that each satellite will bring.

**Multi-Year Budget Information (\$ in thousands):**

Satellite User Readiness & Prior	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Changes from FY 2013 Base		12,400	15,446	18,707	15,399	15,399		
Total Request	0	12,400	15,446	18,707	15,399	15,399	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: National Weather Service  
Subactivity: System Acquisition

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	12,400
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>12,400</u>

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**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION  
SUBACTIVITY: CONSTRUCTION**

The objectives of the Construction subactivity are to:

- Upgrade and improve NOAA's Weather Forecast and Weather Service Offices (WSO)
- Capital improvements to maintain structural integrity
- Maintain compliance with federal law and national and local building codes

**WEATHER FORECAST OFFICE CONSTRUCTION**

To support its mission, the NWS operates and maintains 122 WFOs; 13 RFCs; 18 WSO; 8 National Centers; 2 Data Collection Offices; and 2 Tsunami Warning Centers. Of the WFOs and RFCs, 35 are leased.

The WFO Construction program started in the late 1980s as part of the NWS modernization and restructuring program. The original scope of the project, completed in FY 1999, included the construction or lease of 117 WFOs (13 of which were co-located with RFC) and cost approximately \$250 million. Since then, NWS added five WFOs to address service coverage requirements in Guam; Northern Indiana; Caribou, Maine; Huntsville, Alabama; and Key West, Florida. The original modernization scope did not include the upgrade and modernization of Alaska and Pacific Region Weather Service Offices and associated employee housing units. The original facilities are reaching twenty years in age and require the typical capital improvements necessary to maintain their structural integrity, (e.g., heating, ventilating, and air conditioning systems (HVAC), roof and uninterruptible power supply replacements). In addition, this effort is essential to maintaining compliance with federal law and national and local building codes.

**Schedule & Milestones:**

FY 2013

- Award WSO in Chuuk, Federated States of Micronesia renovation contract
- Award 2 HVAC replacement contracts

FY 2014

- Award Bethel, AK UAIS building contract
- Award King Salmon, AK UAIS building contract

FY 2015

- Award Kodiak, AK UAIS building contract
- Award Kotzebue, AK UAIS building contract

FY 2016

- Award McGrath, AK UAIS building contract
- Award Cold Bay, AK UAIS building contract

FY 2017

- Award Bethel, AK WSO building contract

**Deliverables:**

- Alaska Facility Modernization
- Pacific Facility Modernization

**Multi-Year Budget Information (\$ in thousands):**

<b>WFO Construction</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Changes from FY 2013 Base</b>	126,565	0	0	0	0	0		
<b>Total Request</b>	126,565	3,150	3,150	3,150	3,150	3,150	N/A	Recurring

Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGES FOR FY 2013:**

No program changes requested for this subactivity.

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## **BUDGET ACTIVITY: NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE**

For FY 2013, NOAA requests a net increase of \$162,043,000 and a net decrease of 9 FTE from the FY 2013 base level for a total of \$2,041,406,000 and 818 FTE for the National Environmental Satellite, Data, and Information Service (NESDIS). This includes \$1,518,000 and 0 FTE in inflationary adjustments.

### **BASE JUSTIFICATION FOR FY 2013:**

NESDIS is responsible for the procurement, launch, and operation of the nation's civil operational environmental satellites. Along with providing for the health, safety and management of the satellites, NESDIS manages the product development and distribution of the corresponding data.

NESDIS has two sub-activities in the Operations, Research and Facilities appropriation: 1) Environmental Satellite Observing Systems, with \$113,520,000 and 409 FTE and 2) Data Centers and Information Services, with \$69,198,000 and 269 FTE:

The goals of the Environmental Satellite Observing Systems sub-activity include: (1) maintaining a system of polar-orbiting satellites to obtain global environmental data; (2) maintaining a system of geostationary satellites to provide near-continuous environmental observations of the Earth's Western Hemisphere; (3) acquiring, processing, and analyzing data from NOAA, the Department of Defense (DOD), and other Earth-observing satellites; (4) supplying data and interpretations to users; (5) introducing new technology and processes to improve environmental satellite system capabilities; (6) determining requirements for future satellite systems; (7) serving as the lead U.S. agency for the Search and Rescue satellite system, including operating and maintaining the mission control center; (8) monitoring global sea ice conditions to support safe and effective marine transportation; and (9) demonstrating better ways to use and distribute environmental data from NOAA, the National Aeronautic and Space Administration (NASA), and other satellites, aircraft, and laboratory investigations.

The Environmental Satellite Observing Systems sub-activity includes the following budget line items and PPAs for FY 2013:

- Office of Satellite and Product Operations (OSPO), including Satellite Command and Control, NOAA Satellite Operations Facility (NSOF) operations, and Product Processing and Distribution;
- Product Development, Readiness, and Application, including Ocean Remote Sensing and the Joint Center for Satellite Data Assimilation (JCSDA);
- Commercial Remote Sensing Regulatory Affairs;
- Office of Space Commercialization; and
- Group on Earth Observations (GEO).

The goal of the NOAA Data Centers & Information Services sub-activity is: 1) to provide the Nation with the long-term archive of and access to past, present, and future environmental observations and associated data recorded across the U.S. and globally; and 2) to provide worldwide environmental data and information products and services in the atmospheric, oceanographic, marine, solid Earth, and solar-terrestrial sciences to meet the needs of users. Environmental data and information maintained by NOAA are vital to every economic sector and are used in making decisions critical to national defense; industrial productivity; energy development and distribution; management and planning of water resources; world food supplies; public health, safety, and welfare; and development

of natural resources. Environmental scientists and observers also have a critical need for a long time-series of historical and recent global data to assess long-term environmental trends, to evaluate the current state of the environment, and to predict future environmental conditions and events.

In FY 2013, the NOAA Data Centers and Information Services sub-activity consists of the following budget line items and PPAs:

- Archive, Access, and Assessment
- Coastal Data Development
- Regional Climate Services
- Environmental Data Systems Modernization

NESDIS has two sub-activities in the Procurement, Acquisition and Construction appropriation: 1) Systems Acquisition and 2) Construction.

The Systems Acquisition sub-activity (\$1,694,417,000 and 149 FTE) includes the PPAs below:

- Geostationary Systems – N Series;
- Geostationary Systems – R Series;
- Polar Orbiting Systems – POES;
- Altimetry Mission – Jason-3;
- Polar Orbiting Systems – Joint Polar Satellite System (JPSS);
- Deep Space Climate Observatory (DSCOVR);
- EOS & Advanced Polar Data Processing, Distribution & Archiving System;
- Critical Single Point of Failure (CIP);
- Comprehensive Large Array Data Stewardship System (CLASS); and
- NPOESS Preparatory Data Exploitation.

The Construction sub-activity includes the Satellite CDA Facility (\$2,228,000 and 0 FTE).

#### **Research and Development Investments:**

The NOAA FY 2013 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. NESDIS requests \$35,494,000 for investments in R&D and infrastructure to support R&D in the FY 2013 budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, to provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY13-18), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests an increase of \$1,518,000 and 0 FTE to fund adjustments to current programs for NESDIS activities. The increase will also fund the estimated FY 2013 federal pay raise of 0.5 percent. The increase will provide inflationary increases for non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NESDIS also requests the following technical adjustments and transfers for a net change to NOAA of \$0 and 0 FTE.

NOAA requests a technical adjustment to transfer the NESDIS Satellite Command and Control and Product Processing and Distribution line items to the new NESDIS line item, Office of Satellite and Product Operations (OSPO). No adjustments have been made to the three PPAs, except in the alignment under this new line item.

NOAA requests a technical adjustment to rename the Regional Climate Centers PPA the Regional Climate Services PPA. No funding or FTE changes are associated with this request.

From Office	PPA	To Office	PPA	Amount/FTE
NESDIS	Restoration of Climate Sensors	NESDIS	Joint Polar Satellite System	\$25,880,000/ 0 FTE

NOAA requests a technical adjustment to move \$25,880,000 and 0 FTE from the Restoration of Climate Sensors PPA to the NESDIS Joint Polar Satellite System PPA, in order to more accurately reflect the actual costs of the JPSS program. The measurements provided by the climate sensors funded in the Restoration of Climate Sensors PPA are JPSS program requirements and the sensors are provided to the JPSS program for integration and accommodation on JPSS delivered flight platforms.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on NESDIS' administrative savings planned for FY 2012 (\$13.1 million), an additional \$0.8 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$13.9 million.

**Headquarters Administrative Costs:**

In FY 2013, NESDIS Line Office headquarters will use \$23,870,900 to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, NESDIS will use headquarters administrative funds to support the following:

Headquarters Program Support Type	Description	FY 2013 Amount	FY 2013 FTE associated with NESDIS Line Office HQ
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$7,071,700	34.5
Budget & Finance	Includes Budget, Finance and Accounting	\$3,732,800	21.9
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$1,701,200	0
Human Resources	All HR services, including Equal Employment Opportunity	\$2,115,600	13.2
Acquisitions and Grants		\$0	0
Information Technology	Includes IT-related expenses and other CIO related activities	\$9,249,600	16.9
<b>Total</b>		<b>\$23,870,900</b>	<b>86.5</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary exhibit is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: ENVIRONMENTAL SATELLITE OBSERVING SYSTEMS**

The objectives of Environmental Satellite Observing Systems are to:

- Provide secure and efficient command and control of NOAA, DOD, and other non-NOAA operational environmental satellites; and
- To ensure timely and uninterrupted delivery of data to users, including product processing, development, and distribution.

To achieve these objectives, NOAA meets the Nation's requirement to provide an environmental satellite system capable of providing timely and accurate environmental data. Early warning of major weather events saves countless lives and prevents substantial property damage. Billions of dollars in damage and hundreds of lives are lost each year due to natural disasters. These losses would be significantly worse if NOAA satellite data and services were unavailable due to interference with, or the failure of, critical satellite command and data acquisition infrastructure.

**OFFICE OF SATELLITE AND PRODUCT OPERATIONS (<http://www.ospo.noaa.gov/>)**

The Office of Satellite and Product Operations (OSPO) manages and directs NOAA's 24x7 environmental satellite operations, acquisition, product development and the distribution of environmental data and derived products to domestic and foreign users, and associated services. OSPO manages NOAA's Search and Rescue Satellite Aided Tracking (SARSAT) system and coordinates participation in the International COSPAS-SARSAT Program. OSPO also manages the strategic and tactical environmental and oceanographic ice services at the National Ice Center for the operational requirements of U.S. national interests.

**SATELLITE COMMAND AND CONTROL (<http://www.oso.noaa.gov/>)**

The goal of the Satellite Command and Control program is to provide efficient and secure command and control of NOAA, DOD, and other non-NOAA operational environmental satellites to ensure timely and uninterrupted delivery of data to users.

The NOAA Satellite Command and Control program forms the backbone of the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. The Satellite Command and Control program monitors satellite health and safety; schedules satellite operations and data acquisition to meet user needs; evaluates satellite systems performance; commands spacecraft; supports NASA during launch, activation, and evaluation of new satellites; and assesses satellite and ground station anomalies. The NOAA Satellite Command and Control program ensures acquisition and near real-time delivery of satellite data to product processing centers that, in turn, support NOAA's National Weather Service (NWS) mission to protect lives and property during severe weather events.

The Satellite Operations Control Center (SOCC)/Command and Data Acquisition (CDA) Facilities command and control both NOAA and non-NOAA environmental satellites; track the satellites health and safety; and acquire and process all data delivered from the satellites. The SOCC/CDA provides the vital link between the satellites and every data user. SOCC/CDA operations provide uninterrupted availability of critical information and support NOAA's critical national support functions that are not available commercially, such as real-time hurricane support.

### NOAA SATELLITE OPERATIONS FACILITY (NSOF) Operations

The NOAA Satellite Operations Facility (NSOF) provides a modern, state-of-the-art-facility and infrastructure that supports uninterrupted 24/7 command, control and communications for NOAA's satellite program operations. The NSOF houses high technology equipment, including 16 antennae, which control Geostationary Operational Environmental Satellites (GOES), Polar-orbiting Operational Environmental Satellites (POES), and DOD's Defense Meteorological Satellite Program (DMSP) environmental satellites. Data from other non-NOAA operational and research satellites are also received to support specific NOAA missions. In addition to satellite operations, the 24/7 critical operations at NSOF provide environmental data used to develop weather and climate products, as well as other information products used daily by industry and citizens across the Nation.

### PRODUCT PROCESSING AND DISTRIBUTION (<http://www.osdpd.noaa.gov/ml/index.html>)

The goal of the Product Processing and Distribution (PP&D) program is to provide the Nation with specialized expertise and computing systems that process, analyze, and distribute satellite-derived products and services that protect U.S. lives and property while enhancing the Nation's environmental, national, homeland, and economic security. PP&D processes data from Earth-observing satellites to provide the highest quality products and services to its users.

PP&D provides products and services using data from NOAA, the Department of Defense (DOD), and NASA environmental satellites, as well as foreign and commercial spacecraft to national and international customers and users on a 24/7 basis. PP&D products enable NOAA to accurately track the location, extent, and duration of severe weather such as hurricanes, tornadoes, and winter storms; support development of flash flood warnings; track volcanic ash clouds and severe winds that threaten aviation safety; detect remote wild land fires; monitor coastal ecosystem health; identify and monitor maritime hazards from sea ice; and assist in search and rescue activities. PP&D is the operational interface with NOAA's National Weather Service (NWS) and supplies the satellite data that makes up approximately 93 percent of the information used in numerical weather prediction models. PP&D provides approximately 450 operational products organized into three categories: Atmospheric, Oceanographic, and Terrestrial.

PP&D is constantly assessing and using data from advanced satellite sensors to improve operational support to its customers. It also supports activities to improve the effectiveness and interoperability of national systems for sharing natural disaster information. By using maps and data generated by remote- and land-based sensors, this information is made widely accessible to all government agencies and other entities involved in managing and mitigating the impacts of disasters. PP&D products are widely used by all branches of the U.S. Armed Services and the Department of Homeland Security.

Included in the PP&D operations is NOAA's contribution to the joint U.S. National Ice Center (NIC), which monitors global sea ice conditions to support safe and effective maritime transportation in the polar regions, Great Lakes, Arctic, and North Atlantic waters. NOAA, the U.S. Navy, and the U.S. Coast Guard jointly operate the U.S. NIC to support the civil and military maritime communities. This service is critical to NWS warnings in ice-prone sea lanes, U.S. Coast Guard ice breaking missions, civilian and military shipping, and commercial fishing communities.

PP&D provides NOAA's contribution to the operations of the U.S. search and rescue satellite-aided tracking (SARSAT) system. SARSAT has contributed to the rescue of more than 28,000 people worldwide, including more than 6,000 people in the U.S., since its inception in 1982.

## **Schedule & Milestones:<sup>1</sup>**

### Satellite Command & Control and NSOF Operations

- FY 2013:
  - Command and Control 10 NOAA Satellites and support 8 non-NOAA Satellites
  - Maintain Satellite Operation Facilities at Suitland, MD, Wallops, Virginia, and Fairbanks, Alaska
  - Conduct annual penetration testing on all IT Systems
  - Continuous Monitoring of all IT Systems
  - Assessment and Authorization for required IT Systems
- FY 2014:
  - Command and Control 10 NOAA Satellites and support 10 non-NOAA Satellites
  - Maintain Satellite Operation Facilities at Suitland, MD, Wallops, Virginia, and Fairbanks, Alaska
  - Conduct annual penetration testing on all IT Systems
  - Continuous Monitoring of all IT Systems
  - Assessment and Authorization for required IT Systems
- FY 2015:
  - Command and Control 11 NOAA Satellites and support 11 non-NOAA Satellites
  - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
  - Conduct annual penetration testing on all IT systems
  - Continuous Monitoring of all IT Systems
  - Assessment and Authorization for required IT Systems
- FY 2016:
  - Command and Control 13 NOAA Satellites and support 11 non-NOAA Satellites
  - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
  - Conduct annual penetration testing on all IT systems
  - Continuous Monitoring of all IT Systems
  - Assessment and Authorization for required IT Systems
- FY 2017:
  - Command and Control 14 NOAA Satellites and support 12 non-NOAA Satellites
  - Maintain Satellite Operation Facilities at Suitland, MD; Wallops, Virginia; and Fairbanks, Alaska
  - Conduct annual penetration testing on all IT systems
  - Continuous Monitoring of all IT Systems
  - Assessment and Authorization for required IT Systems

### Product Processing and Distribution

- FY 2013: Begin processing and distribution of Suomi NPP products (9 operational products processed and distributed in FY 2013); Begin data processing and distribution of OceanSat-2
- FY 2014: Complete Certification and Accreditation of product processing system
- FY 2015: Transition high resolution information transmissions into operations

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<sup>1</sup> Schedule and Milestones assume FY 2013 NESDIS program changes for PAC satellite programs

- FY 2016: Distribute validated GOES-R products
- FY 2017: Process and distribute 71 new Suomi NPP products (cumulative) to users within 100% of targeted time; Bring GOES-16 into operation; Bring Metop-C into operation

**Deliverables:**

Satellite Command and Control and NSOF Operations\*

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
<b>Infrastructure Maintained # of National/Mission Critical Systems)</b>	8	8	8	8	8	8
*Includes FY 2013 NESDIS Program Changes for PAC satellite programs						

Product Processing and Distribution

- Delivery of Suomi NPP data to users
- New products transitioned into operations
- Upgraded system architecture to meet security needs and to facilitate transition of research products into operations

**Performance Goals and Measurement Data:**

Satellite Command and Control

<b>Performance Measure:</b>	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percentage of GOES satellite data successfully acquired to meet customer quality and timeliness requirements.	<b>Actual</b> 99.8%	<b>Target</b> 99.0%					
<b>Description:</b> Data from NOAA's GOES satellites are received on a daily basis and compiled monthly. This measure is the percentage of GOES datasets received against what was scheduled to be collected.							

<b>Performance Measure:</b>	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Percentage of POES satellite data successfully acquired to meet customer quality and timeliness requirements.	<b>Actual</b> 99.8%	<b>Target</b> 99.0%					
<b>Description:</b> Data from NOAA's POES satellites are received on a daily basis and compiled monthly. This measure is the percentage of POES datasets received against what was scheduled to be collected.							

## Product Processing and Distribution

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of NOAA-managed Satellite Data processed and distributed within targeted time	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.7%	98.5%	98.5%	98.5%	98.5%	98.5%	98.5%
<b>Description:</b> This measure includes data from NOAA's GOES and POES satellites. It tracks the processing and distribution of environmental data to the users. This measure is used to track timeliness and customer satisfaction. The targeted time varies per satellite: GOES is 15 minutes, POES is 180 minutes (which is based on Advanced Television Infra-Red Observation Satellite Operational Vertical Sounder timeliness).							

<b>Performance Measure:</b>	<b>FY</b>						
Number of environmental products implemented into operations	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	6	10	10	10	14	14	14
<b>Description:</b> This measures the number of validated environmental products (both new and enhanced) that are transitioned from research into operations. Efficiency in managing Research To Operation program resources is reflected by the number of new satellite products that are developed and implemented within the defined schedule and cost criteria for each separate product project.							

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of customer validated, required ice products that are produced and delivered within targeted time	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	96%	97%	97%	97%	97%	97%	97%
<b>Description:</b> Percentage of Imagery required daily by the National Ice Center (NIC) to generate weekly critical ice forecast and other ice products needed for safe marine transportation							

<b>Performance Measure:</b>	<b>FY</b>						
Transmission percentage rate of SARSAT distress alert and location information to search and rescue authorities within targeted time	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	94.7%	93%	93%	93%	93%	93%	93%
<b>Description:</b> Performance measure is important to beacon user customer group. The ability to deliver distress alerts in a timely fashion directly affects the chances of survival for the individual(s) in distress. Baseline performance was derived from historical data. The target performance is included in the Interagency SARSAT Operational Requirements document.							

## **PRODUCT DEVELOPMENT, READINESS & APPLICATION**

**(<http://www.star.nesdis.noaa.gov/star/index.php>)**

The goal of NOAA's Product Development, Readiness, and Application (PDR&A) Line Item is to provide applications-focused research that will develop and evaluate prototype products, algorithms, and pre-operational products to improve existing operational satellite products and services using data from current and next generation environmental satellites. This program includes three PPAs.

PDR&A: PDR&A enhances the accuracy of current satellite products and develops new satellite products to meet user requirements. Activities range from planning new satellite instruments to developing new satellite products and applications. This includes transitioning new satellite products to operations, improving satellite products as instruments degrade, and performing calibration/validation activities between instruments.

The Nation needs enhanced satellite data to improve and extend weather forecasts, expand environmental monitoring and assessment capabilities, and to provide new and improved tools for scientifically based ecosystems management. In the next few years, the number and quality of satellite instruments will grow significantly, providing enhanced data capable of allowing major improvements in weather prediction accuracy. To make these improvements, it is necessary to have both a targeted research program and a cadre of scientists and computing systems dedicated to development of improved satellite data products. The PDR&A activities ensure the highest accuracy of NOAA's current operational environmental satellite data and products via a robust and rigorous satellite data calibration/validation program. This effort improves product quality for the benefit of all users. PDR&A also incorporates the latest academic findings into its work through competitively awarded Cooperative Institutes with academic institutions (Universities of Wisconsin, Maryland, Colorado State, Oregon State, and the City College of New York). The academic expertise and the results of academic findings are infused into product development, readiness, and applications that either lead to improvements in existing products or to the development of new products or sensors.

Ocean Remote Sensing (ORS): ORS targets the development of ocean related products and their transition to operations. Its scope includes developing new and improved ocean remote sensing data, products, and capabilities; ensuring continuity of data streams and specifying requirements for next generation satellite sensors; improving the understanding of ocean dynamics; and addressing research and operational needs related to marine ecosystems.

ORS facilitates the delivery and implementation of multiple satellite ocean data streams with continued science maintenance and improvements in research, data acquisition, calibration, and validation, which are required to maintain and enhance satellite-based tools and products utilized by the global and coastal oceans user community. Major activities under ORS include CoastWatch/OceanWatch (including Marine Optical Buoy support), External Research (Cooperative Institute for Oceanographic Satellite Studies), Sea Surface Roughness, and Sea Surface Temperature.

Joint Center for Satellite Data Assimilation (JCSDA): JCSDA increases forecast prediction capabilities using advanced satellite assimilation methods. Its scope is to accelerate and improve the quantitative use of research and operational satellite data in weather, ocean, climate and environmental analysis and prediction systems.

JCSDA accelerates the application of satellite data for improving weather forecasts and other environmental models. The JCSDA was established to speed the development of new satellite data assimilation science into operational capabilities. NOAA (NWS, OAR, and NESDIS), NASA, and DOD are partners in this coordinated national effort to more fully realize the potential of the vast quantities of new satellite data that are becoming available. The JCSDA is also a risk reduction measure designed to accelerate the JPSS and GOES-R data utilization for the development of numerical weather prediction models and forecast models that will lead to increased accuracy and longer-range forecasts. In the next few years, the number and quality of satellite

instruments will grow significantly, providing an exponential increase in higher quality data capable of allowing major improvements in the accuracy of weather prediction.

**Schedule & Milestones:**

- FY 2013: Establish Jason-3 calibration program  
Development of NDE NOAA-unique products  
Data assimilation experiments of Suomi NPP observations
- FY 2014: Data exploitation of GCOM-W1 mission
- FY 2015: Provide near-real time ocean surface wind data to the National Hurricane and Central Pacific Hurricane Centers in support of operational wind nowcasts, forecasts, and warnings (These data will come from scatterometers on foreign satellites, such as the Advanced Scatterometer (ASCAT) instrument on EUMETSAT's Metop satellite)
- FY 2016: Post-launch checkout of GOES-R
- FY 2017: Post-launch checkout of JPSS-1

**Deliverables:**

- FY 2013: Jason-3 calibration program  
NDE NOAA-unique product capability  
Outputs from data assimilation experiments of Suomi NPP observations
- FY 2014: Initial GCOM-W1 mission products
- FY 2015: Near-real time ocean surface wind data
- FY 2016: Analyses of GOES-R post-launch check out
- FY 2017: Analyses of JPSS-1 post-launch check out

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of products, applications, techniques, and systems developed	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	11	11	14	14	14	16	16
<b>Description:</b> As new requirements for satellite data and environmental information are identified and understood, research is performed that leads to the creation of new information products, applications, processing techniques, and systems.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of new satellite products developed and transitioned to operations	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	5	9	10	10	14	14	14
<b>Description:</b> To apply its research to operational needs, satellite information products are developed and tested that meet the requirements of customers (e.g. the National Weather Service). After an extensive evaluation, the products that satisfy the requirements are transferred to operations for customer use.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of refereed papers published	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	122	75	75	80	80	80	80
<b>Description:</b> To assure that research is valid, high-quality, and up-to-date, scientific results are published in peer-reviewed journals.							

**COMMERCIAL REMOTE SENSING REGULATORY AFFAIRS (CRSRA)**  
**(<http://www.licensing.noaa.gov/>)**

The Nation requires a consistent and transparent regulatory process for licensing commercial remote sensing space systems in order to promote U.S. technological competitiveness and economic security, while ensuring satellite operation is consistent with our national security, intelligence, and foreign policy needs. NOAA's CRSRA program supports these requirements while furthering the Nation's homeland security and national security missions.

The CRSRA program coordinates interagency review of satellite license applications, amendments, and significant foreign agreements. NOAA licenses commercial remote sensing space systems and performs associated monitoring and compliance pursuant to the Secretary of Commerce's statutory responsibilities. Prior to issuing licenses, NOAA must consult with DOD and the Department of State to ensure license compliance with national security and foreign policy, respectively. NOAA works closely with other U.S. Government agencies to implement policy and ensure international coordination. Major monitoring and compliance activities supported by NOAA include review of quarterly license reports, on-site inspections, audits, license violation enforcement, and implementation of restrictions during national security and foreign policy crises. The number of license applications and revocations vary each year, and are not predictable. DOC's CRSRA, managed by NOAA, is responsible for enforcement and ensuring compliance with the terms of the license agreements. Worldwide commercial remote sensing space data sales were estimated to be \$735 million in 2007 and are expected to increase to \$2.5-\$3.4 billion by 2017. Dramatic future growth is expected due to growing civil and military user requirements, improvements in aerospace and information technologies, and e-commerce.

**Schedule & Milestones:**

- FY 2013: Evaluate Kyl-Bingaman limits and establish new threshold if determined necessary
- FY 2014: Evaluate all standard operating procedures to assure effectiveness, gaps, the need for new procedures, or modification of existing procedures
- FY 2015: Examine methodology for licensing of private space systems and determine if the existing license format is relevant or needs to change to better address changes in space systems and their operations
- FY 2016-17: Review regulations for currency and update if appropriate, republish any new regulations

**Deliverables:**

- Issuance of new licenses, waivers and or amendments to licenses, review and approval of foreign agreements, quarterly and annual audits, annual inspections with appropriate documentation for the record

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Process all regulatory actions within statutory time lines and conduct all required audits	31 audits and inspections of domestic and foreign ground	28 audits and inspections of domestic and foreign ground	30 audits and inspections of domestic and foreign ground	32 audits and inspections of domestic and foreign ground	32 audits and inspections of domestic and foreign ground	34 audits and inspections of domestic and foreign ground	36 audits and inspections of domestic and foreign ground

and inspections	stations. 2 new licenses	stations. Process at least 2 new licenses	stations. Process at least 3 new licenses	stations. Process at least 2 new licenses.	stations. Process at least 4 new licenses.	stations. Process at least 5 new licenses.	stations. Process at least 3 new licenses
<p><b>Description:</b> Regulatory actions include the submission of new licenses, the amendment of an existing license (both are 120 days by law), review, and approval of any waiver to a license or a foreign agreement (60 days). Audits and inspections are the quarterly and annual review of records, licenses, data protection plans and agreements, and the annual onsite inspection of the company and any station associated with the collection of satellite data. It is the verification for enforcement.</p>							

**OFFICE OF SPACE COMMERCIALIZATION (OSC)**  
**(<http://www.space.commerce.gov/remotesensing/>)**

OSC, managed by NOAA for DOC, is responsible for developing space-related policies and promotion of the capabilities of the U.S. commercial space industry. OSC represents DOC negotiations with foreign countries to ensure free and fair trade internationally in the areas of space commerce. OSC assists U.S. commercial providers in their efforts to expand their business with the U.S. Government and promotes commercial provider investment by performing economic analysis on space and space-related markets. OSC identifies commercial solutions for key NOAA and other civil government data acquisition requirements. OSC also acts as a broad industry advocate within the Executive Branch to ensure the Federal Government uses commercially available space goods and services to meet its requirements, avoids legal and regulatory impediments, and does not compete with the U.S. commercial space industry. The 2004 U.S. Space-Based Positioning, Navigation, and Timing (PNT) Policy established, through Presidential Directive, a permanent National PNT Executive Committee (EXCOM) to manage the Global Positioning System (GPS) and its U.S. Government augmentations as a national asset. The policy further directed the EXCOM to establish the National Space-Based PNT Coordination Office (NCO) to serve as the Secretariat and perform those functions delegated by the Executive Committee. The Deputy Secretary of Commerce is a member of the Executive Committee and OSC provides management, personnel and facility support to the NCO in addition to performing studies and related activities to meet Executive Committee tasking and responsibilities.

**Schedule & Milestones:**

- FY 2013-17: Accomplish two major policy decisions and commercial industry activities per quarter.

**Deliverables:**

- Increased opportunities for commercial solutions for key NOAA and other civil government data acquisition requirements
- Improved coordination between government and industry on space-related issues and enhance engagement in interagency space-related policy activities

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of major policy decisions supported and industry studies and related activities executed	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	8	8	8	8	8	8	8
<b>Description:</b> The target represents specific actions planned to be executed during the year that deal with commercial space issues and industry studies of the market.							

**GROUP ON EARTH OBSERVATIONS (GEO) (<http://www.noaa.gov/eos.html>):**

The intergovernmental Group on Earth Observations (GEO) is a voluntary international partnership of governments and international organizations that provides a framework where these partners can collaborate globally on Earth observations. Its mission is the implementation of a Global Earth Observation System of Systems (GEOSS). The U.S. government is a founding member of GEO. The Office of Science and Technology Policy, Executive Office of the President leads U.S. engagement with GEO and the Associate Director for Environment serves as U.S. Principal Representative to and Co-Chair of GEO. U.S. government participation in this international activity is coordinated through the interagency U.S. Group on Earth Observations (USGEO). USGEO facilitates domestic coordination of Earth observation initiatives, as well as engagement with the intergovernmental GEO aimed at advancing U.S. goals and objectives relating to Earth observations.

Program resources support the activities of the GEO Secretariat staff in Geneva, who coordinate the 110 cooperative tasks and subtasks of the GEO Work Plan. The work plan is updated annually, with major revisions every three years. Tasks range from data integration and management, to water cycle observations, to Earth observations for climate change adaptation. Program resources also support the domestic cooperative activities of USGEO, including preparations for U.S. government participation in major GEO meetings and events; the development of assessment reports for the Executive Office of the President; planning and coordination meetings focused on federal agency investments in Earth observations, workshops, and other forums.

Global environmental and resource issues are among the great global challenges of our time, including mitigating and adapting to climate change and supporting global food security through sustainable agriculture. Integrated Earth observations are the indispensable foundation for addressing these challenges, of which GEO is a critically important forum for international engagement and cooperation on Earth observations.

The GEOSS endeavor is resulting in unprecedented global access to environmental information, and promises to advance its integration into new data products for the benefit of societies and economies worldwide. It represents a commitment to three important Administration principles: science-based decision making, open access to data and information, and increased international cooperation on science and technology.

In addition to the funding provided in the GEO PPA, NESDIS Headquarters funds labor/ benefits, travel, and supplements the USGEO grant.

**Schedule & Milestones:**

- FY 2013-17: Support annual meeting of member governments and participating international organizations at GEO Plenary and associated Executive Committee and related meetings

**Deliverables:**

- Support the development of U.S. positions and contributions to the implementation of the GEOSS Implementation Plan through preparations for U.S. government participation in major GEO meetings and events; the development of reports for the Executive Office of the President as requested; planning and coordination meetings focused on federal agency investments in Earth observations, workshops, and other forums

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Number of grants provided in support of annual GEO Plenary meetings of the USGEO Subcommittee of the President's NSTC.	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	2	1	1	1	1	1	1

**Description:** Provide support for annual GEO Plenary meetings of the USGEO Subcommittee by providing grants to GEO Secretariat and USGEO Secretariat of the President's National Science and Technology Council (NSTC).

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## **PROGRAM CHANGES FOR FY 2013:**

**Satellite Command and Control: Satellite Command and Control (Base Funding: \$40,112,000 and 174 FTE; Program Change: +\$126,000 and +0 FTE:** NOAA requests an increase of \$126,000 and 0 FTE for a total of \$40,238,000 and 174 FTE to continue funding for the ground systems that command, control, and acquire data from NOAA's on-orbit satellites 24 hours per day, 365 days per year. The requested increase in FY 2013 will continue to support the communications link to retrieve data from satellites passing over ground stations, and also to deliver primary mission data from NOAA Satellite Command and Control to product processing centers. The communications link, technical support, and network support for the day-to-day operations, maintenance, and modification of the GOES and POES spacecraft ground systems are necessary to maintain operational capability. The near real time data retrieved from the polar and geostationary satellites are critical for the National Weather Service (NWS) to issue warnings and forecasts of hurricanes and severe weather that save lives and property.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	126
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>126</u>

**Product Processing and Distribution: Suomi NPP and Polar Continuity Data Processing and Distribution (Base Funding: \$0 and 0 FTE; Program Change: +\$9,435,000 and +0 FTE):** NOAA requests an increase of \$9,435,000 and 0 FTE for a total of \$9,435,000 and 0 FTE to process and distribute environmental data from the Suomi National Polar-orbiting Partnership (Suomi NPP) mission. The Suomi NPP satellite was successfully launched in October 2012. The checkout period under the National Aeronautics and Space Administration (NASA) will be completed during the seven months following the launch.

**Proposed Actions:**

FY 2013 will be NOAA's first full fiscal-year of operations for processing and distributing Suomi NPP environmental products on a 24x7 basis to NOAA Operational Centers. The requested funding will provide full fiscal-year contractual support for the Suomi NPP Production Environment within the Environmental Satellite Processing Center (ESPC) that will process and distribute NOAA-unique Suomi NPP products to the National Weather Service (NWS), NOAA, and other user communities. This same support will continue for the follow-on program, the Joint Polar Satellite System (JPSS).

Specifically, NOAA will hire contractor support for computer operations to monitor the processing system, secure hardware maintenance and software licenses, train science analysts to monitor and maintain science quality for all products, provide additional support for the help desk to respond to queries and comments from the user community, and maintain the communications network to deliver products to users. With this investment, NOAA assumes the operations for the Suomi NPP processing and distribution system and begins to use NPP operationally.

**Statement of Need and Economic Benefits:**

The Suomi NPP Data Processing System is a processing and distribution system that will develop NOAA unique products from Suomi NPP satellite measurements into useful environmental products (e.g., ATMS Radiances and Sea Surface Temperature), which are delivered to the NWS and other customers within specific time requirements. The NOAA satellite data processing operational system uses software applications, network and hardware devices, drivers, and interfaces that process environmental data from Level 0, or raw data, to Level 1B, usable products.

Without the processing system to convert environmental data into required products and standard format used by the NWS, the data would be unusable to the NWS for weather models, warnings, watches, forecasts, etc. Without the processing and distribution network to deliver the products to the NWS, the NWS would not receive the products for its models to issue environmental warnings, watches and forecasts that save lives and protect property. Essentially, if the data are not processed and distributed in a timely fashion, they are not useful. Weather forecasts would be made less accurate and warnings less reliable, increasing risk to life and property.

Specifically, the Suomi NPP products are needed to: 1) Support real-time assessments and short-to-medium range forecasts and warnings of environmental conditions that may endanger human safety and health, and safe transportation; 2) Assess vegetation and drought conditions; 3) Provide information on fire locations and burn areas; 4) Develop ocean products to enhance public health, protected species, fisheries and coastal zone management, recreational boating, the offshore oil/minerals industry, tropical (hurricane) cyclone analyses and; 5) Assess seasonal-to-inter-decadal variability of ocean color and sea surface temperature products for El Niño, La Niña, and Pacific Decadal Oscillation climate analyses.

**Base Resource Assessment:**

The base resources for this activity are described in the Office of Satellite and Product Operations base narrative.

**Schedule and Milestones:**

- FY 2013: Maintain full-year sustainment of Suomi NPP Data Processing System
- FY 2014: Implement IT Refresh for Suomi NPP data processing equipment
- FY 2015: Sign Transition to Operations Plan for JPSS Processing System
- FY 2016: Accept data processing system from JPSS
- FY 2017: Process and distribute 71 Suomi NPP products to users within 100% of targeted time

**Deliverables:**

The requested funding will provide contractual support for the Suomi NPP Production Environment (hardware and software) within the Environmental Satellite Processing Center that will process and distribute 71 Suomi NPP products to the NWS, NOAA net, and other user communities.

The 71 NPP environmental products include: CrIS/ATMS (Atmospheric Temperature and Moisture Profiles for NWS); MIRS (Microwave-based moisture products for NWS); and SST (Sea Surface Radiances for NWS and Sea Surface Temperatures for NOS/CoastWatch).

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of Suomi NPP operational products processed and distributed	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	19	10	14	14	14
<b>Without Increase</b>		0	0	0	0	0	0
<b>Description:</b> Implement into operations the processing and distribution of environmental data from the Suomi NPP mission and other polar missions. Products include microwave and infrared atmospheric soundings, atmospheric ozone, sea surface temperatures, vegetation health, and fire detection. A total of 71 data products will be transitioned to operational products and distributed by FY 2017.							

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
% of Suomi NPP Satellite Operational Data processed and distributed within targeted time	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	98%	98%	100%	100%	100%
<b>Without Increase</b>		0%	0%	0%	0%	0%	0%
<b>Description:</b> With the current system, the goal is 98% of all available Suomi NPP operational data are processed by Suomi NPP Production Environment within 20 minutes from ingest. After the IT refresh, the goal increases to 100% within the target time of 16 minutes from ingest with 100% available Suomi NPP data.							

During FY 2012, the NPOESS Data Exploitation (NDE) program will continue to process and distribute Suomi NPP test products to the National Weather Service, which may be used for weather prediction; however, NESDIS will be unable to provide 24/7 support for these products, which is the

NOAA standard to operationalize satellite data products. Until the requested increase in FY 2013 is received, NOAA will be unable to process NPP test products into operational products, nor provide 24/7 support for the products.

Processing raw data and distributing the useful products that result are also required to help meet key NWS performance metrics:

- Hurricane Track and Intensity Forecast Accuracy
- Winter Storm Warning Lead Time and Accuracy
- Precipitation Threat Accuracy
- Flood Warning Lead Time and Accuracy
- Marine Wind Speed and Wave Height Forecast Accuracy

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	2,000
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	6,635
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	800
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>9,435</u>

The following exhibit shows the summary object class detail for Environmental Satellite Observing Systems program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Environmental Satellite Observing Systems

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	118
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>118</u>

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## **APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**

### **SUBACTIVITY: DATA CENTERS AND INFORMATION SERVICES**

Through three NOAA National Data Centers (NNDCs), environmental data, information, products, and services are provided to support atmospheric, oceanographic, and the solid Earth and solar-terrestrial physical sciences to facilitate sustained economic growth, scientifically sound environmental management, and public safety for the Nation and the international community. The sub-activity provides the core funding for the three NNDCs: the National Climatic Data Center (NCDC), the National Oceanographic Data Center (NODC), and the National Geophysical Data Center (NGDC).

The NNDCs provide the Nation with the long-term stewardship archive of past, present, and future environmental observations and associated data recorded across the U.S. and globally. Access to long time series of environmental data is critical to satisfying the Nation's wide range of needs related to the national security, the economy, the environment, and public safety. Approximately one-third of U.S. economic activity is climate sensitive and this figure continues to increase.<sup>2</sup> Business and government policies and decisions impacting water and energy management, manufacturing, transportation, food production, public health, and many other socio-economic issues depend on quality climate and weather data records. Collectively, the NOAA National Data Centers (NNDC) receive over one (PB) petabyte ( $10^{15}$ ) of new data annually; provide access to an archive exceeding 7 PBs; support over one billion web contacts/hits; and provide data transfers to over 15 million customers. By 2018, the projected ingest of new data will exceed 20 PBs per year and the cumulative archive volume managed and accessible to customers will exceed 100 PBs.

### **ARCHIVE, ACCESS & ASSESSMENT**

Climate Archive, Access, and Assessment (<http://www.ncdc.noaa.gov/oa/ncdc.html>)

The National Climatic Data Center (NCDC), located in Asheville, North Carolina, is the largest climate data center in the world, and is the Nation's designated Federal Records Center (FRC) for climate data. NCDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS). The NCDC receives, processes, archives, provides access, disseminates, and conducts objective assessments of ground based and spaced observations. National and international observing systems provide a regional, national, and global perspective of the State of the Earth's weather and climate. Paleoclimate proxy records (i.e., pre-instruments), such as ice and coral cores, and tree rings, are also collected, archived, and made available to the global community of researchers and other interested users. The NCDC is a designated World Data Center (WDC) for Meteorology and WDC for Paleoclimatology.

The NCDC provides data, information, products and climate services to all sectors of the economy, delivering weather and climate data and information to nearly two million customers each year for planning, operations, and minimizing risks associated with weather and climate extremes. NCDC provides access and data retrieval via the internet and responds to thousands of requests received via e-mail, phone, fax, and the mail. NCDC routinely produces operational products for climate monitoring, such as the weekly and monthly State of the Climate reports, the U.S. and the North American Drought Monitoring Reports, and the Climatology for the U.S. reports. These and other climate assessments support business and government policy makers and implementers. NCDC

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<sup>2</sup> Dutton, John A., Opportunities and priorities in a new era for weather and climate services, Bulletin of the American Meteorological Society, September 2002, Volume 83, no. 9, pp 1303-1311

also works very closely with various regional, state, and local stakeholders.

Approximately 3 PBs of data are now directly accessible from NCDC's website, [www.ncdc.noaa.gov](http://www.ncdc.noaa.gov). 1.285 PB [1,285 terabytes (TB)] of data were delivered on-line during FY 2011 (a 27-fold increase over FY 2005), with nearly 900 million hits and downloads from NCDC's website during that time. Several factors account for this increase, including: Continued infrastructure improvements at NCDC to accommodate user demand, the Climate Services Portal's continued development ([www.climate.gov](http://www.climate.gov)), and access to large volumes of Climate Forecast System Reanalysis data via the NOAA National Climate Model Portal (NCMP). NOAA climate data users and percent data requests-retrievals are placed into four general categories: Business 44 percent, Public 33 percent, U.S. Government 12 percent and Academia 10 percent. The introduction of the Climate Services Portal website is a major contributor to increased customer interactions with NOAA.

The NCDC, in partnership with NASA scientists, develop long time series, satellite-derived Climate Data Records (CDRs). The NOAA National Climate Model Portal (NCMP) will provide access to the next suite of NOAA's Climate System Reanalysis and Reforecast models and products. NCMP provides an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets generated by sophisticated coupled ocean, air, and land models running on supercomputers across NOAA and its collaborators (National Science Foundation, DOE and others). NCMP is an extension of the National Operational Model Archive and Distribution System (NOMADS). NCDC, in cooperation with scientists and other NOAA activities and federal agencies, has designed and deployed the Nation's first climate quality *in-situ* observing network.

NCDC in partnership with other NOAA offices and agencies is developing the National Integrated Drought Information System (NIDIS) portal. Also, NCDC in partnership with the Climate Program Office and other NOAA agencies is continually improving the NOAA Climate Services Portal prototype ([www.climate.gov](http://www.climate.gov)).

#### Climate Database Modernization Program

The NCDC manages the conversion and accessibility of historical non-digital data records through the Climate Database Modernization Program (CDMP). CDMP's goal is to preserve and make available climate data going back several hundreds of years that range from the bottom of the ocean to the top of the atmosphere. Many of these holdings, which are part of the U.S. National Archives, were originally recorded on paper, film, and other fragile media, and stored at various NOAA Centers. Prior to CDMP, not only were these valuable data sources mostly unavailable to the scientific community, but storage technology for the archive was becoming obsolete. Today, CDMP has greatly improved the preservation and access to NOAA's holdings by migrating many of these resources to new digital media.

To date over 57 million images have been digitized for on-line access. Over 14 terabytes of data have been keyed and converted to digital format extending the historical climate record back to the early 1800s and in some cases the 1700s. These are now readily accessible via the Internet and other web-based portals.

#### Ocean Archive, Access, and Assessment (<http://www.nodc.noaa.gov/>)

The National Oceanographic Data Center (NODC), located in Silver Spring, MD, with offices in Stennis, MS; Honolulu, HI; San Diego, CA; Norfolk, VA; and Charleston, SC, is the Nation's permanent archive for oceanographic data, ensuring the public access to and the scientific

stewardship of long-term observational records of the global ocean, and U.S. coastal waters and their ecosystems. These holdings document the physical and chemical properties of the oceans, currents, and biota as observed from ships, buoys, satellites and other ocean and coastal platforms extending back nearly 150 years. NODC provides increased utilization of coastal and oceanographic data using web-based search/access and geographic information system (GIS) techniques to improve the understanding, management and use of coastal areas.

NODC's mission is to ensure that global oceanographic data sets collected are maintained in a permanent archive that is easily accessible. This is accomplished by: building scientifically, quality-controlled global oceanographic databases and providing analysis and climatologies of key ocean variables; supporting ecosystem management by providing access to the Nation's coastal and ocean data resources; and providing information technology services in a secure, sustainable environment.

The NODC serves more than 800,000 users annually through the Internet and provides a variety of publications including atlases and technical reports published on digital media and paper. Examples of the most requested products include the World Ocean Database and Atlas, the International Atlas of the Ocean series, and sea surface temperature climatology derived from satellites and data sets gathered from operational ocean observing systems worldwide. The user community includes resource managers, researchers, educators, and maritime industry professionals from Federal, state and local agencies as well as academia and the public. NODC is a designated World Data Center for Oceanography and provides leadership for international data exchange programs through the Intergovernmental Oceanographic Commission (IOC).

Geophysical Archive, Access, and Assessment (<http://www.ngdc.noaa.gov/>)

The National Geophysical Data Center (NGDC), located in Boulder, Colorado, builds and maintains long-term archives of scientific data with a special emphasis on scientific stewardship of data acquired by NOAA observing systems. Data holdings include bathymetry, solar, geophysical, space environment, and earth observing satellite data. The NGDC plays an integral role in the Nation's research into the environment, at the same time providing public domain data to a wide group of users. The NGDC works very closely with NOAA's Space Weather Prediction Center and Office of Coast Survey to provide archive and access of space weather and hydrographic observations. NGDC works with contributors of scientific data to prepare documented reliable data sets, currently maintaining more than 850 digital and analog data sets, and continually developing data management programs that reflect the changing world of geophysics in an era of electronic data access. NGDC provides funding to the National Snow and Ice Data Center (NSIDC) at the University of Colorado for archive services of polar data. NGDC's unique capabilities have attracted other mission-related functions. NGDC is one of two operational sites for NOAA's Comprehensive Large-Array Stewardship System (CLASS) and is the parallel collection site and archive for the Global Positioning System Continuously Operating Reference Stations (GPS CORS). NGDC is responsible for the development and maintenance of the World Magnetic Model for the Department of Defense and also operates World Data Centers for marine geology and geophysics, solar terrestrial physics, and glaciology for the International Council of Science under the auspices of the U.S. National Academy of Sciences.

NGDC acquires, stewards and disseminates long-term climate records of the solar and space environments. Solar activity measures, such as the historical sunspot numbers, provide quantitative measures of solar variability that are incorporated into large-scale climate models. Related to this, NGDC works with climate scientists within the local Boulder area to maintain within NOAA an accurate record of total solar irradiance and solar spectral irradiance derived from satellite measurements and to advocate for measurements of solar irradiance continuity as a primary forcing

function in climate modeling. NGDC is also responsible for monitoring the long-term records of anthropogenic nighttime lighting which are used to calculate changes in impervious surface areas and other factors that can influence local climate variability. NGDC maintains the largest collection of ionospheric sounding data stretching back to the 1930s; this data has been used to infer climate related changes in the upper atmosphere, including the stratosphere and above. Finally, NGDC space weather datasets obtained by sensors on NOAA's fleet of polar and geosynchronous satellites provide a calibrated record of changes in the local space particle environment within the past 30 years.

### Comprehensive Large Array data Stewardship System (CLASS) - Operations Systems (Data Center Operations)

The NGDC, NCDC, and NODC Data Centers are utilizing CLASS to ensure the long-term preservation (safe storage) and access for data, information, and metadata, particularly for large data sets. Beginning in FY 2008, components of the CLASS development design began to transition into the Data Centers' operations and become operationally integrated into the data management and customer servicing operations systems. At this time the NGDC, NCDC, and NODC assumed the responsibility for operating and sustaining these components of the CLASS Operations System. The CLASS Operations and Planning Board (COPB), which consists of the Directors of the three Data Centers, are responsible for the execution of the CLASS Operations budget (ORF). The COPB also reviews the requirements and provides guidance to the CLASS Development project manager and the associated CLASS budget. The CLASS project manager's focus is on the information technology required to ingest, store, access, and maintain the submitted data sets. The Data Centers through the COPB are responsible for the sustained operations of the CLASS Operations System, a critical component of NOAA's Enterprise System supporting information preservation and end-to-end stewardship of the archived data, as well as maintaining access interfaces used to support customer service requests.

### Regional Climate Services

The Regional Climate Services focus is defining climate service requirements, feeding those requirements back into NOAA's core research infrastructure and translation efforts of emerging research to create more accessible and consistent experimental application within each of the regions. Each Regional Climate Service Director (RCSD) is located at an NWS Regional Office. They are charged with coordinating and organizing relationships and projects within their respective region across NOAA business units, as well as other agencies and non-agencies (government, private, academic, research). Each Regional Climate Center (RCC) provides a range of services and products to NOAA, as well as to state and local agencies, and to regional businesses, among other stakeholders. Each RCC is located on a university campus and is funded from multiple public and private sector sources, as well as NOAA.

The merit-based, competitively selected RCCs ensure effective support for critical NOAA climate services, including,

- Weekly input to the *U.S. Drought Monitor* & other contributions to NIDIS;
- Operation of specialized climate data tools: *Datzilla*, a NOAA reporting and tracking system for observational errors, and *Weather Coder 3*, an operational NWS system to collect and process thousands of daily observations through the Applied Climate Information System (ACIS);
- Contributions to the development of the *NOAA Climate Portal*;

- Support *State of the Climate* reports by providing monthly summaries of regional climate anomalies;
- Acting as a regional hub for State Climatologists for climate information (e.g., support state adaptation programs); and,
- Supporting applied climate research and service development programs to support NOAA and other federal agencies (e.g., USDA, DOI, and the Department of Homeland Security).

**Environmental Data Systems Modernization**

The goal of the Environmental Data Systems Modernization (EDSM) program is to provide increased access and utility to environmental data, information, products, and services through the use of innovative technologies and techniques.

Environmental data and information under the stewardship of NOAA are vital to a wide range of weather sensitive sectors of the economy such as energy and water resources management, aviation, construction, engineering, utilities, food production (agriculture and aquaculture businesses), multi-modal commerce, tourism, manufacturing, and the insurance industry. Business and government leaders and researchers have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to predict future environmental conditions and events.

EDSM consists of two components: Satellite Active Archive (SAA), and Scientific Data Stewardship/Integrated Observations System (SDS/IOS). The SAA provides immediate web-based digital access to satellite data and is an important part of CLASS. SDS/IOS (i.e., collecting, processing, product development, access, distribution, archiving) consists of an integrated suite of functions to preserve and exploit the full scientific value of NOAA's environmental data. Successful implementation of stewardship will maximize the value and utility of NOAA's environmental data, now and in the future. A subset of SDS/IOS is the on-line function of making data held within the NOAA Data Centers available to meet customer requirements. The system is known as the Virtual Data System.

NOAA is developing an integrated, national and global observing system that will bring together all aspects of environmental monitoring on common platforms to ensure data quality, to manage data efficiently for the long-term, and to make these data easily and readily accessible. NOAA plans to accomplish these goals through a program of Scientific Data Stewardship/Integrated Observations System.

**Schedule, Milestones, and Deliverables:**

**Climate Archive, Access and Assessment**

**Climatic Data Services**

<b>Milestones/Deliverables</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Data ingested annually and placed in NCDC primary archive. (Total PBs/yr)	4.1	6.5	6.7	8.6	9.1	11.9
Data & information added annually to on-line access (in-situ + radar +	2.0	4.0	4.0	6.0	8.0	10.0

satellite + model).(Total PB/yr)						
Data/Information available for retrieval via the WWW. (Cumulative Total PBs)	5.0	9.0	13.0	19.0	27.0	37.0
Volume of data (in-situ + radar + satellite) delivered online to customers. (Total TB/yr)	1,200	2,000	3,000	4,500	6,000	8,000
Research Climate Data Sets Transitioned to Operations (transferred to ARC) (Cumulative Total #)	2	3	3	4	4	5
Climate Data Sets Upgraded/ Updated within the Applied Research Center (ARC) (Cumulative Total #)	50	57	64	71	78	84
Paleoclimate Reconstructions (Cumulative Total #)	18	21	24	27	30	33
Climate Extremes Indices providing socioeconomic impacts information (Cumulative Total #)	3	3	3	3	3	3

### **CLASS Operations**

Schedule and Milestones, Deliverables, and Performance Measures are available in the National Climatic Data Center, Data Center Operations program change.

### **Climate Data Records**

FY 2013: Transition 2 CDRs to operations, maintain 13 CDRs in operations cumulative; continue transitioning to Suomi NPP satellite inputs

FY 2014: Transition 1 CDR to operations, maintain 14 CDRs in operations cumulative; continue transitioning to Suomi NPP inputs

FY 2015: Maintain 14 cumulative CDRs in operations; continue transitioning to Suomi NPP; start plans for transition to GOES-R inputs

FY 2016: Transition 1 CDR to operations, maintain 15 CDRs in operations; Suomi NPP operational.

FY 2017: Maintain 15 CDRs in operations cumulative; NPP operational inputs

FY 2016: Transition 1 CDR to operations, maintain 15 CDRs in operations; Suomi NPP operational.

FY 2017: Maintain 15 CDRs in operations cumulative; Suomi NPP operational

## Ocean Archive, Access, and Assessment

### Oceanographic Data Services

Milestones/Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Authoritative, quality controlled, ocean climate data sets/information products transitioned to operations (including chemical and biological data records). (Total #/yr)	2	3	4	4	5	5
Volume of data (and data products) delivered online to customers. (Total TB/yr)	61	67	74	82	90	99
Data ingested annually to the NODC archive. (Total TB/yr)	10	10	10	10	10	10

### Environmental Data System Modernization

Deliverables	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Observing systems regularly monitored on an operational basis for nominal system status and for random and time-dependent errors. (Cum Total # of systems monitored)	8	9	10	11	12	12

### Performance Goals and Measurement Data:

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (measure 16d).	N/A	22%	22%	24%	25%	27%	29%
<b>Description:</b> This measure is an indicator of societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions will lead to better results or improved decisions based on inclusion of this climate information.							

### Climatic Data Services

<b>Performance Measure:</b>	<b>FY</b>						
Safe Storage (NCDC Primary and Security archive), climate data from NOAA/other observing systems consistent with NARA standards. (Cum Total PBs)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	7.4	8.2	13.0	13.4	17.4	18.2	23.8
<b>Description:</b> This measure reflects the amount of data safely stored by NCDC that is derived from NOAA observing systems.							

### Climatic Data Services

<b>Performance Measure:</b>	<b>FY</b>						
State of the Climate Annual Report 42 Essential Climate Variables (ECVs) (% & Cum # ECVs fully assessed)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	62%	65%	69%	71%	74%	77%	79%
	26 of 42	27 of 42	29 of 42	30 of 42	31 of 42	32 of 42	33 of 42
<b>Description:</b> Track the increase in the number of essential climate variables that have a quantitative analysis and assessment of long-term trends and variations in climate performed and published in future annual issues of the Annual State of the Climate Report. The target of 100% is 42 essential climate variables that have a quantitative analysis performed. With adequate observing systems in place under the stewardship of NOAA, a comprehensive and quantitative analysis of atmospheric, ocean, and select terrestrial variables considered essential can be performed.							

### Climate Data Records

<b>Performance Measure:</b>	<b>FY</b>						
Number of CDRs transitioned to NOAA Operations (Cumulative)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	8	11	13	14	14	15	15
<b>Description:</b> The increase will continue transforming raw satellite data into unified and coherent long-term environmental observations and products that are critical to climate modelers and decisions makers concerned with advancing climate change understanding, prediction, mitigation and adaptation strategies, policies, and science.							

**PROGRAM CHANGES FOR FY 2013:**

**Archive, Access, and Assessment: National Climatic Data Center, Data Center Operations (Base Funding: \$722,000 and 0 FTE; Program Change; +\$5,822,000 and +0 FTE):**

NOAA requests an increase of \$5,822,000 and 0 FTEs for a total of \$6,544,000 and 0 FTEs for Data Center Operations to maintain NOAA's ability to provide long-term preservation (safe storage) and access to the Nation's environmental data and information.

**Proposed Actions:**

Funding will be used to sustain and operate NOAA's replacement (new generation) Enterprise Archive System, the Comprehensive Large Array Stewardship System (CLASS).

Funds will be used to support the following:

- Maintenance, operations, and upgrades to the new generation archive system;
- Provide high level of "up time" to meet NOAA operational requirements;
- Maintenance contracts/upgrades to software and hardware needed on a recurring basis to keep the system functional and compatible;
- Periodic/routine increase in energy and heating-cooling-humidity demands related to the new operational archive/access system;
- Training to keep operator skill levels current; and,
- Meeting IT security requirements.

**Statement of Need and Economic Benefits:**

Funding is needed to provide operations and maintenance of NOAA's new Enterprise Archive and Access system and communications bandwidth to deliver large data volumes. The archive system will accommodate data from new or improved observations planned by NOAA: Suomi-NPP, JPSS, GOES-R, and Dual Polarization-modified weather radars. Also accommodated will be data from Jason, Continuously Operating Reference Stations (CORS), and the historical and current satellite and in-situ data already part of the data center holdings that will be transferred into the new archive/access system.

Long-term sustained and reliable archive/access operations are urgent to accommodate a projected 3,000 percent increase in data volume from the Suomi NPP satellite. An additional projected 3,000 percent increase in data volume is expected from JPSS and more from GOES-R, dual polarized Weather radar, and climate/weather models. NOAA is incrementally developing and seamlessly integrating the expanded capabilities into the operational and services management systems, a critical priority for both NOAA and the Data Centers.

**Base Resources Assessment:**

The base resources assessment is provided in the Archive, Access, and Assessment base narrative.

**Schedule and Milestones:**

<b>Operations Readiness Schedule</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017+</b>
Next Generation Archive Initial Operational Capability at Data Centers	IOC	EOC	EOC	EOC	EOC	EOC
Expand/Operate & Maintain Capability/ Capacity	X	X	X	X	X	X
<b>Major Data Generating Programs</b>						
NOAA POES (Historical/Current to End of Life	X	X	<b>End</b>	X	X	X

for NOAA-19)						
NOAA GOES (Historical/Current to End of Life for GOES-14/15)	X	X	X	X	X	X
DoD (Historical/Current DMSP & New DWSS)	X	X	X	X	X	X
EUMETSAT (Historical/Current & New - MetOp, GCOM, EPS)	X	X	X	X	X	X
Jason (Jason-2 and future Jason-3)	X	X	X	X	X	X
WxRadar-NEXRAD (Historical/Current & Dual Polar FY 2012/ Future Phased Array FY 2020)	X	X	X	X	X	X
NCEP Models/Reanalysis Products (Historical/Current & Future)	X	X	X	X	X	X
Suomi National Polar-orbiting Partnership (Suomi NPP) (New)	X	X	X	X	X	X
Joint Polar Satellite System (JPSS) (New)						X
GOES R, S, T, U (New)				X	X	X
Other (Legacy Systems Migration (Historical/Current and New)	X	X	X	Done		
<b>CLASS Data Volume (one site) - Cumulative Total in PB</b>	<b>7</b>	<b>12</b>	<b>17</b>	<b>24</b>	<b>33</b>	<b>44</b>

Table based on CLASS 1RD, NESDIS Satellite “Fly-Out” Charts (January/February 2012), and NEXRAD schedule.

(IOC – Initial Operational Capability, EOC – Expanded/Enhanced Operational Capability)

**Deliverables:**

- FY 12-17: Operate/Sustain new generation Enterprise Archive System (currently referred to as CLASS), with minimum of 99% system availability
- FY 12-15: Safe storage and access for historical data migrated from legacy systems to new system
- FY 14: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD DP, etc.)
- Continuously monitor system risk and protect data from loss or damage

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Sustained long-term preservation (safe storage for and access to) for NOAA’s data and information. (Cumulative Total # Data Sets)	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	2	N/A	5	7	9	11	13
<b>Without Increase</b>		3	3	3	4	5	6
<b>Description:</b> This performance metric is based on “best collective efforts” of a wide range of experts in estimating the current archives yet to be migrated to new archive/access system (aka CLASS) and the projected data volumes from new platforms (Suomi NPP, JPSS, GOES R+, Wx Radars, and Model Reanalyses). The targets represent the cumulative total number of observation systems in the new archive/access system (CLASS).							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	5,822
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>5,822</u>

**Archive, Access, and Assessment: National Oceanographic Data Center (Base Funding: \$12,213,000 and 53 FTE; Program Change: -\$3,796,000 and -6 FTE:** NOAA requests a decrease of \$3,796,000 and 6 FTE for a total of \$8,417,000 and 47 FTE to consolidate operations at the National Oceanographic Data Center (NODC).

**Proposed Actions:**

In FY 2013, NODC will begin to consolidate its operations, centralizing Information Technology (IT) functions in Mississippi and administrative functions in Maryland. The consolidation will reduce requirements for contractor support for IT operations. During the consolidation there will be a temporary decrease in the number of data sets going online until the NODC archive is migrated to the Comprehensive Large Array-data Stewardship System. In addition, NODC will continue to focus on a core set of baselines, but will streamline others. This will include eliminating the generation of baselines for key ocean biological and chemical variables and documentation of long term changes of these variables in areas of the world such as the Arctic Ocean. NODC will continue to provide a permanent archive for ocean and coastal data. NODC will investigate how to transition some of its stewardship functions to the academic and private sectors. NODC will also reduce its scientific personnel.

**Base Resource Assessment:**

The base resources for this activity are described in the Data Centers & Information Services base narrative.

**Schedules and Milestones:**

By FY 2015, NODC will have migrated its archive to the Comprehensive Large Array-data Stewardship System (CLASS). NODC will continue to provide stewardship (quality control, analysis and management) for ocean and coastal data.

**Deliverables:**

- Development of authoritative, quality controlled, global and coastal ocean data sets/information products
- Delivery of ocean data (and data products) online to customers

<b>Deliverables</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of authoritative global and coastal ocean data sets produced. (Total #/yr)	2	1	1	1	2	2
Volume of ocean data (and data products) delivered online to customers. (Total TB/yr)	61	58	58	58	61	64

**Performance Goals and Measurement Data:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: NESDIS  
 Subactivity: Data Centers & Information Services

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Information Mgmt	Silver Spring, MD	ZP IV	-1	89,033	(89,033)
IT Specialist	Silver Spring, MD	ZP III	-2	62,467	(124,934)
Admin Support	Silver Spring, MD	ZS IV	-2	42,209	(84,418)
Computer Asst	Silver Spring, MD	ZS IV	-1	42,209	(42,209)
<b>Total</b>			<b>-6</b>		<b>(340,594)</b>
less Lapse		0%	0		0
Total full-time permanent (FTE)			-6		(340,594)
2012 Pay Adjustment (0%)					0
2013 Pay Adjustment (2%)					0
<b>TOTAL</b>					<b>(340,594)</b>

**Personnel Data**

	<b>Number</b>
Full-Time Equivalent Employment	
Full-time permanent	-6
Other than full-time permanent	0
<b>Total</b>	<b>-6</b>
Authorized Positions:	
Full-time permanent	-6
Other than full-time permanent	0
<b>Total</b>	<b>-6</b>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$341)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(341)</u>
12 Civilian personnel benefits	(145)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(3,310)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(3,796)</u>

**Archive, Access, & Assessment: National Geophysical Data Center (Base Funding: \$6,206,000 and 48 FTE; Program Change: -\$578,000 and -3 FTE:** NOAA requests a decrease of \$578,000 and 3 FTE for a total of \$5,628,000 and 45 FTE to discontinue specific sea-ice products developed for the National Snow and Ice Data Center and reduce staffing at NGDC.

**Proposed Actions:**

With this reduction, NOAA will not support specific sea-ice products that are developed for the National Snow and Ice Data Center; some of these products could potentially be funded through other sources outside of NGDC or NOAA. Two FTE will be reduced from the NGDC division responsible for providing scientific data stewardship for the nation’s operational space environmental data and information; even with this reduction, NGDC maintains the ability to provide mission critical space weather data sets to support NOAA’s forecasting and monitoring abilities. An additional one FTE will be reduced from the NGDC division responsible for archiving and assimilating natural hazard information, since funding provided by sources outside of NGDC was already scheduled to decrease.

**Base Resource Assessment:**

The base resources for this activity are described in the Archive, Access, and Assessment base narrative.

**Schedules, Milestones, and Deliverables:**

<b>Deliverables (excluding CLASS)</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Cumulative total of data ingested and placed in the archive. Unit of measure is Terabytes (TB).	634	685	739	799	863	932
Volume of data and information delivered online to customers. (TB/yr)	146	158	170	184	199	200

**Performance Goals and Measurement Data:**

N/A

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: NESDIS  
 Subactivity: Data Centers and Information Services

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Physical Scientist	Boulder, CO	ZP IV	-1	87,815	(87,815)
Physical Scientist	Boulder, CO	ZP III	-1	61,612	(61,612)
Scientific Data Technician	Boulder, CO	ZS II	-1	26,758	(26,758)
<b>Total</b>			<u>-3</u>		<u>(176,185)</u>
less Lapse		0%	<u>0</u>		<u>0</u>
Total full-time permanent (FTE)			-3		(176,185)
2012 Pay Adjustment (0%)					0
2013 Pay Adjustment (0.5%)					0
<b>TOTAL</b>					<u>(176,185)</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>
Authorized Positions:	
Full-time permanent	-3
Other than full-time permanent	0
Total	<u>-3</u>

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$176)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(176)</u>
12 Civilian personnel benefits	(94)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(38)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(270)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(578)</u>

**Archive, Access, and Assessment: Climate Database Modernization Program (CDMP) (Base Funding: \$2,000,000 and 0 FTE; Program Change: -\$2,000,000 and -0 FTE):** NOAA requests a decrease of \$2,000,000 and 0 FTE to terminate the Climate Database Modernization Program. This program scans images and keys data from paper and microfilm of new incoming and historical records and makes the digital data available on the web to businesses and members of the climate and environmental communities.

**Proposed Actions:**

NOAA will terminate the CDMP program. The CDMP program is a partnership with four private sector contractors, currently supporting approximately 35 contractor personnel. CDMP's goal is to preserve and make available climate data going back several hundred years. To date, over 57 million images have been digitized for online access. Over 14 terabytes of data have been keyed and converted to digital format, extending the historical climate record back to the early 1800s, and in some cases, the 1700s. These are now readily accessible via the Internet and other web-based portals. Environmental publications and historical documents are now available in electronic form and can be downloaded to a computer.

Monthly current observations from over 2,650 National Weather Service (NWS) Cooperative Observer Program stations, as well as approximately 1,600 NWS hydrological stations, are also digitized and then merged with historical long term climate data records going back decades to 100+ years. The Budget proposes to discontinue the conversion of new observations from paper to digital format. NWS is in the process of digitally converting its remaining stations that still record and report via paper, which will reduce the immediate operational need for CDMP supported service.

**Base Resource Assessment:**

The base resources for this activity are described in the Data Centers & Information Services base narrative.

**Schedule and Milestones:**

Terminate program in FY 2013

**Deliverables:**

None

**Performance Goals and Measurement Data:**

None

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,000)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(2,000)</u>

**Coastal Data Development: Coastal Data Development (Base Funding: \$4,500,000 and 16 FTE; Program Change: -\$500,000 and 0 FTE:** NOAA requests a decrease of \$500,000 and 0 FTE for a total of \$4,000,000 and 16 FTE to reduce regional product development at the National Coastal Data Development Center (NCDDC) , a division of the National Oceanographic Data Center (NODC).

**Proposed Actions:**

This request will reduce regional project development and science contractor support at the National Coastal Data Development Center, a division of NODC. NODC will continue to identify and obtain coastal data sets for ingest into the national ocean and coastal archive.

**Base Resource Assessment:**

The base resources for this activity are described in the Data Center & Information Services base narrative.

**Schedules and Milestones:**

Continue regional product development

**Deliverables:**

- Development of regional products and services in support of NOAA’s Oceans, Climate and Coastal goals

<b>Deliverables</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Number of regional products (multiple data elements) produced. (Total #/yr)	3	2	2	3	3	3

**Performance Goals and Measurement Data:**

N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	(500)
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	<u>0</u>
99 Total obligations	<u>(500)</u>

**Regional Climate Services: Regional Climate Services (Base Funding: \$6,800,000 and 6 FTE; Program Change: -\$1,048,000 and -0 FTE):** NOAA requests a decrease of \$1,048,000 and 0 FTE for a total of \$5,752,000 and 6 FTE for Regional Climate Services (RCS), which includes the six Regional Climate Centers (RCCs) and the six Regional Climate Services Directors (RCSDs).

**Proposed Actions:**

The current contract period for the RCCs ends April 1, 2013. The acquisition package for open competition will be prepared in FY 2012 and the solicitation will follow. Through the competitive award process, six new RCC contracts will be awarded for FY 2013. Each RCSD will directly manage the NOAA contract for a specific RCC, thereby reducing the management overhead costs under the contract and providing improved contract oversight regarding deliverables, performance measures, etc.

The intent is to better align the areas of responsibility of the RCCs with the geographical regions (area of responsibilities) managed by NOAA through the RCSDs and the NWS regions. Together, the RCSDs and RCCs will serve as trans-boundary experts identifying stakeholder needs and matching those needs with the emerging science and observations developed through NOAA's Data Centers, labs and partners. Ultimately, the goal is to promote the development and delivery of timely, place-based climate information to meet stakeholder demand. Initial sectors targeted will include water resources (including drought), sea level rise and coasts, and living marine resources. The work will be guided by regional and national climate assessment activities as well as Action Plans that will be developed by the RCSDs in FY 2012. In addition, the work will be guided by NOAA's MOU with the Department of the Interior and the work of the Interagency Climate Change Adaptation Task Force.

**Base Resource Assessment:**

The base resources for this activity are described in the Data Centers & Information Services base narrative.

**Schedules and Milestones:**

- FY 2012: Initial Regional Climate Services Action Plans developed for all 6 regional networks, incorporating other federal agencies where applicable, including plans to retrieve user feedback to evaluate services
- FY 2012-17: Establish and implement a continuous process for characterizing regional customer/partner requirements, starting with an initial baseline assessment of needs for products, services, tools, and capacity building
- FY 2012-17: Develop and implement a continuous system for conducting product and service delivery to the customers/partners of the climate service network.
- FY 2013-17: Establish a regionally based process for new product and service development and transition, focusing on closing high priority research gaps, and transitioning science to applications through active engagement with academic, private, and federal research sectors in the regions.

**Deliverables:**

- Integrated tools and outreach that enhance risk management strategies for decision makers, such as GIS-enabled NOAA climate data products focused initially on Sea-level rise and water management
- Competency-building training sessions for professional development to enhance use of regionally- or sectorally-relevant climate products/services; includes rigorous feedback mechanisms (e.g., user evaluations, surveys)
- Updated regional contributions to the Climate Services Portal

	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Numbers of customer requirements activities conducted	3	3	6	8	8	8
Numbers of products or tools developed	2	2	3	4	4	5
Numbers of models developed	0	0	3	4	4	6
Numbers of collaboration meetings held	4	4	5	5	5	5
Number of science to application projects/products	5	4	4	4	5	5
<b>Total</b>	<b>14</b>	<b>13</b>	<b>21</b>	<b>25</b>	<b>26</b>	<b>29</b>

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
New regional products and services provided and used by the public, private sector, and decision support communities for climate related decisions (cumulative per year)							
<b>With Decrease</b>	0	N/A	8	9	10	11	12
<b>Without Decrease</b>		7	8	9	10	11	12

**Description:** Examples of potential RCC products and services in FY 2012 include Applied Climate Information System web tools for gridded data, including historical gridded data sets; regional content for the Climate Portal; a new application that allows growers to receive pertinent climate information on their smart phones; and decision support tools for cereal crop producers.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Data Centers and Information Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,048)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,048)

**Environmental Data Systems Modernization: Satellite Active Archive (Base Funding: \$1,500,000 and 0 FTE; Program Change: +\$800,000 and +0 FTE:** NOAA requests an increase of \$800,000 and 0 FTE for a total of \$2,300,000 and 0 FTE to continue funding for the Satellite Active Archive (SAA) for web-based digital access to satellite data.

**Proposed Actions:**

FY 2013 funds will be used for the communications circuits specific to connecting the CLASS archive system at the National Climatic Data Center, Asheville, NC, and National Geophysical Data Center, Boulder, CO, to the satellite providers “landing zone” pick-up point at the NOAA Satellite Operations Facility (NSOF), Suitland, MD.

**Statement of Need and Economic Benefits:**

The NOAA Satellite Active Archive mission is to provide robust and safe archive storage and stewardship, and open access to data sets and derived climate model products for present and future generations of users. This next generation archival and access capability enables NOAA and the Nation to maintain and improve its science programs in support of economic growth and improved environmental stewardship. Business, research, and government leaders have critical needs for quality long time-series of historical and recent national and global data to evaluate the current status of the environment, to assess long-term environmental trends, and to assist in predicting future environmental conditions and events. These funds will address the cost of CLASS related communications.

**Base Resource Assessment:**

The base resources for this activity are described in the Data Centers & Information Services base narrative.

**Schedules and Milestones:**

N/A

**Deliverables:**

- FY 12: Archive and service GOES, POES, and Suomi NPP data from the new system (aka CLASS)
- FY 12-15: Safe storage and access for historical data migrated from legacy systems to new system
- FY 12-18: Operate/Sustain new generation Enterprise Archive System (currently referred to as CLASS), with minimum system availability of 95% for each node, and of 99% for the combined nodes
- FY 14: Additional storage to accommodate anticipated data volume growth (Suomi NPP/NEXRAD Dual Polarization, etc.).
- Continuously monitor system risk and protect data from loss or damage.

**Performance Goals and Measurement Data**

N/A

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS

Subactivity: Data Centers & Information Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	800
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>800</u>

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION, AND CONSTRUCTION**  
**SUBACTIVITY: SYSTEMS ACQUISITION**

**Geostationary Operational Environmental Satellite Program**

The goals of the Geostationary Operational Environmental Satellite (GOES) program are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment; provide satellite and instrument anomaly support to the on-orbit GOES satellites; and maintain the ground system for GOES satellite operations which is necessary to maintain an uninterrupted flow of environmental data collected from geosynchronous satellites to users.

GOES data provide:

- Cloud images and precipitation estimates for hurricanes and other coastal storms;
- NOAA CoastWatch sea surface temperature (SST) products for locating commercial and sport fish as well as protected marine species;
- New research products, such as ocean surface currents, that support both ecosystems management and safety of marine navigation;
- Primary information in the Nation's Climate Reference Network, providing reference quality data for surface temperature and precipitation monitoring;
- Images of the United States and adjacent ocean areas to enable the detection of hurricanes and other major weather events;
- Data collection from remote fixed in-situ observing platforms such as buoys and rain gauges for use in numerical weather prediction models and flood/drought assessments;
- Weather information to emergency managers for use during severe weather and other disasters;
- A means to obtain quantitative environmental data such as temperature, moisture, wind, radiation and solar energy particle flux for use in weather predictions, hydrometeorological flux, climate long term trending, ecosystems management, commercial economic gain, and transportation safety;
- Unique monitoring capabilities that support air, land, and marine transportation.

The GOES system provides an uninterrupted, continuous flow of data and information that meets customers' spatial, temporal and accuracy requirements, providing significant customer benefit within an established life cycle cost target. The procurement of GOES satellites is a cooperative venture between NOAA and NASA. Historically, NOAA defines requirements, manages, funds, implements system integration, procures ground segments, and operates the GOES satellites. NASA serves as the agency with multi-disciplinary engineering expertise, develops detailed system specifications, procures and launches the spacecraft, and assists NOAA in system integration.

NOAA GOES satellite systems are designed, developed, acquired, and operated as a single end-to-end system. The system includes the observing platform (space-based instruments); command and control of the platform; product generation and distribution; archive and access; and user interface. GOES contributes to an Integrated Global Observation System, which is an end-to-end approach linking requirements to services. The system delivers critical real-time data and information needed for sound decision making, addresses needs to support expanded climate services, and works with global partners.

The GOES program operates a two-satellite constellation in geosynchronous orbit above the equator and observes about 60 percent of the Earth with at least one satellite placed in on-orbit storage. GOES observations allow continuous monitoring from the same angle during the tracking/detection of severe storms, atmospheric moisture changes, mesoscale scanning, currents flow dynamics, and atmospheric chemicals (particles) that cannot be achieved from a non-stationary orbit without

increased error rates and lost data segments. NOAA maintains an on-orbit spare to complement the two operational GOES satellites. This on-orbit spare philosophy allows NOAA to quickly replace a failed satellite by re-positioning an on-orbit satellite to ensure there is no loss in continuous coverage. To facilitate this strategy, NOAA plans the launch of the next satellite to coincide with the planned switchover of the on-orbit spare to operational status.

A primary function of the GOES program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data results in dissemination of timely weather forecasting and advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

**GOES-N SERIES ([http://www.osd.noaa.gov/GOES/goes\\_n.htm](http://www.osd.noaa.gov/GOES/goes_n.htm))**

The NOAA GOES-N program serves the public by generating timely and accurate environmental data, images, and other weather information. The GOES-N Series program includes GOES-13, GOES-14, and GOES-15 satellites, launched May 2006, June 2009, and March 2010, respectively.

GOES-N satellites provide many weather images seen on U.S. television newscasts every day. The GOES-N imaging and sounding instruments feature flexible scans for small-scale area viewing in regions of the visible and infrared spectrum allowing meteorologists to improve short-term forecasts. The GOES-N satellites provide nearly continuous imaging and sounding, which allow forecasters to better measure changes in atmospheric temperature and moisture distributions and, hence, increase the accuracy of their forecasts. GOES-N environmental information is used for a host of applications, including weather monitoring and prediction models, ocean temperatures and moisture locations, climate studies, cryosphere (ice, snow, glaciers) detection and extent, land temperatures and crop conditions, and hazards detection.

During the week of April 10, 2011, tornadoes were reported in Oklahoma, Mississippi, Arkansas, Alabama, North Carolina, South Carolina and Virginia. The GOES-13 satellite provided images that tracked those tornadoes and thereby facilitated the NWS in issuing timely advisory warnings. Additionally, GOES-N satellites produced some of the first images to track smoke from the oil fire that later became the Deepwater Horizon Oil Spill in the Gulf of Mexico. Scientists and environmentalists used and continue to use the GOES data and images to assess environmental impact to that region.

GOES-N satellites measure the Earth’s atmosphere, its surface, cloud cover, and the solar and geosynchronous space environment; and provide a platform for the Imager, Sounder, Solar X-Ray Imager (SXI), and space environment monitoring instruments. The system also supports land and ocean-based Data Collection Platforms, transmits Imager and Sounder data, relays Low Rate Information Transmission data, relays GOES variable reformatted Imager and Sounder data, relays Emergency Managers Weather Information Network broadcasts, and participates in the international COSPAS-Search and Rescue Satellite-Aided Tracking (SARSAT) system.

<b>Spacecraft</b>	<b>Date Launched</b>	<b>Operational Date</b>
GOES-13	May 2006	2010-2015
GOES-14	June 2009	2015-2020
GOES-15	March 2010	2012-2017

**See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.**

**GOES-R SERIES (<http://www.goes-r.gov/>)**

The GOES-R program will provide end-to-end system integration through the acquisition, deployment, maintenance, and operations of the space, ground, and launch segments.

The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Needed as a backup to GOES-14 or -15 as part of a system of two operational satellites and an on-orbit spare;
- Provides advances in NOAA's observation capabilities for all NOAA mission goals including improvements to coastal, space weather, and lightning observations; and,
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness.

Average annual damage from tornadoes, hurricanes, and floods is \$11.4 billion with about 100 deaths annually<sup>3</sup>. Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays<sup>4</sup>. Lightning causes between \$4 and \$5 billion in losses each year in the civilian sector with about 47 deaths and 303 injuries per year<sup>5</sup>. By helping to produce more accurate forecasts and warnings, the GOES-R series will minimize these losses.

Funding is used for the following activities:

- Continued development of GOES-R & S spacecraft and ground system. The program will complete the Mission Operations (MOR) and Systems Integration Review (SIR) for the GOES-R System;
- Continuation of instruments already under contract: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In- Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM); Initial Flight Models for each instrument will be delivered in FY 2013 and continue development of satellite activities;
- Continued development of GOES-T & U spacecraft and instruments; and
- Continuation of the ground system integration and test activities including the new antennas.

<b>Spacecraft</b>	<b>Launch Readiness Date</b>	<b>Planned Operational Date</b>
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

<sup>3</sup> Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO).

<sup>4</sup> NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESDIS Office of Systems Development, Silver Spring, MD)

<sup>5</sup> NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESDIS/Office of Systems Development, Silver Spring, MD

**See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.**

### **Polar-orbiting Operational Environmental Satellite Programs**

The goals of the Polar-orbiting Operational Environmental Satellite programs are to continue the procurement of spacecraft, instruments, launch services, and ground systems equipment necessary to maintain an uninterrupted flow of weather and environmental data to users.

Polar satellites provide a continuous flow of global weather and environmental observations in support of the following operational requirements:

- Environmental monitoring, and weather and marine forecasting;
- Climate assessment and change prediction;
- Detecting weather systems and significant environmental events such as volcanic eruptions, oil spills, and wildfires;
- Measuring atmospheric ozone and the space environment;
- Collecting environmental data from other surface platforms such as buoys; and
- Performing search and rescue functions.

### **POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE (POES)** **(<http://www.oso.noaa.gov/poes/>)**

POES is NOAA's current operational polar satellite system, with the last satellite in the series (NOAA-19) launched on February 6, 2009. As part of an international agreement with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the POES program also includes the European Polar Weather Satellite program, Metop. Metop satellites carry U.S. instruments and provide data services coverage from a mid-morning polar orbit through 2020.

NOAA has the responsibility to provide forecasts and warnings for the U.S., its territories, adjacent waters and ocean area; for the protection of life and property and the enhancement of the national economy. This mission requires an enduring capability to acquire global data from satellites, and the capability to process and disseminate environmental data on an extensive spatial range (global, regional and local) within a variety of time scales (minutes to days) to central processing centers and distributed direct users. These data include, but are not limited to global imagery; cloud and precipitation parameters; atmospheric profiles of temperature, moisture, wind, aerosols and ozone; surface conditions concerning ice, snow and vegetation; ocean parameters of sea temperature, color and state; and solar and in-situ space environment conditions.

These data are critical for,

- Severe storm and flood warnings;
- Tropical cyclone and hurricane reconnaissance and warnings;
- Hydrologic forecasts and forecasts of the ocean surface and internal structures;
- Medium range weather forecast (out to fifteen days);
- Solar and space environmental forecasts;
- Aviation forecasts (domestic, military, and international);
- Forecasts of ice conditions;
- Seasonal and inter-annual climate forecasts;
- Decadal-scale monitoring of climate variability;
- Assessment of long-term global environmental change;
- Environmental air quality monitoring and emergency response;
- Detection and analysis of fires and volcanic eruptions; and
- Short-term and mesoscale forecasts.

Continued funding supports the following activities:

- Satellite and instrument anomaly support to the on-orbit POES satellites;
- Maintaining the ground system for operations; and
- Procurement, maintenance and testing of the U.S. instruments on the European Metop satellites.

**Schedule and Milestones:**

- FY 12: Continue satellite and instrument anomaly support for on-orbit POES satellites
- FY13 - 15: Support annual reactivation for MetOp-C
- FY16: Prepare to support the launch of MetOp-C
- FY 17: Post-launch support of MetOp-C

**Deliverables:**

- Engineering support for the on-orbit POES satellites and support to EUMETSAT for U.S. instruments for Metop satellites, either in orbit or waiting to be launched.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percentage of NOAA managed satellite data processed and distributed within 60 minutes	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.8%	95%	95%	95%	95%	95%	95%
<b>Description:</b> Provide the necessary polar observations from the primary polar spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. Note that in 2017, NOAA-19 will have exceeded its design life and Suomi NPP will be close to its nominal end of life; for FY 2017 this measure assumes funding from the JPSS program.							

**Outyear Funding Estimates (\$ in thousands):\***

<b>POES**</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>		-	-	-	(4,171)	(26,562)		
<b>Total Request</b>	2,441,566	32,241	32,241	32,241	28,070	5,679	0	2,572,038

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\*Given the 28 years of prior budget records for the POES program, the vast majority of which was recorded on paper rather than digitally, along with a number of funding modifications from the enacted levels (rescissions, supplementals, Hollings scholarships, etc.), a breakout of FY 2012 and prior funding is not available at this time. At Congress' request, NESDIS will conduct an audit of these records to obtain a more detailed breakout.

**JOINT POLAR SATELLITE SYSTEM (JPSS)**

JPSS will address NOAA's requirements to provide global environmental data such as cloud imagery, sea surface temperature, atmospheric profiles of temperature and moisture, atmospheric ozone concentrations, search and rescue, direct read-out, and data collection services. These data

are used in numerical weather prediction models primarily for 2-7 day forecasts and for climate monitoring.

JPSS will provide continuity of polar satellite coverage and will improve the nation's ability to collect and distribute higher resolution data and products. This is achieved through the modernization of sensors and systems to ensure improved performance, compatibility, supportability, and maintainability. JPSS data will improve weather forecasts, climate monitoring, and warning lead times for severe storms benefiting agriculture, transportation, and energy production. In accordance with the Administration's February 2010 restructuring of the program, DOD manages satellite acquisition for the morning orbit and NOAA – with the assistance of NASA – manages acquisition for the afternoon orbit. NOAA/NASA will continue to provide joint ground system support.

**See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.**

### **SATELLITE ALTIMETRY MISSION – JASON-3**

Jason-3 is a joint satellite altimetry mission between NOAA and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). Jason-3 will provide continuity of precise measurement of sea [ocean] surface heights for applications in,

- Ocean Climatology: global sea-level rise, decadal variability in the ocean, seasonal/inter-annual variability, and coastal variability & its impact on ecosystems; and,
- Ocean Weather: operational oceanography, surface wave forecasting & evaluation, and hurricane intensity forecasting.

Jason-3 is a five-year development and integration effort that started in FY 2010. NOAA is providing a microwave radiometer, precision orbit determination components (e.g., GPS, Laser Retroreflector Array (LRA)), launch services, ground system and operations, and associated engineering services for Jason-3. Through an interagency agreement, NASA is NOAA's acquisition and development agent, but NOAA will retain overall program management responsibility. EUMETSAT is providing the spacecraft, altimeter, additional precision orbit components, ground system and operations.

Jason-3 will follow in the tradition of the previous altimetry missions, Topex/Poseidon, Jason-1 and -2. The Jason series has been transitioned as a research endeavor from NASA and the Centre National d'Etudes Spatiales (CNES), the French Space Agency, to NOAA and EUMETSAT for joint implementation as a sustained and systematic (i.e., operational) capability.

NASA on behalf of NESDIS has started acquisition of the mission instruments and started a feasibility study to identify a suitable launch vehicle. Continued funding supports the ongoing acquisition of Jason-3 components and launch services.

**See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.**

### **DEEP SPACE CLIMATE OBSERVATORY (DSCOVR)**

Refurbishment of NASA's DSCOVR satellite will allow NOAA to maintain continuity of solar wind data used for geomagnetic storm warnings. NOAA will manage the DSCOVR mission as an operational sentinel to give notice of approaching solar storms with potentially calamitous consequences for terrestrial electrical grids, communications, GPS navigation, air travel, satellite operations and human spaceflight. This program is being conducted in partnership with the U.S. Air Force (USAF), which will provide the launch vehicle and services.

NOAA has an operational requirement for continuous solar wind data. These data are the sole source of geomagnetic storm alerts. Geomagnetic storms are the costliest form of space weather and have the greatest potential economic impact on the largest number of customers.

**See the Program Change for the proposed schedule/milestones, deliverables, performance goals and measurement data, and the budget profile.**

**CRITICAL SINGLE POINT OF FAILURE/CRITICAL INFRASTRUCTURE PROTECTION (CIP)**

The Critical Infrastructure Protection project will provide backup systems at the Wallops Command and Data Acquisition Station (WCDAS) and will perform all mission critical operations and critical product data processing functions in the event of a catastrophic outage at the NSOF primary site.

The CIP is a backup facility to the NSOF/Environmental Satellite Processing Center (ESPC) operations and ensures the continuity of the nation's environmental satellite data images and critical products used by the NWS and DOD as inputs to analyses and forecast models. CIP will ensure continuity of the issuance of life-saving NWS watches and short-term warnings to the public in the event the primary ESPC system at the NSOF becomes inoperable.

The NOAA Product Processing and Distribution (PP&D) Office is a critical single point of failure for every operational NOAA satellite product and service that NWS and other users rely on for weather information. Satellite data represents approximately 93 percent of the input to numerical weather prediction models.

**Schedule and Milestones:**

- FY 2013: Build back-up systems for ESPC applications in order to address Research-to-Operations missions and continuing evolution of the Office of Satellite Data Processing and Distribution/ESPC systems and products.
- FY 2014-17: Maintenance and Operations

**Deliverables:**

- The CIP project will provide backup systems that will perform mission critical operations and critical product data processing functions in the event of a catastrophic outage of the primary site, the satellite operations facility at NSOF. CIP will deliver continuity of operations of NOAA products and services generated by the environmental satellites.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
% of critical satellite data processed and distributed in the event of a catastrophic outage at the NSOF primary site	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	90%	90%	95%	95%	95%	95%
<b>Description:</b> Provide critical satellite data product processing backup in the event of a catastrophic outage of the primary satellite operations facility at NSOF. Critical satellite data is data that has been approved for CIP backup by the Satellite Products and Services Review Board (SPSRB).							

<b>Performance Measure:</b>	<b>FY</b>						
% of satellite data processed and distributed within 4 hours of CIP activation	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	95%	95%	95%	95%	95%	99%
<b>Description:</b> The CIP requirement is to have Priority 1 operational products available within 24 hours of CIP activation (complete product list in found at <a href="http://www.osdpd.noaa.gov/ml/cip.html">http://www.osdpd.noaa.gov/ml/cip.html</a> ).							

**Outyear Funding Estimates (BA in thousands):\***

<b>CIP</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>CTC</b>	<b>Total</b>
	<b>2012 &amp; Prior</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>		
<b>Change from FY 2013 Base</b>		-	-	-	-	-		
<b>Total Request</b>	27,656	2,772	2,772	2,772	2,772	2,772	2,842	44,358

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

**NPOESS PREPARATORY DATA EXPLOITATION (NDE)**

The NDE project is developing and implementing capabilities to process and distribute Suomi NPP and future Joint Polar Satellite System (JPSS) products and services, once the data have been delivered to NOAA. NOAA must implement capabilities to process the observations into useful products that meet the requirements of NOAA's operational centers and other civilian users. The NDE program will generate measurements of atmospheric and surface properties with smaller biases and less noise that will improve and extend the NWS's capability to provide weather forecasts and warnings. NESDIS and the NWS have collaborated to establish a priority for NDE product developments. As a result, the NDE program will provide the capability to generate the following data products for NOAA within two years after the Suomi NPP launch: atmospheric and ocean surface radiances, snow cover, sea surface temperature, vegetation fraction, tropical cyclone products, polar winds, atmospheric moisture, ocean color and ozone profiles.

The NDE project is developing the IT infrastructure and science code necessary to ingest and add value to Suomi NPP and JPSS observations. By mid-FY 2012, NDE will have procured and integrated the Suomi NPP Production Environment, a data processing system designated to address the unique needs of the NOAA user community. Once validation and verification of the system and science products are complete, the Production Environment will be turned over to NESDIS Operations which will then assume 24/7 operations in mid FY 2013. The performance of this IT system will also be evaluated during the Suomi NPP post-launch period in FY 2012. Following the transition of the Suomi NPP Production Environment to operations, NDE will focus development on new Suomi NPP-based products to provide polar continuity products to the user community.

**Schedule & Milestones:**

- FY 2012: Train NESDIS Operations staff to monitor the NDE Production Environment before NESDIS Operators assume 24x7 monitoring of NDE systems in July 2012
- FY 2013: Complete transition of NDE Production Environment to NESDIS Operations. Integrate second set of products into NDE Production Environment
- FY 2014: Continue to integrate new products into NDE Production Environment
- FY 2015: Continue integration of new Suomi NPP-based products into operations
- FY 2016: Implement an NDE Backup System
- FY 2017: Provide infrastructure for JPSS Data Exploitation (JDE)

**Deliverables/Outputs:**

- Initiate delivery of the NDE Production Environment to NESDIS Operations in FY 2012. This System will enable NESDIS Operations to generate and deliver 57 products to the NWS and other users in FY 2012-FY 2016.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of new Science Products Tested within NDE Science	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
Algorithm Development and Integration Environment (SADIE)	3	12	12	10	10	10	3

**Description:** NDE integrates new science algorithms, provided by NOAA scientists, into the NDE SADIE to conduct functional and end-to-end testing of the products generated from those algorithms. Once it is determined that the code is ready for operations, NDE will transition the algorithms to the Production Environment for routine operations. The process of testing new algorithms and integrating them into operations takes approximately one year. All algorithms listed in FY 11-16 will generate new operational products from Suomi NPP one year later. After the JPSS launch in 2017, JPSS Data Exploitation will provide 3 data products after completion of the calibration and validation period.

**Outyear Funding Estimates (BA in thousands):\***

<b>NPOESS Data Exploitation</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>		-	-	-	-	-		
<b>Total Request</b>	27,097	4,455	4,455	4,455	4,455	4,455	4,525	53,897

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

**EARTH OBSERVING SYSTEM (EOS) & ADVANCED POLAR DATA PROCESSING, DISTRIBUTION, AND ARCHIVING**

NOAA is committed to preserve the NASA Earth Observing System (EOS) data per NOAA's long-term management agreement with NASA. EOS & Advanced Polar Data Processing, Distribution and Archiving System support is directed toward the NOAA CLASS Development project. It takes the NASA EOS data requirements for archive and access and provides funding to ensure the CLASS Development team designs and engineers the appropriate capabilities and capacities into the CLASS Operating System. NOAA will use the funds to procure additional media storage hardware and telecommunications to safely store and provide access to NASA EOS data.

NOAA is currently responsible for the stewardship of over three petabytes (PB) of environmental data and information, which is expected to grow to well over 14 PBs in FY 2012. NOAA spends more than one billion dollars each year collecting environmental data in support of its mission. NASA launched the Suomi NPP satellite in FY 2012, which NOAA will follow with the first launch of Joint Polar Satellite System satellite scheduled in FY 2017. The environmental data generated will be a 100-fold increase in data volume per satellite.

**Outyear Funding Estimates (\$ in thousands):\***

<b>EOS &amp; Advanced Polar Data Processing, Distribution, &amp; Archiving Systems</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>		-	-	-	-	-		
<b>Total Request</b>	14,330	990	990	990	990	990	992	20,272

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

**COMPREHENSIVE LARGE ARRAY DATA STEWARDSHIP SYSTEM (CLASS) – DEVELOPMENT**

CLASS is the NOAA Enterprise System IT capability for the Data Centers, acting as a web-based data storage and distribution system for NOAA's environmental data. It is currently utilized by the NOAA Data Centers for the distribution of operational environmental satellite data from NOAA's Geostationary and Polar (GOES and POES) operational satellites and derived data products. CLASS is under development to support additional satellite data streams, such as GOES-R, Suomi NPP, and JPSS. In addition, NEXRAD and modeled data are planned for inclusion in CLASS and the system is being evolved to provide a configurable set of tools for data ingest to allow rapid response to new requirements, additional tools for data management and stewardship by data center experts, and generalized access interfaces to allow tailored tools for data access.

In the near term, efforts will focus upon operations and maintenance of CLASS components that have transitioned from development to operational status. Longer-term plans for CLASS include expanding the safe storage/access capacity to meet the data influx expected from the operational introduction of data from radar, models, and new satellites. The current CLASS configuration can provide services for approximately four PBs of data. Management of these data can be accomplished through expanding storage capacity at the Data Centers and automating the means of data ingest, quality control, and access through phased systems procurement. The early implementation of this archive and access system has paved the way to accommodate additional massive data volumes from the Earth Observing System Satellites.

**Schedule and Milestones:**

N/A

**Deliverables**

- Safe Storage and Access Capability/Capacities “just in time” ready to meet phased-in introduction of new major observing systems (Satellites, Radars, Model Data, Other)
- Long-term, safe storage that meets the NOAA Data Centers’ legislative requirements.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Measure 1: CLASS Development System components integrated into the Data Centers'</b>	8	9	9	10	10	11 GOES-R	12 JPSS-1

operational architecture (CLASS Operations System) ready to support NEW Satellite Launches/RADAR DP and PH Upgrades, Model Data, etc. (Cum # systems the CLASS Ops System is ready to support)							
Measure 2: Annual Increase - New Data/Year (PB/FY)*	1.0	4.7	5.1	5.1	6.6	7.6	9.8
Measure 3: Cumulative Total Data (PB)*	1.97	6.7	11.8	16.9	23.5	31.1	40.9
<b>Description:</b> Measure 1 measures the cumulative number of systems ready to be supported by the CLASS Ops System. Measure 2 measures the annual increase of new data measured in terabytes per year (TB/FY). Measure 3 measures the cumulative total data measured in terabytes (TB).							

\* Safe Storage and Access Capability and Capacity (Volumes are only for One Copy/One Site) Mapped against January 2012 Satellite "Fly Out" Chart, Radar Upgrades, Model Data, Other Data

**Outyear Funding Estimates (\$ in thousands):\***

CLASS	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
Change from FY 2013 Base		-	-	-	(4,111)	(6,476)		
<b>Total Request</b>	74,758	6,476	6,476	6,476	2,365	0	0	96,551

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

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## **PROGRAM CHANGES FOR FY 2013:**

**GOES-N: GOES-N (Base Funding: \$32,467,000 and 20 FTE; Program Change: -\$2,567,000 and -0 FTE):** NOAA requests a decrease of \$2,567,000 and 0 FTE for a total of \$29,900,000 and 20 FTE for the GOES-N program.

### **Proposed Actions:**

A planned decrease in funding is proposed to reflect reduced requirements in NASA's system engineering and support based on the launch of the last satellite in the GOES-N series in March 2010. With the successful handover of GOES-15 command and control from NASA to NOAA, funds are still required to support ground systems, continue product development, and provide technical management, maintenance support and operations of the on-orbit assets. The purpose of the GOES-N Series is to provide environmental satellite continuity of the eastern and western hemispheres.

### **Statement of Need and Economic Benefits:**

Since 1975 when GOES-1 (A) was launched, the benefits derived from the GOES Program were immediate. Specifically, geostationary satellite information has become a standard tool used to generate advisories to inform the public of severe weather conditions. NWS and news stations depend on the data generated by the geostationary satellites. The images of hurricanes shown on news stations in the U.S. and around the world are due to these critical satellites.

The GOES-N Series program aids the public by generating timely and accurate environmental data/weather information. A primary function of the GOES Program is supporting the NWS in forecasting, tracking, and monitoring severe storms. The improved accuracy of the NWS forecasts by using GOES data for severe storms results in weather forecasting/advisories to impacted areas to ensure authorities and the public are equipped with decision-making information to protect lives and property.

The GOES Program continuity schedule was created to minimize disruptions of satellite observations that will significantly impact customers' decision-making and the development of scientific analyses that could negatively impact NOAA's ability to accomplish its mission. Maintaining GOES continuity is necessary to provide continuous global weather monitoring from two geostationary orbital locations to provide near total Western Hemispheric coverage.

### **Base Resource Assessment:**

The base resources for this activity are described in the Systems Acquisition base narrative.

### **Schedule and Milestones:**

GOES-14 has a planned operational date of 2015.

### **Deliverables:**

Continued operational support and maintenance of the GOES ground systems and on-orbit assets

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Percentage of NOAA-managed satellite data processed and distributed within 15 minutes							
<b>With Decrease</b>	99.7%	N/A	98%	98%	98%	98%	98%
<b>Without Decrease</b>		98%	98%	98%	98%	98%	98%
<p><b>Description:</b> This measure includes observations from the primary geostationary spacecraft tracked from observation through availability to the user. This measure is used to track timeliness and customer satisfaction. The targeted time for GOES is 15 minutes.</p>							

**Outyear Funding Estimates (\$ in thousands):\***

<b>GOES-N**</b>	<b>FY 2012 &amp; Prior*</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>	-	(2,567)	(2,567)	(2,567)	(2,567)	(7,467)	(7,467)	(7,467)	(16,379)	-
<b>Total Request</b>	2,088,754	29,900	29,900	29,900	29,900	25,000	25,000	25,000	16,088	2,299,442

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\*Given the 17 years of prior budget records for the GOES-N program, the majority of which was recorded on paper rather than digitally, along with a number of funding modifications from the enacted levels (rescissions, supplementals, Hollings scholarships, etc.), a breakout of FY 2012 and Prior funding is not available at this time. At Congress' request, NESDIS will conduct an audit of these records to obtain a more detailed breakout.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(2,567)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(2,567)

**GOES-R: GOES-R (Base Funding: \$615,622,000 and 46 FTE; Program Change: +\$186,378,000 and +0 FTE):** NOAA requests an increase of \$186,378,000 and 0 FTE for a total of \$802,000,000 and 46 FTE to provide continued satellite engineering development and production activities for the GOES-R Series (GOES-R, -S, -T, & U) program that are necessary to meet a Q1 FY 2016 launch readiness date (LRD).

The GOES-R Series will provide continuity of GOES data coverage after the GOES-N series. GOES-R is the next-generation series of NOAA geostationary satellites and provides GOES mission continuity through 2036. The procurement of GOES satellites and ground systems is a cooperative venture between NOAA and NASA. NOAA defines requirements for the program based on user needs; budgets and funds program resources and contracts; manages the integrated NOAA/NASA Program Office; procures ground segments; and operates the GOES satellites. NASA procures and launches the spacecraft, manages the system integration and mission assurance activities, and provides satellite acquisition and engineering expertise.

#### **Proposed Actions:**

The GOES-R budget request for FY 2013 is for the continuation of a four satellite GOES program (GOES-R, S, T, & U) with enhanced capabilities above the current GOES-N Series. FY 2013 GOES-R funding will be used for,

- Continued development of GOES-R Series spacecraft, to include the subsystem fabrication, system integration and testing (I&T), and the start of instrument I&T onto the spacecraft;
- Continued development of the ground system, to include continuing I&T for and completing the release of the mission management software, and completing the operational and back-up facilities for GOES-R;
- Integration, testing and delivery of initial Flight Units for: Advanced Baseline Imager (ABI), Solar Ultra Violet Imager (SUVI), Extreme Ultra Violet Sensor/X-Ray Sensor Irradiance Sensor (EXIS), Space Environmental In-Situ Suite (SEISS), and Geostationary Lightning Mapper (GLM).
- Continue with launch vehicle procurement and launch services; and,
- Continuation and ramp-up of the ground system integration and test activities, including the delivery of two new antennas to Wallops and a retrofit of one existing antenna at NSOF.

#### **Statement of Need and Economic Benefits:**

The GOES system provides an uninterrupted, continuous flow of environmental data and information that is critical to the Nation's weather forecasting capabilities. The needs and benefits of GOES-R series satellites are as follows:

- Maintains continuous real-time observations for severe storms, hurricanes, and weather monitoring to the Nation;
- Provides advances in NOAA's observation capabilities for all NOAA mission goals, including improvements to coastal, space weather, and lightning observations;
- Needed as a backup to GOES-14 or -15, as part of a system of two operational satellites and an on-orbit spare; and
- Incorporates key enhancements in spatial and spectral information, coverage, and timeliness to help generate more timely and accurate weather forecasts.

The GOES-R Series satellites are being developed as the follow-on to the GOES-N series. The GOES-R Series will minimize losses to life, property and the economy by giving early warning for severe weather events, which can cause significant impacts to people and property such as:

- \$11.4 billion in average annual damage from tornadoes, hurricanes, and floods with about 100 deaths annually<sup>6</sup>.
- Approximately \$4 billion per year is lost in economic efficiencies as a result of weather-related air traffic delays<sup>7</sup>.
- \$4 and \$5 billion in losses each year due to lightning in the civilian sector with about 47 deaths and 303 injuries per year<sup>8</sup>

**Base Resource Assessment:**

The base resources for this activity are described in the Systems Acquisition base narrative.

**Schedule and Milestones:**

Spacecraft	Launch Readiness Date	Planned Operational Date
GOES-R	Oct 2015	Dec 2016
GOES-S	Feb 2017	Apr 2020
GOES-T	Apr 2019	Mar 2025
GOES-U	Oct 2024	Jul 2028

**Deliverables:**

- Delivery of first Flight Model (FM) for ABI, SUVI, SEISS, GLM, and EXIS
- Continue development of software and acquisition of hardware for Ground System
- Continue development of Spacecraft and Antennas for Ground System

**Performance Goals and Measurement Data:**

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Improvement in the accuracy of hurricane intensity forecasts in the 24-to 48-hour time frame.	Actual	Target	Target	Target	Target	Target	Target
<b>With Increase</b>	N/A	N/A	N/A	N/A	N/A	N/A	10%
<b>Without Increase</b>	N/A	N/A	N/A	N/A	N/A	N/A	0
<b>Description:</b> Improvement in the accuracy of hurricane intensity forecasts, in the 24-48 hour time frame, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

<sup>6</sup> Extreme Weather Sourcebook 2001: *Economic & Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena*. Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information, Boulder, CO

<sup>7</sup> NOAA, 2002: GOES-R Sounder and Imager Cost/Benefit Analysis, NOAA NESDIS Office of Systems Development, Silver Spring, MD

<sup>8</sup> NOAA, 2004: GOES-R Sounder and Imager Cost/Benefit Analysis - Phase III. NOAA/NESDIS/Office of Systems Development, Silver Spring, MD

<b>Performance Measure:</b>	<b>FY</b>						
Improvement in hurricane track forecasts out to 5 day	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	N/A	N/A	N/A	N/A	5%
<b>Without Increase</b>		N/A	N/A	N/A	N/A	N/A	0
<b>Description:</b> Improvement in the accuracy of hurricane track forecasts, out to day 5, as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

<b>Performance Measure:</b>	<b>FY</b>						
Improvement in tornado warning lead times (in minutes)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	N/A	N/A	N/A	N/A	N/A	N/A	7
<b>Without Increase</b>		N/A	N/A	N/A	N/A	N/A	0
<b>Description:</b> Improvement in the tornado warning lead time as a result of the continuous monitoring of total lightning flash rate from the GLM together with improvements in observations from the ABI. Performance Measure improvement does not take place until FY 2017, when GOES-R becomes operational.							

**Outyear Funding Estimates (\$ in thousands):\***

<b>GOES-R</b>	<b>FY 2000</b>	<b>FY 2001</b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
<b>Change from FY 2013 Base</b>	-	-	-	-	-	-	-	-	-	-
<b>Total Request</b>	3,300	20,162	25,338	15,300	101,778	151,036	219,299	253,040	234,791	465,000

<b>GOES-R</b>	<b>FY** 2010</b>	<b>FY 2011</b>	<b>FY*** 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Change from FY 2013 Base</b>	-	-	-	186,378	335,139	229,122	166,031	90,629	(36,911)	(203,728)
<b>Total Request</b>	641,500	662,373	615,622	802,000	950,761	844,744	781,653	706,251	578,711	411,894

<b>GOES-R</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>
<b>Change from FY 2013 Base</b>	(315,710)	(415,503)	(353,877)	(258,887)	(243,158)	(524,281)	(543,245)	(542,995)	(542,745)	(542,595)
<b>Total Request</b>	299,912	200,119	261,745	356,735	372,464	91,341	72,377	72,627	72,877	73,027

<b>GOES-R</b>	<b>FY 2030</b>	<b>FY 2031</b>	<b>FY 2032</b>	<b>FY 2033</b>	<b>FY 2034</b>	<b>FY 2035</b>	<b>FY 2036</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>	(542,270)	(542,295)	(542,370)	(543,495)	(543,495)	(544,395)	(548,545)	-
<b>Total Request</b>	73,352	73,327	73,252	72,127	72,127	71,227	67,077	10,860,266

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\* FY 2010 includes a \$26M reduction from a NOAA rescission

\*\*\* FY 2012: GOES-T and -U were added to the profile to extend the Life Cycle from 2028 to 2036.



**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	115,680
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	70,698
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	186,378

**Jason-3: Jason-3 (Base Funding: \$19,700,000 and 0 FTE; Program Change: +\$10,300,000 and +0 FTE):** NOAA requests an increase of \$10,300,000 and 0 FTE for a total of \$30,000,000 and 0 FTE to continue the development of the Jason-3 satellite in partnership with EUMETSAT and CNES. Jason-3 will provide continuity of precise measurement of sea surface heights for applications in ocean climatology and ocean weather.

**Proposed Actions:**

The increase is required for NOAA to complete development activities on the U.S. instruments: a microwave radiometer and precision orbit determination components (e.g., GPS). Funds will also continue to support, launch services and associated engineering services for Jason-3. EUMETSAT and CNES are providing the spacecraft, altimeter, precision orbit components, ground system, and operations.

**Statement of Need and Economic Benefits:**

The most accurate measurements of sea surface heights are made by the Jason series of satellites. It is critical to our understanding of global and regional climate variability that we continue to collect, analyze and maintain a continuous record of sea surface height data.

While its latest projections for Global Sea Level Rise (GSLR) over the coming century range from 28 to 79 cm, the Intergovernmental Panel for Climate Change (IPCC) states "...the upper values of the ranges given are not to be considered upper bounds..." for GSLR because existing models are unable to account for uncertainties such as changes in ice sheet flow. Additionally, the U.S. Climate Change Science Program has recently stated that these uncertainties "...will likely lead to sea-level projections for the end of the 21<sup>st</sup> century that substantially exceed the [latest IPCC] projection." Because this will impact the 146 million people worldwide living within 1 meter of the mean high water mark, it is critical that systematic observations of global sea level be collected on a continuing basis until these uncertainties are successfully addressed.

The Jason-3 altimetry mission is needed to provide continuity of precise measurement of sea surface heights for applications in the areas of ocean climatology and ocean weather.

- Ocean Climatology Benefits
  - Global sea-level rise - A fundamental indicator of climate change. An altimeter time series of several decades will be needed to distinguish signals related to anthropogenic warming from those related to natural variability, as well as to clarify whether the rate of sea-level rise is accelerating.
  - Decadal variability in the ocean – This variability has been shown to have an impact on fishery regime changes and correlates with droughts and changes in hurricane activity.
  - Seasonal/inter-annual variability - On seasonal to inter-annual timescales, ocean-atmosphere interactions in the tropical Pacific, the El Niño / Southern Oscillation (ENSO) phenomena, currently provide much of the signal for seasonal forecasts.
- Ocean Weather Benefits:
  - Operational Oceanography - Input to operational integrative services based on global and regional ocean models are necessary to provide real time and prognostic information on the state of the global ocean. This capability helps its users understand and monitor the world's marine environment and facilitate a safe, non-polluting and sustainable human exploitation of the ocean environment.
  - Surface wave forecasting and evaluation - Accurate surface wave forecasts are a major requirement for offshore operators. Over the last decade altimeter-derived significant wave height data have been critical for improvements in wave prediction systems.

- Hurricane intensity forecasting - The knowledge of the upper ocean heat content (OHC) is a critical factor in forecasting the intensity of hurricanes as they approach the U.S. East and Gulf Coasts where high OHC is quite variable.
- Coastal variability and its impact on ecosystems - Observations for modelling the ocean basin and the broader coastal area are critical. Coastal forecasting is needed in responding to environmental problems such as oil spills and harmful algal blooms, as well as forecasting tides and currents important to commercial shipping.

**Base Resource Assessment:**

The base resources for this activity are described in the Systems Acquisition base narrative.

**Schedule and Milestones:**

- FY 2012: Select and begin procurement of Launch Vehicle
- FY 2013: Complete the development of the U.S. provided instruments and deliver them to Europe for integration with the satellite; continue Launch Vehicle development
- FY 2014: Support instrument integration onto spacecraft; continue Launch Vehicle development
- FY 2015: Launch Jason-3<sup>9</sup>; perform calibration and validation and begin routine operations
- FY 2016 - 19: Continue routine operations

**Deliverables:**

- NOAA will provide a microwave radiometer, precision orbit determination components (e.g. GPS), launch services, and associated engineering services for Jason-3
- Continue 20 plus years of sea level observations, a critical climate monitoring variable, and provide operational ocean weather products using Jason-3 observations

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
Number of ocean science products produced	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Increase</b>	0	N/A	0	0	5 <sup>9</sup>	5 <sup>9</sup>	5 <sup>9</sup>
<b>Without Increase</b>		0	0	0	0	0	0
<b>Description:</b> Jason-3 altimetry products will provide important data for ocean climatology studies and ocean weather forecasting as defined above under the Statement of Need and Economic Benefits. Products are Sea Level Height, El Niño Forecasting, Hurricane Intensity Forecasting, Ocean Waveheight Forecast, and Ocean Surface Current.							

<sup>9</sup> Launch vehicle selection in FY 2012 can affect the launch schedule, performance measure, and the total life cycle cost.

**Outyear Funding Estimates (\$ in thousands):\***

<b>Jason-3</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>	-	-	-	10,300	20,300	(13,700)	(13,700)	(13,700)	(13,700)	(14,360)	-
<b>Total Request</b>	20,000	19,960	19,700	30,000	40,000	6,000	6,000	6,000	6,000	5,340	159,000

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	10,300
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>10,300</u>

**Joint Polar Satellite System (JPSS): JPSS (Base Funding: \$949,894,000 and 61 FTE; Program Change: -\$33,530,000 and -0 FTE):** NOAA requests a decrease of \$33,530,000 and 0 FTE for a total of \$916,364,000 and 61 FTE to continue development of the JPSS instruments, ground system, and the spacecraft.

The JPSS program continues a number of management and acquisition reforms initiated in FY 2010 to deliver polar observations for weather and climate information. All program activities are managed and monitored in accordance with strict acquisition strategies, program requirements documents, and a management control plan. Sensor activities include post delivery support to prime contractors (e.g., for installation, integration, test launch and on-orbit calibration/validation).

#### **Proposed Actions:**

The Administration and NOAA understand the critical importance of efficiently allocating scarce resources, and are committed to maintaining a total Life Cycle Cost (LCC) through FY 2028 of \$12.9 billion or less for the JPSS program. This LCC is a revision from the previously submitted LCC of \$11.9 billion through FY 2024 and reflects an additional four years of operations. In order to meet this lifecycle cost, it is possible that the program will need to make tradeoffs between enhanced capabilities, risk, and cost or may not be able to accommodate all currently planned instruments. NOAA will continue to work with NASA and others in the Administration to determine the best available options for the program going forward.

The FY 2013 profile maintains all planned weather instruments and supports a second quarter FY 2017 Launch Readiness Date for the first JPSS satellite to minimize any gap in weather coverage between the Suomi NPP satellite and the launch of the first JPSS satellite. FY 2013 funding is necessary to continue development of the JPSS ground system, spacecraft and instruments, including sensors for measuring ozone, earth radiation and solar irradiance. FY 2013 funding will complete the development of the Total Solar Irradiance Sensor (TSIS)-1 and the Clouds and Earth Radiant Energy System instrument (CERES), and continue the development of the Ozone Mapping Profiler Suite-Nadir instrument (OMPS-Nadir). CERES will sustain the measurement from the Suomi NPP satellite. TSIS-1 cannot be accommodated on the JPSS-1 spacecraft, and NOAA and NASA are evaluating options for flying the instrument. FY 2013 funds will:

- Support the ground operations and data uplink of Suomi NPP
- Continue to develop the selected suite of instruments: Visible/Infrared Imager/Radiometer Suite (VIIRS), Cross-track Infrared Sounder (CrIS), and Advanced Technology Microwave Sounder (ATMS), and OMPS-Nadir
- Complete development of the TSIS-1 instrument and the CERES Flight Model-6 (CERES FM-6) instrument.
- Continue development of the JPSS-1 spacecraft bus for the afternoon orbit
- Continue to upgrade the ground system to address IT security and operational satellite/redundancy deficiencies and to begin development of capability to support JPSS-1

Outyear funding will continue to support the accommodation of French and Canadian provided instruments for A-DCS and the SRSAT system, as well as the launch dates below.

Spacecraft	Date
JPSS-1 Launch Readiness	Q2 FY 2017
JPSS-1 Launch	Q2 FY 2017
JPSS-2 Launch Readiness	Q2 FY 2021
JPSS-2 Launch	Q1 FY 2023

The JPSS program will not support the following activities:

- DOD follow-on program for the early morning polar orbit; the JPSS program will continue to engage DOD on the follow-on program, requirements definition and analysis of alternatives
- Two data processing sites for the Navy's Fleet Numerical Meteorology and Oceanography Center (FNMOC) and the Naval Oceanographic Office (NAVO)
- Data Latency of 30 minutes by JPSS-2\*

\*Data latency will improve from the current POES standard of 120 minutes to 80 minutes for both JPSS-1 and -2.

A breakdown of FY 2013 funding is provided below.

Effort	FY 2013 President's Budget Request
Space Segment	391,575
Ground Segment	383,889
Program Management*	140,900
<b>Total, JPSS</b>	<b>916,364</b>

\*Program Management includes NOAA Algorithm Development, Science & Technology, and Data Processing; NASA Systems Engineering and Mission Assurance

**Statement of Need and Economic Benefits:**

Data and imagery obtained from JPSS satellites will help increase timeliness, accuracy, and cost-effectiveness of public warnings and forecasts of climate and weather events, thus reducing the potential loss of human life and property and allowing proactive steps to protect the Nation's economy. This program serves the NWS by providing continuous global temperature and humidity values from polar satellites that provide critical inputs for quality three to five day and long-range temperature, precipitation, and snow forecasts. Simulations have shown that absent NOAA's critical polar satellite data, forecast errors of up to 50 percent are possible in predicting rain and snowfall. Polar satellites also monitor the global sea surface temperature, indicating the location, onset, and severity of El Niño and La Niña events as early as possible. Longer lead times of these impending events allow emergency and agricultural managers to activate plans to reduce the impacts of floods, landslides, fires, oil spills, volcanic eruptions, and droughts.

**Base Resource Assessment:**

The base resources for this activity are provided in the Systems Acquisition base narrative.

**Schedule & Milestones:**

- FY 2013: Begin procurement of JPSS-1 launch vehicle; Complete CERES FM-6 instrument for JPSS-1 and deliver to spacecraft integrator; Complete TSIS-1 instrument; Continue development of OMPS-Nadir instrument
- FY 2013 - 2014: Continue development of VIIRS, ATMS, and CrIS instruments
- FY 2013 - 2015: Continue spacecraft bus procurements
- FY 2013 - 2018: Develop, operate and sustain ground systems
- FY 2014 - 2016: Provide post-delivery support to the spacecraft integrator for CERES FM-6
- FY 2017: Launch JPSS-1

**Deliverables:**

- Complete a delta Critical Design Review (CDR) for the Ground System
- Complete delivery of Block 1.2 of the Ground System, which will address existing deficiencies in the Ground System.
- Complete CDR for JPSS-1 spacecraft

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Percent of data availability to support NOAA operational needs	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	98.50%	N/A	99.95%	99.95%	99.95%	99.95%	99.95%
<b>Without Decrease</b>		99.95%	99.95%	99.95%	99.95%	99.95%	99.95%
<b>Description:</b> This measure assumes the continuity of existing satellites and NPP data availability to support civilian and military operational needs. JPSS-1 will continue to meet targets after launch. JPSS-1 launch readiness is FY 2017.							

**Outyear Funding Estimates (\$ in thousands):\***

<b>NPOESS</b>	<b>FY 1995</b>	<b>FY 1996</b>	<b>FY 1997</b>	<b>FY 1998</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>
<b>Change from FY 2013 Base</b>	-	-	-	-	-	-	-	-	-	-
<b>Total Request</b>	16,000	10,500	29,000	34,000	50,000	59,772	73,164	157,269	222,874	273,789

<b>NPOESS</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY** 2009</b>	<b>FY*** 2010</b>	<b>Total</b>
<b>Change from FY 2013 Base</b>	-	-	-	-	-	-	-
<b>Total Request</b>	300,528	316,581	337,532	331,300	313,985	382,200	2,908,494

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\* FY 2009 includes \$287,985 in regular appropriation and \$26,000 in ARRA funds totalling \$313,985.

\*\*\* FY 2010 the NPOESS Program was restructured and transitioned to NOAA JPSS and DoD DWSS Programs

\*\*\*\*Funding for FY 1995 to FY 2010 reflects NOAA share of funding for NPOESS (does not include Department of Defense cost share).

<b>JPSS**</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY*** 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Change from FY 2013 Base</b>	-	-	(33,530)	6,106	8,734	(6,294)	(28,794)	(335,605)	(445,909)	(469,813)
<b>Total Request</b>	471,900	924,014	916,364	956,000	958,628	943,600	921,100	614,289	503,985	480,081

<b>JPSS</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Total****</b>
<b>Change from FY 2013 Base</b>	(499,399)	(538,640)	(598,875)	(699,786)	(726,938)	(738,945)	(737,077)	(767,947)	-
<b>Total Request</b>	450,495	411,254	351,019	250,108	222,956	210,949	212,817	181,947	12,890,000

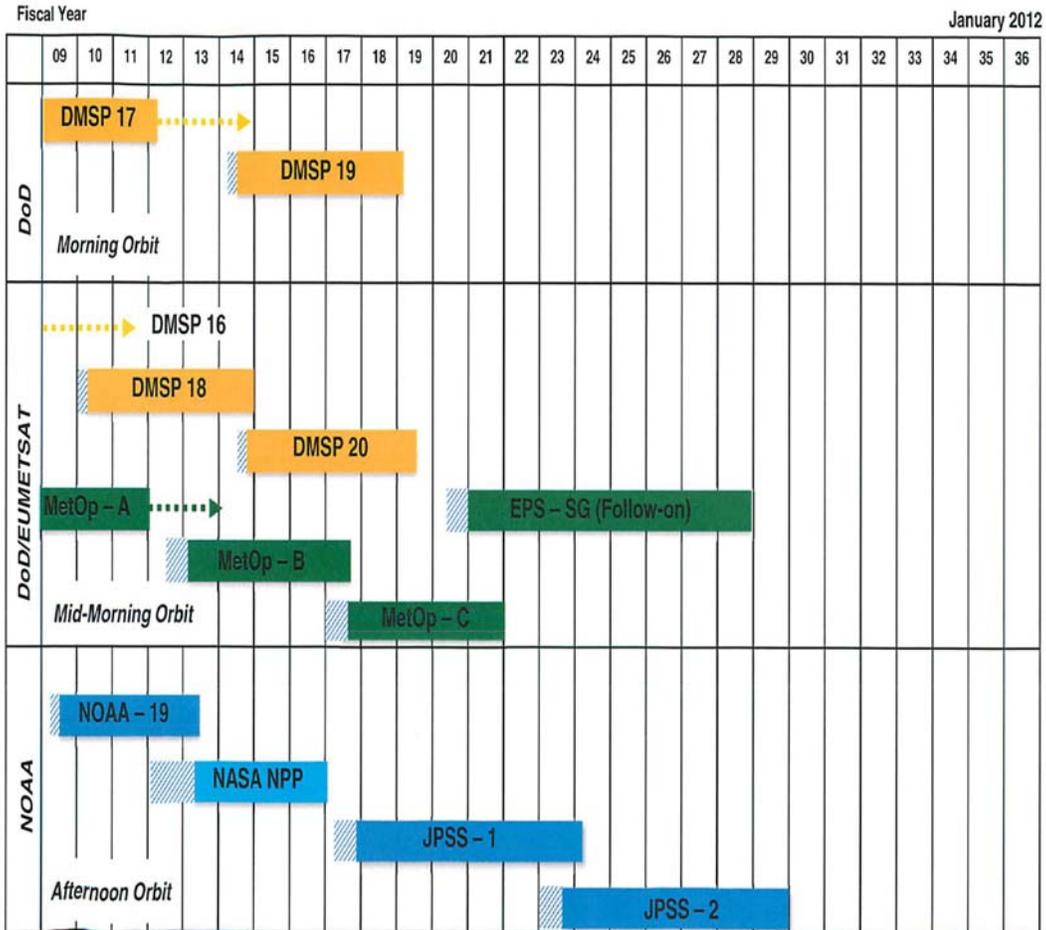
\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\*JPSS Program Management is in the process of prioritizing content based on requirements and the appropriate phasing of the budget by fiscal year; as a result, outyears estimates are preliminary and may change. NOAA and the Administration are committed to maintaining a Life Cycle Cost of \$12.9 billion or less.

\*\*\* Restoration of Climate Sensor funding is transferred to the JPSS Budget PPA in FY 2013 President's Budget

\*\*\*\* Program Life Cycle Total includes \$2,908,494 carried over from the NPOESS Program for FY 2010 and Prior

# Continuity of NOAA's Polar (Primary) Operational Satellite Programs



Approved: *Mary E. King*  
 Assistant Administrator for  
 Satellite and Information Services

Signed on: *2-08-2012*

Satellite is operational beyond design life    
  Post Launch Test  
 Operational

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(33,530)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(33,530)</u>

**Deep Space Climate Observatory (DSCOVR): DSCOVR (Base Funding: \$29,800,000 and 0 FTE; Program Change: -\$6,917,000 and -0 FTE):** NOAA requests a decrease of \$6,917,000 and 0 FTE for a total of \$22,883,000 and 0 FTE to continue the refurbishment of DSCOVR, which will provide solar wind data for geomagnetic storm warnings.

**Proposed Actions:**

FY 2013 funds will support the continued refurbishment of an existing NASA Satellite, DSCOVR, by the NASA/Goddard Space Flight Center (GSFC). This program is in partnership with the U.S. Air Force (USAF), which will provide the launch vehicle and services. The life-cycle cost of \$85 million will provide for the development and operation of systems for solar wind data processing and distribution, calibration and validation, and data archiving. After launch, NOAA will be responsible for command and control of the satellite, as well as timely processing and distribution of the solar wind data for geomagnetic storm warnings.

**Statement of Need and Economic Benefits:**

Without timely and accurate alerts and warnings, space weather has demonstrated the potential to disrupt significant portions of the infrastructure system, including transportation systems, power grids, telecommunications, and GPS. NOAA will supply geomagnetic storm warnings to support key industries such as the commercial airline, electric power, and GPS industries. Our national security and economic wellbeing, now dependent on advanced technologies, are at significant risk without accurate advance warning of impending geomagnetic storms. Aircraft that fly polar routes now include space weather as an integral part of pilots' weather pre-briefs, which provides the current status of the flight environment including potential impacts to critical communication and navigation systems, and the potential for hazardous solar radiation exposure.

The frequency and intensity of geomagnetic storms will increase significantly as the next solar maximum approaches in 2013 and lasts for several years. A Solar Maximum is the peak of the 11 year sunspot cycle, and is associated with large increases in all categories of solar activity. Strong storms with the potential to impact critical elements of our Nation's infrastructure can occur over 100 times during a solar cycle. The Nation's advanced technology service providers will be looking to NOAA for the alerts, watches and warnings needed to protect lives and livelihood and ensure continuity of critical operations.

According to a recent report by the National Academies<sup>10</sup>, geomagnetic storm-disabled electric power grids and collateral impacts could result in projected economic and societal costs of up to ~\$1-\$2 trillion per extremely large storm, and full recovery could take 4 –10 years. Precision GPS-enhanced agriculture is an \$5.8 billion per year enterprise<sup>11</sup>, and the Next Generation Air Transportation System is based entirely on GPS-enabled positioning, navigation and timing.

**Base Resource Assessment:**

The base resources for this activity are described in the Systems Acquisition base narrative.

**Schedule and Milestones:**

- FY 2012: Initiate the refurbishment of DSCOVR satellite  
Initiate Solar Wind Sensor Recalibration

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<sup>10</sup> *Severe Space Weather Events – Understanding Societal and Economic Impacts*, National Research Council 2009.

<sup>11</sup> National Coordination Office for Space Based PNT, "Current U.S. Economic Benefits of the Global Positioning System," Levenson, 2010 (in review)

U.S. Air Force begins launch vehicle acquisition  
Reintegrate Solar Wind Sensors on DSCOVR

- FY 2013: Perform Spacecraft and Sensor Environmental Testing
- FY 2014: Launch Spacecraft
- FY 2014-2018: Maintenance and Operations

The DSCOVR mission's expected end of life is 2018.

**Deliverables:**

- Launch and operate the DSCOVR satellite
- Provide timely access to operational solar wind data for geomagnetic storm warnings

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY</b>						
Lead Time Geomagnetic Storm Warnings (minutes)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	53	N/A	40	40	40	40	40
<b>Without Decrease</b>		40	40	40	40	40	40
<b>Description:</b> This measure is a Space Weather Prediction Center (SWPC) performance measure that represents the average number of minutes of warning before geomagnetic storm arrival. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers that subscribe. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes that NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

<b>Performance Measure:</b>	<b>FY</b>						
% Warnings Issued Prior to Geomagnetic Storm	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	100%	N/A	100%	100%	100%	100%	100%
<b>Without Decrease</b>		100%	100%	100%	100%	100%	100%
<b>Description:</b> This measure is a SWPC performance measure that ensures issuance of warnings for all geomagnetic storms. Once SWPC receives real-time data regarding geomagnetic storm arrival, the alert is posted on their website and email alerts are sent to customers. SWPC will also contact high impact customers such as FEMA, Coast Guard, power distributors, airlines, etc. This measure also assumes NASA's Advanced Composition Explorer satellite continues until the launch of DSCOVR.							

**Outyear Funding Estimates (\$ in thousands):\***

<b>DSCOVR</b>	<b>FY</b>	<b>Total</b>							
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	
<b>Change from FY 2013 Base</b>	-	-	(6,917)	(10,525)	(26,600)	(26,600)	(27,400)	(27,458)	-
<b>Total Request</b>	2,000	29,800	22,883	19,275	3,200	3,200	2,400	2,342	85,100

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

\*\*This table reflects NOAA funding only. It does not include funding from the U.S. Air Force, which will provide the launch vehicle and services.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: NESDIS  
Subactivity: Systems Acquisition

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(6,917)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(6,917)</u>

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**APPROPRIATION: PROCUREMENT, ACQUISITION, AND CONSTRUCTION**  
**SUBACTIVITY: CONSTRUCTION**

**SATELLITE COMMAND AND DATA ACQUISITION (CDA) FACILITY**

The Satellite CDA Facilities Program ensures a robust facility and related infrastructure is available for supporting the continuous collection, processing and distribution of environmental data for the issuance of life saving NWS watches and short-term warnings to the public. NOAA's CDA Infrastructure programs at Wallops, VA, and Fairbanks, AK, enable the continuation of the current 99 percent data availability for NOAA environmental satellite systems. The Wallops and Fairbanks facilities continue to undergo significant infrastructure and building upgrades to replace aging infrastructure installed over 40 years ago. The program plans to update major systems operating well past their design lives based on a Facilities Master Planning Process that began for the Operating Stations in 1998. Both facilities continue to require maintenance, repair, and replacement, to aging systems.

Existing buildings and aging infrastructure continue to require resources to continue reliable operations. The Wallops facility, on the Atlantic coast, is subject to a corrosive salt air environment and lies in the path of hurricanes that hit the U.S. East Coast. The Wallops facility is undergoing major electrical infrastructure upgrades to support the reliability necessary to insure 99 percent of data is captured. Associated infrastructure is planned for maintenance, repair, and rehabilitation to support the various missions integral to both locations. Both stations have been determined to be critical national infrastructure elements by a Presidential Decision Directive.

Funding for this budget line item is for repair and replacement of critical infrastructure components necessary to maintain the operational integrity of facilities. The Program's current activities include replacement of the 13M Antenna(s) Electrical Distribution Shelters and Engineering Design and Construction of the Electrical Distribution System upgrade at the Wallops CDAS. Installation of a Fire Suppression System(s) in the 13M Antenna pedestals at the Fairbanks CDAS is also ongoing.

**Schedule & Milestones:**

- FY 2013: Start design for Electrical Distribution System upgrades at Fairbanks CDAS; Execute Phase 4 of Road Repair Project at Fairbanks CDAS
- FY 2014: Complete Electrical Distribution System upgrades at the Wallops CDAS.
- FY 2014: Complete design & begin Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2015: Start design for Operations Building infrastructure upgrades at Wallops CDAS; Complete Electrical Distribution System upgrades at Fairbanks CDAS
- FY 2016-17: Complete design & begin operations building infrastructure upgrades at Wallops

**Deliverables/Outputs:**

The Satellite CDA Infrastructure Program will complete the Electrical Distribution System upgrades at the Wallops CDAS, providing a modernized, robust and reliable Electrical Distribution System with increased capacity to meet current and future mission requirements.

**Outyear Funding Estimates (\$ in thousands):\***

Satellite CDA	FY 2012 & Prior	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	CTC	Total
<b>Change from FY 2013 Base</b>		-	-	-	-	-		
<b>Total Request</b>	17,776	2,228	2,228	2,228	2,228	2,228	2,287	31,203

\*Outyears are estimates only. Future requests will be determined through the annual budget process.

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**PROGRAM CHANGES FOR FY 2013:**

No program changes for this sub-activity.

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## **NOAA PROGRAM SUPPORT**

For FY 2013, NOAA requests a decrease of \$15,586,000 and 12 FTE below the FY 2013 base level for a total of \$235,702,000 and 1,003 FTE for the Program Support mission area. This includes -\$256,000 and 0 FTE in inflationary adjustments.

### **BASE JUSTIFICATION FOR FY 2013:**

The Program Support Operations, Facilities, and Research base (\$251,288,000 and 1,015 FTE) includes the following sub activities:

- Corporate Services (\$201,741,000 and 949 FTE) includes the Under Secretary and Associate Offices, NOAA Wide Corporate Services, and the Office of the Chief Information Officer.
- NOAA Education Program (\$25,090,000 and 21 FTE) includes NOAA's Competitive Educational Grants and Programs.
- Facilities (\$24,457,000 and 45 FTE) includes NOAA's ongoing facilities management and maintenance activities.

Program Support activities support the people and the programs of NOAA, ensuring they have the proper work environment, the necessary tools and equipment, and the vital personnel and finance services which allow them to provide the finest possible services to the American people, our economy and our environment.

Within Corporate Services there are three line items: 1) NOAA's Under Secretary and Associate Offices; 2) NOAA Wide Corporate Services and Agency Management; and 3) Office of the Chief Information Officer. The Under Secretary and Associate Offices budget line item funds centralized executive management as well as policy formulation and direction. In addition, there are various staff offices, including the offices of the Principal Deputy Under Secretary for Oceans and Atmosphere and the Deputy Under Secretary for Operations; Legislative and Intergovernmental Affairs; Communications and External Affairs; International Affairs; the Federal Coordinator for Meteorology; and the General Counsel. The NOAA Wide Corporate Services and Agency Management line item funds such activities as financial reporting, budgeting, information technology, acquisitions and grants, and human resource services.

The second sub-activity in Program Support is the NOAA Education Program, which provides expert support on education activities to NOAA Line, Program, and Staff Offices, while promoting NOAA services and products, and their benefits to the public. The Office of Education (OEd) consults within NOAA and with the Department of Commerce (DOC), and identifies opportunities for the deployment of coordinated interagency/intergovernmental policy strategies that recognize the importance of linking education, economic and environmental goals. OEd also manages the Ernest F. Hollings Scholarship Program, which is funded through a set-aside of one-tenth of one percent of NOAA's annual appropriation.

The third sub-activity in Program Support is Facilities, which provides funds to address facilities management; repair, restoration and other construction; and environmental compliance and safety issues NOAA-wide. NOAA is continuing efforts to comply with Executive Order 13327 (Federal Real Property Asset Management) and to effectively manage its facilities portfolio through investments in strategic long-range facility planning and modernization; annual facility condition assessments; and repair and restoration projects to address facility maintenance, repair, safety, and compliance issues. Our goal is to conduct required maintenance and periodic life-cycle replacement of major building

systems and components in order to maintain NOAA-owned facilities at a safe and effective operational state. Funds for new construction and selected major facility projects are requested separately in the Procurement, Acquisition and Construction account.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests a net decrease of \$256,000 and 0 FTE to fund adjustments to current programs for Program Support activities. The decrease reflects savings in the DOC Working Capital Fund. Increases are requested for the estimated 2013 Federal pay raise of 0.5 percent and inflationary non-labor activities, including service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

<u>From Office</u>	<u>Line</u>	<u>To Office</u>	<u>Line</u>	<u>Amount (\$K)/FTE</u>
PS	Educational Partnership Program/Minority Serving Institutions	PS	NOAA Education Program Base	\$(12,561,000)/0 FTE
Total				\$12,561,000/0 FTE

NOAA requests a technical adjustment to move \$12,561,000 and 0 FTE from the Educational Partnership Program/Minority Serving Institutions (EPP/MSI) PPA to the NOAA Education Program Base PPA (renamed from Competitive Educational Grants and Programs), for a net change to NOAA of \$0 and 0 FTE. This will improve the ability of the OEd to manage the EPP/MSI program and sustain office activities.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on Program Support's administrative savings planned for FY 2012 (\$5.6 million), an additional \$5.0 million in savings is targeted for FY 2013 for a total savings in FY 2013 of \$10.6 million.

**Headquarters Administrative Costs:**

<b>Headquarters Program Support Type</b>	<b>Description</b>	<b>FY 2013 Amount</b>	<b>FY 2013 FTE associated with PS</b>
General Management & Direction/Executive Management	Includes Under Secretary's office, public affairs, information services	\$30,921,000	149.4
Budget & Finance	Includes Budget, Finance and Accounting	\$41,049,000	225.5
Facilities/Other Administrative Functions (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$48,188,700	180.7

Human Resources	All HR services, including EEO	\$16,477,100	142.2
Acquisitions and Grants		\$14,824,000	92.5
Information Technology	Includes IT-related expenses and other CIO related activities	28,871,000	103.2
<b>Total</b>		<b>\$180,330,800</b>	<b>893.5</b>

**Narrative Information:**

Following this section are base justification materials and program change narratives by subactivity for this line office. Please note that no program change narrative is provided for program changes of less than \$100,000, however, a summary Exhibit 15 is provided at the end of each subactivity showing the object class detail for the small program changes. Please contact the NOAA budget office if details for any of these changes are required.

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**  
**SUBACTIVITY: NOAA WIDE CORPORATE SERVICES & AGENCY MANAGEMENT**

The objectives of the Corporate Services subactivity are to:

- Develop policies regarding the administration of NOAA programs with Federal agencies, the Congress, and private industry
- Provide oversight of the implementation of information technology policies
- Develop and implement policy, planning, and program oversight

NOAA conducts activities in several program areas within the Under Secretary and Associate Offices and NOAA Wide Corporate Services and Agency Management to achieve these objectives. These activities are composed of three primary programs:

**1. NOAA's Under Secretary and Associate Offices (USAO)**

USAO provides the top leadership and management of NOAA, and represents NOAA at the executive level with other Federal agencies, Congress, NOAA stakeholders, and private industry.

**The Offices of the Under Secretary/Assistant Secretary and Deputy Under Secretary:**

These offices provide the highest level of NOAA leadership. Program activities consist of formulating and executing policies for achieving NOAA objectives, responding to executive branch policy decisions, and exercising delegated authority in committing NOAA to courses of action. USAO also consists of the following additional Staff Offices covering specific areas of activities:

**Office of Legislative and Intergovernmental Affairs (OLIA):** This office is responsible for devising and implementing the legislative strategy to carry out NOAA's initiatives requiring Congressional action. OLIA articulates the views of NOAA, including its components, on Congressional legislative initiatives. OLIA responds to requests and inquiries from Congressional committees, individual congressional members, and their staff. It coordinates Congressional oversight activities involving NOAA, as well as the appearances of NOAA's witnesses and the interagency clearance of all Congressional testimony. OLIA serves as the primary liaison for NOAA with the members and staff of Congress. The office is also responsible for the planning, direction, and coordination of legislative programs that are of immediate concern to the Office of the Under Secretary.

**Office of Communications and External Affairs:** This office is the principal point of contact for NOAA programs with the public and the news media. Its staff advises NOAA and other Departmental officials on all aspects of media relations and communication issues. The Office ensures that information provided to the news media by NOAA is current, complete, and accurate. It also ensures that all applicable laws, regulations and policies involving the release of information to the public are followed so that maximum disclosure is made without jeopardizing investigations and prosecutions, violating rights of individuals, or compromising national security. Activities address a variety of unique audiences: media relations; non-government organizations; state, tribal, territorial, regional and local government; and the general public.

**Office of International Affairs (OIA):** This office coordinates NOAA and other leadership officials' relationship with international programs, as directed by the Office of the Under Secretary. The Director of the Office of International Affairs exercises a leadership role in

establishing policies, guidelines, and procedures for NOAA's international programs. Within DOC, NOAA OIA works closely with the International Trade Administration on a broad spectrum of issues including seafood exports, export control issues, and information exchange on countries and regions. Outside of DOC, NOAA OIA works closely with the State Department, the U.S. Agency for International Development, and others, to represent U.S. interests abroad in NOAA mission areas.

**Office of the Federal Coordinator for Meteorology (OFCM):** This office establishes procedures for systematic and continuing review of national basic specialized meteorological and oceanographic requirements for services and supporting research. It also brings Federal agencies concerned with international activities and programs in meteorological and oceanographic programs into close consultation and coordination.

**Office of General Counsel (OGC):** NOAA's Office of General Counsel provides legal advice, review, and representation on a host of complex matters arising from the fulfillment of NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs. In doing so, NOAA OGC ensures NOAA management decisions are made with necessary consideration of proper legal requirements, procedures, and options.

NOAA OGC's activities conducted with program resources include Magnuson-Stevens Reauthorization Act implementation; National Marine Sanctuaries Act consistency appeals; enforcement of fisheries and species conservation regulations; natural resource damage assessment and recovery, including litigation to recover damages in connection with the Deepwater Horizon oil spill; support of legislative proposals, including Coral Reef Conservation and Coastal Zone Management legislation; and support of Law of the Sea Convention implementation obligations.

**Office of Strategic Initiatives and Partnerships:** NOAA's Office of Strategic Initiatives and Partnerships is located under the Office of the Under Secretary, and it focuses on establishing and sustaining current public-private partnership relationships that support NOAA and Department of Commerce interests. The Director engages across Department of Commerce (DOC) bureaus to support NOAA business development, innovation, and infusion activities with existing and emerging markets and identifies specific trade, technology, and science-based partnership activities appropriate to supporting and leveraging NOAA and DOC mission areas. The Director also conducts outreach to high-level constituents in both the business and non-governmental organization communities and forms connections with agencies, on an event-driven basis. The Director works closely with the Office of Communications and External Affairs to leverage its ongoing work in forming strategic partnerships and messages for the Under Secretary.

## **2. NOAA Wide Corporate Services and Agency Management**

**Acquisition and Grants Office (AGO):** AGO supports NOAA Line and Staff Offices and a number of other DOC bureaus, providing the planning, solicitation, award, administration, and close-out of approximately 16,000 acquisition and 4,000 financial assistance actions annually. Of these, approximately 200 acquisition actions and 250 grant awards are of high societal impact, and involve major systems or are high risk programs. Through these functions, AGO helps NOAA execute its day-to-day responsibilities and assists the agency in providing critical services to the Nation. The success of DOC and NOAA in their accomplishment of missions and goals is largely dependent on AGO's ability to obligate over \$2 billion annually in accordance with statutory and regulatory requirements.

**Office of Chief Administrative Officer (OCAO):** OCAO is responsible for NOAA's facility management program, including capital investment planning and management for NOAA's substantial facility portfolio totaling over \$5 billion in owned and leased facilities; facility construction and modernization; and real and personal property management. The OCAO manages NOAA's safety, environmental compliance, and energy efficiency programs; NOAA's technology and deemed export control program to ensure continued NOAA-wide compliance with Export Administration Regulations; and oversees NOAA's Office of Inspector General and Government Accountability Office audit coordination and resolution program. The OCAO also manages NOAA's Freedom of Information Act compliance, competitive sourcing program, administrative issuances program, civil rights program, and compliance with Homeland Security Presidential Directive (HSPD)– 12 requirements.

**Office of the Chief Financial Officer (CFO):** The CFO serves as the principal financial manager for an organization whose appropriated resources approach nearly \$5 billion and whose recorded capital asset value exceeds \$7 billion. The CFO's Office also has the responsibility under the CFO Act to provide the leadership necessary for NOAA to obtain a yearly-unqualified opinion in the audit of its consolidated financial statements. The areas under the direction of the CFO are the Budget Office, the Finance Office, the DOC Working Capital Fund (WCF), and Common Services.

The Budget Office is responsible for the oversight and management of NOAA's budget process. It develops overall guidance, reviews proposals, and prepares supporting justification and documentation. This includes coordinating the preparation of NOAA budget submissions to DOC, OMB and the Congress, including data on budget authority, obligations, outlays, permanent positions, and full-time equivalent employment. The Budget Office also provides for the proper allocation and control of the execution of all budgetary resources as required under the Congressional Budget and Impoundment Act of 1974 (31 U.S.C. 11) and related statutes, and as specified by the OMB. The Budget Office also maintains a staff that focuses on outreach and communication, particularly with the staff of Congressional Appropriations committees, as well as other Executive Branch agencies.

The Finance Office works to ensure that NOAA's consolidated financial statements and reports accurately reflect NOAA's fiduciary status at the end of the fiscal year, as required of all government agencies under the CFO Act of 1990. It operates NOAA's financial management system (the Commerce Business System (CBS)) to ensure that NOAA managers have access to timely financial data necessary to make informed programmatic decisions. The Finance Office is also responsible for ensuring that NOAA's bills are paid in a timely manner. The Finance Office also:

- Provides accounting and payments services. The objective is to provide financial management service and support to NOAA programs. The Finance Office plans, designs, and coordinates standards, practices, and procedures on financial operations for NOAA programs.
- Prepares internal and external accounting and financial reports on NOAA appropriations, including the audited financial statements required by the CFO Act. The objective is to maintain the Department's clean financial opinion without any material weaknesses and to correct any findings.

- Manages NOAA's financial management system. The objective is to plan, develop, and implement changes to CBS throughout NOAA to ensure that NOAA programs have the needed financial information for their programs.

The DOC Accounting System (CBS application) supports the NOAA CFO in ensuring compliance with legal/regulatory/executive requirements, and enables NOAA program managers to execute the budget while enforcing funds control. The CBS application requires that the application, along with associated interfaces and feeder systems, be operated, maintained and enhanced. Based on the maintenance and enhancements that are designed, developed and implemented, these need to be tested to ensure that integrity, availability, and confidentiality are maintained within the context of a secure application environment. The CBS user community, which consists of over 10,000 users across the agency, requires ongoing helpdesk services, training, and, depends on system maintenance and enhancement releases. Ongoing maintenance and support of CBS allows NOAA to maintain compliance with OMB Circular A-123 and the Federal Information Security Management Act (FISMA).

The NOAA implementation of the CBS application develops interfaces, maintains the NOAA Data Warehouse and portal (including associated feeder systems), and conducts quality assurance tests to ensure that the CBS application and all associated feeder systems produce reliable, accurate, and verifiable data. This helps to ensure NOAA compliance with legal, regulatory, and executive requirements; and allows NOAA managers to have access to the financial data necessary to make informed programmatic decisions and perform funds management.

The Common Services (CS) account supports the NOAA CFO in providing resources for NOAA-wide activities and services provided through the DOC and other agencies through Memoranda of Understanding and/or Interagency Agreements. CS funds the entire NOAA Workman's Compensation costs; DOC's Departmental Management Advances and Reimbursements (A&R) accounts consisting of special services and tasks; NOAA-wide Spectrum Management costs; off-site health services at the Census Bureau Health Unit; OPM USAJobs portal usage and maintenance; and other miscellaneous services and products.

**Workforce Management Office (WFMO):** The Workforce Management Office provides policies, programs, and processes that facilitate the recruitment, hiring, development, and retention of a diverse, highly skilled, motivated, and effective workforce capable of accomplishing the Agency's mission. This office provides NOAA-wide leadership to workforce management functions including strategic human capital planning, labor-management and employee relations, performance management and incentive awards, executive resources, distance learning, leadership development, training and career development, as well as human resources data management and automation initiatives.

**Program Planning and Integration (PPI):** The Office of Program Planning and Integration manages the planning and evaluation components of the NOAA Strategy, Execution, and Evaluation system (SEE). The SEE process is a continuing effort by NOAA to align the strategic priorities to the budget and to provide meaningful evaluation of the budget execution. With the implementation of NOAA's Next Generation Strategic Plan in FY 2011, NOAA is using this opportunity to reassess the budget formulation process and to take steps to implement processes that provide organizational efficiencies. This office provides corporate management to coordinate NOAA's many lines of service with the Nation's numerous needs for environmental information and stewardship. It ensures that agency investments and actions are guided by a strategic plan, are based on sound social and economic analysis, adhere to executive as well as

legislative branch science, technology and environmental policy, and integrate the full breadth of NOAA's resources, knowledge and talent to meet its stated mission goal.

PPI also coordinates NOAA's internal and external collaborative networks by promoting coordination of NOAA's diverse assets within eight regions and collaboration with internal stakeholders and external partners to respond to our stakeholders' unique regional challenges and requirements. PPI also coordinates all NOAA activities implementing the National Environmental Policy Act (NEPA) and ecology and environmental conservation matters, and serves as the focal point for Department NEPA compliance and implementation.

**Program Analysis and Evaluation (PA&E):** PA&E contributes to the NOAA corporate level management and decision-making process through independent and objective analysis. PA&E evaluates programs relative to NOAA's mission and capabilities, identifying the linkage between program requirements and available resources. PA&E is currently unstaffed due to attrition. Staffing and functions that PA&E performed are being covered by PPI.

**Payment to the DOC Working Capital Fund (WCF):** The WCF was established to provide centralized services to the Line Offices and Staff Offices in the most efficient and economical manner possible by the DOC to NOAA. Organizational units within DOC provide the administrative, legal, information technology and financial support needed to accomplish NOAA's overall mission. The Working Capital Fund was established pursuant to 5 USC 607 (15 USC 1521). Unlike other DOC bureaus, the NOAA contribution to the WCF is provided by specific allocation within the NOAA appropriation.

### 3. **Office of the Chief Information Officer (OCIO)**

OCIO is responsible for providing information technology (IT) leadership, mission assurance, and high-performance computing capabilities. The OCIO:

- Leads NOAA's principal IT research through the NOAA High Performance Computing and Communications Program;
- Promotes the effective use of IT to accomplish NOAA's mission;
- Provides advice to NOAA management on information resources and information systems management;
- Promotes and shapes an effective strategic and operational IT planning process for NOAA;
- Directs the improvement of NOAA operations and service delivery using IT systems;
- Coordinates the preparation of the IT components of NOAA's budget;
- Oversees selected NOAA-wide operational IT systems and services;
- Strengthens the security posture of NOAA's enterprise IT investments;
- Develops policies and procedures and implements the provisions of the Clinger-Cohen Act, the E-Government Act, the Paperwork Reduction Act, and other statutory requirements regarding the acquisition, management, and use of information and IT resources; and
- Manages NOAA's Homeland Security Program to ensure business continuity in the event of a terrorist attack, major disaster, or other emergency.
- Is committed to modernizing the IT infrastructure via the implementation of the Federal Data Center Consolidation Initiative and Cloud First activities as well as improving the cost effectiveness, efficiency, and service of operations to support NOAA's mission

High-level execution priorities include the following:

- Ensure IT Security -- Implement policies, standards, and procedures for NOAA IT systems which are consistent with government-wide laws and regulations and information assurance standards to protect NOAA's information systems, whether maintained in-house or commercially, and prevent security breaches which would adversely impact NOAA's mission
- Modernize IT Infrastructure -- Plan for new investments in NOAA's IT infrastructure including wide and local area networks, transport services integration, cloud computing, enterprise messaging systems, web collaboration tools, telephony, workstations, help desks, enterprise Commercial-off-the-Shelf (COTS) software, and administrative applications
- Establish Enterprise Architecture and Planning -- Transform Enterprise Architecture (EA) in NOAA into a practical, relevant, and value-added tool to guide CIO and corporate decisions regarding NOAA's IT future, and begin integrating the NOAA security architecture into the EA, providing a framework for consolidating IT infrastructure, integrating applications and data across programs and Line Offices, and achieving concurrence from Goal Teams on the Target Architecture
- The Federal Data Center Consolidation Initiative (FDCCI) – As part of the Department of Commerce's effort to consolidate its data centers, NOAA will migrate commodity IT services to the cloud (commensurate with risk and the business case for cost avoidance/savings), close or repurpose unneeded data centers and optimize those that remain. By consolidating data centers, NOAA can save money by improving utilization of existing infrastructure, lowering aggregate labor costs through consolidation of support staff requirements, enhance its cybersecurity posture; shrink its energy and real estate footprints; and take advantage of transformational technologies like cloud computing and virtualization

Within NOAA, a portion of base resources currently allocated within each line office to development, modernization or enhancement or operations and maintenance of IT investments will be redirected to cover crucial enterprise-wide IT projects to mitigate risks that threaten NOAA's daily operations. NOAA's enterprise IT security efforts funded through this mechanism will be centrally managed by NOAA's CIO office. Each Line Office will contribute based on their IT assets and will benefit from NOAA's overall Enterprise IT Security efforts by not having to provide, individually, for IT security for their systems. Line Office contributions are as follows:

<b>Line Office</b>	<b>Enterprise-Wide IT Security Contribution Estimates (\$ in K)</b>
NOS	\$583
NMFS	\$581
OAR	\$811
NWS	\$6,400
NESDIS	\$11,298
OMAO	\$151
Program Support	\$176
<b>Total</b>	<b>\$20,000</b>

**Schedule and Deliverables:**

**CFO Schedule and Deliverables:**

<b>Deliverables/Outputs</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Provide Enacted Fund Availability Table	Q1						
Provide funding allocations to NOAA Line Offices	15 days after enactment						
Complete apportionment submission to DOC	10 days after enactment						
Identify corrective action plans for Audit Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings	1-30 days after receipt of Final Findings
Review of Execution spend plan for Staff Offices	monthly						
Complete Direct Bill analysis and distribution of Direct Bill Funds	Q2						
Complete Blue Book for President's Budget Request	Q2						
Document and track all Congressional Appropriation Reports	monthly						
Complete Congressional Budget Submission	Q2						
Complete NOAA Control Table for Passbacks and MarkUps	5 days after receipt of change						

**PPI Schedule and Milestones:**

- Corporate Portfolio Analysis – 1<sup>ST</sup> Quarter
- Annual Guidance Memorandum – 4<sup>th</sup> Quarter
- Progress to Plan – 4<sup>th</sup> Quarter
- NEPA Analysis/Reviews – All Quarters
- Economic Statistics – All Quarters
- Performance Measure Analysis – 4<sup>th</sup> Quarter

**PPI Deliverables and Outputs:**

1. Corporate Portfolio Analysis - Analyzes Implementation Plans to identify key issues and corporate priorities for the next budget formulation phase; draws attention to long term concerns for Leadership; concludes with NEP/NEC Decision Memo
2. Annual Guidance Memorandum - provides NOAA wide annual guidance focusing analytical attention based on the Strategic Plan, Administration priorities, recent execution/evaluation, fiscal and policy environment. It also identifies NOAA's near term priorities, initial fiscal guidance for planning cycles.
3. Progress to Plan - Assesses progress toward NGSP objectives; evaluates executed programs to determine what has been working and what might be changed for better performance
4. NEPA Analysis and Reviews - NOAA is charged by the White House Council on Environmental Quality (CEQ) regulations with implementing NEPA policy from a corporate (NOAA-wide) perspective. NOAA actions requiring NEPA review include: Fisheries management and regulations, Endangered Species Act/Marine Mammal Protection Act permits/authorizations, Habitat restoration plans, National Marine Sanctuaries and National Estuarine Research Reserves site designation and management, NOAA-wide administered grant programs, and construction activities such as science laboratories, ground stations for, satellites and NWS Weather Forecast Offices.
5. Economic Statistics - Ensures that information regarding the social science benefits of NOAA's programs is collected and clearly conveyed via appropriate media such as Web sites and printed materials.
6. Performance Measure Analysis – The Government Performance and Results Act (GPRA), enacted by Congress in 1993, instituted formal requirements for strategic planning and performance measurement in the Federal government. GPRA requires that agencies develop strategic plans, annual performance plans, and annual program performance reports.

**OCIO Schedule and Deliverables:**

Activity	Description of Milestone	Planned Completion Date
IT Administration and Regulation	Prepare IT Implementation Plan	Q1 annually
	Prepare NOAA Operational IT Plan	Q2 annually
	Prepare NOAA Strategic IT Plan	Q3 annually
	Maintain and/or improve the overall ratings of NOAA Major Investments on the Federal IT Dashboard	Quarterly
IT Security	Complete Continuous Monitoring (CM) activities (i.e., annual penetration testing for high impact systems, quarterly vulnerability scanning for all systems, annual assessment of select controls for all systems not undergoing C&A testing) in accordance with CIO Council-approved CM schedule	Quarterly
	Complete C&A packages in accordance	Quarterly

	with the CIO Council-approved C&A schedule	
	Complete Contingency Plan updates and testing in accordance with DOC policy, NIST Guidance, and NOAA policy	Quarterly
	Administer annual NOAA IT security awareness training	Q2 annually
	Complete annual FISMA Report	Q4 annually
IT Program Management	Implement enterprise-wide IT governance	Quarterly
	Provide IT infrastructure services across the enterprise	Quarterly
	Promote cost-effective Green IT	Quarterly
Enterprise Architecture	Leverage service-based IT across multiple goals and business needs	Quarterly
	Facilitate implementation of an enterprise-wide data management architecture	Quarterly
	Facilitate planning and transition to mission services upon an enterprise infrastructure services architecture	Quarterly
	Update Data Center Consolidation Baseline and Consolidation/Implementation Plan	Q4 Annually
IT Support for Administrative Systems	Communicate efficiently and securely through a modernized infrastructure	Quarterly
	Deliver customer-focused IT services for the enterprise	Quarterly
Homeland Security	Plan & conduct annual NOAA HQ Continuity of Operations (COOP) exercise	Q3 annually
	Update NOAA COOP Plan	Q4 annually

**Performance Goals and Measurement Data: AGO**

<b>Performance Measure:</b>	<b>FY</b>						
Timeliness of acquisition actions	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	91%	85%	85%	85%	85%	85%	85%
<b>Description:</b> This measure tracks the percentage of on time acquisition actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates are tracked in the CRequest/CBuy procurement system. Percentages represent meeting the published PALT for that transaction.							

<b>Performance Measure:</b>	<b>FY</b>						
Timeliness of grants actions	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99%	90%	90%	90%	90%	90%	90%
<b>Description:</b> This measure tracks the percentage of on time grants actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured							

against the published procurement action lead time metrics (for each acquisition package) and is measured from the receipt of a requisition to the date of award. The dates are tracked in the CRequest/CBuy procurement system. Percentages represent meeting the published PALT for that transaction.

<b>Performance Measure:</b>	<b>FY</b>						
Customer Satisfaction with Service	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	N/A	3.5	3.5	3.5	3.5	3.5	3.5
<b>Description:</b> This measure is the average customer rating on customer satisfaction surveys. This measure tracks the satisfaction level of AGO customers based on a rating of 1 through 5, with 5 representing the highest satisfaction level. Performance will be tracked through DOC Office of Acquisition Management surveys, semi-annual customer surveys, individual action customer surveys, and outreach by the Director of AGO.							

**OGC**

<b>Performance Measure:</b>	<b>FY</b>						
Availability of legal support to programs	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
<b>Description:</b> This measure serves as an indicator of the availability of legal resources to support program requirements.							

**CFO**

<b>Performance Measure:</b>	<b>FY</b>						
Complete End of Year Execution Reviews for NOAA Line Offices	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%
<b>Description:</b> This performance measure relates to the Target levels for the Budget Office to complete the End of Year Execution Reviews for all NOAA Line Offices							

<b>Performance Measure:</b>	<b>FY</b>						
Expend CFO Office Funding by Year End	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%
<b>Description:</b> This performance measure relates to the Target levels for the Budget Office to expend all appropriated funding by the end of Fiscal year							

<b>Performance Measure:</b>	<b>FY</b>						
Prompt Payment of Vendor Invoices w/o penalty	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	98%	98%	98%	98%	98%	98%	98%
<b>Description:</b> This performance measure relates to the Target levels for the Finance Office to pay all the vendor invoices promptly and without any penalties							

<b>Performance Measure:</b>	<b>FY</b>						
Financial Statements and Regulatory reports due date	2011	2012	2013	2014	2015	2016	2017
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	100%	100%	100%	100%	100%	100%	100%

**Description:** This performance measure relates to the Target levels for the Finance Office to submit all the Financial Statements and Regulatory Reports by the due date. Previously, the performance targets for this measure were reported at 98%, which was an error. This reflects the correct targets.

**OCIO**

<b>Performance Measure:</b>	<b>FY</b>						
Full Authorization to Operate for all NOAA IT Systems (Complete C&A)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99%	99%	99%	99%	99%	99%	99%

**Description:** The Certification and Accreditation (C&A) process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given point in time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. This IT measure reports the percentage of NOAA IT Systems that have completed the C&A process and operate under a Full Authorization to Operate (ATO). Systems with full Authorization to Operate have completed Certification & Accreditation (C&A) prescribed by FISMA – security controls are in place for those systems and their FISMA documentation has been verified.

<b>Performance Measure:</b>	<b>FY</b>						
Number of outstanding plans of action and milestones (POA&Ms) greater than 120 days past due	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	180	<150	<140	<130	<120	<110	<100

**Description:** The C&A process requires a fully-tested system with a complete set of security documentation (e.g., approved security plan, risk assessment, disaster recovery plans, security testing), prior to being deemed certified. All systems in NOAA (approximately 120-150 at any given time) have been inventoried for their relative ranking as National Critical, Mission Critical, or Business Essential. Plans of action and milestones (POA&Ms) are assigned, and those that are outstanding beyond 120 days past their planned completion date are reported in this IT measure.

<b>Performance Measure:</b>	<b>FY</b>						
Web Operations Center (WOC) Availability	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99%	99%	99%	99%	99%	99%	99%

**Description:** This IT measure reports the availability of the Web Operations Center (WOC), which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.

<b>Performance Measure:</b>	<b>FY</b>						
Performance Measure: Availability of Unified Messaging System (UMS)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%

**Description:** This IT measure reports the availability of the NOAA Enterprise Messaging System, which is operated and maintained by OCIO, expressed as the percentage of uptime in a given year. Network engineers monitor the system and measure the percentage of time that it is available. Availability is inversely proportional to the total downtime in a given year, and the total

downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.

<b>Performance Measure:</b>	<b>FY</b>						
Availability of Application Services	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%

**Description:** This IT measure reports the availability of application services, which are operated and maintained by OCIO in the metropolitan DC area, expressed as the percentage of uptime in a given year. Staff monitor the systems and measure the percentage of time that they are available. Availability is inversely proportional to the total downtime in a given year, and the total downtime is simply the sum of the duration of each outage. Decreasing the duration and/or frequency of outages increases availability.

**PROGRAM CHANGES FOR FY 2013:**

**Corporate Services: Under Secretary and Associate Offices (USAO) and the Office of General Counsel (OGC) (Base Funding: \$27,535,000 and 154 FTE; Program Change: -\$106,000 and 0 FTE ):** NOAA requests a decrease of \$106,000 and 0 FTE for a total of \$27,429,000 and 154 FTE to reflect on-going efforts to control overhead costs.

**Proposed Actions:**

NOAA will terminate non-essential contracts, and contracts related to purchasing supplies and other expenses. NOAA will continue to provide the leadership oversight, policies oversight, mission assurance, and proper legal requirements, procedures, and options.

**Base Resource Assessment:**

The base resources for this program are described in the base narrative for the NOAA Wide Corporate Services and Agency Management.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Corporate Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	(106)
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(106)

**NOAA Wide Corporate Services & Agency Management Base: Acquisitions and Grants Management (Base Funding: 105 FTE and \$14,084,000; Program Change: 0 FTE and +\$740,000)**: NOAA requests an increase of 0 FTE and \$740,000 for a total of 105 FTE and \$14,824,000 to support acquisition and grants services for NOAA.

### **Proposed Actions**

With the requested increase, NOAA's Acquisitions and Grants office will be able to increase the timeliness of contract actions by five percent. This increase will be used to augment the Federal AGO workforce with contractor staff to ensure successful obligation of the annual volume of contractual and financial assistance actions. Additionally, the funding will allow retention of contractor staff to provide Government Accountability Office (GAO-06-594, NOAA Acquisition Function) recommended reviews of procurement actions conducted by 47 collateral duty contracting officers and Government Purchase Cardholders, who similarly exercise delegated procurement authority. Effective oversight is essential to ensure adherence to Federal Acquisition Regulation (FAR), Departmental and NOAA policy and to protect NOAA from instances of fraud, waste and abuse.

### **Statement of Need and Economic Benefits**

NOAA AGO provides annual acquisition and financial assistance support to DOC and NOAA valued at approximately \$2 billion (\$1 billion in financial assistance awards and \$1 billion in contract awards). The success of DOC/NOAA's acquisition and grants programs is best described as our ability to obtain the necessary research, equipment and services needed, on time, and at the best value to the taxpayer. This accomplishment is largely dependent on the ability of NOAA AGO to successfully obligate these funds in accordance with statutory and regulatory requirements. Once obligation has occurred, oversight and administration of those contracts and grants is crucial to reduce risk of cost overruns, substandard contractor/grantee performance and agency embarrassment.

DOC also continues to receive intense scrutiny of its acquisition and grants function. In the Department of Commerce Office of Inspector General's *Semi-Annual Report to Congress September 2011*, the number four challenge for 2012 was, "The need to manage acquisition and contract operations more effectively to obtain quality goods and services in a manner most beneficial to taxpayers."

Key issues included:

- developing and retaining a qualified acquisition workforce;
- ensuring high ethical standards in the acquisition workforce and in procurement practices;
- strengthening processes to govern the appropriate use of high-risk contracts and to maximize competition;
- achieving efficiency and savings in acquiring goods and services, and improving oversight and tracking of contract savings; and
- delivering cost savings and efficiency on major IT investments."

### **Deliverables and Performance Goals**

This increase supports the Department of Commerce Strategic Goal of "Organizational Excellence" and the NOAA High Performing Organization objective in NOAA's Strategic Plan.

<b>Performance Measure:</b>	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Timeliness of contract and grant actions</b>							
<b>With Increase</b>	N/A	N/A	90% for contracts 95% for grants	90% for contracts 95% for grants	90 % for contracts 95% for grants	90% for contracts 95% for grants	90% for contracts 95% for grants
<b>Without Increase</b>	91% for contracts 99% for grants	85%+for contracts 90%+for grants	85%+for contracts 90%+for grants	85%+for contracts 90%+for grants	85%+for contracts 90%+for grants	85%+for contracts 90%+for grants	85%+for contracts 90%+for grants
<p><b>Description:</b> This measure tracks the percentage of on time contract and grants actions as measured against NOAA's published Procurement Action Lead Time (PALT) schedule. Timeliness is measured against the published procurement action lead time metrics (for each acquisition or grants package) and is measured from the receipt of a requisition or application to the date of award. The dates are tracked in the CRequest/CStar procurement system and Grants Online. Percentages represent meeting the published PALT for that transaction.</p>							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Corporate Services

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	740
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>740</u>

**DOC Accounting System: Commerce Business System (Base Funding: \$10,168,000 and 39 FTE; Program Change: -\$435,000 and 0 FTE ):** NOAA requests a decrease of \$435,000 and 0 FTE for a total of \$9,733,000 and 39 FTE to reflect efficiencies in NOAA's implementation of DOC and government-wide federal financial management mandates and regulations.

**Proposed Actions:**

The FY 2013 request for a decrease of \$435,000 will not impact NOAA's ability to maintain NOAA's instance of the Commerce Business System.

**Base Resource Assessment:**

The base resources for this program are described in the base narrative for the DOC Accounting System.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Corporate Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(435)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(435)

**Corporate Services: NOAA Wide Corporate Services and Agency Management: (Base Funding: \$117,278,000 and 756 FTE; Program Change: -\$784,000 and 0 FTE)** NOAA requests a decrease of \$784,000 and 0 FTE for a total of \$117,234,000 and 756 FTE in NOAA Wide Corporate Services & Agency Management. NOAA will reduce non-essential contracts and will delay filling lower priority vacancies throughout the Staff Offices.

**Proposed Actions:**

In order to continue to provide the level of services needed to programs, NOAA will terminate non-essential contracts, and reduce contracts associated with purchasing of supplies and other expenses. NOAA will continue to provide the leadership oversight, policies oversight, planning, acquisition, administration, facility management, financial management, information technology, high performance computing capabilities, recruitment and development and retention of its workforce.

**Base Resource Assessment:**

The base resources for this program are described in the base narrative of the NOAA Wide Corporate Services and Agency Management.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Corporate Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(784)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(784)

**IT Security: Enterprise IT Security (Base Funding: \$9,686,000 and 0 FTE; Program Change: -\$1,255,000 and 0 FTE):** NOAA requests a decrease of \$1,255,000 and 0 FTE, for a total of \$8,431,000 and 0 FTE, to reflect reduced requirements in this line as NOAA moves to a new funding model for its enterprise IT security needs.

**Proposed Actions:**

With the requested funds, in addition to the base resources as outlined on page PS-9, NOAA will provide central management of funds to reduce its vulnerability to cyber threats and improve the NOAA-wide IT security posture by:

- Enhancing nationwide 24x7 security monitoring and incident response,
- Reducing the backlog and duration of IT security investigations,
- Controlling the number of affected devices,
- Reducing IT security risk in new enterprise deployments,
- Operating in a proactive mode rather than the current reactive mode,
- Fortifying critical IT security support to NOAA programs and mission,
- Improving NOAA's enterprise management of security risks, threats, and vulnerabilities,
- Transforming the NOAA-Computer Incident Response Team into the NCSC,
- Providing needed cutting-edge IT security technologies to support NOAA's infrastructure (maintaining state-of-the-art monitoring equipment and near real-time IT security event correlation),
- Providing highly skilled IT security engineers,
- Improving Federal Information Security Management Act of 2002 (FISMA) mandated incident reporting capabilities,
- Improving research and development for testing and evaluation of applications and technologies prior to procurement and deployment,
- Improving the identification and remediation of security weaknesses, and
- Provide some cost savings for the Department's Security Operations Center.

**Statement of Need and Economic Benefits:**

The frequency, sophistication, and maliciousness of cyber attacks in NOAA are rapidly increasing. NOAA experiences thousands of attacks every month. Intrusion detection alerts are doubling every year. NOAA is at risk to data integrity losses, network failures, and website compromises that have a significant probability of compromising the collection, processing, and dissemination of forecast and warning information to the public and other government institutions, leading to the possible loss of life and property.

Our time-sensitive data and information products (required to be accurate and available 24 x 7) are at risk, which in turn puts the American public (and nations that depend on NOAA products) at risk of significant loss of life and property. NOAA experiences thousands of attacks every month, and responded to 1,296 reported incidents during FY 2011.

**Drivers include (but are not limited to):**

- Clinger-Cohen Act (a.k.a. the Information Technology Management Reform Act of 1996)
- FISMA requirement for Certification and Accreditation (C&A) through Common Controls
- OMB Circular A-130
- OMB Memo M-04-25 of August 23, 2004
- US-CERT Concept of Operations
- DOC IT Security Program Policy and Minimum Implementation Standards

- NOAA IT Security Manual
- NOAA Strategic IT Plan
- NOAA IT Security Strategic Plan
- NOAA Enterprise Security Architecture
- NIST SP 800-41, -44v2, -45v2, -53 rev2, -53a, -61 rev2, -83, -86, -92, -94, -95 compliance
- DOC/OIG: Top Management Challenges Facing the Department (Final Report OIG-19884, January 2010) – IT Security: Continue enhancing the Department's ability to defend its systems and data against increasing cyber security threats

**Base Resource Assessment:**

The base resources for this program are described in the base narrative for the Office of the Chief Information Officer.

**Schedules and Milestones:**

Description of Milestone	Planned Completion Date
NCSC: Support 24x7 operations	10/2013
NCSC: Enhance security services at second TIC Access Provider (TICAP)	12/2013
NCSC: Enhance security services at third TICAP	04/2014
NCSC: Enhance security services at fourth TICAP	12/2014

**Deliverables:**

Outputs	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Number of security consulting projects per year	13	13	13	13	13

**Performance Goals and Measurement Data\*:**

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Silver Springs Campus Networks Single Points of Failure(SPF) (Redundant telecommunications equipment and services)	Actual	Target	Target	Target	Target	Target	Target
<b>With Redirected Funds</b>	N/A	N/A	7 of 7 SPF addressed	7of7 SPF addressed	7of7 SPF addressed	7of7 SPF addressed	7of7 SPF addressed
<b>Without Redirected Funds</b>	0	0	0	0	0	0	0
<b>Description:</b> By reducing the number of SPFs, NOAA will reduce the operational risk and reduce downtime for NOAA's mission by providing load balancing and failover capabilities at the Silver Springs Campus.							

Performance Measure:	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Trusted Internet Connection Access Points Security Stack Deployment (NOAA has 4 approved TICAPS)	Actual	Target	Target	Target	Target	Target	Target

<b>With Redirected Funds</b>	N/A	N/A	3	4	4	4	4
<b>Without Redirect</b>	1	1	2	3	4	4	4
<b>Description:</b> NOAA's TICAP initiative is provides a standardized set of security services at our four approved TICAP locations. The funding of this project shall provide the final three approved TICAP locations Boulder, Seattle, and Dallas/Ft. Worth with Web Content Filtering, Network IDS, and audit logging.							

<b>Performance Measure:</b>	<b>FY</b>						
Percentage of systems with HSPD-12 compliant Logical Access Control System (LACS)	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Redirected Funds</b>	N/A	N/A	30%	50%	70%	95%	98%
<b>Without Redirect</b>	0%	0%	0%	0%	0%	0%	0%
<b>Description:</b> This measure shows the percentage of NOAA systems using two-factor authentication, or LACS, which is one of the requirements of HSPD-12.							

\*Total funding for NOAA's IT security in FY 2013 remains at similar levels to that in the past. With the redirection of funding, NOAA will centrally manage these IT security resources from FY 2013 forward.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Corporate Services

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(955)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	(300)
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,255)</u>

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES**  
**SUBACTIVITY: NOAA EDUCATION PROGRAM**

The objectives of this subactivity are:

- Provide advice and counsel to the Under Secretary of Commerce for Oceans and Atmosphere in matters pertaining to education
- Coordinate educational activities across NOAA
- Develop NOAA's Education Strategic Plan and policy to help ensure that NOAA's education programs and activities are based on NOAA science and support the agency's cross-cutting priority of promoting environmental literacy

**Educational Partnership Program/Minority Serving Institutions**

The Educational Partnership Program/Minority Serving Institutions (EPP/MSI) provides financial assistance, through competitive processes, to students and Minority Serving Institutions that train students and conduct research in NOAA mission sciences. The program's goal is to increase the number of students, particularly from underrepresented communities, who are trained and graduate in sciences directly related to NOAA's mission. In FY 2011 EPP/MSI recruited 11 Undergraduate Scholarship students; five Graduate Student Trainees became NOAA employees; the Cooperative Science Centers (CSC) supported 366 and graduated 96 students with STEM degrees. To date, NOAA has hired 102 CSC students.

**NOAA Education Program Base (renamed Competitive Educational Grants and Programs)**

This activity includes the Education Program Initiative (Office of Education) and Competitive Education Grants that were individual budget lines prior to FY 2011. The Office of Education coordinates education activities throughout NOAA through the NOAA Education Council and its working groups. Through FY 2012, the Competitive Educational Grants and Programs have promoted public environmental literacy and funded a broad range of informal and formal education projects implemented on state to national scales. Beginning in FY 2013, NOAA will terminate the Competitive Education Grants program. The Office of Education will continue to support EPP/MSI grants, Hollings Scholarships, CSC agreements, and Education Council and Interagency working group efforts.

**Ernest F. Hollings Scholarship Program**

The National Oceanic and Atmospheric Administration (NOAA) Ernest F. Hollings (Hollings) scholarship program is designed to:

1. increase undergraduate training in oceanic and atmospheric science, research, technology, and education and foster multidisciplinary training opportunities;
2. increase public understanding and support for stewardship of the ocean and atmosphere and improve environmental literacy;
3. recruit and prepare students for public service careers with NOAA and other natural resource and science agencies at the federal, state and local levels of government; and
4. recruit and prepare students for careers as teachers and educators in oceanic and atmospheric science and to improve scientific and environmental education in the United States.

Based on the FY 2013 President's Request of \$5.06 billion, NOAA estimates it will have \$5.058 million for scholarships. Actual funding will be determined as provided in statute at one-tenth of one percent of the annual appropriation. For more information, please visit the Hollings Scholarship website: [http://www.oesd.noaa.gov/Hollings\\_info.html](http://www.oesd.noaa.gov/Hollings_info.html).

**Schedule & Milestones:**

FY 2013 – 2017

*Educational Partnership Program*

- April: Award EPP Undergraduate Scholarships
- May: Award Graduate Sciences Awards
- August: Fund 2nd of 5-Year Cooperative Science Centers financial awards

*OED Student Opportunities*

- April: Award Hollings Undergraduate Scholarships

*Intra/Inter-agency Coordination of STEM Education Activities*

- Lead monthly Education Council meetings
- Co-lead monthly Interagency Working Group on Ocean Education meetings
- Lead two monthly education working group meetings

**Deliverables:**

*Educational Partnership Program*

- Award 9 EPP Undergraduate Scholarships
- Award 4 Graduate Science Awards
- Award 4 Cooperative Science Centers Cooperative Agreements

*OED Student Opportunities*

- Award 100+ Hollings Scholarships

*Intra/Inter-agency Coordination of STEM Education Activities*

- Chair 12 Education Council meetings
- Chair 12 Interagency Working Group on Ocean Education meetings
- Chair 24 education working group meetings

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of CSC students who graduate in NOAA core science areas	<b>Actual</b> 96	<b>Target</b> 183	<b>Target</b> 128	<b>Target</b> 128	<b>Target</b> 128	<b>Target</b> 128	<b>Target</b> 128

**Description:** Each NOAA CSC aligns with specific NOAA Line Offices and develops education/outreach and research programs to train the next-generation workforce in the NOAA mission-related sciences. The data tracked represent the total number of CSC-supported students earning a degree at the Associate, baccalaureate, Master’s or doctoral level in science, technology, engineering, and mathematics (STEM) and related fields aligned with the CSCs’ research areas to increase the number and diversity of NOAA’s and the nation’s highly trained STEM workforce.

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
Number of CSC students hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local, tribal levels, private sector, and academia	<b>Actual</b> 30	<b>Target</b> 104	<b>Target</b> 73	<b>Target</b> 73	<b>Target</b> 73	<b>Target</b> 73	<b>Target</b> 73

**Description:** Each of the five NOAA CSCs builds sustainable capacity in education and research, increasing the numbers of highly trained graduates in NOAA's mission sciences. These CSC graduates have expertise in NOAA mission-related fields and are available to hiring managers. The tracked data represent the total number of CSC graduates who are hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels, private sector, and academia

<b>Performance Measure:</b>	<b>FY</b>						
Number of collaborative research projects undertaken between NOAA and CSC partners in support of NOAA mission	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	152	188	131	131	131	131	131

**Description:** Each NOAA CSC aligns with specific NOAA Line Organizations and collaborates with NOAA scientists and engineers on research to better understand the significance of changes in the Earth's oceans, coasts, Great Lakes, weather, and climate. The data tracked represent the total number of CSC research projects that include a NOAA collaborator.

<b>Performance Measure:</b>	<b>FY</b>						
Number of Hollings scholarship students trained in NOAA-mission related sciences, research technology, and education	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	103	100+	100+	100+	100+	100+	100+

**Description:** The Ernest F. Hollings Scholarship Program awards are designed to increase undergraduate training in oceanic and atmospheric science, research, technology, and education activities; foster multidisciplinary training opportunities; recruit and prepare students for careers as teachers and educators in oceanic and atmospheric science, and to improve scientific and environmental education in the U.S. Students receive support for academic assistance, and a 10-week, full-time NOAA internship providing "hands-on" research and practical educational training experience in NOAA-related science, research, technology, policy, natural resource management, and education activities. The tracked data represent the total number undergraduate scholarship recipients pursuing degrees in oceanic and atmospheric science, research, science policy, technology, and science education fields.

<b>Performance Measure:</b>	<b>FY</b>						
Number of Hollings scholarship students hired by NOAA and other natural resource and science agencies at the Federal, State, and local levels	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
	5	5	5	5	5	5	5

**Description:** Students supported by the Ernest F. Hollings Scholarship Program who graduate have valuable real-world natural resource management and environmental science experience and are available to be hired in NOAA's mission-related fields as well as teachers and educators in oceanic and atmospheric science in the U.S. The tracked data represent the total number of Ernest F. Hollings Scholarship Program graduates who are hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels, in oceanic and atmospheric science, research, technology, and education fields.

**NOTE:** NOAA's Office of Education student scholarship and internship opportunities target students pursuing post secondary degrees in science, technology, mathematics and engineering disciplines

that directly support NOAA's mission. Students will be eligible to compete for positions at NOAA and other natural resource and science agencies, at the Federal, State and local levels. NOAA CSC and Hollings graduates voluntarily provide employment information to NOAA's Office of Education which becomes part of the student tracker data base. The data provided here is as of 01/03/12.

## **PROGRAM CHANGES FOR FY 2013:**

### **NOAA Education Program: NOAA Education Program Base (formerly Competitive Educational Grants and Programs) (Base Funding: \$17,590,000 and 21 FTE; Program**

**Change: -\$6,324,000 and -12 FTE)**: NOAA requests a decrease of 12 FTE and \$6,324,000, for a total of 9 FTE and \$11,266,000 to fund NOAA's Office of Education and the Educational Partnership Program for Minority Serving Institutions program.

#### **Proposed Actions:**

NOAA proposes a reduction of 12 FTE and \$6,324,000 to terminate NOAA's Competitive Education Grants Program, and to reduce funding levels for the Educational Partnership Program for Minority Serving Institutions (EPP/MSI) and the Office of Education.

At the proposed funding level of \$10,000,000, representing a decrease of \$2,561,000, the Educational Partnership Program with Minority Serving Institutions (EPP/MSI) will still exceed the performance targets set forth in the FY 2012 President's Budget for:

- Number of CSC students who graduate in NOAA core science areas
- Number of CSC students hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local, tribal levels, private sector, and academia,
- Number of collaborative research projects undertaken between NOAA and CSC partners in support of NOAA mission

The Office of Education will take the following actions:

- Eliminate one EPP Cooperative Science Center , focused on Scientific Environmental Technology
- Reduce the operating support for the four established CSCs by 20 percent
- Eliminate funds to support CSCs in conducting partnership research
- Reduce by 76 the number STEM undergraduate and graduate students at CSCs, primarily from under-represented groups, receiving NOAA support.
- Reduce by 55 the number of undergraduate and graduate students at CSCs, primarily from under-represented groups, receiving NOAA support to earn STEM degrees in NOAA core mission areas
- Award 9 scholarships in the EPP Undergraduate Scholarship Program; 2 fewer than planned in FY 2012
- Fund 4 Graduate Sciences Program participants; 2 less than planned in FY 2012.

With a reduction of \$3,107,000, the Competitive Education Grants will be terminated, however due to the multi-year nature of prior year awards NOAA will still support teacher development, and formal and informal education initiatives through the grant award periods (3 – 5 years):

Key impacts include:

- Discontinue support for the training of new teachers in STEM concepts related to environmental literacy, beyond the period sustained by prior year awards.
- Discontinue support to 40 institutions for specific STEM-related programs or operations after prior year awards expire.

At the proposed funding level of \$1,266,000, a reduction of \$656,000 to the Education Program base, NOAA will reduce program administration commensurate with the above programmatic reductions.

In addition, NOAA's capacity to meet the needs of stakeholders and build internal capability for advancing STEM education across the agency will be reduced. Key impacts include:

- Discontinue contract to update and manage the NOAA education portals as well as a contract for the coordinated evaluation of education across the agency
- Discontinue NOAA's participation in 10 annual STEM education conferences that reach approximately 20,000 formal and informal educators.
- Discontinue involvement and participation at the National Intel Science and Engineering Fair, as well as at over 250 regional high school science fairs
- Reduce the number of NOAA employees who receive training on program development and evaluation through the Designing Education Projects program

**Base Resource Assessment:**

The base resources for this program are described in the base narrative for the NOAA Education Program.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b> Number of CSC students receiving direct NOAA support to graduate in NOAA mission science areas	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>With Decrease</b>	N/A	N/A	128	128	128	128	128
<b>Without Decrease</b>	96	183	183	183	183	183	183
<b>Description:</b> The NOAA CSC develops programs to educate and graduate students for the next-generation workforce and to increase the number of competent individuals with the knowledge and skills to support NOAA STEM activities. CSC graduates will lead innovation and technologies to enhance NOAA services and stewardship while supporting global competitiveness to advance national economic growth.							

<b>Performance Measure:</b> Number of CSC students receiving direct NOAA support and hired by NOAA, NOAA contractors and other natural resource and science agencies at the Federal, State, local and tribal levels; private sector and academia	<b>FY 2011 Actuals</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>With Decrease</b>	N/A	N/A	73	73	73	73	73
<b>Without Decrease</b>	30	104	104	104	104	104	104
<b>Description:</b> The NOAA CSC align with specific NOAA mission priorities and develop education, engagement, and NOAA STEM research programs to graduate students with NOAA mission-critical STEM knowledge and skills. With the collaboration and mentoring by NOAA scientists, program graduates may pursue careers at NOAA and become part of the scientific and							

technological workforce at resource management agencies, private sector and academia. Currently, 102 CSC graduates have been hired by NOAA. <http://www.epp.noaa.gov>

Performance Measure: Number of NOAA-supported CSC students from underrepresented communities who graduate in NOAA mission science areas	FY 2011 Actuals	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
<b>With Decrease</b>	N/A	N/A	96	96	96	96	96
<b>Without Decrease</b>	67	137	137	137	137	137	137

**Description:** The NOAA Cooperative Science Center (CSC) develop education/engagement and research programs to increase the number of undergraduate and graduate students, from underrepresented communities, who complete degrees in NOAA mission-relevant STEM disciplines and are prepared to enter NOAA mission-relevant STEM careers or advanced education. [http://www.epp.noaa.gov/docs/csc\\_contributions\\_STEM\\_pool.pdf](http://www.epp.noaa.gov/docs/csc_contributions_STEM_pool.pdf)

Performance Measure: ELG-funded projects	FY 2011 Actuals	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
<b>With Decrease</b>	41	38	20	10	6	3	0
<b>Without Decrease</b>	41	38	31	27	26	26	26

**Description:** Number of active multi-year ELG-funded educational projects integrating coastal, ocean, Great Lakes, weather, and climate sciences and resources into formal or informal education programs

Performance Measure: Students impacted by ELGs	FY 2011 Actuals	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
<b>With Decrease</b>	240,000	360,000	200,000	160,000	120,000	40,000	0
<b>Without Decrease</b>	240,000	360,000	360,000	480,000	600,000	680,000	640,000

**Description:** Number of students who benefit from more highly qualified teachers in STEM fields as a result of multi-year Environmental Literacy Grants.

Performance Measure: Informal learning through ELGs (in thousands of people)	FY 2011 Actuals	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
<b>With Decrease</b>	26,256	26,256	21,279	11,550	0	0	0
<b>Without Decrease</b>	26,256	26,256	26,990	29,040	28,479	21,150	12,000

**Description:** Number of people (annually) that visit museums, zoos and aquariums with a high quality and effective STEM exhibits or programs incorporating NOAA's science or services. NOAA's science products and services are unique among the federal government and academia. The exhibits and programs funded through ELG incorporate these unique assets and capabilities into interactive exhibits that immerse the general public in these real-world and current issues.

NOAA's products and services are essential to explaining critical STEM issues such as climate change, oil spills, extreme weather and weather safety, appropriate management of coastal environments, and overfishing.

<b>Performance</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>	<b>FY</b>
<b>Measure: Teachers impacted by ELGs</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actuals</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>With Decrease</b>	750	1,125	625	500	375	125	0
<b>Without Decrease</b>	750	1,125	2,000	2,375	2,125	2,000	2,000
<b>Description:</b> Number of teachers who receive training in STEM concepts related to environmental literacy as a result of multi-year Environmental Literacy Grants.							

**PROGRAM CHANGE PERSONNEL DETAIL**

Activity: Program Support  
 Subactivity: NOAA Education Program

<b>Title:</b>	<b>Location</b>	<b>Grade</b>	<b>Number of Positions</b>	<b>Annual Salary</b>	<b>Total Salaries</b>
Supervisory Program Manager	Washington, DC	ZA-V	-1	123,758	(123,758)
Supervisory Program Specialist	Silver Spring, MD	ZA-IV	-2	89,033	(178,066)
Program Planning Specilaist	Washington, DC	ZA-IV	-1	89,033	(89,033)
Program and Policy Analyst	Washington, DC	ZA-IV	-1	89,033	(89,033)
Consumer Affairs Specialist	Washington, DC	ZA-IV	-1	89,033	(89,033)
Budget Analyst	Washington, DC	ZA-IV	-1	89,033	(89,033)
Supervisory Policy Analyst	Silver Spring, MD	ZA-IV	-1	89,033	(89,033)
Comm Program Specialist	Silver Spring, MD	ZA-IV	-1	89,033	(89,033)
IT Specialist	Silver Spring, MD	ZP-III	-1	62,467	(62,467)
Admin Management Specialist	Washington, DC	ZA-III	-1	62,467	(62,467)
Administrative Assistant	Silver Spring, MD	ZS-IV	-1	42,209	(42,209)
<b>Total</b>			<u>-12</u>		<u>(1,003,165)</u>
less Lapse		0%	<u>0</u>		
Total full-time permanent (FTE)			-12		(1,003,165)
2012 Pay Adjustment (0%)					0
2013 Pay Adjustment (0.5%)					<u>0</u>
TOTAL					<u>(1,003,165)</u>

**Personnel Data**

	<u>Number</u>
Full-Time Equivalent Employment	
Full-time permanent	-12
Other than full-time permanent	<u>0</u>
Total	-12
Authorized Positions:	
Full-time permanent	-12
Other than full-time permanent	<u>0</u>
Total	-12

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Education

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	(\$1,003)
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>(1,003)</u>
12 Civilian personnel benefits	(267)
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(1,329)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(3,725)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(6,324)</u>

**B-WET Regional Programs: NOAA Bay-Watershed Education and Training (B-WET) Regional Program (Base Funding: 0 FTE and \$5,500,000; Program Change: 0 FTE and -\$5,500,000):**

NOAA requests a decrease of \$5,500,000 and 0 FTE for a total of \$0 and 0 FTE. NOAA's operating plan for FY 2012 provided \$5,500,000 for B-WET regional programs, which promote place-based, experiential learning in K-12 Science, Technology, Education, & Mathematics (STEM) education. With these funds NOAA supported Meaningful Watershed Educational Experiences (MWEE) through competitive funding to local and state education offices and government agencies, academic institutions, and nonprofit organizations. MWEEs integrate field experiences with multi-disciplinary classroom activities and instruction in NOAA-related sciences. In FY 2013, NOAA will continue to provide watershed educational experiences for students through other programs, including National Marine Sanctuaries and the National Estuarine Research Reserves.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: NOAA Education Program

<b>Object Class</b>	<b>2,013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(900)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(4,600)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(5,500)</u>

**NOAA Education Program: Ocean Education Partnerships: (Base Funding: \$1,000,000 and 0 FTE; Program Change: -\$1,000,000 and 0 FTE)** NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$0 and 0 FTE. With these funds NOAA provided competitive grants to aquariums and their partners to build capacity within that community for effectively communicating ocean literacy and related topics that are relevant to NOAA's mission. NOAA is not requesting funds for Ocean Education Partnerships in the FY 2013 President's Budget. In FY 2013, NOAA will continue to provide educational experiences for students through other programs, including National Marine Sanctuaries and the National Estuarine Research Reserves.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support

Subactivity: Education

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	<u>0</u>
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	<u>(1,000)</u>

**NOAA Education Program: Geographic Literacy: (Base Funding: \$1,000,000 and 0 FTE; Program Change: -\$1,000,000 and 0 FTE)** NOAA requests a decrease of \$1,000,000 and 0 FTE for a total of \$0 and 0 FTE. With these funds NOAA provided competitive grants to support the integration of NOAA assets into geography education. NOAA is not requesting funds for Geographic Literacy in the FY 2013 President's Budget. In FY 2013, NOAA will continue to provide educational experiences for students through other programs, including National Marine Sanctuaries and the National Estuarine Research Reserves.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Education

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	0
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	(1,000)
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(1,000)

**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH, AND FACILITIES  
SUBACTIVITY: NOAA FACILITIES PROGRAM**

The objectives of the Facilities Program sub-activity are to:

- Provide effective long-range facility planning and capital investment planning
- Manage and execute NOAA's facility assessment and restoration program
- Manage NOAA's safety, environmental compliance, and energy efficiency programs
- Manage NOAA's lease and real property acquisition and disposal program
- Manage and execute NOAA's facility construction and modernization program

The NOAA Facilities Program supports objectives under the DOC Strategic Goal of "Observe, protect, and manage the Earth's resources to promote environmental stewardship" and the NOAA Next Generation Strategic Plan Goal of "Modern, safe, and sustainable facilities." The program supports NOAA's mission by providing program direction and oversight to NOAA to ensure NOAA's facilities support current and future mission requirements.

The NOAA Facility Program is the focal point for facility planning, project planning formulation and development, and project management oversight. This program supports an integrated capital investment planning process; integrated facility condition inspection program; systems and technology tools to enable efficiency in project and facility management planning; and investments required to keep facilities in an adequate condition, fix substandard/aging facilities, renovate facilities to meet mission needs, and dispose of facilities that are no longer required.

As NOAA-owned facilities age, investments in maintenance, repairs and modernization increase. NOAA's owned capital assets total more than 400 buildings, in addition to piers and other structures, which are valued at approximately \$2.5 billion with new facilities coming on-line by 2013. These facilities are aging, with an average age of 30 years and with more than 100 buildings over 40 years old. NOAA's facilities are often subject to the extremes of weather and climate conditions, and are, therefore, more prone to needing unplanned repairs while simultaneously remaining in operation.

The Facilities program provides funding to conduct facility condition inspections and supports investments in facility repairs and modernization. This line item also includes funds to support operations at the David Skaggs Research Center in Boulder, Colorado. This facility houses staff and programs from three NOAA line organizations (Office of Oceanic and Atmospheric Research, National Environmental Satellite, Data, and Information Service, and National Weather Service) as well as NOAA's Regional corporate services capability. The line item also includes funding for security guard services at NOAA headquarters in Silver Spring, Maryland, and at its field locations in Boulder, Colorado and Seattle, Washington.

This program oversees a centrally-managed and integrated national project construction program. The Chief Administrative Officer (CAO) has responsibility for policy development and guidance, long-term facility planning, and construction program planning and execution.

The Facility Program provides the resources necessary to comply with existing federal, state, and local laws, regulations and safety requirements; and identify environmental compliance and safety issues requiring remediation. NOAA is responsible for ensuring continued compliance with applicable environmental and safety laws. NOAA continues to implement a management

system to increase awareness, oversight and assessment; and ensure compliance with applicable laws and regulations.

**Schedule and Milestones:**

In FY 2013, the Facilities program will:

- Conduct 600 facility condition assessments across NOAA.
- Open and operate the Tuscaloosa Lab and Office Complex at the University of Alabama.
- Consolidate NOAA operations in Oahu with the opening of the Pacific Regional Center.
- Renegotiate 200 lease contract actions.
- Develop and implement two alternatively financed energy performance improvement projects for NOAA facilities.

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>Improve NOAA owned facility portfolio Facility Condition Index</b>	82%	82%	81%	81%	81%	81%	81%
Description: This measure shows the average condition of NOAA-owned facilities. NOAA conducts a real property condition assessment annually through the Integrated Facilities Inspection Program (IFIP), a facility assessment model that uses survey data for each facility to identify the characteristics of the current inventory and estimate the deficiencies within the NOAA facility portfolio.							

**PROGRAM CHANGES FOR FY 2013:**

The following exhibit shows the summary object class detail for the Facilities program changes less than \$100,000. Please contact the NOAA budget office if details for any of these changes are required.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS  
(Dollar amounts in thousands)**

Activity: Program Support  
Subactivity: Facilities

<b>Object Class</b>		<b>2013 Increase</b>
11	Personnel compensation	
11.1	Full-time permanent	\$0
11.3	Other than full-time permanent	0
11.5	Other personnel compensation	0
11.8	Special personnel services payments	0
11.9	Total personnel compensation	0
12	Civilian personnel benefits	0
13	Benefits for former personnel	0
21	Travel and transportation of persons	0
22	Transportation of things	0
23.1	Rental payments to GSA	0
23.2	Rental Payments to others	0
23.3	Communications, utilities and miscellaneous charges	0
24	Printing and reproduction	0
25.1	Advisory and assistance services	0
25.2	Other services	78
25.3	Purchases of goods & services from Gov't accounts	0
25.4	Operation and maintenance of facilities	0
25.5	Research and development contracts	0
25.6	Medical care	0
25.7	Operation and maintenance of equipment	0
25.8	Subsistence and support of persons	0
26	Supplies and materials	0
31	Equipment	0
32	Lands and structures	0
33	Investments and loans	0
41	Grants, subsidies and contributions	0
42	Insurance claims and indemnities	0
43	Interest and dividends	0
44	Refunds	0
99	Total obligations	78

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## **BUDGET ACTIVITY: OFFICE OF MARINE AND AVIATION OPERATIONS**

For FY 2013, NOAA requests an increase of \$15,026,000 and 0 FTE over the FY 2013 base level for a total of \$241,070,000 and 1,035 FTE for the Office of Marine and Aviation Operations. This includes \$10,487,000 and 0 FTE in adjustments-to-base.

### **BASE JUSTIFICATION FOR FY 2013:**

NOAA's Office of Marine and Aviation Operations (OMAO) operates an array of specialized aircraft and ships in support of NOAA's environmental and scientific missions. OMAO administers the NOAA Diving Program and NOAA Small Boat Program. OMAO is composed of the NOAA Commissioned Corps (NOAA Corps) officers and civilians who play a critical role in the collection of oceanographic, atmospheric, hydrographic, and fisheries data.

The Ship and Aircraft Fleets operate throughout the world supporting the full range of NOAA missions, such as fisheries research, nautical charting, hurricane reconnaissance and research, snow surveys, and specialized atmospheric and ocean research. Ships range from large oceanographic research vessels capable of exploring the world's deepest ocean to smaller ships responsible for charting the shallow bays and inlets of the United States. Aircraft range from the four engine P-3 capable of penetrating a hurricane to the small twin engine Twin Otters suited to marine mammal surveys where slower airspeeds and higher endurance are essential.

In addition to the research and monitoring activities critical to NOAA's mission, OMAO ships and aircraft provide immediate response capabilities for unpredictable events. Following major natural and environmental disasters, NOAA ships and aircraft can conduct emergency navigation hazard surveys that help ports reopen quickly and obtain aerial images of disaster-torn areas that enables residents and emergency workers to verify the condition of houses, bridges and roads.

OMAO is charged with the safe and efficient operation and maintenance of the Ship and Aircraft Fleets. OMAO develops annual fleet allocation plans, conducts life cycle maintenance, and provides centralized fleet management including standard procedures, safety inspections, and medical services in partnership with the Public Health Service. OMAO coordinates the training and certification of officers, crew members, and scientists in at-sea and airborne safety and procedures.

The NOAA Corps commands and supports the fleets as well as provides support to NOAA Line Offices. OMAO manages the recruitment, training, personnel assignments, and payroll for the NOAA Corps.

Beginning with the FY 2013 request, NOAA proposes to consolidate OMAO's Operations, Research, and Facilities appropriation into two sub-activities by incorporating funding previously provided in the Fleet Planning and Maintenance sub-activity into the Marine Operations and Maintenance sub-activity (\$193,447,000 and 1,030 FTE):

- Marine Operations and Maintenance (\$165,198,000 and 926 FTE)
- Aviation Operations (\$28,249,000 and 104 FTE)

In addition, OMAO also has one sub-activity in the Procurement, Acquisition and Construction appropriation (\$2,392,000 and 5 FTE):

- Fleet Replacement (\$2,392,000 and 5 FTE) includes Fleet Capital Improvements & Tech Infusion and New Vessel Construction

The OMAO budget includes the following other accounts:

- NOAA Corp Commissioned Officers Retirement Pay (\$28,269,000 and 0 FTE)
- Medicare Eligible Retiree Healthcare Fund (\$1,936,000 and 0 FTE)

**Research and Development Investments:**

The NOAA FY 2013 Budget estimates for its activities, including research and development programs, are the result of an integrated requirements-based strategic planning process. This process provides the structure to link NOAA's strategic vision with programmatic detail and budget development, with the goal of maximizing resources while optimizing capabilities. OMAO requests \$74,884,000 for investments in R&D and infrastructure to support R&D in the FY 2013 Budget.

NOAA's R&D planning is tied to the goals, enterprises, and associated objectives outlined in NOAA's Next Generation Strategic Plan. Specifically, NOAA's Science and Technology Enterprise and underlying objectives of holistic understanding of the Earth system through research; accurate and reliable data from observing systems; and an integrated environmental modeling system, provide the basis for a set of internal implementation plans covering a 7-year period which guide NOAA's research and development activities. The NOAA Research Council - an internal body composed of senior scientific personnel from every line office in the agency - informs the annual updates to these implementation plans, and is developing the next 5-Year Research and Development Plan for NOAA (FY2013- 2018), which will be publicly available when completed. This new plan will reflect NOAA's strategic objectives, provide a single guiding document for our scientists, the public, and our partners, and inform future internal planning efforts.

**Significant Adjustments-to-Base (ATBs):**

NOAA requests an increase of \$10,487,000 and 0 FTE's to fund adjustments to current programs for OMAO activities. The increase will fund the estimated 2013 Federal Civilian pay raise of 0.5 percent and Military pay raise of 1.7 percent. The increase will also provide inflationary increases for non-labor activities, including ship and aircraft fuel cost increases, service contracts, utilities, field office lease payments, and rent charges from the General Service Administration (GSA).

NOAA also requests the following transfer for a net change of \$0 and 0 FTE:

From Office	PPA	To Office	PPA	Amount/FTE
OMAO	Fleet Planning and Maintenance	OMAO	Marine Operations and Maintenance	\$26,949,000/ 3 FTE

NOAA requests a technical adjustment of \$26,949,000 and 3 FTE from the Fleet Planning and Maintenance PPA to the Marine Services PPA which it renames the Marine Operations and Maintenance PPA to reflect a consolidation of the two PPAs. The merger of the two line items will enable OMAO to better facilitate the management of the fleet. The separation of Fleet Planning and Marine Services budgets has not been conducive to integrating the planning and management of fleet operations and associated scheduled maintenance activities. OMAO has found that executing interdependent activities (e.g. ship operations schedule and shipyard repair schedule) to separate predetermined operations and maintenance budgets from year to year is inefficient and presents an unnecessary burden to the effective allocation of fleet resources. Combining them will enable more efficient execution of fleet and maintenance budgets, while not impacting OMAO's ability to report on maintenance costs.

**Administrative Cost Savings:**

The Administration is continuing its pursuit of an aggressive government-wide effort to curb non-essential administrative spending. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. The Department's total savings target for FY 2013 is \$176 million, which includes \$142.8 million in savings initiated in FY 2012 and an additional \$33.2 million planned for FY 2013. Building on OMAO's administrative savings planned for FY 2012 (\$3.5 million), an additional \$0.1 million in savings is targeted for FY 2013 for total savings in FY 2013 of \$3.6 million.

**Headquarters Administrative Costs:**

In FY 2013, OMAO Line Office headquarters will use \$6,870,000 in funds to support general management activities, financial and budgeting, and IT related expenses, as well as supporting facilities and other general operating costs. These funds also include support for service contracts, utilities, and rent charges from the General Services Administration. Specifically, OMAO will use headquarters administrative funds to support the following:

<b>Headquarters Program Support Type</b>	<b>Description</b>	<b>FY 2013 Amount</b>	<b>FY 2013 FTE associated with OMAO HQ</b>
General Management & Direction/Executive Management	Includes Assistant Administrator's office, public affairs, information services	\$1,973,000	8.4
Budget & Finance	Includes Budget, Finance and Accounting	\$1,870,000	12.0
Facilities/Other Administrative (CAO Functions)	Includes Facilities and Security costs, as well as other CAO related activities	\$917,000	0
Human Resources	All HR services, including EEO	\$135,000	1.0
Acquisitions and Grants		\$0	0
Information Technology	Includes IT-related expenses and other CIO related activities	\$1,975,000	5.0
<b>Total</b>		<b>\$6,870,000</b>	<b>26.4</b>

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: MARINE OPERATIONS AND MAINTENANCE**

Marine Operations and Maintenance (MOM) is the consolidation of the Marine Services Data Acquisition and the Fleet Planning and Maintenance PPAs into a single PPA. The creation of a single PPA will provide improved flexibility in the year-to-year planning of ship operations and shipyard repair schedules by allowing OMAO to invest resources based on specific needs and condition of the fleet. In addition, a single PPA will contribute to the simplification of OMAO accounting transactions and the more effective tracking of fleet resources.

MOM funds centralized management for NOAA's 16 active ships including the newest Fisheries Survey Vessels, *Pisces*, *Bell M. Shimada*, *Reuben Lasker* (FSV6), and a new shallow draft hydrographic survey ship the *Ferdinand Hassler*. NOAA vessels range in length from 124 to 274 feet and are capable of conducting operations that support NOAA's programs in nautical charting, bathymetric mapping, fisheries research, ecosystem assessments, marine environmental baseline assessments, coastal-ocean circulation, and oceanographic and atmospheric research. In FY 2013, funding will provide approximately 2,586 Days at Sea to support NOAA's highest priority programs.

Regular and adequate maintenance allows NOAA ships to meet the rigorous demands of scientific, forecasting, and regulatory missions of NOAA. MOM funding provides for general maintenance and repair of NOAA ships including critical scientific and technical equipment necessary to meet stakeholder requirements.

The NOAA Fleet is subject to various requirements and regulations related to safety and emissions put forth by three organizations. The American Bureau of Shipping (ABS) certifies ships as seaworthy. The MOM program uses ABS rules to design its maintenance program and conduct Structural Systems Mechanical Engineering Inspection (SSME), formerly called Material Condition Assessments on the NOAA Fleet. The Environmental Protection Agency (EPA) promulgates regulations governing airborne emissions under the Clean Air Act that affects engine and exhaust components. The United States Coast Guard (USCG) promulgates regulations on all discharges from ships that regulations are designed to protect marine environments from harmful discharges. In addition, as the primary provider of fisheries and mammal surveys, the program has a unique operating role in marine sanctuaries that requires additional protections to maintain the pristine nature of these environments.

The objectives of MOM are:

- Ensure the operational readiness and maximum capability of the NOAA fleet in support of present and future NOAA data collection;
- Provide properly trained personnel, fuel, warehousing, laboratory and deck equipment, and other scientific equipment necessary to meet user requirements and schedules;
- Develop, with the guidance of the Fleet Council, annual ship allocation schedules based on program requirements and available funds;
- Provide centralized management and coordination of scheduling, port services, operating procedures, and engineering support for NOAA's ships;
- Conduct Work Definition Conferences (WDC) to prioritize tasks and determine availability for docksides (DS), drydocks (DD) and Major Repair Periods (MRPs);
- Train and qualify NOAA personnel to ensure safe and effective diving operations;
- Train and certify NOAA Commissioned Corps officers, crew, and scientists in at-sea safety requirements for their positions according to the Standards of Training, Certification and Watch keeping for Seafarers and the International Maritime Organization conventions;

- Provide NOAA Corp Officers trained as engineers and scientists in NOAA program disciplines to provide mobile operational and other support;
- Provide oversight and support to enhance safety of NOAA's small-boat operations.
- Support the maintenance activities for the NOAA fleet with appropriate maintenance and repair tracking systems and databases.

FY 2011 Program Accomplishments:

- OMAO took possession of its new Marine Operations Center- Pacific Newport, OR facility on May 1, 2011.
- The NOAA Working Diver Standards and Safety Manual was approved and implemented on July 14, 2011.
- NOAA Ship *Ferdinand R. Hassler* received its US Coast Guard Certificate of Inspection (COI) and American Bureau of Shipping (ABS) Classification on May 26, 2011. This marked the completion of the first of three phases to bring the ship into regulatory body compliance and meeting all the original design and construction performance requirements.
- Conducted Arctic survey work, in Kotzebue Sound, using the NOAA ship *Fairweather*.
- Ocean explorers on NOAA Ship *Okeanos Explorer* observed two species of marine life (chemosynthetic shrimp and tubeworms) scientists believe have never before been seen together at a hydrothermal vent.
- NOAA Ship *Okeanos Explorer* conducted the longest plankton sampling effort by any vessel, more than 5,100 nautical miles, during its return to the West Coast from Guam.
- NOAA Ship *McArthur II* studied the impact of the Deepwater Horizon oil spill on the Gulf of Mexico as part of the Natural Resource Damage Assessment process.

NOAA Fleet detail as of FY 2012 is provided below:

Vessel	Length-Class	Mission	Home Port	Status
<i>Ronald H. Brown</i>	274 ft. - I	1,4	Charleston, SC	Active
<i>Rainier</i>	231 ft.- II	3	Newport, OR	Active
<i>Fairweather</i>	231 ft.- II	3	Ketchikan, AK	Active
<i>Ka'imimoana</i>	224 ft.- III	1	Honolulu, HI	Active
<i>Miller Freeman</i>	215 ft.-II	1,2	Newport, OR	Inactive
<i>McArthur II</i>	224 ft.- III	1,2,4	Newport, OR	Inactive
<i>Oregon II</i>	175 ft.- III	2	Pascagoula, MS	Active
<i>Thomas Jefferson</i>	208 ft.- II	3	Norfolk, VA	Active
<i>Gordon Gunter</i>	224 ft.- III	2	Pascagoula, MS	Active
<i>Oscar Elton Sette</i>	224 ft.- III	2	Honolulu, HI	Active
<i>Delaware II</i>	155 ft.- IV	2	Woods Hole, MA <sup>1</sup>	Active
<i>Nancy Foster</i>	187 ft.- III	1,4	Charleston, SC <sup>1</sup>	Active
<i>Hi'ialakai</i>	224 ft.- III	1,4	Honolulu, HI	Active
<i>Oscar Dyson</i>	208 ft. - II	2	Kodiak, AK	Active
<i>Henry B. Bigelow</i>	208 ft. - II	2	Newport, RI**	Active
<i>Pisces</i>	208 ft. - II	2	Pascagoula, MS	Active
<i>Bell M. Shimada</i>	208 ft. - II	2	Newport, OR	Active
<i>Okeanos Explorer</i>	224 ft.- III	1	Davisville, RI	Active
<i>Ferdinand R. Hassler</i> <sup>2</sup>	124 ft - II	3	New Castle, NH	Active
<i>Reuben Lasker</i> <sup>3</sup>	208.6 ft -II	2	West Coast	Under Construction
Mission: 1= Oceanographic Research 2 = Fisheries Research		3 = Hydrographic Surveys 4 = Environmental Assessment		

<sup>1</sup> These ships are currently proposed to be inactive in the FY 2013 operating plan.

<sup>2</sup> Limited operations in FY 2012

<sup>3</sup> NOAA ship *Reuben Lasker* is currently under construction and will be under limited operations in FY 2013.

In FY 2013, NOAA will move NOAA ships *Nancy Foster* and *Ronald H. Brown* to MOC-A in Norfolk, VA.

The subactivity also includes:

The Marine Operations Center (MOC): The Marine Operations Center has Atlantic and Pacific regional offices located in Norfolk, Virginia, and Newport, Oregon, respectively. MOC provides regional fleet management, maintenance, warehousing, supplies, repair facilities, data-processing facilities, operational support, and administrative support for NOAA's vessels. The vessels are assisted by a small support staff at the home port of most ships. NOAA vessels are staffed by NOAA Corps officers, civilian Wage Mariners, and Electronics Technicians. NOAA vessels are strategically deployed based on the size, range, laboratory space, equipment, and accommodations necessary to meet project requirements. The Class I and II vessels have the endurance, and equipment to conduct surveys and investigations in the deep ocean outward from the continental shelf or in remote areas such as Alaska and Antarctica. The Class III vessels perform fisheries surveys, climate research and ocean exploration. The Class IV vessel, *Delaware II*, is designed for continental shelf and near-shore operations. Some of the projects include water quality studies, maritime heritage surveys, and coral reef assessments. Programs supported by ships are organizationally housed within NOAA's National Marine Fisheries Services (NMFS), Office of Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), and National Weather Service (NWS).

The NOAA Commissioned Personnel Center (CPC): CPC, headquartered in Silver Spring, Maryland, is responsible for providing a specialized workforce to NOAA that has the skills to plan, prepare, and execute the acquisition of environmental and scientific data on land, at and under the sea, and in the air. CPC is a unique personnel system within NOAA. CPC is responsible for active duty NOAA Corps officers and associated human resource activities that include recruitment, appointment, training, assignments, promotion, separation, retirement, and officer entitlements.

OMAO Headquarters (HQ): OMAO Headquarters division consists of Executive Affairs Division (EAD), Resource Management Division (RMD), Safety and Environmental Compliance Division (SECD), Information Management Division (IMD) and Health Services. Located in Silver Spring, Maryland, HQ is responsible for the formulation of policies and procedures, development of plans and budgets, and management of the NOAA Corps. Management of the NOAA Corps includes providing direction for labor relations activities, medical affairs, training, safety, and other personnel matters unique to commissioned officers and vessel employees assigned to the fleet.

OMAO Headquarters administers the following NOAA-wide activities including the:

NOAA Dive Program: The NOAA Dive Center (NDC) provides diver training, safety standards, certification, technical advice, a standardized equipment program, and publishes the NOAA Diving Manual. NOAA has more than 400 divers who perform over 15,000 dives annually in support of NOAA's programs. Marine Center divers played a support role for various projects. Fleet diving activities included ship husbandry tasks such as clearing screws and sea strainers, conducting hull surveys for damage, and installing transducers. Ship divers also install tide gauges and other data gathering equipment and investigate multi-beam contacts. These activities provide cost savings to the NOAA fleet, enhance customer service and facilitate self-sufficiency on the seas.

NOAA Small Boat Program (SBP): The SBP is designed to reduce risk, promote standardization, and enhance the safety of NOAA's small boats. NOAA maintains over 400 small boats, which are operated and funded within the Line Office programs. The SBP monitors and conducts small-boat inspections, facilitates small boat activities by hosting workshops and sharing related information, and provides technical and engineering assistance to NOAA Line Offices concerning small boats.

NOAA Teacher at Sea Program (TAS): Up to 30 teachers per year participate in the TAS program. Teachers at the kindergarten through college level spend time on NOAA vessels working with NOAA scientists. The teachers provide a valuable connection between NOAA and their students. The popularity of the program led two alumni to develop the spin-off, Teacher in the Air. NOAA's Teacher in the Air (TIA) program now flies between two to five teachers on NOAA aircraft each year. As of FY 2011, over 630 teachers, from all 50 states, have participated in the programs.

**Schedule & Milestones:**

- Ships annual schedules and milestones are governed by the Fleet Allocation Plan (<http://www.oma.noaa.gov/shipallocation.html>) as agreed to and signed by the NOAA Fleet Council. The Fleet Allocation Plan details the objective and duration of individual NOAA projects.
- Drydock and Dockside repair has a set maintenance period for each vessel based on ABS scheduling by ship class. The following ships are scheduled for drydocks in FY 2013: *Rainier, Oscar Dyson, Gordon Gunter, and Oscar Elton Sette.*

**Deliverables:**

FY 2013:

- At the requested funding level, the program will provide 2,586 base Days at Sea (DAS) in FY 2013. Detailed deliverables are determined on a project by project basis as documented in sailing instructions agreed to by OMAO and the respective line office.
- Perform Program Funded DAS (PFD) as scheduled. In addition to the base funded DAS, OMAO conducts missions funded through reimbursable agreements and Service Level Agreements (SLA) with NOAA programs. Program funded days (PFD) are scheduled based on availability of ships and program funds. OMAO does not anticipate future reimbursable DAS.

**Performance Goals and Measurement Data:**

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Annual Number of Fleet Casualty Reports (CASREPS)	177	160	140	110	100	80	80
Description: Casualty Reports (CASREPS) is the annual number of machinery, electrical or personal system breakdowns.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Days at Sea	2,609	2,166	2,586	2,586	2,586	2,586	2,586
<b>Discussion:</b> Days at Sea (includes mission days only). A mission day is defined as when ship is at sea incident to the scientific mission. For FY 2013 and forward, NOAA assumes 16 active ships and a fuel rate of \$3.35 per gallon.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Reimbursable DWH DAS	286	30	N/A	N/A	N/A	N/A	N/A
<b>Discussion:</b> In response to the Deep Water Horizon oil spill in the Gulf of Mexico, NOAA's ships performed reimbursable NRDA days at sea. NOAA does not anticipate reimbursable DAS in the out years.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Program funded DAS	0	529	TBD	TBD	TBD	TBD	TBD
<b>Discussion:</b> OMAO conducts missions funded through reimbursable agreements and Service Level Agreements (SLA) with NOAA programs. Program funded days (PFD) are scheduled based on availability of ships and program funds, therefore out year targets are to be determined.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Fleet Utilization	65%	59%	71%	71%	71%	71%	71%
<b>Discussion:</b> Fleet utilization rate is calculated by taking the actual days at sea from base Marine Operations and Maintenance funding and dividing it by the maximum operating tempo of 235 days at sea per active ship. In FY 2013 and forward, NOAA assumes 16 active ships. Not included in the calculation are the ships proposed for inactive status in FY 2013. This reflects NOAA's practice of reinvesting fixed cost savings from non-active ships into the active fleet, thereby increasing overall days at sea.							

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## **PROGRAM CHANGES FOR FY 2013:**

**Marine Operations and Maintenance: Environmental Compliance Increase (Base Funding: \$350,000 and 0 FTE; Program Change: \$1,017,000 and 0 FTE):** NOAA requests an increase of \$1,017,000 and 0 FTE for a total of \$1,367,000 and 0 FTE for activities associated with bringing NOAA fleet and small boats into compliance with Environmental Protection Agency (EPA) and United States Coast Guard (USCG) regulations.

### **Proposed Actions:**

A number of maritime environmental regulations have gone into effect, including stricter emissions requirements from the Environmental Protection Agency (EPA) and stricter discharge requirements from the United States Coast Guard (USCG). These new regulations will require changes to the existing vessel fleet to ensure compliance is maintained and monetary fines are avoided. Proactively ensuring compliance with these new environmental regulations will allow NOAA to maintain its position as a leader in environmental stewardship and in executing the Administration's energy priorities.

Specifically, NOAA will:

- Purchase and install tier upgrade kits for main propulsion engines and ship service generators for vessels undergoing MRP to become tier compliant, as required by EPA 40CFR part 1042.
- Replace top-side hydraulic lines during special survey dry dockings to reduce risk of failure, as required by EPA Vessel General Permit.
- Upgrade or replacement of Oily Water Separators (OWS) to separate free and emulsified oils (black) / waste (grey water) for vessels which OWS is no longer supported by the manufacturer or the technology has advanced as required.
- Reduced greenhouse gas emissions by increasing vessel efficiency as required by the Energy Independence and Security Act and EO 13514.

### **Statement of Need and Economic Benefits:**

These priorities were selected according to their status as legal requirements with market-ready solutions, as identified by the DRAFT Cost/Benefit Analysis Study for Greening of the NOAA Fleet (researched by Art Anderson Associates, February, 2010).

### **Base Resource Assessment:**

The Base Resource Assessment is provided in the Marine Operations and Maintenance base narrative.

### **Schedule & Milestones:**

FY 2013 – 2017:

- Award contracts and complete work to bring vessels into environmental compliance

### **Deliverables:**

FY 2013 – 2017:

- Install two engine upgrade kits on Oscar Dyson class ship
- Install four engine upgrade kits on NOAA ship *Henry Bigelow*
- Convert four top-side hydraulic piping and hoses to biodegradable hydraulics
- Upgrade five Oily-Water Separators
- Perform Green House Gas/increased efficiency Audit

**Performance Goals and Measurement Data:**

<b>Performance Measure: Ships Compliant with Environmental Regulations (%)</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
<b>With increase</b>	N/A	N/A	11%	15%	19%	23%	26%
<b>Without increase</b>	5%	7%	9%	13%	15%	18%	21%
<b>Discussion:</b> Measures the number of NOAA ships compiling with new environmental regulations for the Environmental Protection Agency and United States Coast Guard now in effect.							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Marine and Aviation Operations

Subactivity: Marine Operations and Maintenance

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	\$0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	110
25.2 Other services	907
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,017

**Marine Operations and Maintenance: Charleston Homeport Closure– (Base Funding \$165,198,000 and 926 FTE: Program Change: -\$200,000 and 0 FTE):** NOAA requests a decrease of \$200,000 and 0 FTE for a total of \$164,998,000 and 926 FTE associated with the relocation of NOAA ships *Ronald H. Brown* and *Nancy Foster* from the Charleston, SC homeport to the Marine Operations Center-Atlantic and homeport in Norfolk, VA.

**Proposed Action:**

NOAA proposes to relocate two NOAA vessels from the Charleston, SC homeport to the Marine Operations Center-Atlantic (MOC-A) in Norfolk, VA. Charleston, SC is currently home to NOAA Ships *Ronald H. Brown* and *Nancy Foster* and their crews, a port captain, and a port engineer, all of which will move to Norfolk. The port consolidation will result in annual operating cost savings of \$200,000 which includes the elimination of the cost of dredging the Charleston, SC every three years, at \$150,000 per dredging. The consolidation enables NOAA to increase the efficiency of the fleet in a number of ways. Using the MOC-A as the new location will improve training, logistics and fleet maintenance by concentrating the ships in a central location and allowing easier access for NOAA's fleet engineers.

**Statement of Need and Economic Benefits:**

The cost savings and efficiency gained through the consolidation will enable OMAO to more effectively manage the Atlantic fleet. Internal NOAA partners will not be affected by the relocation because the programs that the vessels support are not co-located in Charleston, SC. Finally, the US Coast Guard will benefit by having increased pier space available for their National Security Cutters which are expected to arrive in 2015.

**Base Resources Assessment:**

The Base Resource Assessment is provided in the Marine Operations and Maintenance base narrative.

**Schedule & Milestones:**

**FY 2013:**

Achieve vessel and personnel relocation and close the homeport and port office.

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Marine and Aviation Operations  
Subactivity: Marine Operations and Maintenance

<b>Object Class</b>	<b>2013 Decrease</b>
11 Personnel compensation	
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	(200)
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	(200)

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**APPROPRIATION ACCOUNT: OPERATIONS, RESEARCH AND FACILITIES**  
**SUBACTIVITY: AVIATION OPERATIONS**

OMAO's Aircraft Operations Center (AOC), located at MacDill Air Force Base in Tampa, Florida, operates NOAA's Aircraft Fleet in support of NOAA's mission to promote global environmental assessment, prediction and stewardship of the Earth's environment. The aircraft operate throughout the United States and around the world; over open oceans, mountains, coastal wetlands, and the Arctic. AOC provides capable, mission-ready aircraft and professional crews to meet NOAA's mission supporting scientific endeavors studying global climate change and air quality, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, conducting coastal mapping, surveying snowpack levels for flood prediction, and improving hurricane prediction models. AOC flight crews operate in some of the world's most demanding flight regimes including flying into the eye of a hurricane.

The variety and versatility of the aircraft provide scientists with the airborne platforms necessary to collect essential environmental and geographic data. The Fleet is equipped with comprehensive data-collection systems in support of missions related to the Earth's environment, coastal and marine resources, and severe weather. OMAO also ensures that outsourced aviation operations are conducted safely by providing technical support, services and equipment to NOAA programs. In FY 2013, AOC will provide approximately 1,380 base funded flight hours in support of NOAA's mission. In this submission, NOAA has changed flight hour reporting to show only base funded hours, and will no longer include program funded hours. This is consistent with reporting of marine days at sea metrics.

The objective of the Aviation Operations subactivity is to:

- Provide NOAA with centralized aircraft systems management and coordination of airborne data collection flight time;
- Modify, maintain, and operate the aircraft with a combined work force of specially trained civilians and officers of the NOAA Corps to meet airborne data-collection requirements;
- Maintain the airworthiness and operating standards of the aircraft for optimum safety along with standardization of scientific systems and aircraft;
- Operate the aircraft safely and in compliance with Federal Aviation Administration regulations regarding use of airspace, control of air traffic, and aircraft registration;
- Develop and operate prototype and operational scientific-research instrumentation aboard NOAA aircraft; conduct applied research to ensure validity of data collected; recommend and implement specialized modifications, equipment or personnel for particular missions or projects;
- Develop, with the guidance of NOAA's Fleet Council, annual flight-time allocation schedules based on airborne data-collection requirements;
- Provide centralized expertise in aviation safety to arrange for safe commercial aviation services for NOAA programs using outsourced aircraft.

**FY 2011 Program Accomplishments**

- Supported emergency response efforts following the devastating tornados in Missouri and Alabama. The NOAA King Air flew damage assessment missions and collected quality aerial photographs with its high performance digital imaging system. Made immediately available to emergency management officials, these photographs were instrumental in assessing the damage and locating missing residents of the area.
- Supported the National Hurricane Center as Hurricane Irene tracked toward and along the U.S. East Coast by providing round-the-clock hurricane research, surveillance and forecast

improvement. AOC deployed two WP-3s and a G-IV to probe the storm as it developed over the Atlantic and moved north along the eastern seaboard.

- Delivered the Service Life Assessment of WP-3 aircraft, detailing the end of service life and additional structural inspections to keep the aircraft airworthy.
- Performed a series of three flights over several days, using a WP-3, at the request of the National Hurricane Center (NHC) to obtain sea surface temperature (SST) and flight-level, surface, and profile wind observations in Hurricane Dora in the eastern Pacific during the decay process over cold water. This data set, which NHC has been trying for years to collect, will go a long way in answering questions about the dynamics of the decay process as a hurricane weakens rapidly.
- Successfully flew for the first time the tail Doppler radar (TDR) on the G-IV. This radar will provide invaluable data for assimilation into the hurricane models to improve tropical cyclone intensity forecasts.
- Flew almost 200 hours using a WP-3 in support of the Alaska Gravity for the Re-definition of the American Vertical Datum (GRAV-D) project. The aircraft, which was supporting NOS in its efforts to redefine the American vertical gravity datum, was able to fly long duration missions well out over the Beaufort Sea covering a large part of the Alaskan grid.
- Utilized a NOAA-owned Unmanned Quadro-copter on Cape Shirreff, Antarctica for the first time. A team from Southwest Fisheries and AOC, performed penguin population studies from the air. The battery operated copter, which is virtually noiseless, remotely sampled wildlife in undisturbed conditions.
- Participated in a joint Winter Storm Pacific Atmospheric Rivers (WSPAR) mission with the G-IV and the NASA/NOAA Global Hawk in early March utilizing GPS dropsondes from both platforms to define the latitudinal extent of moist air flowing toward the U.S. west coast from the tropical Pacific.

The following table provides information on the aircraft fleet for the current program (missions and support fluctuate based on program priorities):

Aircraft	Type	Mission	Location
<b>HEAVY:</b> (3) Lockheed WP-3	4-engine turbo prop	Air quality (OAR) Hurricane research (OAR) Hurricane reconnaissance (NWS) Ocean winds (NESS, NWS) Hurricane intensity forecasting (NWS) Climate research (OAR)	MacDill AFB, FL
<b>MID:</b> (1) Gulfstream G-IV	2-engine turbo jet	Hurricane surveillance (NWS) Winter storm reconnaissance (NWS) Hurricane intensity forecasting (NWS) Atmospheric research (OAR)	MacDill AFB, FL
<b>LIGHT:</b> (4) Dehavilland Twin Otter DHC-6	2-engine turbo prop	Aerial surveys (NMFS) Atmospheric research (OAR)	MacDill AFB, FL
(1) King Air	2-engine turbo prop	Photogrammetry (NOS) Multi-spectral scanner (NOS) Airborne bathymetric LIDAR (NOS, NWS) Post-storm damage assessment (NOS)	MacDill AFB, FL

(2) Rockwell Shrike Commander/AC500S	2-engine reciprocating	Snow survey (NWS) Fisheries observations (NMFS) Marine mammal observations (NMFS)	Minneapolis, MN MacDill AFB, FL
(1) Jet Prop Commander AC/695	2-engine turbo prop	Snow surveys (NWS) Fisheries observations (NMFS) Marine mammal observations (NMFS)	Minneapolis, MN

**Schedule & Milestones:**

- Aircraft Services annual schedule and milestones are governed by the Aircraft Allocation Plan (<http://www.omaο.noaa.gov/airallocation.html>) as agreed to and signed by the NOAA Fleet Council. The Aircraft Allocation Plan details the individual NOAA projects to be conducted on each aircraft, and the timeframe for project.

**Deliverables:**

- At the requested funding level, the program will provide 1,380 base flight hours in FY 2013. Detailed deliverables are determined on a project by project basis as documented in flight instructions agreed to by OMAO and the contracting line office.
- Perform Program Funded Hours as scheduled. In addition to the base funded flight hours, OMAO conducts missions funded through reimbursable agreements and Service Level Agreements (SLA) with NOAA programs. Program funded hours are scheduled based on availability of planes and program funds. OMAO does not anticipate future reimbursable flight hours.

**Performance Goals and Measurement Data:**

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Base Flight Hours	1,876	1,330	1,380	1,380	1,380	1,380	1,380
Description: Number of base funded flight hours. For FY 2013 and forward, NOAA assumes a fuel rate of \$3.67 per gallon.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Program funded flight hours	1,638	1,990	TBD	TBD	TBD	TBD	TBD
<b>Discussion:</b> OMAO conducts missions funded Service Level Agreements (SLA) with NOAA programs. Program funded hours are scheduled based on availability of planes and program funds, therefore out year targets are to be determined.							

Performance Measure:	FY 2011 Actual	FY 2012 Target	FY 2013 Target	FY 2014 Target	FY 2015 Target	FY 2016 Target	FY 2017 Target
Reimbursable flight hours	427	578	N/A	N/A	N/A	N/A	N/A
<b>Discussion:</b> OMAO conducts reimbursable funded missions based on the availability of planes. NOAA does not anticipate reimbursable flight hours in the outyears.							

## **PROGRAM CHANGES FOR FY 2013:**

**Aircraft Services: Flight Hour Increase (Base Funding: \$28,249,000 and 104 FTE; Program Change: +\$1,992,000 and + 0 FTE):** NOAA requests an increase of \$1,992,000 and 0 FTE for a total of \$30,241,000 and 104 FTE to increase the frequency and density of in-situ and remotely sensed data through additional base flight hours. Additional flight hours will support hurricane reconnaissance and surveillance, high impact weather, and satellite calibration and validation.

### **Proposed Actions:**

AOC will provide an additional 595 flight hours of critical in-situ observations supporting NOAA's mission to promote global environmental assessment, prediction and stewardship of the Earth's environment. The flight hours will support hurricane reconnaissance and research missions aimed at improving hurricane intensity forecasts including the only three tail mounted Doppler radars in the world on the WP-3 and G-IV. Additional hours will provide observations necessary for accurate and reliable winter storm warnings. Further hours will support snow surveys that allow water managers and forecasters to more accurately forecast spring melts to meet industrial, agricultural, and human needs. International partners rely on AOC to conduct satellite ocean wind sensor calibration and validations. In return, our partners provide ocean wind data that is used to improve hurricane forecasts. NOAA aircraft provide a comprehensive suite of data-collection systems in support of these projects.

### **Statement of Need and Economic Benefits:**

The Aircraft Fleet support activities that impact a broad range of activities in the U.S. AOC provides aircraft with unique observing capabilities including three tail mounted Doppler radars. These radars are designed to observe the structure of severe weather and provide the necessary data to better predict the impact of severe weather.

The accuracy of hurricane track and intensity forecasts helps mitigate the impact of hurricanes, which average \$10 billion per landfalling storm and \$1 million per mile for evacuations. AOC provides NOAA scientists the in-situ observations that are necessary to continue improvements to hurricane track and intensity forecasts. As a member of the Interagency National Hurricane Operations Plan (NHOP), AOC is responsible for augmenting Air Force Reserve capabilities typically flying 10 percent of total hurricane operation flight hours. The increased hours will provide more accurate hurricane intensity and track forecasts to help state and federal planners mitigate losses of property and life from these devastating storms.

High impact weather is severe weather events from tornados to snow storms that impact the daily routines of thousands of people. AOC operates the aircraft in support of winter storms and water resource management. Improved forecasts help state and local communities prepare for major wind, rain, and snow events allowing equipment to be pre-positioned and supplies moved into communities before they are needed. Snow Surveys of mountain packs helps to inform water managers and forecasters of the volume of water anticipated during spring melts. Better forecasts improve reservoir and dam management allowing water managers to better determine water levels and reduce flood risks, while still allowing them meeting the needs of their customers.

Satellites are multi-billion dollar investments that can only provide their broad coverage and continuous observational capability if they are properly calibrated and validated with Earth based instruments. AOC plays a role in ensuring ocean surface vector winds satellites operated by international partners are regularly calibrated and validated ensuring accurate and reliable data. The accuracy of these satellite based observations plays a critical role in marine wind speed and wave height forecasts. In order to meet the calibration and validation requirements, AOC operates aircraft

with instruments similar to those on the satellites allowing NOAA personnel to validate satellite data and make any necessary adjustments to their calibration.

**Base Resource Assessment:**

The Base Resource Assessment is provided in the Aircraft Services Base Narrative.

**Schedule & Milestones:**

FY2013 – 2017:

Achieve and maintain a Base Flight Hours of 1,975; by annually flying an additional:

- 170 Flight Hours for Hurricane Operations and Research
- 410 Flight Hours for High Impact Weather
- 15 Flight Hours for Calibration and Validation

**Deliverables:**

- Hurricane Operations and Research
  - Additional 100 Hurricane Reconnaissance Flight Hours
  - Additional 60 Hurricane Surveillance Flight Hours
  - Additional 10 Hurricane Research Flight Hours
- High Impact Weather
  - Additional 145 Winter Storms Reconnaissance Flight Hours
  - Additional 265 Snow Survey Flight Hours
- Calibration and Validation
  - Additional 15 Ocean Winds Winter Flight Hours

**Performance Goals and Measurement Data:**

<b>Performance Measure:</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<b>Base Flight Hours</b>	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
<b>with increase</b>	N/A	N/A	1,975	1,975	1,975	1,975	1,975
<b>without increase</b>	1,876	1,330	1,380	1,380	1,380	1,380	1,380
<b>Discussion:</b> Base funded mission flight hours							

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Marine and Aviation Operations  
Subactivity: Aviation Operations

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	0
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	50
11.8 Special personnel services payments	0
11.9 Total personnel compensation	50
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	0
25.2 Other services	1,031
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	911
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	1,992

**APPROPRIATION ACCOUNT: PROCUREMENT, ACQUISITION AND CONSTRUCTION  
SUBACTIVITY: FLEET REPLACEMENT PROGRAM**

The Fleet Replacement Program (FRP) develops the requirements, acquisition strategies, and monitors the modernization and construction of the ships in order to meet NOAA's DAS in-situ observing requirements. FRP oversees government and contractual resources necessary to design, equip, construct or modernize the ships and ship-board systems. NOAA ships face challenges similar to other observational infrastructure including expanded mission requirements, age and obsolescence, and finite resources for recapitalization. NOAA has successfully developed, adapted, and fielded a number of technologies that have enhanced the capabilities of NOAA ships and is currently evaluating a number of technologies that have potential to contribute to more effectively and efficiently meet collection requirements. FRP receives sustained funding for ongoing activities related to modernization and current ship construction activities as delineated in the 2008 Ship Recapitalization Plan (Ship Recapitalization Plan)

Fleet Capital Investment and Technology Infusion (FCITI) is designed to maintain and extend the service life of the ship fleet by ensuring required upgrades to ship board systems and mission equipment in line with the needs of the programs and safety requirements. FCITI monitors the material condition of the ships using, a Structural Systems Mechanical Engineering Inspection (SSME), which capture the ship's condition after each Dockside (DS), Drydock (DD), or Major Repair Period (MRP). The SSME documents the results of inspections and identifies future work data, which will guide future capital investment decision making. At the same time, OMAO will use manufacturer provided information for new ships to develop maintenance profiles. As information is gathered through these means, the investment decision model will be continually updated.

New Vessel Construction (NVC) receives sustained funding for ensuring proper oversight of ship construction activities by enabling a cadre of government experts is available to evaluate requirements, review proposals, and monitor progress towards achieving goals. Currently, NVC sustains contract oversight for construction of the newest Fisheries Research Vessel (FSV) 6, the *Rueben Lasker* that was funded under the American Reinvestment and Recovery Act (ARRA).

NOAA Ship Recapitalization Plan

In 2008, NOAA submitted a Ship Recapitalization Plan to Congress ([http://www.oma.noaa.gov/publications/08\\_ship\\_recap\\_plan.pdf](http://www.oma.noaa.gov/publications/08_ship_recap_plan.pdf)), which was a comprehensive plan designed to systematically replace or upgrade the fleet in order to meet the ever changing and evolving demands of the scientific community. Specially, the plan examined 10 of the fleet's 19 ships that would reach the end of their useful service life over the next 15 years reducing the average age of the fleet by 9.6 years by 2025. Since delivering the plan, Congress has appropriated funding via ARRA for construction of FSV6 and MRPs on the *Rainer* and *Oregon II*.

For the past five years the Ship Recapitalization Plan has served as a guide for planned investments, but events since 2008 have lead NOAA to reassess our current recapitalization strategy through an internal review process, the NOAA Fleet Plan, to assess current and future NOAA in-situ ocean observing platforms.

The objectives of the Fleet Replacement Program are:

- Ensure the proper maintenance and safety of NOAA ships within American Bureau of Shipping, U.S. Coast Guard, Environmental Protection Agency, and applicable international requirements.
- Ensure proper oversight of the design and construction of new ships that meet all applicable federal regulations.

FY 2011 Program Accomplishments:

- The NOAA Ship *Reuben Lasker* (FSV6) keel laying ceremony was held June 21, 2011 at Marinette Marine Corporation in Marinette, WI. The keel laying marked the beginning of major construction efforts for the future NOAA Ship *Reuben Lasker*.
- Completed installation of a Kongsberg EM710 multi-beam sonar system during the *Rainier* Major Repair Period (MRP). The new sonar system will provide high resolution seabed mapping capability.

**Schedule & Milestones:**

FY 2013

- *Reuben Lasker* delivery and Post Shipyard Availability (PSA); operational “shakedown” days.

**PROGRAM CHANGES FOR FY 2013:**

**Fleet Capital Improvements & Technology Infusion: NOAA Ship *Thomas Jefferson* Major Repair Period (MRP) (Base Funding: \$1,000,000 and 0 FTE; Program Change: +\$10,712,000 and 0 FTE):**

NOAA requests an increase of \$10,712,000 and 0 FTE for a total of \$11,712,000 and 0 FTE to address high priority repairs to extend the operational service life of the ship. Repairs will include mandatory upgrades and repairs to ship board systems, in-situ observing mission systems, and crew safety.

**Proposed Actions:**

The proposed MRP will provide the necessary capital investments in ship board systems, in-situ observing mission equipment, and crew safety that will allow OMAO to continue to operate the NOAA Ship *Thomas Jefferson* in a safe and efficient manner. The *Thomas Jefferson* is a T-AGOS class Oceanographic Survey ship built in 1993 and operated by NOAA since 2003. As the ship reaches the nominal end of its service life, mechanical systems are beginning to fail at a higher rate with fewer machinery and equipment supported by its original manufacturer. Recent NOAA fleet inspections and regular maintenance periods show accelerated deterioration of several key ship board systems and the discovery of equipment no longer supported by the manufacturer risks American Bureau of Shipping (ABS) certification requirements and further increases in lost DAS. Without the capital investment, the end result may ultimately be the premature retirement of the *Thomas Jefferson*.

Continued advances in technology allow for improved ship capacity to survey and process hydrographic data for nautical charting. Sensors for collecting chart data have a similar, but slightly longer life as personal computers where technology continues to advance and the older models are no longer supported. The cumulative result is the need for capital investment beyond routine maintenance to ensure ship readiness and safe operation. An MRP will typically extend the useful life of the ship at least five years and guides future determinations of regular maintenance. The table below shows the estimated cost breakdown of the MRP goals and specific types of equipment.

Ship-Board Systems	Mission Support Equipment	Electronics	Mandatory Certification	Growth
\$3,200	\$3,300	\$2,400	\$1,000	\$1,812
Piping systems (fresh, grey, and black water)	Cranes, Winches, & HSL Davits	Replace unsupported navigation, communications and ship control systems with new technology	Dry docking, mandatory dry dock repairs,	Unknown deficiencies discovered during MRP
Heating, Ventilation and Air Conditioning (HVAC)	Small boat refurbishing	Refresh Ship-Board electronic data processing and storage technology	ABS Inspections to maintain ABS Certification	Inflationary growth
Refrigeration systems	Hydrographic Survey Systems - shallow, mid, and deep water transducers and associated sensors		Associated Inspections to maintain various certifications	
Fresh water production				

**Statement of Need and Economic Benefits:**

The *Thomas Jefferson* is currently the only NOAA ship conducting hydrographic surveys in the Atlantic and Gulf of Mexico and is a work horse of the NOAA Fleet. Originally a U.S. Navy ship, anti-submarine warfare platform, the *Thomas Jefferson's* efficiency at slower speed, varied sonar

configurations, and outfitting with Hydrographic Survey Launches (HSL) make the ship an excellent multi-platform hydrographic survey vessel. An HSL is equipped with electronic and sonar systems that scan the sea floor to determine least water depths and locate obstructions, shoaling, wreckage, and other dangers to navigation. HSLs operate in areas too shallow for the ships to enter as well as expand the overall survey areas that can be covered within a given period of time.

Between 2006 and 2010 the ship averaged 42 percent of all the east coast hydrographic surveys, conducted 41 percent of the total linear nautical miles surveyed by NOAA hydrographic ships, and produced 14 percent of the total linear nautical miles surveyed by NOAA. The *Thomas Jefferson* conducted critical hydrographic surveys in New York Harbor in 2006 and following natural disasters in the Tidewater, Virginia ports in 2010 and 2011. Accurate nautical charts play a critical role ensuring safe transport of in U.S. exports which supported 10.3 million jobs, accounting for 6.9 percent of U.S. employment in 2008.

Due to the condition of the ship, restrictions were placed on the HSL Davits due to safety concerns. This limits the ability of the *Thomas Jefferson* to conduct multi-HSL operations, reducing the effectiveness of the ship. Existing multi-beam sonar systems are quickly becoming obsolete with parts no longer manufactured and manufacturers moving to the latest technologies to keep pace with the market. During the MRP, NOAA can take advantage of advances in technology providing better resolution and faster processing speeds. A critical aspect of hydrographic surveys is the ability to process and store data. Improvements to the existing observing system will require complementary upgrades to ship-board information technology systems.

**Base Resource Assessment:**

The base resource assessment is provided in the Fleet Replacement base narrative.

**Schedule and Milestones:**

FY 2013

- Publish Solicitations (Q1)
- Award Contracts (Q4)
- Begin Industrial Work (Q4)

FY 2014

- Complete Industrial Work and Return to Service (Q3)

**Deliverables:**

- Improved working and living environment for wage mariner satisfaction
- Fully functioning mission equipment to meet the state of science needs
- Reliable, supportable in-situ observing capabilities
- Compliance with all applicable statues and regulations

**Performance Goals and Measurement Data:**

<b>Performance Measures:</b>	<b>FY 2011 Actual</b>	<b>FY 2012 Target</b>	<b>FY 2013 Target</b>	<b>FY 2014 Target</b>	<b>FY 2015 Target</b>	<b>FY 2016 Target</b>	<b>FY 2017 Target</b>
Reduce the hydrographic survey backlog within navigationally significant areas (square nautical miles) (measure 18f)							
With Increase	N/A	N/A	3,400	2,800	3,400	3,400	3,400
Without Increase	2,278	2,200	3,400	2,500	2,500	2,500	2,500
Note: The with increase assumes limited operations of the ship in FY 2014. The measure includes only base funded days at sea.							

**Outyear Funding Estimates (\$ in thousands):**

<b>FCITI</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
Change from FY 2013 Base	0	10,712	0	0	0	0	0	10,712
Total Request	1,000	11,712	0	0	0	0	0	11,712

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Marine and Aviation Operations  
Subactivity: Fleet Replacement Program

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	0
11.1 Full-time permanent	0
11.3 Other than full-time permanent	0
11.5 Other personnel compensation	0
11.8 Special personnel services payments	0
11.9 Total personnel compensation	0
12 Civilian personnel benefits	0
13 Benefits for former personnel	0
21 Travel and transportation of persons	0
22 Transportation of things	0
23.1 Rental payments to GSA	0
23.2 Rental Payments to others	0
23.3 Communications, utilities and miscellaneous charges	0
24 Printing and reproduction	0
25.1 Advisory and assistance services	3,428
25.2 Other services	7,284
25.3 Purchases of goods & services from Gov't accounts	0
25.4 Operation and maintenance of facilities	0
25.5 Research and development contracts	0
25.6 Medical care	0
25.7 Operation and maintenance of equipment	0
25.8 Subsistence and support of persons	0
26 Supplies and materials	0
31 Equipment	0
32 Lands and structures	0
33 Investments and loans	0
41 Grants, subsidies and contributions	0
42 Insurance claims and indemnities	0
43 Interest and dividends	0
44 Refunds	0
99 Total obligations	10,712

**New Vessel Construction: Fisheries Survey Vessel 6 Acquisition – Preliminary Delivery and Post Shipyard Availability Period (Base Funding: \$1,392,000 and 5 FTE; Program Change: +\$1,505,000 and 0 FTE):** NOAA requests a planned increase of \$1,505,000 and 0 FTE for a total of \$2,897,000 and 5 FTE for activities to complete preliminary delivery, post-shipyard shakedown, performance of initial operations and final acceptance, shipyard periods, and contract close out for the newest fisheries survey vessel, the NOAA Ship *Reuben Lasker*. A total of \$79,843,000 was provided in the FY 2009 American Recovery and Reinvestment Act for the detailed design and construction. The request is consistent with the profile approved prior to contract award.

### **Proposed Actions**

The NOAA Ship *Reuben Lasker* is the fifth and newest Oscar Dyson class fisheries survey vessel and replaces the NOAA Ship *David Starr Jordan*. The *Reuben Lasker* will support activities at NMFS's Southwest Fisheries Science Center. The additional funding will support preliminary delivery, post-shipyard shakedown events and availabilities, initial operations and final acceptance of the NOAA ship. After preliminary acceptance from the shipyard, a nine month warranty period starts, and NOAA will begin overlapping initial ships operations, crew phase-up/training, and ship mission system shakedown period. Based on prior experience with Oscar Dyson class ships, NOAA anticipates up to three Post Shakedown Availability (PSA) periods where industrial work will be performed, but not covered by warranty. Two PSA acoustic trials will be conducted at US Navy testing areas. The first will occur prior to initial delivery at the Atlantic Undersea Test and Evaluation Center at Andros Island, Bahamas. The second will occur prior to final ship acceptance at the Southeast Alaska Acoustic Measurement Facility in Ketchikan, Alaska.

### **Statement of Need and Economic Benefits:**

The NOAA Ship *Reuben Lasker* is among the most advanced fisheries survey vessels in the world. The ship will support fishery-independent surveys for NOAA stock assessments and protected species status reviews required by the reauthorized Magnuson-Stevens Act (MSA), Marine Mammal Protection Act (MMPA), and Endangered Species Act (ESA).

The ship has enhanced capabilities and extended operating range that will increase both the frequency and precision of current assessments and support new assessments. Under MSA, Annual Catch Limits (ACLs) are set under rigid timeframes using the best scientific data available. The greater precision will allow NMFS to set more accurate ACLs for the multi-billion dollar US fishing industry, impacting thousands of local fisheries and regional economies. Additionally, MMPA and ESA require regular status updates of protected species assessments.

NOAA requires these funds for contractor performance assessments and critical engineering changes that were not anticipated in the initial acquisition of the vessel. A lack of funding would jeopardize the normal preliminary delivery and post construction shipyard activities would be curtailed or canceled. The acoustic rangings are Government responsible evaluations required by the *Rueben Lasker* detailed design and construction contract. The ship's acoustic signature determined by the acoustic ranging results are required to confirm whether the ship's acoustic performance meets International Council for the Exploration of the Seas (ICES) contract requirements.

### **Base Resource Assessment:**

The base resources for this activity are described in the Fleet Replacement base narrative.

### **Schedule and Milestones:**

FY 2013

- Preliminary delivery of and post-shipyard shakedown events and availabilities for FSV6.
- Perform initial operations and take final acceptance of FSV6.

**Deliverables:**

- NOAA Ship *Reuben Lasker* (FSV6)

**Performance Goals and Measurement Data**

<b>Performance Measures:</b>	<b>FY</b>						
Percent of Living Marine Resources with Adequate Population Assessments	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
	<b>Actual</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>	<b>Target</b>
With Increase	N/A	N/A	N/A	N/A	19.1%	19.1%	19.1%
Without Increase	N/A	N/A	(1.8%)	(2.7%)	(3.6%)	(4.5%)	(4.5%)

Note: Includes only base funded days at sea.

**Outyear Funding Estimates (\$ in thousands):**

<b>FSV6</b>	<b>FY 2012 &amp; Prior</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>CTC</b>	<b>Total</b>
Change from base		1,505	0	0	0	0		1,505
Total Request	81,343	2,897	0	0	0	0	0	84,240

**PROGRAM CHANGE DETAIL BY OBJECT CLASS**  
**(Dollar amounts in thousands)**

Activity: Office of Marine and Aviation Operations  
Subactivity: Fleet Replacement Program

<b>Object Class</b>	<b>2013 Increase</b>
11 Personnel compensation	
11.1 Full-time permanent	-
11.3 Other than full-time permanent	-
11.5 Other personnel compensation	-
11.8 Special personnel services payments	-
11.9 Total personnel compensation	-
12 Civilian personnel benefits	-
13 Benefits for former personnel	-
21 Travel and transportation of persons	-
22 Transportation of things	-
23.1 Rental payments to GSA	-
23.2 Rental Payments to others	-
23.3 Communications, utilities and miscellaneous charges	-
24 Printing and reproduction	-
25.1 Advisory and assistance services	1,505
25.2 Other services	-
25.3 Purchases of goods & services from Gov't accounts	-
25.4 Operation and maintenance of facilities	-
25.5 Research and development contracts	-
25.6 Medical care	-
25.7 Operation and maintenance of equipment	-
25.8 Subsistence and support of persons	-
26 Supplies and materials	-
31 Equipment	-
32 Lands and structures	-
33 Investments and loans	-
41 Grants, subsidies and contributions	-
42 Insurance claims and indemnities	-
43 Interest and dividends	-
44 Refunds	-
99 Total obligations	1,505

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### **Appropriation Account: NOAA Corps Retirement Pay (Mandatory)**

The retirement system for the uniformed services provides a measure of financial security after release from active duty for service members and their survivors. It is an important factor in the choice of a career in the uniformed services, and the legal mandate for rates to be paid is the same for all uniformed services, see 10 USC. Retired pay is an entitlement to NOAA Commissioned Corps officers under 33 USCA 3044, 33 USCA 3045, and 33 USCA 3046. Retired pay funds are transferred to the U.S. Coast Guard, which handles the payments each year as adjusted pursuant to the Department of Defense Authorization legislation. Healthcare funds for non-Medicare-eligible retirees, dependents, and annuitants are administered by OMAO.

Legal authority for retirement of NOAA Commissioned Corps officers is contained in 33 USCA 3044. Retired officers of the NOAA Commissioned Corps receive retirement benefits that are administered by the Commissioned Personnel Center within the Office of Marine and Aviation Operations.

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**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 NOAA Corps Retirement Pay (Mandatory)  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

		Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available		0	0	28,269	28,269
plus: 2013 Adjustments to Base		0	0	0	0
FY 2013 Base		0	0	28,269	28,269
plus: 2013 Program Changes		0	0	0	0
FY 2013 Estimate		0	0	28,269	28,269

Comparison by activity/subactivity		FY 2011		FY 2012		FY 2013		FY 2013		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Medicare Eligible Retiree	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
Health Fund Contribution - NOAA Corps	FTE/OBL	0	24,286	0	28,269	0	28,269	0	28,269	0	0
Total: Medicare Eligible Retiree Health Fund	Pos/BA	0	28,269	0	28,269	0	28,269	0	28,269	0	0
	FTE/OBL	0	24,286	0	28,269	0	28,269	0	28,269	0	0

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 NOAA Corps Retirement Pay (Mandatory)  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	FY 2011 Actuals		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/ Decrease	
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	24,286	0	28,269	0	28,269	0	28,269	0	0
<b>Total Obligations</b>	<b>0</b>	<b>24,286</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
Unobligated balance	0	3,983	0	0	0	0	0	0	0	0
<b>Total Budget Authority</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>28,269</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
Net Appropriation	0	28,269	0	28,269	0	28,269	0	28,269	0	0

**Appropriation Account: Medicare-Eligible Retiree Healthcare Fund Contribution - NOAA Corps**

The FY 2003 Department of Defense Authorization Act requires all uniformed services, including NOAA, to participate in an accrual fund for Medicare-eligible retirees. Payments into this accrual fund will cover the future health care benefits of present, active-duty NOAA officers and their dependents and annuitants. For FY 2013, payments to the accrual fund are estimated at \$1,936,000.

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**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	Positions	FTE	Budget Authority	Direct Obligations
FY 2012 Currently Available	0	0	1,936	1,936
plus: 2013 Adjustments to Base	0	0	0	0
FY 2013 Base	0	0	1,936	1,936
plus: 2013 Program Changes	0	0	0	0
FY 2013 Estimate	0	0	1,936	1,936

Comparison by activity/subactivity		FY 2011 Actuals		FY 2012 Currently Available		FY 2013 Base Program		FY 2013 Estimate		Increase/Decrease	
		Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount	Personnel	Amount
Medicare Eligible	Pos/BA	0	1,832	0	1,936	0	1,936	0	1,936	0	0
Retiree Health Fund Contribution - NOAA	FTE/OBL	0	1,832	0	1,936	0	1,936	0	1,936	0	0
Total: Medicare Eligible Retiree Health Fund	Pos/BA	0	1,832	0	1,936	0	1,936	0	1,936	0	0
	FTE/OBL	0	1,832	0	1,936	0	1,936	0	1,936	0	0

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps  
**SUMMARY OF RESOURCE REQUIREMENTS**  
 (Dollar amounts in thousands)

	FY 2011		FY 2012		FY 2013		FY 2013		Increase/ Decrease	
	Actuals		Currently Available		Base Program		Estimate			
	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount	FTE	Amount
Direct Discretionary Obligation	0	1,832	0	1,936	0	1,936	0	1,936	0	0
<b>Total Obligations</b>	<b>0</b>	<b>1,832</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>
<b>Adjustments to Obligations:</b>										
<b>Total Budget Authority</b>	<b>0</b>	<b>1,832</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>
<b>Financing from Transfers and Other:</b>										
<b>Net Appropriation</b>	<b>0</b>	<b>1,832</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>1,936</b>	<b>0</b>	<b>0</b>

**Department of Commerce**  
 National Oceanic and Atmospheric Administration  
 Medicare Eligible Retiree Health Fund Contribution - NOAA Corps  
**SUMMARY OF REQUIREMENTS BY OBJECT CLASS**  
 (Dollar amounts in thousands)

	FY 2011	FY 2012	FY 2013	FY 2013	Increase/ (Decrease)
<b>Object Class</b>	<u>Actuals</u>	<u>Currently Available</u>	<u>Base</u>	<u>Estimate</u>	<u>over 2012 Base</u>
Other purchases of goods and services from Gov't accounts	1,832	1,936	1,936	1,936	0
<b>Total Obligations</b>	<b>1,832</b>	<b>1,936</b>	<b>1,936</b>	<b>1,936</b>	<b>0</b>
Less prior year recoveries	0	0	0	0	0
Less unobligated balance, SOY	0	0	0	0	0
Plus unobligated balance, EOY	0	0	0	0	0
Offsetting collections, Mandatory	0	0	0	0	0
Less: Previously Unavail. Unoblig. Bal.	0	0	0	0	0
<b>Total Budget Authority Mandatory</b>	<b>1,832</b>	<b>1,936</b>	<b>1,936</b>	<b>1,936</b>	<b>0</b>
 <b>Personnel Data</b>					
Full-Time equivalent Employment:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0
Authorized Positions:					
Full-time permanent	0	0	0	0	0
Other than full-time permanent	0	0	0	0	0
Total	0	0	0	0	0

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