NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
FY 2006 ANNUAL PERFORMANCE PLAN

The National Oceanic and Atmospheric Administration (NOAA) is a future-minded environmental science agency whose mission is to understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet the Nation's economic, social, and environmental needs.

Success in a global economy is linked not only in the ability to respond or react to events but to anticipate or forecast them. Moreover, understanding ocean and atmosphere is essential to sustaining the United States' environmental and economic health. As an agency, NOAA aims to become the global leader for integrated management of the oceans and the atmosphere. From satellite imagery to tornado warnings, navigational charts to fishery stock assessments, hurricane tracking to El Niño and harmful algal bloom predictions, severe weather forecasts to coastal zone management – every day NOAA's science, service and stewardship are essential to the lives of millions of people in the United States. For example, lives, safety and businesses depend on reliable weather and climate forecasts to minimize disruption in economic activity and everyday life. Accurate predictions of severe weather safeguard both lives and economic structure of communities. A deeper understanding of long-term climate and environmental trends can impact daily activities from the strategic planting of crops to better management of water and energy resources. Coastal communities, representing over thirty percent of the U.S. gross domestic product, depend heavily on sustaining healthy marine habitats and a robust ocean ecosystem.

NOAA's science-based management approach provides a solid foundation for economic growth and a healthy economy. New priorities for global observation systems, international cooperation, and homeland security will improve NOAA's delivery and effectiveness of services for all of its mission goals. Ultimately, NOAA's success will be measured in the quality of information, service, and benefits provided to customers – the American public.

Priorities/Management Challenges

The 21st century poses complex challenges for NOAA. As the new century unfolds, new priorities for NOAA action are emerging in the areas of climate change, freshwater supply, ecosystem management, and homeland security. Every aspect of NOAA's mission – ranging from managing coastal and marine resources to predicting changes in the Earth's environment – faces a new urgency to address intensifying national needs related to the economy, the environment, and public safety.

In FY 2003, NOAA updated its Strategic Plan to address global emerging trends and to guide NOAA business processes to address those trends. Significant reports such as the Preliminary Report of the U.S. Commission on Ocean Policy and the Strategic Plan for the U.S. Climate Change Science Program cite growing needs with respect to the oceans, coasts, and response to climate changes. Recommendations in such reports were used to form the

revised NOAA Strategic Plan, setting a framework for addressing the needs of the Nation today and tomorrow. The Strategic Plan responds to the President's Management Agenda for a citizen-centered, results-driven organization that serves every American every day.

In FY 2004 NOAA restructured its Strategic Plan to 1. Retain the four existing goals identified in FY 2003 but re-classify them as NOAA's "mission goals" and 2. Add one goal and classify it as NOAA's "mission support goal." This restructured Strategic Plan sets an agenda to:

Four Mission Goals --

- Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management.
- Understand climate variability and change to enhance society's ability to plan and respond.
- Serve society's needs for weather and water information.
- Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.

One Mission Support Goal --

- Provide critical support for NOAA's mission.

The Plan's elevation in FY 2003 of ecosystem-based management and climate science to high-priority goals is especially noteworthy to meet the challenges of the 21st century. In recent years, extreme drought and flooding conditions in large regions of the Nation combine to make improved water resources prediction an urgent requirement for NOAA's future weather and climate mission. The Plan's emphasis on the Nation's needs for expanded commerce and economic development directly relates to the Administration's focus on a healthy and growing economy.

The Strategic Plan guides all NOAA's management decisions and provides a consistent framework for Line Office and cross-organizational plans, initiatives, and performance measures to be implemented. Through this revised plan, NOAA employees and contractors have a better understanding of their role in meeting NOAA's strategic goal.

Unit Cost Measures

The NOAA performance measures for this report relate to the scientific work conducted within the agency. Because of the technical and complex nature of NOAA activities and the impact of biological and other natural conditions, unit cost measures are currently not used in this report. However, NOAA is currently reviewing its existing performance measures and developing (if needed) new and more relevant measures.

Program Assessment Rating Tool (PART)

FY 06 PART Programs: Climate Program and Protected Areas

The NOAA Climate Program was rated "Moderately Effective" as a result of the Office of Management and Budget (OMB) PART for FY06. The assessment found that the program is relatively strong and has undertaken steps to improve program management and focus on results. Additional findings included: 1) NOAA Climate coordinates with other federal agencies through the Climate Change Science Program; 2) Deficiencies in the management of NOAA's laboratory activities as identified by the NOAA Research Review Team; 3) Need to better integrate performance into budget decisions; and 4) Program has appropriate long-term goals and annual measures which demonstrate progress. In response to these findings, NOAA is developing an action plan for implementation of the recommendations, including evaluating options for consolidating research laboratories and other management changes recommended by the NOAA Research Review Team, as well as implementing a database for tracking performance and linking it to the budget.

The NOAA Protected Areas program includes the National Marine Sanctuaries Program (NMSP) and the Marine Protected Areas Center (MPA Center). The PART applied by OMB gave the NMSP and MPA Center the highest possible rating for their defined purpose and management. Further, the NMSP and the MPA Center scored very well on the planning systems section of the PART. Scores for the results and accountability section resulted in the "adequate" rating overall for Protected Areas program. The PART assessment noted that more integration among the programs within the larger coastal and marine management arena would be an improvement. The assessment also noted the importance of the NMSP's requirement to address site-specific natural and cultural resource protection issues through public processes. In response to these findings, the NMSP and MPA Center will ensure that targets and time frames for performance are ambitious.

Status on implementation of recommendations of previous PART Programs

NOAA is on track to meet the recommendations made on previous PART reviewed programs. NOAA has developed a suite of proposed outcome-oriented measures in response to recommendations regarding the Coastal Zone Management Program and National Estuarine Research Reserve System. In addition, eight states are participating in a pilot effort to assess data sources and refine the proposed coastal management measures for implementation. Regarding the Nautical Mapping and Charting Program**,** NOAA has implemented an interagency agreement with the United States Merchant Marine Academy to look at data to support clear and meaningful linkages between long-term performance measures and annual goals.

In response to recommendations regarding NMFS regulatory programs, NOAA has implemented management and organizational changes including: replacement of the performance measures for the Protected Species Program; merger of the Planning and Budget Formulation Divisions of the Management and Budget Office; improvement of the efficiency and effectiveness of regulatory operations; decreased policy vulnerability to legal challenges; and reduced regulatory burden on the affected public. Regarding the Pacific Coastal Salmon Recovery Fund, NOAA has

developed performance indicators and collected data to develop baseline information to set performance targets to demonstrate results from the Fund. Final measures and their targets will be available March 30, 2005.

FY 2006 Program Increases

Program increases are listed under each Performance Goal (see relevant section).

Targets and Performance Summary

Performance Goal for Ecosystems: Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management

Measure	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Target	FY 2006 Target	Comment
Number of Overfished Major Stocks of Fish	46	45	44	43	42	42	The FY 2003 actual was incorrectly reported in the Department of Commerce FY 2004 Performance and Accountability Report (PAR). The FY 04 Actual is a projection; actual available 5/31/05.
Number of Major Stocks with an "Unknown" Stock Status	120	88	94	85	81	77	The FY 04 Actual is a projection; actual available 5/31/05.
Number of protected species designated as threatened, endangered or depleted with stable or increasing population levels	New	17	18	18	20	22	This is a new measure for FY 2006. FY 2002 – 2005 actuals and targets provided for informational purposes.
Number of stocks of protected species with adequate population assessments	New	New	New	45	55	65	This is a new measure for FY 2006. FY 2002 – 2005 actuals and targets provided for informational purposes.
Number of Habitat Acres Restored (Annual/Cumulative)	1,520	4,300/ 5,820	5,200/ 11,020	5,563/ 16,583	4,500/ 21,083	4,575/ 25,658	In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.

See discussion on page xlvi for background on the following measures:

Measures Under Development	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Target	FY 2006 Target	Comment
Percentage of coastal and marine ecosystems with improved ecosystem health Proxy: Percentage of shallow coral reef ecosystems with improved condition	New	New	New	New	78 percent of states/territories in the National Coral Reef Monitoring Program have implemented a nationally coordinated, long-term monitoring and assessment system. (Complete system implementation by FY 2009).	78 percent of states/territories in the National Coral Reef Monitoring Program have implemented a nationally coordinated, long-term monitoring and assessment system. (Complete system implementation by FY 2009).	FY 05 data is provided for informational purposes. Proxy is measure to be assessed in FY 06.
Percentage of Coastal and Marine Ecosystems Adequately Characterized for Management Proxy: Percentage of Coastal and Marine Protected Area Sites Adequately Characterized	New	New	New	55%	65%	74%	FY 04 and 05 data are provided for informational purposes. Proxy is measure to be assessed in FY 06.
Cumulative Number of Coastal and Marine Ecosystem Forecasting Capabilities Developed and Used for Management	New	New	New	1	1	1	FY 04 and 05 data are provided for informational purposes.
Capacity Building for Ecosystem Management: cumulative number of tools and technologies that improve ecosystem management	New	New	New	New	TBD	TBD	
Cumulative Number of Coastal and Marine Habitat Acres Restored and/or Designated or Acquired for Long-term Protection	New	New	New	15,807	12,969	245,828	This would expand the current acres restored measure listed in the previous table. FY 04 and 05 data are provided for informational purposes.

Performance Goal for Climate: Understand climate variability and change to enhance society's ability to plan and respond

Measure	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Target	FY 2006 Target	Comment
U.S. Temperature Forecasts (Cumulative Skill Score Computed Over the Regions Where Predictions are Made)	20	18	17	17	18	18	
Reduce the Uncertainty in the Magnitude of the North American (NA) Carbon Uptake	New	Identified Five Pilot Carbon Profiling Sites and four New Oceanic Carbon Tracks	Established five pilot atmospheric profiling sites. Established one oceanic carbon track; identified two additional oceanic carbon tracks	Reduce Uncertainty of Atmospheric Estimates of NA Carbon Uptake to +/- 0.5 Gt. Carbon per Year	Reduce Uncertainty of Atmospheric Estimates of NA Carbon Uptake to +/- 0.48 Gt. Carbon per Year	Reduce Uncertainty of Atmospheric Estimates of NA Carbon Uptake to +/- 0.4 Gt. Carbon per Year	This performance measure has been reworded to reflect North America and not just the United States.
Reduce the Uncertainty in Model Simulations of the Influence of Aerosols on Climate	New	New	New	New	New	Establish 15% improvement (baseline: 2001 climate change assessment) in uncertainty in model simulations of how North	This is a new measure for FY 2006.

						American aerosols influence climate	
Determine the National Explained Variance (%) for Temperature and Precipitation for the Contiguous United States using USCRN Stations	New	Captured more than 85% of the Annual National Temperature Trend and more than 55% of the Annual National Precipitation Trend for the Contiguous U.S.	Captured more than 95% of the Annual National Temperature Trend and captured 84% of the Annual National Precipitation Trend for the Contiguous U.S.	Captured more than 96% of the Annual National Temperature Trend and more than 90% of the National Annual Precipitation Trend for the Contiguous U.S.	Capture 96.7% of the Annual National Temperature Trend and 90% of the Annual National Precipitation Trend for the Contiguous U.S	Capture 97% of the Annual National Temperature Trend and 91.2% of the Annual National Precipitation Trend for the Contiguous U.S	The FY 2002 actual of 55% was incorrectly reported in the Department of Commerce FY 2004 Performance and Accountability Report.
Reduce the Error in Global Measurement of Sea Surface Temperature	New	New	New	New	New	0.4 C	This is a new measure for FY 2006.
Improve Society's Ability to Plan and Respond to Climate Variability and Change Using NOAA Climate Products and Information	New	New	New	New	New	32 risk assessments / evaluations communicated to decision makers	This is a new measure for FY 2006.

Performance Goal for Weather and Water: Serve society's needs for weather and water information

Measure		FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Target	FY 2006 Target	Comment
Lead Time (Minutes), Accuracy (%), and False Alarm Rate (FAR, %) for Severe Weather Warnings Tornadoes	Lead Time	10	12	13	12	13	14	Preliminary FY 2004 actual
	Accuracy	67%	76%	79%	75%	73%	76%	Preliminary FY 2004 actual
	FAR	73%	73%	76%	75%	73%	72%	Preliminary FY 2004 actual. In the Department of Commerce FY 2004 Performance and Accountability Report (PAR), the FY 01 actual was incorrectly reported.
Lead Time (Min) and Accuracy (%) for Severe Weather Warnings for Flash Floods	Lead Time	46	52	41	47	48	48	In the FY 2004 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
	Accuracy	86%	89%	89%	89%	89%	90%	In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
Hurricane Forecast Track Error (48 Hour)	Nautical Miles	New	122	107	94	128	128	In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts		New	30	29	29	27	28	In the FY 04 PAR, the FY 03 actual was incorrectly reported.

Lead Time (Hours) and Accuracy (%) for Winter Storm Warnings	Lead Time	13	13	14	15	15	15	In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
	Accuracy	90%	89%	90%	91%	90%	90%	In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
Cumulative Percentage of U.S. Shoreline and Inland Areas that Have Improved Ability to Reduce Coastal Hazard Impacts		8%	8%	17%	17%	28%	32%	

Performance Goal for Commerce and Transportation: Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation

Measure	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Actual	FY 2005 Target	FY 2006 Target	Comment
Reduce the Hydrographic Survey Backlog Within Navigationally Significant Areas (square nautical miles surveyed per year)	2,963	1,514	1,762	2,070	2,700	3,500	
Percentage of U.S. counties rated as enabled or substantially enabled with accurate positioning capacity	New	New	New	25%	28%	33%	This is a new measure for FY 2006.
Accuracy (%) and False Alarm Rate (FAR) (%) of Forecasts of Ceiling and Visibility (3miles/1000 ft.) (Aviation Forecasts):							In the FY 04 PAR, the FY 04 actual was reported as a projection; the actual is reported here.
Accuracy (%)	New	45%	48%	45%	46%	48%	
FAR (%)	New	71%	64%	65%	68%	68%	
Accuracy (%) of Forecast for Winds and Waves (Marine Forecasts)							
Wind Speed	New	52%	57%	57%	57%	60%	
Wave Height	New	68%	71%	67%	67%	70%	

Performance Goal for Mission Support: Provide critical support for NOAA's mission

There are no GPRA measures for the Mission Support goal since the activities of this goal support the outcomes of the Mission goals. NOAA is developing new and improving existing internal management performance measures for the Mission Support Goal.

Measure	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Target	FY 2005 Target	FY 2006 Target
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Resource Requirements Summary
($ in Millions)

Performance Goal for Ecosystems: Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management	**FY 2004 Actual**	**FY 2005 Enacted**	**FY 2006 Base**	**Increase/Decrease**	**FY 2006 Request**
Operations, Research, Facilities					
National Ocean Service	331.0	364.2	226.3	5.9	232.2
National Marine Fisheries Service	632.1	632.1	570.8	52.7	623.5
NOAA Research	164.9	146.4	113.9	4.1	118.1
National Weather Service	0	0	0	0	0
NESDIS	10.7	16.8	17.4	0	17.4
Program Planning and Integration	0	0	0	0	0
Program Support	0	0	0	0	0
Procurement, Acquisition, and Construction	10.4	59.0	0	0	0
Other-Discretionary and Mandatory	114.9	117.1	106.4	0	106.4
Total	1,182.3	1,378.5	1,034.8	62.8	1,097.5
IT Funding	2.6	2.7	2.7	.2	2.9
FTE	3,611	3,484	3,435	43	3,478

Note: Funding amounts reflect direct obligations

Resource Requirements Summary
($ in Millions)

Performance Goal for Climate: Understand climate variability and change to enhance society's ability to plan and respond	**FY 2004 Actual**	**FY 2005 Enacted**	**FY 2006 Base**	**Increase/Decrease**	**FY 2006 Request**
Operations, Research, and Facilities					
National Ocean Service	0	0	0	0	0
National Marine Fisheries Service	1.4	1.5	1.5	.5	2.0
NOAA Research	168.4	173.8	156.2	18.0	174.3
National Weather Service	15.4	17.6	21.5	.2	21.6
NESDIS	51.0	54.1	31.0	1	32.0
Program Planning and Integration	0	0	0	0	0
Program Support	0	3.5	3.5	0	3.5
Procurement, Acquisition, and Construction	3.2	6.4	6.5	0	6.5
Other-Discretionary and Mandatory	0	0	0	0	0
Total	239.5	256.9	220.3	19.7	239.9
IT Funding	60.8	79.7	79.7	-.1	79.6
FTE	603	602	601	11	612

Note: Funding amounts reflect direct obligations

Resource Requirements Summary
($ in Millions)

Performance Goal for Weather and Water: Serve society's needs for weather and water information	**FY 2004 Actual**	**FY 2005 Enacted**	**FY 2006 Base**	**Increase/Decrease**	**FY 2006 Request**
Operations, Research, and Facilities					
National Ocean Service	31.4	28.5	9.6	.4	10.1
National Marine Fisheries Service	0	0	0	0	0
NOAA Research	71.0	65.4	51.2	1.9	53.1
National Weather Service	695.0	671.9	680.1	19.7	699.8
NESDIS	2.7	9.3	5.6	1.1	6.7
Program Planning and Integration	0	0	0	0	0
Program Support	0	.6	.6	0	.6
Procurement, Acquisition, and Construction	83.6	76.6	77.1	11.2	88.3
Other-Discretionary and Mandatory	0	0	0	0	0
Total	883.6	852.3	824.3	34.3	858.6
IT Funding	289.1	286.1	286.1	-9.3	276.8
FTE	4,760	4,655	4,652	0	4,652

Note: Funding amounts reflect direct obligations

Resource Requirements Summary
($ in Millions)

Performance Goal for Commerce and Transportation: Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation	**FY 2004 Actual**	**FY 2005 Enacted**	**FY 2006 Base**	**Increase/Decrease**	**FY 2006 Request**
Operations, Research, Facilities					
National Ocean Service	152.1	141.6	126.0	18.6	144.7
National Marine Fisheries Service	0	0	0	0	0
NOAA Research	0	0	0	0	0
National Weather Service	12.9	14.4	14.9	1.1	16.0
NESDIS	27.1	8.6	8.8	.1	8.9
Program Planning and Integration	0	0	0	0	0
Program Support	0	0	0	0	0
Procurement, Acquisition, and Construction	0	0	0	0	0
Other-Discretionary and Mandatory	0	0	0	0	0
Total	192.2	164.7	149.6	20.0	169.6
IT Funding	11.9	11.9	11.9	.6	12.5
FTE	716	751	755	5	760

Note: Funding amounts reflect direct obligations

Resource Requirements Summary
($ in Millions)

Performance Goal for Mission Support: Provide critical support for NOAA's mission	FY 2004 Actual	FY 2005 Enacted	FY 2006 Base	Increase/Decrease	FY 2006 Request
Operations, Research, Facilities					
National Ocean Service	0	6.9	7.0	.3	7.3
National Marine Fisheries Service	0	0	0	0	0
NOAA Research	1.8	18.5	16.3	0	16.3
National Weather Service	1.5	0	7.4	0	7.4
NESDIS	58.4	87.2	86.8	2.2	89.0
Program Planning and Integration	2.0	2.5	2.0	0	2
Program Support	304.6	361.1	308.2	29.6	337.8
Procurement, Acquisition, and Construction	920.0	900.0	798.5	73.7	872.2
Other-Discretionary and Mandatory	17.2	17.6	18.5	0	18.5
Total	1,304.5	1,393.8	1,244.7	105.8	1,350.5
IT Funding	108.0	110.7	110.7	8.7	119.5
FTE	2,178	2,437	2,515	1	2,516

Note: Funding amounts reflect direct obligations

Resource Requirement Summary
($ in Millions)

	FY 2004	FY 2005	FY 2006
Grand Total	Actual	Enacted	Request
Operations, Research, and Facilities			
National Ocean Service	514.5	541.2	394.2
National Marine Fisheries Service	633.5	676.5	625.5
NOAA Research	406.0	404.1	361.7
National Weather Service	724.8	703.9	744.8
NESDIS	149.9	176.1	154.0
Program Planning and Integration	1.9	2.5	2.0
Program Support	304.6	365.2	342.0
Procurement, Acquisition, and Construction			
National Ocean Service	128.3	127.1	14.5
National Marine Fisheries Service	32.1	31.0	2.0
NOAA Research	32.2	9.7	10.5
National Weather Service	102.2	79.1	94.4
NESDIS	663.9	731.4	809.9
Program Support	58.4	63.9	35.7
Other Accounts			
Discretionary			
National Ocean Service	0	0	0
National Marine Fisheries Service	2.9	90.1	89.6

Resource Requirement Summary
($ in Millions)
(Continued)

	FY 2004	FY 2005	FY 2006
	Actual	Estimate	Request
Mandatory			
National Ocean Service	7.3	1.0	6.0
National Marine Fisheries Service	23.2	26.0	10.8
Program Support	16.3	17.6	18.5
Direct	3,904.3	4,046.3	3,716.1
Reimbursable	209.2	209.2	209.2
Total Funding	4,113.5	4,255.5	3,925.3
IT Funding*	472.4	491.1	491.3
FTE			
Direct	11,868	11,929	12,018
Reimbursable	713	849	815
Total	12,581	12,778	12,833

*IT funding included in total funding.

Notes:

Funding amounts reflect direct obligations.
Other Accounts/Mandatory Program Support is a breakout of the NOAA Commissioned Officers Retirement Account.

Performance Goal for Ecosystems: Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management

DOC Strategic Goal 3: Observe, protect, and manage the earth's resources to promote environmental stewardship

General Goal/Objective 3.2: Enhance the conservation and management of coastal and marine resources to meet America's economic, social and environmental needs

Coastal areas are among the most developed in the Nation, with over half of our population lives on less than one-fifth of the land in the contiguous United States. Coastal counties, including those along the Great Lakes, are growing three times faster than counties elsewhere, adding more than 3,600 people a day to their populations. Coastal and marine waters support over 28 million jobs, and provide a tourism destination for 180 million Americans a year. The value added to the national economy is over $115 billion. The amount added annually to the national economy by the commercial and recreational fishing industry alone is over $48 billion annually, with an additional $6 billion in direct and indirect economic impacts from aquaculture. With its Exclusive Economic Zone of 3.4 million square miles, the U.S. manages the largest marine territory of any nation in the world. Within this context, NOAA works with its partners to achieve a balance between the use and protection of these resources to ensure their sustainability, health, and vitality for the benefit of this and future generations and their optimal contribution to the Nation's economy and society.

NOAA has a unique mandate form Congress to be a lead Federal agency in protecting, managing and restoring these marine resources. To meet this mandate, our scientists, specialists, and external partners contribute a world-class expertise in oceanography, marine ecology, marine archeology, fisheries management, conservation biology, natural resource management, and risk assessment. To achieve balance among ecological environmental and social influences, we have adopted an ecosystem approach to management. We recognize that the transition to an ecosystem approach must be incremental and collaborative. In pursing this approach, we strive to integrate the concerns, priorities, and expertise of all citizens and sectors in the management of coastal and marine resources.

Until ecosystem approaches are fully adopted, NOAA will continue to manage on a more narrowly focused species- and site-specific basis. However, NOAA will be improving the science, management, and regulatory processes to implement a more comprehensive ecosystem approach that will allow better management decisions for the Nation's ocean, coastal, and Great Lakes resources.

Program Initiative	FTE	Funding Request	Anticipated Impact
Expand Stock Assessments-Improve Data Collection	8	$4,597,000	Address long-standing shortfalls in fisheries science, fishery monitoring, and fisheries data management capabilities.
Fish Statistics-Economics	7	$4,400,000	Enhance economic and socio-cultural data collection programs, data which is

and Social Science Research			necessary to estimate both the market and non-market benefits society derives from living marine resources, and for assessing the human impacts from and responses to management decisions.
Observers/Training	2	$1,469,000	Increase observer coverage by approximately 604 additional sea days. This level of funding will also enable NOAA to fully meet sampling design objectives in three currently observed fisheries and initiate coverage in two additional fisheries to obtain preliminary estimates of catch and bycatch rates. This information will allow development and implementation of a statistically valid sampling design in these fisheries within three to five years.
Conservation and Management Base - Vessel Buyback	0	$440,000	Funds will help NOAA to reduce Atlantic pelagic long-line swordfish fishery vessels. NOAA plans to partner with the fishing industry to plan and conduct a voluntary permit buyback program in the commercial sector of the Atlantic Highly Migratory Species (HMS) pelagic and bottom longline fisheries. This reduction will help achieve an appropriate balance between resource availability and harvesting capacity in this fishery, reduce conflicts with recreational user groups targeting these resources, and reduce bycatch of important species like blue and white marlin and endangered sea turtles.
Regulatory Streamlining:	7	$595,000	Improve quality and timeliness of regulatory processes and policy development for Fishery Management Program. Also reduce the time required to review and process rules and regulations, increase public participation, and generate long-term savings to government.
Regional Councils	0	$1,305,000	Allow the Regional Fishery Management Councils to analyze a greater range of alternatives when developing new Fishery Management Plans or amendments to current plans to reduce levels of overfishing and overcapacity while taking into consideration the impacts of proposed actions on other components of the marine ecosystem.
Science and Technology: Ocean Sound Research	2	$1,100,000	Better understand the effects of ocean sound on protected marine species. Allow the development of cost effective mitigation measures to help prevent the decline of marine protected species.
Protected Resources Stock Assessments and Mortality Estimation	5	$1,172,000	The request will increase the number and quality of stock surveys and assessments on which to base regulatory decisions. These assessments provide timely, reliable, and precise estimates of distribution, abundance, and mortality estimates for listed species. Imprecise estimates increase the probability that species will be misclassified under the ESA or MMPA; resulting in increased risk to the species, delay of recovery, and

			additional mitigation measures that pose significant economic losses to the regulated community. NMFS is required to evaluate the status of listed species annually for MMPA listings and every five years for ESA listings, and to reclassify the affected listing as appropriate following these status reviews.
Protected Species Proactive Conservation	1	$2,550,000	Reduce the risk of extinction for two species by reducing threats to the species through on-the-ground conservation actions or development of management agreements.
Minimizing Impacts to Protected Species While Enhancing Public Service	3	$1,000,000	Develop take reduction plans for marine mammals which should reduce their interactions with other fisheries. Reduce fishery interactions coupled with improved ESA section 7 consultation and permitting will lead to stable or increasing populations of protected species.
Recovery Plan Development and Implementation	0	$750,000	Increased capacity to plan for and implement recovery actions for ESA-listed species. These efforts will have a direct impact on addressing threats to species survival and will lead to stable or increasing population trends.
Great Lakes Habitat Restoration	3	$1,500,000	Establish a Great Lakes Habitat Restoration Program, emphasizing protection and restoration of NOAA trust resources at the watershed scale within the Great Lakes Areas of Concern. Provide technical support to assist in the prevention of invasive species and limiting the spread of established invasive species, harmful algal bloom, etc.
Aquatic Invasive Species Program	0	$2,502,000	Protect coastal aquatic resources from the serious and increasing challenges of invasive species.
NCCOS – Expand and Improve Coastal Monitoring, Assessments, and Forecasts, Science in Support of Coastal Zone Management.	3	$700,000	Enhance the quality and quantity of ecosystem data collected in support of coastal resource conservation and management activities. Develop new ecological forecast capabilities and increase efforts to transfer technology to coastal resource managers.
NCCOS – Improve Protected Areas Research, Education, and Outreach	1	$400,000	Expand scientific research in protected areas. Will also accelerate efforts to provide more comprehensive support to the National Marine Sanctuaries Program and the National Estuarine Reserve System for better management too meet goals of each protected area due to a broader scientific foundation.
NCCOS – Strengthen the Assessment of Stressors in Chesapeake Bay	0	$500,000	Provide more information on the types of stressors impacting Chesapeake Bay in order to support stronger linkages to marine diseases found in commercial and recreational species of importance to the Bay.

NCCOS – Center for Coastal Environmental Health and Biomolecular Research	0	$500,000	Develop a better understanding of the effects of different land use practices on the health of the Bay's resources, particularly on the incidence of disease in commercially important species in the Bay.
NCCOS – Increase the Understanding of Harmful Algal Bloom	0	$500,000	Increase the understanding of the processes that control the reproduction and growth of harmful algal blooms.
Coral Reef Program – local action strategy	0	$1,500,000	Increase will be used to augment state and territory grants for the implementation of Local Action Strategy (LAS) projects. Implementing LAS projects will significantly reduce specific threats to valuable U.S. coral reefs. It will also leverage non-NOAA resources for additional on-the-ground actions.
National Estuarine Research Reserve System	0	$575,000	Funding will provide equipment and staffing support for physical and biological monitoring to implement the NERRS System Wide Monitoring Program.
CZM Program Administration	1	$220,000	To support NOAA staff to work with a new reserve in Texas and the associated travel, equipment, training, rent and supply costs. In addition, the increase will cover printing of revised reserve system information to include the new reserve, and contractual funds to update reserve system plans and performance measures for facilities, land acquisition, research and education to cover the addition of the Texas reserve.
Pacific salmon	0	$200,000	Also part of the FCRP. The goal is to measure changes in habitat capacity, and establish a linkage between habitat attributes and fish distribution, and tracking population growth rate and habitat trends.
Restorations of FY 2005 program funds		$36,355,000	This increase will restore funds requested in FY 2005 to several programs that carry out base operations.

Measure 1a: Number of Overfished Major Stocks of Fish

Explanation of Measure

The purpose of this measure is to focus on the number of major stocks that were listed as overfished in the 2000 Report to Congress on the Status of Fisheries that have not yet been rebuilt to sustainable levels. A major stock is defined as a stock that yields annual catches of more than 200 thousand pounds (90.7 metric tons). In 2000, there were 287 major stocks, of which 56 were listed as overfished. The original baseline of 56 was changed to 46 because 10 of the 56 stocks were later reclassified as not being overfished as defined in the Fisheries Management Plan.

The goal for this measure is to reduce the number of overfished stocks from a FY 2000 baseline of 46 to 32 by 2009. The term overfishing means that the harvest rate is above a prescribed threshold. Overfished means the biomass of a given fishery's stock is below a prescribed threshold. Overfished stocks are defined in the Fisheries Management Plan.

The National Marine Fisheries Service (NMFS) is providing some financial assistance, such as disaster relief programs, to alleviate some of the hardship confronting fishermen during the course of rebuilding fisheries stocks.

FY 2005 and FY 2006 Targets

There are a wide range of actions and activities that will be taken in order for NOAA Fisheries to meet the FY 2005–FY 2006 targets. The measure 'Number of Overfished Major Stocks of Fish' gauges whether the NOAA Fisheries Management Program is on the right track. The desired outcome of the program is to manage Federal fisheries for sustainability at maximum levels. To accomplish this, and meet the FY 2005–FY 2006 targets, NOAA Fisheries will: approve the fisheries management actions recommended by the Regional Fishery Management Councils, approve proposed management programs and implement the required Federal regulations. These actions require many sub-activities in order to be accomplished, such as: drafting and reviewing regulations; reviewing the biological, economic, and social analysis; overseeing the NEPA analysis and review; supervising the general review and approval process implementing regulatory requirements.

Measure 1b: Number of Major Stocks with an "Unknown" Stock Status

Explanation of Measure

The purpose of this measure is to focus on the number of overfished major stocks for which the population status is known. There are 909 stocks overall (as reported in the Annual Report to Congress), of which 641 have a population status of either unknown or undefined. Currently, the population status of 161 major stocks is known. The measure addresses reducing the number of stocks with an unknown population status. The goal for this measure is to reduce the number of major stocks with an unknown status to no more than 69 by FY 2009.

Not all unknown stocks are of equal importance; parameters such as the value and quantity of catches or known role in the ecosystem as key predators or prey determine a stock's level of importance. This measure takes into account the outcome of investments in staff and data acquisition, such as charter and research vessel days-at-sea and stock assessment methodological research.

FY 2005 and 2006 Targets

The target "Reduce Number of Major Stocks with an 'Unknown' Stock Status" is to move four major fish stocks from "unknown" status to "known" status annually. Therefore, there will be eight fewer major stocks with "unknown" status by the end of FY2006. The status of a major

fish stock is considered "known" when the requirements are fulfilled for Tier 2 of the Marine Fish Stock Assessment Improvement Plan, "Elevate Stock Assessment to New National Standards of Excellence." These requirements are fulfilled when data collection and assessment models for major species are upgraded to achieve Level 3 Assessments, which comprise analytical models in which ages or species are integrated.

Measure 1c: Number of Protected Species Designated as Threatened or Endangered under the Endangered Species Act, or as Depleted under the Marine Mammal Protection Act, with Stable or Increasing Population Levels

Explanation of Measure

This is a new measure. The Protected Species Management program has revised all performance measures for the program to better reflect actual performance of the program as well as to allow better tracking and reporting of performance measures. The revised performance measures reflect a focus on protected species and the conservation and recovery of protected species through assessments, planning and actions. This measure tracks progress at achieving partial recovery of endangered, threatened or depleted protected species under the jurisdiction of the National Marine Fisheries Service from a baseline of 66 species established as of January 1, 2004. Protected species are defined as all marine mammal stocks (except walruses, polar bears, and manatees) and those domestic non-marine mammal species listed as threatened or endangered under the Endangered Species Act that are under the jurisdiction of the National Marine Fisheries Service. Marine Mammal species can be listed as "depleted" under the Marine Mammal Protection Act.

Recovery of threatened, endangered, or depleted protected species is very slow and can take decades. While it may not be possible to "recover or de-list" a species in a one or two year time frame, progress can be made to stabilize or increase the species. For some, it is trying to stop a steep decline (right whales, stellar sea lions); for others it is trying to increase their numbers/abundance (Ridley turtles). NOAA's protected species management efforts are focused on halting declines and conserving species while still allowing human activities to continue.

FY 2005 and FY 2006 Targets

In FY 2006, NOAA will make specific investments in minimizing impacts to protected species, improving recovery planning and implementing recovery actions, and implementing recovery with states, tribes and local entities. Strategies to accomplish this performance measure include enforcing existing conservation measures; conducting priority research as identified in species recovery plans; developing partnerships with states and others to implement conservation programs; and building the tools and technology to improve the effectiveness of conservation actions. Improved protected species stock assessments and improved understanding of the effects of ocean noise will help the Protected Species Management program to make informed management decisions, leading to increased protection for species, while allowing human activities to continue.

Measure 1d: Number of stocks of protected species with adequate population assessments

Explanation of Measure

This is a new measure. The Protected Species Management program has revised all performance measures for the program to better reflect actual performance of the program as well as to allow better tracking and reporting of performance measures. The revised performance measures reflect a focus on protected species and the conservation and recovery of those species through assessments, planning and actions. This measure gauges efforts to improve the quality and quantity of information used in assessing the status of individual stocks of protected species. While some protected species are listed as large units under the ESA, they are managed at the stock and population level and this level is the best way to gather information on status and trends. As of the end of FY2003 only 52 of 229 stocks have adequate assessment frequency and quality that provides information on demography, abundance, habitat use, food habits, or anthropogenic impacts (Tier II).

FY 2005 and FY 2006 Targets

In FY 2006, NOAA will make specific investments in improved protected species stock assessments. NOAA Fisheries is in the process of finalizing a stock assessment improvement plan for marine mammals and sea turtles that outlines the resource needs to achieve the FY2006-2010 performance targets. The goal of the program is to achieve adequate assessments for all protected species stocks by 2010.

Measure 1e: Number of Habitat Acres Restored (Annual/Cumulative)

Explanation of Measure

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 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.

FY 2005 and FY 2006 Targets

NMFS participates in a variety of regional and national programs to restore NOAA trust resources and meet the FY 2005 - FY 2006 targets. On a national basis, NMFS directs restoration planning, implementation and monitoring for the Community-based Restoration Program, a program of modest grants for local, partnership-based restoration activities. Over 100 such projects will be funded in FY 2005 and FY 2006. NMFS serves as the Department of Commerce representative to the Coastal Wetlands Planning, Protection and Restoration Act Task Force, through which the agency undertakes large-scale habitat restoration and protection projects in coastal Louisiana. NMFS serves as the primary source of restoration expertise for the NOAA Damage

Assessment and Restoration Program. Working with staff from the National Ocean Service and the NOAA General Counsel's Office, NMFS experts address large-scale oil spills, releases of toxic compounds, and ship groundings to obtain monetary compensation from responsible parties and apply funds to restore or replace injured resources.

Development of Crosscutting Ecosystem Performance Goal Measures

Through implementation of NOAA's mandates and responsibilities, NOAA has realized the importance of integrating its efforts and adopting an approach that incorporates ecosystem-based principles and practices. In response, in FY 2003, NOAA elevated the importance of an ecosystem approach to management in the NOAA Strategic Plan. The Plan states that NOAA will target its resources to "build healthy and productive coastal and marine ecosystems that will benefit society and engage the public so they can serve as stewards of these ecosystems." Because an ecosystem approach is evolving across NOAA and other Federal agencies, NOAA recognizes that implementing this approach must be incremental and collaborative.

An expected long-term outcome for NOAA's ecosystem approach to management is engendering healthier ecosystems. Many NOAA activities are dedicated to achieving this outcome. To gauge NOAA's progress toward this outcome, NOAA is developing a long-term outcome measure, *coastal and marine ecosystems with improved ecosystem health.* Although NOAA is not currently in a position to comprehensively assess the health of coastal and marine ecosystems, NOAA can assess various indicators. For example, NOAA has made significant progress in its ability to monitor the health of shallow coral reef ecosystems, a smaller, nested ecosystem. (All ecosystems are composed of smaller, nested ecosystems.) NOAA will use the measure of shallow coral reef health, i.e., percentage of shallow coral reef ecosystems with improved condition, as a proxy for the larger ecosystem health measure to illustrate what NOAA is planning to accomplish on the larger ecosystem scale and to demonstrate the progress it is making in one type of ecosystem.

NOAA has identified four intermediate outcomes that contribute to realizing this long-term goal. The four intermediate outcomes build on foundational elements of NOAA's enterprise and should culminate in improved coastal and marine ecosystem health. They are characterization of coastal and marine ecosystems; ecosystem capacity building development, transfer, and use; ecosystem forecasting; and habitat protection and restoration Achieving these intermediate outcomes will require more integration and major crosscutting activities and will evolve over time as NOAA's capabilities to support an ecosystem approach to management matures.. To maximize results for American society, NOAA will continue to focus resources and partnership enterprises on priority coastal and marine ecosystems with the greatest needs or under the greatest threats.

Each of the four intermediate outcomes would be tracked by a performance measure. What follows are descriptions of these measures. These new performance measures when fully implemented will give NOAA an end-to-end analysis of performance. These measures are representative of NOAA's plans to date for measuring ecosystem performance. They are included in the *Annual Performance Plan* to alert stakeholders to NOAA's serious commitment to the health and productivity of coastal and marine ecosystems. These measures are interconnected and designed to track NOAA's performance in achieving the greatest impact on ecosystem health for priority coastal and marine resources.

Ecosystem characterizations (scientifically-based information on their location, size, and biological, chemical, and physical characteristics) provide foundational information on current ecosystem health and provide data for many coastal and marine management tools including forecasts, assessments, and management plans. These characterizations are essential to understand the history, current state, and future condition of the ecosystems NOAA works in. Ultimately, ecosystem characterizations will allow NOAA to address a broad set of management issues across multiple habitat types to document change, forecast affects of environmental stressors, and evaluate management response.

Ecosystem forecasting will enable managers of coastal and marine resources to predict future ecosystem status and health to understand potential impact of stressors to those resources.

Ecosystems capacity building provides information, knowledge, and expertise (intermediate analysis and targeting of resources) to support coastal and marine managers and other users of NOAA's products and services. This measure will help guide decision-making by NOAA and across other agencies and programs involved in ecosystem approaches to management. This measure dovetails with performance measures for forecasting and characterization, in that each of these activities can only be successful if transferred and used by others.

Habitat restoration and long-term protection maintains or restores habitats that provide critical ecosystem functions, as well as many other societal or economic benefits, to improve overall ecosystem health. These other activities (forecasting, characterization, etc.) impact NOAA's success at restoring and protecting habitat that ultimately improves ecosystem health.

Measures under Development

Measure 1f-i: Percentage of coastal and marine ecosystems with improved ecosystem health (as demonstrated by a suite of indicators of ecosystem health)

Proxy: Percentage of shallow coral reef ecosystems with improved condition

The key outcome of NOAA's Ecosystem Goal is "Healthy and productive ocean, coastal, and Great Lakes ecosystems that benefit society". NOAA works to achieve this goal through the execution of numerous legislative mandates, which convey public trust responsibilities to NOAA for the nation's coastal and marine resources. NOAA, other Federal, state, and local government agencies, the private sector, nongovernmental groups and the public influence the desired outcome. To gauge progress toward achieving this goal, NOAA is developing a new performance measure that indicates whether ecosystem health is improving in each of the large ecosystems or subecosystems within its purview.

However, much work remains to implement this measure. For example, NOAA has begun to delineate coastal and marine ecosystems at their largest scale. NOAA will continue to develop this regional framework, and in consultation with key stakeholders, to identify subecosystems

(encompassing coastal watersheds and marine waters). Concurrently, NOAA will be developing indicators of ecosystem health in those regions. Until the ecosystems are defined and a set of indicators of ecosystem health has been identified, proxies will be required to monitor NOAA's results.

In the short to medium term, NOAA has two options for placeholder measures to track progress toward impacting the ecosystem health outcome. NOAA can potentially utilize the *Coastal Condition Report,* a U.S. Environmental Protection Agency report (produced with assistance from NOAA) that tracks the health of coastal regions using a series of indicators. However, these indicators are not compiled and reported on annually. This Report's data could serve as an interim measure of ecosystem health, reported periodically rather than annually. As a preferred option, NOAA is also helping strengthen monitoring and assessment of coral reef ecosystems and is working with many partners to assess the condition of U.S. coral reef ecosystems through biennial reports. This is one example of the type of assessment NOAA will develop in the future for a variety of marine and coastal ecosystems, and could serve as a place-holder for a larger "ecosystem health" measure until the new measure indicators, baselines, and targets are defined on the larger scale for overall ecosystem health.

NOAA works with many Federal, state, territory, and other partners to conduct observations, assess information, and track the health of shallow coral reef ecosystems in three main categories: water quality, habitat condition, and living marine resources. NOAA receives annual monitoring reports from U.S. states and territories with coral reefs detailing trends in water quality, habitat condition, and living marine resources. If two or more of the parameters are showing a significant improvement, the coral reef region is considered to have "improved condition." The Coral Reef Conservation Program is currently validating the criteria for a "significant improvement" with regional experts and expects agreement by the end of FY 2005.

FY 2007 and Beyond Targets

For the coral reef ecosystem indicator measure, the 2004 baseline is zero. Given the relatively short (three years) period of time for National Coral Reef Monitoring Program, none of the coral reef regions are showing improvement at this time. For the coral reef ecosystem indicator measure, targets include: 25% of coral reef regions improving by 2010; 50% of coral reef regions improving by 2012; and 75% of coral reef regions improving by 2014.

Measure 1f-ii: Percentage of Coastal and Marine Ecosystems Adequately Characterized for Management

Proxy: Percentage of coastal and marine protected area sites adequately characterized

Sound management of coastal and marine ecosystems requires scientifically-based information on their location, size, and biological, chemical, and physical characteristics. NOAA characterizes ecosystems on many scales to inform managers and users of coastal and marine resources.

Because ecosystems are dynamic, characterizations must be done both short- and long-term. In addition, characterizations can assist management decisions for a small or large geographic area. NOAA will prioritize what and when to characterize based on major needs of governments and stakeholders managing the coastal zone, protected areas, or NOAA trust resources (essential fish habitat, National Marine Sanctuaries, National Estuarine Research Reserves, and coral reef ecosystems). NOAA and partners will identify key parameters for characterizing and tracking their health.

However, much work remains to implement this measure. The components of an adequate ecosystem characterization will vary by ecosystem. Characterization of an ecosystem will likely be measured as uncharacterized (undefined), substantially characterized (with defined location, size, and physical characteristics), and adequately characterized (builds upon substantially characterized with biological and chemical characteristics).

In the short to medium term, NOAA has two options for placeholder measures to track progress toward completing ecosystem characterizations. NOAA has adequately characterized all U.S. coral reef ecosystems — NOAA could report this baseline information as a way of demonstrating progress in one component of the larger ecosystem. NOAA also characterizes coastal and marine areas that it manages for long-term protection. NOAA can report its progress in characterizing these sites as another component of the larger ecosystem.

FY 2007 and Beyond Targets

By the end of FY 2004, NOAA adequately characterized all U.S. coral reef ecosystems. The measure "Percentage of coastal and marine protected area sites adequately characterized" tracks the progress of 13 National Marine Sanctuaries and 26 National Estuarine Research Reserves in completing monitoring and assessment to characterize the sites for ongoing management and long-term protection.

Under the current schema, by 2011, 50% of sites will have been adequately characterized. As NOAA refines its definition of an adequate ecosystem characterization for management, these targets will evolve.

Measure 1f-iii: Capacity Building for Ecosystem Management: Cumulative number of tools and technologies that improve ecosystem management

NOAA develops and transfers its products and services and those of other stakeholders (e.g. EPA) to improve the capacity of decision makers and the public for coastal and marine ecosystem management. These products and services are intended to provide information, tools, and technologies by Federal, state, local and tribal authorities and other users whose actions impact coastal and marine ecosystems (e.g., private industry and the public). NOAA builds capacity through technical assistance, education, training, and outreach based on assessments of the users' highest needs. This measure tracks whether NOAA activities are producing increased capacity for ecosystem management. NOAA plans to employ evaluations and surveys to assess usefulness of these products and services.

FY 2007 and Beyond Targets

NOAA will develop indicators, baseline, and targets for this measure during FY 2005.

Measure 1f-iv: Cumulative Number of Coastal and Marine Ecosystem Forecasting Capabilities Developed and Used for Management

NOAA is developing ecosystem forecasting models on several scales to help resource managers and other users (governmental and nongovernmental organizations and the private sector) protect coastal, marine, and human health; restore degraded environments and ecosystem functioning; and sustain living marine resources (managed fisheries and protected species). Managers will routinely use NOAA forecasts of ecosystem status and health to understand potential impact of stressors (e.g., climate change, pollution, and invasive species). Using field and laboratory studies, data, and models predicting environmental conditions under different scenarios, these forecasts will provide managers a prediction of how no management action or different actions will impact the ecosystem.

This measure tracks whether NOAA's forecasts are being used for management. It counts the cumulative number of ecosystem health forecast capabilities as they become operational. For example, Harmful Algal Blooms (HAB) forecasts in the Gulf of Mexico and Gulf of Maine would be counted as two forecast capabilities. Similarly, forecasts on HABs, pink shrimp harvest, and hypoxia in the Gulf of Mexico would be counted as three forecast capabilities in a single ecosystem. NOAA develops forecast capabilities based on the highest needs of managers and other users. NOAA will use evaluations and surveys to assess whether managers and other users have employed NOAA forecasts in management decisions.

FY 2007 and Beyond Targets

By the end of FY 2004, the capability to forecast HABs in the Gulf of Mexico was complete. Under the current schema, by 2011, five NOAA ecosystem forecast capabilities are affecting management decisions. The ultimate goal is for resource managers to use NOAA's forecasts routinely.

Measure 1f-v: Cumulative Number of Coastal and Marine Habitat Acres Restored and/or Designated or Acquired for Long-term Protection.
(Note: This is a proposed expansion of the current GPRA measure *Number of acres restored*.)

Serious habitat degradation is evident throughout the nation's coastal and marine areas. Current threats to these habitats include contaminants, invasive species, and coastal urbanization. Habitat restoration and long-term protection are critically needed to help to reverse this trend. As a natural resource trustee and under legislative mandates, NOAA protects and restores key habitats that provide critical ecosystem functions that support the health of endangered or threatened species, essential fish habitat, as well as provide a number of other societal or economic benefits. NOAA maintains the health of coastal and marine habitats by designating and managing important areas for long-term conservation and as providing support to state and local governments to protect additional key habitats by purchasing land from willing sellers. NOAA also increases effectiveness of habitat restoration efforts by conducting damage assessments, providing solutions for protective environmental cleanup, partnering with other stakeholders, and providing technical assistance for community-based habitat restorations.

This measure has two indicators, 1) number of acres restored and 2) number of acres designated or acquired for long-term protection. These indicators describe distinct actions by NOAA to maintain or improve ecological functions.

- The *restored* indicator, an existing GPRA measure, tracks the number of restored habitat acres that had been lost or degraded as a result of development and other human activities, including pollution. The *restored* acres are the actual number of acres restored in a fiscal year.

- The *long-term protection* indicator tracks the number of acres designated for long-term protection by NOAA or by state partners, such as through the National Marine Sanctuary Program (NMSP) and National Estuarine Research Reserve System (NERRS), natural resource damage settlements, or acres acquired with NOAA funds by state or local government agencies from willing sellers for long-term protection of important coastal habitats. The protected acres are the actual number of acres protected in a fiscal year.

Since this measure does not capture all of NOAA's activities to protect habitats, NOAA is exploring how to further expand it to encompass them. (If the measure cannot be expanded to accomplish this, and it currently appears unlikely, then another approach to measure habitat protection will be implemented; NOAA is targeting FY 2007 to implement such a measure.) The measure does not track NOAA's proactive efforts to educate landowners and inform decision-makers about reducing the number of proposals that degrade or destroy habitat or its reactive efforts to comment on permits requesting development in areas that would have adverse effects on marine and coastal ecosystems.

FY 2007 and Beyond Targets

The goal for the restored indicator is about 4,500 acres each year. The cumulative total represents acres restored starting from a baseline of FY 2001. The goal for the long-term protection indicator is more variable, as the yearly target can vary from hundreds to thousands of acres each

year. For example, the initial habitat designation or acquisition for a new reserve or sanctuary may be in the range of hundreds of thousands of acres. The cumulative total represents acres designated or acquired to date for the National Estuarine Research Reserve System, National Marine Sanctuaries Program, and Coastal and Estuarine Land Conservation Program.

Discontinued Measures

* Actual is available May 2005.

Measure: Increase in Number of Threatened Species with Lowered Risk of Extinction

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Target	2	2	5	5	6	No target
Actual	2	7	7	*		
Met/Not Met	Met	Met	Met			

Measure: Number of Commercial Fisheries that Have Insignificant Marine Mammal Mortality

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Target	2	6	6	8	8	No target
Actual	2	3	5	*		
Met/Not Met	Met	Not Met	Not Met			

Measure: Increase in Number of Endangered Species with Lowered Risk of Extinction

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Target	3	6	6	6	7	No target
Actual	3	5	5	*		
Met/Not Met	Met	Not Met	Not Met			

Measure: Percentage of Plans to Rebuild Overfished Major Stocks to Sustainable Levels

	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Target	New	94%	96%	90%	98%	98%
Actual	93%	90%	90%	*		
Met/Not Met	-	Not Met	Not Met			

Explanation of Discontinued Measures

The first and third of the measures listed above are being replaced because NMFS does not have sufficient resources to determine the risk of extinction of endangered and threatened species with a frequency sufficient for the measures to meaningfully represent program performance. Determination of the risk of extinction involves many different factors that are examined collectively only during a full status review. Such reviews are carried out infrequently, often at five-year intervals or more, due to resource and data limitations. As a result, the measures showed little movement from year to year, and therefore did not reflect ongoing successful conservation efforts or increases in population levels. The new measure 1d, which replaces these measures, focuses on population status only rather than risk of extinction. Because this is measurable on an annual basis, it should be more sensitive to year-to-year changes, and as such is a more accurate reflection of program performance.

The second measure listed above is being discontinued because it focuses on management actions rather than on the effects of those actions on species. The new measure 1e is more outcome-oriented and is thus a better reflection of the program's performance. It will also be easier to track on an annual basis. The fourth measure is being discontinued because it too focuses on management actions rather than on the effects of those actions on stocks. NMFS will continue to track this measure on an annual basis but not for the purposes of the Annual Performance Plan and the Performance and Accountability Report.

Program Evaluation

Virtually every aspect of National Marine Fisheries Service's fisheries science program is peer reviewed, either internally within NMFS or outside the agency by, for example, the National Academy of Sciences or the National Science Foundation. NMFS also relies on extensive informal networks of university partnerships and laboratories throughout the Nation. Moreover, reviews often occur by opposing parties' scientists in the court system when fisheries management decisions are litigated.

Evaluation efforts include peer reviews of proposals, internal and external reviews of programs, and quarterly reviews of NMFS' overall performance in protected species recovery. Constituent input is an important part of the evaluation process and is solicited regularly through constituent workshops.

NOAA's goal to sustain healthy coasts is the product of more than 25 years of experience helping to understand and manage coastal resources so that their ecological and economic productivity can be fully realized and sustained. Evaluation efforts exist at a variety of levels, from peer reviews of proposals and evaluations of individual projects, to internal and external reviews of entire programs and quarterly reviews of NOAA's overall performance in coastal stewardship areas. Constituent input is an important part of the evaluation process and is solicited regularly through constituent workshops.

Cross-cutting Activities

Intra-Department of Commerce

The National Marine Fisheries Service will focus on reducing overfishing and overcapitalization of U.S. fishery resources by improving stock assessment and prediction, improving essential fisheries habitat, and reducing fishing pressure, including downsizing of fishing fleets. The Department of Commerce, enlisting the support of key bureaus such as the Economic Development Administration, the Minority Business Development Agency, and the National Institute of Standards and Technology, will play a key role in mitigating the impact of these critical resource conservation decisions in the transition to economically sustainable communities.

Other Government Agencies

The Department of Commerce will enlist the support of other federal agencies, such as USDA, the Small Business Administration, and the U.S. Department of Labor, to mitigate the effect of resource conservation decisions.
Over the past year, NMFS has developed innovative partnerships with the states of Maine, Washington, Oregon, and California to promote the recovery of listed and at-risk salmon and steelhead species.

NOAA has leveraged its resources through a variety of effective international, interagency, state, local, private sector, and other partnerships to develop world-class coastal stewardship capabilities. These partnerships are essential to effectively integrate coastal science, assessment, monitoring, education, and management activities.

NOAA provides technical and scientific assistance to a variety of partners involved in protection, monitoring, and restoration of coastal resources. For example, NOAA provides critical information to the U.S. Coast Guard to help the Coast Guard respond to approximately 70 serious oil and chemical spills every year. NOAA also works closely with other agencies, Department of Commerce bureaus, states, local governments, and industry on important cross-cutting activities such as reducing the risks and impacts of natural hazards, protecting and restoring essential fish habitats, reducing runoff pollution, forecasting and preventing harmful algal blooms, and exploring the deep ocean and new uses of the ocean's rich biodiversity.

External Factors and Mitigation Strategies

Various external factors may affect NMFS' ability to reach its targets. The impact of climate, biological, and other natural conditions affect NMFS' efforts to recover protected species and maintain the status of healthy species. In addition, many of NOAA's coastal stewardship activities depend on contributions from multiple partners, particularly states, territories, and other federal agencies. The failure of one or more of these partners to fulfill their cooperative contributions could have very serious consequences on overall efforts. Further, the effect of national and/or local economic conditions may affect NOAA's ability to reach certain targets. Research may identify opportunities to pursue mitigating strategies in some cases.

Performance Goal for Climate: Understand climate variability and change to enhance society's ability to plan and respond

DOC Strategic Goal 3: Observe, protect, and manage the earth's resources to promote environmental stewardship

General Goal/Objective 3.1: Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs

Society exists in a highly variable climate system, with conditions changing over the span of seasons, years, decades, or even longer. Weather and climate-sensitive industries account for about 25% of the nation's gross domestic product (GDP), or about $2.7 trillion.

Seasonal and interannual variations in climate, like El Niño, led to economic impacts on the order of $25 billion for 1997-98, with property losses of over $2.5 billion and crop losses approaching $2.0 billion. Given such stresses as population growth, drought, and increasing demand for fresh water, and emerging infectious diseases, it is essential for NOAA to provide reliable observations, forecasts, and assessments of climate, water, and ecosystems to enhance decision makers' ability to minimize climate risks. This information will support decisions regarding community planning, public policy, business management, homeland security, natural resource and water planning, and public health preparedness. In the U.S. agricultural sector alone, better forecasts can be worth over $300 million in avoided losses annually.

To enable society to better respond to changing climate conditions, NOAA, working with national and international partners, will employ an end-to-end system comprised of integrated observations of key atmospheric, oceanic, and terrestrial variables; a scientific understanding of past climate variations and present atmospheric, oceanic, and land-surface processes that influence climate; application of this improved understanding to create more reliable climate predictions on all time scales; and service delivery methods that continuously assess and respond to user needs with the most reliable information possible.

These activities will accelerate the development of a structure and process for improving the relevance of climate science to assist decision-makers in their development of national, regional and sectoral adaptation responses (actions to reduce vulnerability, seize opportunities, and enhance resilience) to variability and long-term changes in the climate, particularly for industry, natural resource and water managers, community planners, and public health professionals.

Program Initiative	FTE	Funding Request	Anticipated Impact
Climate Observations and Services	11	$7,441,000	Ensure continuation of the climate observing networks and long-term climate records that are essential to today's climate research and further the development of operational climate products and services, providing the foundation for NOAA's participation in the interagency U.S. Climate Change Science Program.

Aerosols, Clouds, and Climate Change: Observations and Predictions	0	$2,078,000	Develop a better predictive understanding of how aerosols (airborne fine particles) influence climate by their interaction with clouds, a key gap in the current scientific understanding of one of the major factors that affects climate
Ocean Observations for Climate	0	$3,515,000	55% completion of the global ocean observing system for climate, responding to the long-term observational requirements of the operational forecast centers, international research programs, and major scientific assessments
Tropical Buoy Expansion	0	$3,200,000	Enhance the overall capability of the Tropical Atmosphere Ocean (TAO) and Pilot Research Moored Array in the Tropical Atlantic (PIRATA) arrays in order to accurately document the state of the ocean climatic conditions and improve seasonal forecasting capability in a cost-effective manner.
Explaining Climate Conditions to Improve Predictions	0	$2,000,000	Enhance climate prediction capabilities to enable regional and national decision makers and resource managers to better plan for impacts of climate extremes, variability, and change.
Regional Integrated Sciences and Assessments Program	0	$800,000	Contribute significantly to addressing key information gaps that affect decision-makers' use of climate information to improve NOAA's climate service capacity.
Restorations of FY 2005 program funds	0	$1,615,000	This increase will restore funds requested in FY 2005 to several programs that carry out base operations.

Measure 2a: U.S. Temperature Forecasts (Cumulative Skill Score Computed Over the Regions Where Predictions are Made)

Explanation of Measure

The Heidke Skill Score (HSS) is one of several accepted standards of forecasting in the scientific community. It is calculated as follows:

Heidke skill score: $S = ((c-e)/(t-e)) \times 100$
where c = number of stations correct
and e = number of stations correct by chance = (1/3) x total number of stations in a 3 equal class system
and t = number of stations, total
S is approximately equal to one-half of the correlation between forecast and observations.

Accurate measures of temperature are critical to many sectors of the national economy, including agriculture and energy utilities. This measure compares actual observed temperatures with forecasted temperatures from areas around the country. For those areas of the United States where a temperature forecast (warmer than usual, cooler than normal, near-normal) is made, this score measures how much better the prediction is than the

random chance of being correct. Areas where no forecast for surface temperature is made (i.e., areas designated as "equal chance" on the Climate Prediction Center (CPC) seasonal forecast maps) are not included in the computation of HSS.

The HSS is a function of both whether or not a forecast is verified and whether or not a prediction is made, but does not reward when the forecast is verified by chance. Skill score is based on a scale of -50 to +100. If forecasters match a random prediction, the skill score is zero. Anything above zero shows positive skill in forecasting. Given the difficulty of making advance temperature and precipitation forecasts for specific locations, a skill score of 20 is considered quite good and means the forecast was correct in almost 50% of the locations forecasted. Forecasts will likely be better in El Niño years than in non-El Niño years. Reported skill score is a cumulative average over past 48 consecutive 3-month seasons. For example, skill score of 18 reported at the end of FY 2002 is the HSS averaged over 48 surface temperature forecasts from October 1998 to September 2002. Prior to FY 2001, the Heidke skill score reported by NOAA was averaged only over the past 36 seasons. A decision to change to an average over 48 seasons was based on following considerations: (1) A longer average reduces the influence of natural unpredictable variability on the skill score, and (2) a cumulative average over 4 years tends to better capture transitions from El Niño to neutral, and then to La Niña conditions. After the definition for the reported scores was changed in FY 2001, NOAA recomputed the skill scores for FY 1999 and FY 2000, and these numbers, based on 48-season cumulative average, appear in the Table above. Temperatures across the United States will be measured using NOAA's cooperative network maintained by volunteers across the nation. Temperature data will be collected and analyzed by NOAA.

The FY 2006 target reflects higher skill scores from previous high scoring seasons dropping out from the 48-month average forecasts. Beyond FY 2006, a gradual increase in performance skill score is expected due to improvements in modeling and research activities.

FY 2005 and 2006 Targets

Specifically, the National Weather Service implemented a new Climate Forecast Model in FY 2004 that is expected to yield benefits in the late 2005 or early 2006 time period. Long term plans include the development of a Climate Test Bed, which will accelerate the transition of research improvements to operational climate prediction, and the North American Monsoon Experiment (NAME). NAME is focused at improving warm-season predictions. NWS is also working with the research communities to develop and propose new and improved GPRA skill measures for seasonal outlooks.

Measure 2b: Reduce the uncertainty in the magnitude of the North American carbon uptake

Explanation of Measure

The annual targets have been modified to represent more realistic estimates of progress. The performance measure has also been revised to better reflect the metric.

By 2008, NOAA will reduce the uncertainty of atmospheric estimates of the North American carbon uptake by half to +/- 0.3 Gt C per year, assuming a full network of 36 stations has been established and monitored. Beginning in 2004, a standard set of 4-5 inverse models is being used to determine the uncertainty in the North American carbon uptake as the number of carbon dioxide profiling sites is increased.

Carbon dioxide is the most important of the greenhouse gases that are undergoing changes in abundance in the atmosphere due to human activity. On average, about one half of all the carbon dioxide emitted by human activity is taken up by the oceans and the terrestrial biosphere (trees, plants, and soils). These reservoirs of carbon are known as carbon "sinks." However, the variation in the uptake from year to year is very large and not understood. A large portion of the variability thought to be related to the terrestrial biosphere in the Northern Hemisphere, and quite likely North America itself. NOAA needs to understand the source of this variability if it is to provide scientific guidance to policymakers who are concerned with managing emissions and sequestration of carbon dioxide. This can only be done by making regional-scale measurements of the vertical profile of carbon dioxide across the U.S. which, combined with improved transport models, can be used to determine carbon dioxide sources and sinks on a regional (about 600 mile) scale. This will provide a powerful tool to gauge the effectiveness of carbon management and enhanced sequestration efforts.

Research supporting this measure also ensures a long-term climate observing system that provides an observational foundation to evaluate climate variability and change, and provides the mechanism to support policy and management decisions related to climate variability and change at national and regional scales.

FY 2005 and 2006 Targets

One key activity for FY2005 and FY 2006 will be to continue expansion of the North American observing network of tall tower and aircraft profiling sites. An intensive interagency field campaign in the north-central United States is also planned during the summer of 2005 to reconcile estimates of regional carbon sources and sinks calculated from atmospheric measurements, with direct estimates utilizing field measurements, land-based carbon inventories, regional geographic information, and remote sensing. The campaign also seeks to attribute sources and sinks of carbon dioxide to ecosystem processes and human activities within the region. This field campaign will lead to reduced uncertainty in the magnitude and the mechanisms of the North American terrestrial carbon sink.

Measure 2c: Reduce the uncertainty in model simulations of the influence of aerosols on climate (new)

Explanation of Measure

The near-term goal. *By 2006, NOAA observational and theoretical research will reduce the uncertainty in the simulated influence of North American aerosols on climate by 15%.* The baseline for comparison will be the level of uncertainty reflected in the 2001 climate-change assessment of the Intergovernmental Panel on Climate Change (IPCC), which was prepared by the worldwide scientific community. The meeting of the 15% measure will be judged by the findings of the forthcoming 2006/7 IPCC assessment, which will update the understanding of climate change.

The longer-term goal. By 2010, *NOAA observational and theoretical research will reduce the uncertainty in the simulated influence of global aerosols on climate by 40%.* The baseline for comparison will again be the high level of uncertainty reflected in the 2001 climate-change assessment of the IPCC, prepared by the worldwide scientific community. The meeting of this longer-term 40% measure will be judged by the findings of forthcoming IPCC assessments, further updating the understanding of climate change.

Background on the science. Aerosols are liquid or solid particles suspended in the atmosphere. They force changes in the climate system by (i) directly absorbing and scattering of radiation from the sun and (ii) by changing the way clouds reflect back solar rays. While greenhouse gases warm the atmosphere, aerosols and clouds can both counteract greenhouse gases by cooling the atmosphere, or, under different conditions, can both heat the atmosphere? The role of aerosols, clouds, and climate is deemed to be the biggest single uncertainty in the prediction of how human activities influence climate change (IPCC, 2001).

NOAA research plan and annual performance measures. To meet the 2006 goal, NOAA has designed a four-step research program. It is complete with annual measures of success of each year's step, plus an overall evaluation of how all four steps contribute to the 2006 goal. *Plan.* (1) The multi-stepped plan began in 2002, scoping out the information needs associated with the climate influence of North American aerosols. (2) In 2003, instruments were developed to fill the North American observational gaps. (3) In 2004, the improved measurement capabilities will be used to take a two-month, field-study "snapshot" of how well models simulate these "real-world" aerosols and their climate impact. (3) In 2005, monitoring of the seasonal changes of the aerosols and their climate impact will begin in two key North American regions. (4) Lastly, in 2006, using all of the data, NOAA will evaluate the percentage improvement in model simulation of the role of North American aerosols on climate. *Annual Performance Measures.* Annual targets quantitatively score the success of each of the individual research tasks in preceding years. Success in each of these preceding steps is necessary for success in meeting the 15% reduction of uncertainty associated with the 2006 goal.

Outcome and payoffs. The desired outcome is an improved science-vetted set of options for changing the impact of North American aerosols on climate, which can be considered by governments, the private sector, e.g., transportation and energy production, and the public. Reductions in the uncertainties surrounding aerosols relate directly to the confidence with which model simulations can support policy decisions on the climate issue. Furthermore, since aerosols are also a human-health, air quality issue, there is the opportunity to quantify "win-win" opportunities of how decisions made to improve air quality may also contribute to reduce the forcing of climate change.

FY 2005 and FY 2006 Targets

While 2006 will be the first year this measure is presented in this report, progress toward this near-term goal is already being tracked at the program level. A series of annual research activities from instrument development in FY2003, to field process studies and long-term monitoring of aerosol distributions in FY2004 and FY2005, will be utilized to achieve the FY2006 goal and further enhance our understanding of how aerosols affect climate.

Measure 2d: Determine the National Explained Variance (%) for Temperature and Precipitation for the Contiguous United States using USCRN Stations

Explanation of Measure

This measure is designed to address the significant shortcomings in past and present observing systems by capturing 98% of the long-term changes in the national annual average surface air temperature and 95% of the long-term changes in the national annual average precipitation throughout the contiguous U.S. using the U.S. Climate Reference Network (USCRN).

Inadequacies in the present observing system increase the level of uncertainty when government and business decision-makers consider long-range strategic policies and plans. The U.S. Climate Reference Network (USCRN), a benchmark climate-observing network, will provide the nation with long-term (50 to 100 years) high quality climate observations and records with minimal time-dependent biases affecting the interpretation of decadal to centennial climate variability and change. Deployment of the U.S. Climate Reference Network is continuing, with stations added over the next several years. NOAA will deploy instrument suites in a combination of single and nearby paired sites.

Due to funding limitations, the original full national network implementation plan has been scaled back to ~110 stations deployed across the contiguous U.S., capturing long-term temperature and precipitation trends only at the national level across the lower 48 states. The adjusted network distribution provides for the life cycle high performance operations and maintenance of the commissioned stations while maintaining the quality of the data at the highest possible level, given the current and future state of available technologies. The smaller sized network will not be able to achieve the level of monitoring and evaluation of climate variations and trends originally intended at the regional scale.

The USCRN will strengthen the existing climate record through determination of transfer functions between these stations and the instrumentation and stations of other observing networks. This will increase assurance of long-term and bias-free national and global monitoring, including higher-precision, higher-confidence validation of NOAA's space-based (satellite) measurements and monitoring capabilities.

FY 2005 and FY 2006 Targets

The deployment of new stations will be suspended as of the end of calendar year (CY) 2004 and available funds will be directed at the operations and maintenance (O&M) of commissioned observing stations, due to reduced funding levels in FY 2005. All other USCRN related activities, such as developing instrument transfer functions and station normals, will be suspended during FY 2005. The percent national explained variance for the annual average surface air temperature will remain at the current FY 2004 level of 96.7% and for precipitation at 90%. Provided funding enacted at the FY 2006 requested level, the target completion date will be extended from FY 2007 to FY 2009 for completing the deployment of the remainder of the currently planned network of stations across the lower 48 states. In addition, quality control technique improvements will be delayed, and incomplete instrument

transfer functions will prevent improvements in the quality and value of other NOAA observations from in situ and remote (satellite based) observing systems, as related to climate monitoring and evaluation of present, past, and future climate variation and change.

Measure 2e: Reduce the error in global measurement of sea surface temperature

Explanation of Measure

NOAA proposes a new measure to document progress in accurately measuring the global sea surface temperature. The unit of measure is potential satellite bias error (in degrees Celsius) of global sea surface temperature. The long-term goal is to reduce the error to 0.2 °C by FY2008.

The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate. It is where the atmosphere "sees" the ocean, i.e. where heat is transferred either to or from the atmosphere. Elevated sea surface temperature in the tropical Pacific is a dominant characteristic of the El Niño phenomenon, and predictive climate models for El Niño must have an accurate sea surface temperature to produce accurate results. Since this temperature is measured by buoys, ships and satellites, this performance measure is one indicator of the effectiveness of our integrated ocean observing system.

This performance measure will reflect 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. More accurate estimates of sea surface temperature and ocean heat content will improve the ability to respond to changes in the climate system.

FY 2005 and FY 2006 Targets

The integrated ocean climate observing system is ~45% complete in 2004. Current limitations in accurate measurements of global sea surface temperature include insufficient observing platforms in the global ocean. FY2005 and FY2006 will be dedicated to further expanding the global ocean observing network to 55%, working toward global coverage and the long-term goal of reduced error in the global measurement of sea surface temperature.

Measure 2f: Improve society's ability to plan and respond to climate variability and change using NOAA climate products and information

Explanation of Measure

NOAA proposes a new measure to document our success in working directly with stakeholders to develop and enhance a suite of climate data, monitoring, and prediction products that are valuable to our customers and stakeholders. The unit of measure is: number of risk and impact assessments/evaluations published and communicated to decision makers.

NOAA currently provides state of the art science and discovery information products to a range of decision makers, from water resource managers and regional forecast offices, to national and international assessments, such as the U.S. Climate Change Science Program (CCSP) and the Intergovernmental Panel on Climate Change (IPCC). These information summaries highlight important deliverables such as reducing uncertainty in climate forcing models (e.g. carbon sources and sinks, effects of aerosols on climate), as well as in seasonal, interannual, and decadal climate forecasts. These deliverables form the basis of NOAA's emerging climate products and services. NOAA requires stakeholder input and feedback for product development and improvement. These interactions are facilitated by interdisciplinary research, bridging the gap between research and decision makers. By increasing the interactions between NOAA and the users of climate information, NOAA will ensure that climate products and services are reaching the key decision maker sectors.

FY 2005 and FY 2006 Targets

NOAA is planning on continuing the development of prototype decision support tools and the broadening of decision support partnerships through extramural research grants and enhancements to the already successful Regional Integrated Sciences and Assessments program. The NOAA Climate Transition Program is also being newly implemented in FY2005. This flexible program will focus on the successful transfer of experimental research and information products into operational settings.

Discontinued Measures

Measure: New Climate Observations Introduced

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	2006
Target	New	120	174	275	412	1014	
Actual	New	132	192	282	529		
Met/Not Met	New	Met	Met	Met	Met		

This measure is not an outcome measure and only focuses on a very narrow objective of the NOAA Climate Program. NOAA is replacing this measure with a broader, outcome oriented performance measure that focuses on multiple observational efforts within the program. Regarding the "actual" number for FY 2003, the funding for additional floats was not received until mid FY 2004. The number of floats deployed in FY 2003 (282) was primarily supported using FY 2002 funds.

Measure: Assess and Model Carbon Sources and Sinks Globally

	FY 2002	FY 2003	FY 2004	FY 2005	FY2006
Target	Establish Three New Global Background Sites as Part of the Global Flask Network	Complete a Working Prototype of a Coupled Carbon-climate Model	Develop Carbon Climate Scenarios for Input to Assessment	Improve Measurements of North Atlantic and North Pacific Ocean Basin Carbon Dioxide Fluxes to Within +/-0.1 Petagrams Carbon/year	
Actual	Established Three New Global Background Sites as Part of the Global Flask Network	Completed a model that can look at effects of climate change on particular carbon sinks with feedback to the atmosphere	Scenarios Developed for Input to IPCC		
Met/Not Met	Met	Met	Met		

This measure has not used a consistent metric in the past. Demonstrable progress on an annual basis will be difficult to assess with slower expansion of the observing network.

Program Evaluation

The NOAA Scientific Advisory Board (SAB), made up completely of private sector, university, and other Federal agency scientists, conducts periodic reviews of the activities of the Office of Oceanic and Atmospheric Research Laboratories and Joint Institutes. The SAB also provides guidance on NOAA's Climate Program. A number of NOAA line offices participate in the activities that support climate research. The National Environmental Satellite, Data, and Information Service (NESDIS) holds management performance reviews several times a year. NWS conducts reviews of the National Centers for Environmental Prediction (NCEP). In addition, programs are evaluated by the National Science Foundation and the National Research Council. NOAA holds annual constituent workshops at which NOAA's seasonal climate forecast efforts are discussed with the community of seasonal-to-

interannual climate forecast users, and input is solicited to shape future efforts. NOAA's Office of Global Programs, funded in OAR's Climate and Global Change research line item, receives review from international science agencies, universities, and private sector scientists.

Cross-cutting Activities

Intra-Department of Commerce

In partnership with the Technology Administration and the International Trade Administration within the Department of Commerce, other federal agencies, the private sector, and academia, NOAA is providing the foundation the United States will depend upon to lead new emerging global industries in economically and environmentally sustainable ways.

Other Government Agencies

NOAA works with a wide variety of partners in the area of climate forecasts, including other federal agencies (for example, the Federal Emergency Management Agency and the U.S. Agency for International Development), state and local agencies (for instance, state departments of environmental protection and emergency preparedness managers), academia, foreign government agencies, and international organizations. In preparing for the 1997–98 El Niño, NOAA worked closely with the Federal Emergency Management Agency and state and local officials, greatly improving public preparedness for the severe weather resulting from El Niño.

In 2003, the US government formed the Climate Change Science Program (CCSP) to facilitate the creation and application of knowledge of Earth's global environment through research, observations, decision support, and communication. The DOC, partnering with 12 other Federal agencies, leads this nationwide effort (http://www.climatescience.gov/Library/stratplan2003/default.htm). At NOAA, climate performance objectives are virtually identical to CCSP goals and are managed by the NOAA Climate Program.

Government/Private Sector

NOAA depends strongly on universities to help accomplish its science objectives through a network of joint and cooperative institutes and universities. NOAA also funds academic researchers through competitive, peer-reviewed programs, including the Global Climate Change Program.

External Factors and Mitigation Strategies

A major failure of Earth observing and computing infrastructure would impair NOAA's ability to produce climate forecasts. NOAA has been looking for backup outside the organization. For example, the Department of the Navy provides backup to the National Centers for Environmental Prediction mainframe computer.

An unanticipated major increase of the customer base for climate-related products may strain NOAA resources. In such an event, NOAA would prioritize its activities to meet the immediate increase in demand while it looks for alternative ways to meet the needs of all its customers.

Improving our understanding of the natural environment requires advanced infrastructure and therefore continual investment in new technology, such as supercomputers and environmental satellites.

The science of climate change crosses generations and has progressed as a result of evolving technology. Our ability to measure performance is contingent upon many external factors, including the advancement of climate change itself. While the time frame of these processes spans decades and even centuries, the reporting periods extend over years.

Improving our understanding of the natural environment requires advanced infrastructure and therefore continual investment in new technology, such as supercomputers and environmental satellites.

Performance Goal for Weather and Water: Serve society's needs for weather and water information

DOC Strategic Goal 3: Observe, protect, and manage the earth's resources to promote environmental stewardship

General Goal/Objective 3.1: Advance understanding and predict changes in the Earth's environment to meet America's economic, social, and environmental needs

On average, hurricanes, tornadoes, tsunamis, and other severe weather events cause $11 billion in damages per year. Weather, including space weather, is directly linked to public safety and about one-third of the U.S. economy (about $3 trillion) is weather sensitive. With so much at stake, NOAA's role in observing, forecasting, and warning of environmental events is expanding, while economic sectors and its public are becoming increasingly sophisticated at using NOAA's weather, air quality, and water information to improve their operational efficiencies and their management of environmental resources, and quality of life.

NOAA is strategically positioned to conduct sound science and provide integrated observations, predictions, and advice for decision makers to manage many aspects of environmental resources–from fresh water to coastal ecosystems and air quality. Bridging weather and climate time scales, NOAA will continue to collect environmental data and issue forecasts and warnings that help protect life and property and enhance the U.S. economy.

NOAA is committed to excellent customer service. NOAA depends on partners in the private sector, academia, and government to help disseminate critical environmental information. NOAA will work even closer with existing partners and will develop new partnerships to achieve greater public and industry satisfaction with weather, air quality and water information. NOAA will expand services to support evolving national needs, including space weather, freshwater and coastal ecosystems, and air quality predictions throughout the Nation.

Program Initiative	FTE	Funding Request	Anticipated Impact
Water Resources Initiative	0	$4,000,000	With this increase NOAA will provide nationally consistent water and soil condition forecasts via: 1) a national digital database incorporating assimilation of all available hydrometeorological data and observations; 2) a community hydrologic prediction system (CHPS) necessary to advance water prediction science. These activities will improve NOAA's operational service delivery system by, and will augment NOAA's capabilities to produce higher resolution water forecasts and information.
Air Quality Forecast Capability	0	$2,072,000	This increase will accelerate nation wide implementation of ozone Air Quality (AQ) forecasting capability from FY09 to FY07 and deliver an initial particulate matter forecasting capability by FY2011.

Data Assimilation	0	$1,000,000	This increase will fund focused research, development, and testing of advanced data assimilation algorithms and techniques. Expected improvements include: development of advanced techniques in global and mesoscale atmospheric, ocean and land data assimilation systems, use of new satellite data from NPOESS, the NPOESS Preparatory Project and European operational instruments, and increased use of surface and radar observations for initializing high resolution mesoscale forecasts.
NOAA Weather Radio Expansion and Modernization	0	$5,650,000	Funds will be used to complete NWR broadcast coverage of all areas in the United States identified as at high risk of severe weather events by establishing 17 new broadcast stations. Additionally, funds will be used to refurbish 400 stations established in the 1970s, eliminating single points of failure and improving network reliability.
Cooperative Observer Network Modernization (COOP)	0	$3,400,000	Funds will continue the deployment of modernized COOP sites nationwide as NWS implements the "National Cooperative Mesonet". The proposed COOP Modernization will provide the United States with a network of accurate, near real-time surface weather data (temperature, precipitation, soil moisture) obtained with state-of-the-art measurement, monitoring, and communication equipment.
Aeronomy Laboratory: Texas-2006 Regional Air quality Assessment	0	$1,700,000	Assessment that will characterize key atmospheric processes that drive air pollution problems in east Texas.
National Centers for Environmental Prediction (NCEP) IT Refreshment	0	$2,035,000	To provide for the cyclic replacement of information technology infrastructure at the National Centers for Environmental Prediction (NCEP) in order to enable the effective use of increasing volumes of model guidance, imagery and observational data and to comply with IT security requirements and related challenges which are projected to increase through the FY06 – FY07 time frame.

Strengthen U.S. Tsunami Warning Network	0	$9,500,000	Funds will be used to expand the U.S. tsunami detection, warning and mitigation abilities. This program increase expands the current U.S. Tsunami Warning Program by accelerating activities currently underway as part of NOAA's National Tsunami Hazard Mitigation Program (NTHMP) and by expanding the scope of the NTHMP from the Pacific to the Atlantic and Caribbean. In FY 2006 NOAA will expand the operational hours or its two Tsunami Warning Centers and begin expansion of its current 6-buoy array to that of a 32-buoy array. Finally, FY 2006 funds will be used to accelerate U.S. Coastal community inundation mapping efforts and community-based tsunami mitigation education/awareness and community preparedness activities.
NPOESS Preparatory Project / Data Assimilation	0	$4,500,000	The requested funding will also allow NOAA to study the communications links necessary to disseminate products and services to the user community and start the development of the product generation and dissemination system in Suitland. This system will include new hardware and software to facilitate the assimilation of NPOESS atmospheric sounding products into the NWS Numerical Prediction Models.
Restorations of FY 2005 program funds	0	$8,803,000	This increase will restore funds requested in FY 2005 to several programs that carry out base operations.

Measure 3a: Lead Time (Minutes), Accuracy (%), and False Alarm Rate (FAR, %) of Severe Weather Warnings for Tornadoes

Explanation of Measure

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 continental 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. In FY 2003, the percentage of events with a lead time greater than zero was 73 percent. 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% represents the percentage of events without a warning. The false alarm rate is the percentage of times a tornado warning was issued but no tornado occurrence was verified. The false alarm rate was added as a reportable measure in FY 2000, although it had been collected and used internally previously.

FY 2005 and 2006 Targets

NWS lead time target will gradually increase to 13 minutes by FY 2005 after completion of retrofits of the NEXRAD systems, implementation of new training techniques such as a weather event simulator, and realization of the operational benefits of Advanced Weather Interactive Processing System's five software enhancements. Technological advances and new training techniques have resulted in meeting or exceeding lead time and accuracy goals in recent years. The same training techniques have also led to False Alarm Rate not meeting the goals set in FY 2002, and FY 2003 and FY 2004. National emergency manager and media surveys indicate that they can "tolerate" a higher false alarm rate if it results in longer lead times and increased accuracy. The FY 2005 and 2006 targets have been updated to reflect this. Supplemental coverage from FAA radars and enhanced radar algorithms and scan strategies are being incorporated into AWIPS from FY 2005 through FY 2010 to reduce the false alarm rate. The false alarm rate goals have been revised to reflect the potential of these technological advances.

Measure 3b: Lead Time (Minutes) and Accuracy (%) for Severe Weather Warnings for Flash Floods

Explanation of Measure

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. In FY 2003, the percentage of events with a lead time greater than zero was 75%. 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% represents the percentage of events without a warning

FY 2005 and 2006 Targets

The FY 2005 and 2006 targets for the Flash Flood performance lead time goal have been adjusted based upon performance in FY 2003, FY 2004 and the FY 2005 budget. NWS expects to improve both flash flood lead-time and accuracy over the next several years through the implementation of new Advanced Hydrologic Prediction Service (AHPS) flash flood decision assistance tools. However, the FY 2005 enacted budget will delay the implementation of forecaster-requested enhancements to the operational AHPS Flash Flood Monitoring and Prediction (FFMP) decision assistance tool, which is why the FY 2005 and FY 2006 goals have been revised. Critical flash flood operations related training to field staff will also be delayed in FY 2005, which contributes to the goal revision. The implementation of NEXRAD Open Radar Data Acquisition (ORDA) will occur in FY 2005, and will provide precipitation estimates on a much smaller grid, which will give forecasters many more points to average for the basin rainfall. The larger number of points for averaging the rainfall will deliver more precise precipitation input for forecasting flash floods.

Measure 3c: Hurricane Forecast Track Error (48 Hours)

Explanation of Measure

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 outyear goals on that trend, is preferred over making large upward or downward changes to the goals each year.

FY 2005 and 2006 Targets

The average track error is projected to decrease due to improvements in hurricane forecast models, aircraft upgrades, supporting data and computer infrastructure, and by conducting research within the U.S. Weather Research Program (USWRP) that will be transferred to NOAA NWS forecast operations.

Measure 3d: Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts

Explanation of Measure

This performance measure tracks the ability of the weather forecasters of NOAA's Hydrometeorological Prediction Center 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. This measure was originally, "Accuracy of 3-day Forecast of Precipitation." The measure has been revised to reflect a more representative and accurate means of measuring the performance for this strategic goal. Through this measure, the Hydrometeorological Prediction Center (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.

The HPC of the NOAA NWS began providing quantitative precipitation forecasts (QPFs) in 1961. These forecasts indicate how much precipitation is expected across the United States, not just whether it will rain or snow. HPC forecasters work under the supervisory control of the Senior Branch Forecaster (SBF), who is responsible for the quality and content of all products issued during the shift. The observations of precipitation are collected by the NWS from several thousand locations around the United States for the 24-hour period from 12:00 UTC (Universal Time) one day to 12:00 UTC the next day. The verifying SBF reviews the precipitation observations to ensure there are no noticeable errors or large numbers of missing precipitation data. As required, the SBF corrects observational errors and supplements missing data areas based on radar information.

The HPC began making QPFs through two days into the future in 1965 and through three days in 2000. The HPC has tracked the accuracy of these forecasts very carefully over the years using a metric with the statistical name of "threat score" or equivalently "critical success indicator". This accuracy metric ranges from 0%, indicating no skill, to 100% for a perfect forecast. In verifying the accuracy of a forecast of 1 inch or more of precipitation for day 1 (the next 24 hours), for example, the HPC first determines everywhere in the U.S. where an inch or more actually fell and was observed by rain gauges. On a given day this occurs only over a very small percentage of the country (although a 1 inch or more precipitation event is significant for the inhabitants of that particular area). The HPC then compares these observed areas of at least 1 inch of precipitation with the forecasted areas of at least 1 inch, counting only those points in the United States where HPC forecasted and observed at least an inch as being an accurate forecast. (These points are called "hits".) Thus, if HPC forecasts 1 inch to fall at the point representing Washington, DC, and it observed only 3/4" actually had fallen in that specific area, the forecast is then rated as a "miss", even if an inch of rain was observed to have fallen at the points nearby representing the area of Fairfax City, Virginia, or the area of Upper Marlboro, Maryland. The overall accuracy score for the country for that particular day 1 forecast is then determined by dividing the total number of correctly forecast points (hits) by the total number of points where HPC had either forecast at least 1 inch of liquid precipitation or 1 inch of liquid precipitation had actually occurred. Thus this measure takes into consideration those areas where 1 inch or more of precipitation was correctly forecast, where it was forecasted but did not occur, and where it occurred but had not been forecasted. In summary, to earn a high accuracy score, HPC has to forecast the time, place, and amount of precipitation very well.

Several important points should be noted. First, although the accuracy scores are low with respect to perfection, the accuracy is clearly high enough to be of major utility to America's decision makers. As indicated by the numerous requests for HPC's precipitation products, especially in times of hardship, the Federal Emergency Management Agency (FEMA), Army Corps of Engineers, the media, and farmers among others all rely heavily on NOAA forecasts to decide how to proceed.

Secondly, the scores are continuing to improve in accuracy. The metrics from the last 40 years indicate the day 2 forecasts of at least one inch of precipitation in 2003 had more skill than the day 1 forecasts in 1980, and HPC's day 3 forecasts in 2003 were more accurate than the day 2 forecasts in 1984.

FY 2005 and 2006 Targets

NOAA has an intensive effort internally and with its partners to improve the accuracy of its numerical weather prediction models, as well as enhance the global observing system providing the foundation for observations needed by these models. During the next several years, NOAA will implement the following numerical weather prediction model enhancements aimed at improving heavy precipitation forecasts: enhancements to mesoscale Eta analysis and model physics (2004), increasing global forecast system resolution from 55 km to 45 km (2005), improving short-range ensemble forecasts system from 48 km and 15 members to 18 km and 20 members (2006).

In addition, NOAA delivered and installed an upgrade to its Central Computer System in 2004 which will improve the delivery of products to the field and provide system users with enhanced productivity. Investments will also be made to establish a Hydrometeorological Testbed at the HPC beginning in FY

2006 for the purpose of improving precipitation prediction. This will include assessing scientific breakthroughs and new techniques to identify advanced, real-time, data analysis techniques, numerical forecast models and methods, observational systems, and climate-water-weather linkages that could significantly improve the forecast guidance which are necessary to improving quantitative precipitation forecasts through seven days. The combination of these activities will lead to improvements in Quantitative Precipitation Forecasts over the course of the next decade.

Measure 3e: Lead Time (Hours) and Accuracy (%) of Winter Storm Warnings

Explanation of Measure

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**.**

FY 2005 and FY 2006 Targets

The performance indicator measuring the accuracy and advance warning lead time of winter storm events will rise to 90% accuracy and 15 hours lead time in FY 2005 and FY 2006. These advancements will be attributed to improvements in numerical weather prediction, super computer upgrades, the use of ensemble modeling forecasting techniques, and local training initiatives.

Measure 3f: Cumulative Percentage of U.S. Shoreline and Inland Areas that Have Improved Ability to Reduce Coastal Hazard Impacts

Explanation of Measure

This measure tracks improvements in NOAA's ability to assist coastal areas with estimating the risks of natural hazards in U.S. coastal regions. Activities are underway to develop a coastal risk atlas that will enable communities to evaluate the risk, extent, and severity of natural hazards in coastal areas. The risk atlas will help coastal communities make more effective hazard mitigation decisions to reduce the impacts of hazards to life and property. Currently, many coastal communities make major decisions on land use, infrastructure development, and hazard responses without adequate information about the risks and possible extent of natural hazards in their area. Through the coastal risk atlas, NOS, with other Federal and state agencies, will provide a mechanism for coastal communities to evaluate their risks and vulnerabilities to natural hazards for specific U.S. coastal regions and improve their hazard mitigation planning capabilities.

FY 2005 and 2006 Targets

NOAA began working to expand phase II of the Coastal Risk Atlas to other areas within FEMA Region IV (North Carolina, South Carolina, Georgia, Florida, Alabama, and Mississippi) during FY 2003. This expansion will not result in an increase to the target for FY 2004, but results in an increase in FY 2005. The completion of the expansion in FY 2005 will increase the cumulative total to 26,778 miles of the total shoreline, 97,128, or 28%. This increase will consist of 2,344 mile of shoreline for Georgia and 7,721 miles of shoreline for Louisiana. An evaluation at the end of the phase II expansion will determine the feasibility of continued expansion of the Coastal Risk Atlas beyond FY 2005. If continued expansion is deemed feasible, efforts will focus on adding Oregon and Texas to the Coastal Risk Atlas. This increase will consist of 1,357 of shoreline for Oregon (53 of the total 1,410 miles of shoreline for Oregon has previously been attributed towards this measure in FY 2001) and 3,359 miles of shoreline for Texas.

Program Evaluation

NOAA's vision for FY 2006 is to provide significantly improved short-term warning and forecast products and services that enhance public safety and the economic productivity of the Nation. While it is difficult to see the improvements on an annual basis because of the scientific nature and seasonal variations of weather events, historical trends have shown that NOAA continues to improve the accuracy and advance warning lead time of severe weather hazards.

Program evaluations at NWS Field Offices are conducted annually. Quality control procedures are followed to ensure the highest reliability of gathered data and weather products. The National Academy of Sciences is also involved in program analysis and evaluation processes on a national level.

Cross-cutting Activities

Intra-Department of Commerce

NOAA works closely with the National Institute of Standards and Technology and the Economic Development Administration on the Federal Natural Disaster Reduction initiative, which focuses on reducing the costs of natural disasters, saving lives through improved warnings and forecasts, and providing information to improve resiliency to disaster.

Other Government Agencies

NOAA also works closely with other agencies such as the Federal Emergency Management Agency, the Corps of Engineers, the Bureau of Reclamation, the Department of Defense, as well as state and local governments to complement their meteorological services in the interest of

national security. NOAA works closely with the U.S. Coast Guard to disseminate marine weather warnings and forecasts and works directly with the Federal Aviation Administration on aviation forecasts and with the National Aeronautics and Space Administration on launch forecasts and solar forecast effects.

Government/Private Sector

Weather and climate services are provided to the public and industry through a unique partnership between NOAA and the private meteorological sector. NOAA provides forecasts and warnings for public safety, and the private sector promotes dissemination of forecasts and tailors basic information for business uses.

External Factors and Mitigation Strategies

A number of factors unique to the atmospheric sciences must be considered when reviewing the performance measures for this goal. The primary factor to consider is the natural variation of this goal related to annual fluctuations in meteorological conditions. Another factor concerns the damage to critical equipment (for example, supercomputer fire and satellite outages) that can affect daily operations for extended periods, even though numerous safety measures and backup procedures are in place.

Although the performance measures for this goal may improve, the impact on society may not be obvious because of factors beyond our control. For example, hurricane warnings may become more accurate, but because of the increase in population along the coastlines, the deaths, injuries, and/or damage estimates may increase.

Improving our understanding of the natural environment requires advanced infrastructure and therefore continual investment in new technology such as supercomputers and environmental satellites.

NOAA relies on its partners in the media, private sector, and the state and local emergency management community to disseminate weather warnings.

Performance Goal for Commerce and Transportation: Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation

DOC Strategic Goal 3: Observe, protect, and manage the earth's resources to promote environmental stewardship

General Goal/Objective 3.2: Enhance the conservation and management of coastal and marine resources to meet America's economic, social and environmental needs

Safe and efficient transportation systems are crucial economic lifelines for the Nation. NOAA's information products and services are essential to the safe and efficient transport of goods and people at sea, in the air, and on land and waterways. More accurate and timely warnings associated with severe weather threats, marine navigation products and services, and improved positioning data can better support the growing commerce on our road, rail and waterways through improvements in transportation safety and just-in-time efficiencies. For example, the U.S. Marine Transportation System (MTS) ships over 95 percent of the tonnage and more than 20 percent by value of foreign trade through America's ports, including 48 percent of the oil needed to meet U.S. energy demands. Waterborne cargo alone contributes more than $740 billion to the U.S. gross domestic product and creates employment for over 13 million citizens. Every year, 134 million passengers are ferried to work and other destinations on U.S. waterways, along with 5 million cruise ship passengers. Better aviation weather information could significantly reduce the $4 billion that is lost through economic inefficiencies as a result of weather-related air traffic delays. Improved surface forecasts and specific user warnings would likely reduce the 7,000 weather-related fatalities and 800,000 injuries annually from vehicle crashes.

As U.S. dependence on surface and air transportation grows over the next 20 years with significant increases in the volume of land transportation and the projected doubling of maritime trade, better navigation and weather information will be critical to protect lives, cargo, and the environment. NOAA is committed to improve the accuracy of its marine forecasts, provide advanced electronic navigational charts and real-time oceanographic information, and maintain a precise positioning network that mariners need to navigate with confidence. Consistent, accurate and timely positioning information derived from NOAA's positioning services is critical for air and surface activities such as aircraft landings and improving the safety and efficiency of road and railroad delivery.

NOAA partners in the academic, government, and private sectors are essential to realizing this goal. Improved NOAA information will enable the private weather sector to provide better weather related forecasts and information to their clients for improved efficiencies. NOAA will work with the Federal Aviation Administration and the private sector to reduce the impacts of weather on aviation without compromising safety. Reducing the risk of marine accidents and oil spills, better search and rescue capabilities, and other efficiencies that can be derived from improved navigation and coastal and ocean information and services could be worth over $300 million annually around the Nation's coasts. NOAA will work with port and coastal communities, and with Federal and state partners, to ensure that port operations and development proceed efficiently and in an environmentally sound manner. On land, improvements in weather information will be used more effectively to reduce the $42 billion annual economic loss and the 500 million vehicle hour delays attributed to weather-related crashes.

Program Initiative	FTE	Funding Request	Anticipated Impact
Aviation Weather	0	$1,100,000	This increase will continue a 10-year plan to improve U.S. aviation safety and economic efficiencies by providing state-of-the-art weather observation and forecast products responsive to aviation user needs. Specifically, this increase will allow NOAA to proceed with the acquisition of water vapor sensors.
Mapping and Charting Base - Navigation Response Teams (NRTs)	2	- 0 -	Complete NOAA's effort to provide national coverage for Electronic Navigational Chart validation and regional emergency hydrographic survey response. NRTs provide a critical emergency response role for stakeholder survey requests following natural or man-made disasters.
Mapping and Charting Base – Navigation Data Acquisition and Processing Improvements	1	$1,000,000	Improve the speed and accuracy of data acquisition, and accelerate the delivery of navigation information to the maritime community for safe, efficient, and environmentally sound transportation.
Mapping and Charting Base – VDatum	2	$1,500,000	Enable NOAA to transition VDatum from successful demonstration projects in select locations to national scale. VDatum is a revolutionary vertical datum transformation tool which translates geospatial data between vertical reference systems and removes the most serious impediments to data sharing. Continued development of the National VDatum data base will enhance U.S. transportation system by providing more accurate mapping tools at a lower cost to users.
Mapping and Charting – Socioeconomic Analysis	0	$500,000	Effectively quantify the value and articulate well the extent to which users rely on NOAA services such as navigation products and services; weather information for air, marine, and surface transportation; positioning capabilities; emergency response to oil/chemical spills and natural disasters; and commercial remote sensing licensing.
Tide and Current Data – National Current Program	0	$1,500,000	Ensure that NOAA's Annual Tidal Current Table predictions are maintained in an accurate status by systematically conducting observations to update potentially dangerous tidal current predictions based on old or insufficient data.
Address Survey Backlog	0	$10,487,000	Allow NOAA to maintain its planned FY 2006 survey schedule to collect and process approximately 3500 square nautical miles of hydrographic data.
Restorations of FY 2005 program funds	0	$5,272,000	This increase will restore funds requested in FY 2005 to several programs that carry out base operations.

Measure 4a: Reduce the Hydrographic Survey Backlog within Navigationally Significant Areas (square nautical miles surveyed per year)

Explanation of Measure

NOAA conducts hydrographic surveys to determine the depths and configurations of the bottoms of water bodies, primarily for 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 and the Global Positioning System (GPS). NOAA uses the data to produce traditional paper, raster and electronic navigational charts 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 emergency response planners. Ships traversing our coastal waters rely on charts based on sounding data that are more than 50 years old in many places. NOAA has identified approximately 537,000 square nautical miles of the U.S. Exclusive Economic Zone as navigationally significant and in need of resurvey. Since 1994, NOAA has focused primarily on surveying and reporting its accomplishments in the highest priority areas, many of which carry heavy commercial traffic, are less than 30 meters deep, and change constantly. However, this critical area constitutes only a small portion (8%) of the entire navigationally significant area used by large commercial vessels and recreational boaters. The square nautical miles reported in the table above reflect data collected within all areas designated as navigationally significant. NOAA's surveying activities balance in-house resources with contracts and use the latest full-bottom coverage sounding technologies to survey the nation's coastal areas for navigation. NOAA utilizes private contractors and a vessel time charter to supplement its in-house resources to conduct hydrographic data collection.

Weather, mechanical failure, and level of surveying difficulty are variables for both NOAA and its contractors, and therefore variances from the targets of +/- 50 square nautical miles per vessel are to be expected in a normal field season.

FY 2005 and 2006 Targets

NOAA's FY 2005 target is consistent with reduced capabilities the reactivated NOAA Ship FAIRWEATHER will incur during her first full field season of operations. The ship was delayed in coming out of the shipyard until late summer, 2004, and was only outfitted with two, rather than four hydrographic survey launches. The ship will also utilize a substantial amount of sea days for crew training, equipment and procedural development, and for safety concerns. Additionally, the ship may be involved in an Integrated Ocean Mapping test project in the Bering Sea. Although a great cooperative project for NOAA, the test will utilize sea days that would otherwise be used for the address survey backlog performance measure. The FY 2005 target includes anticipated production of a Time Charter vessel.

The FY 2006 production has been estimated to be 3,500 snm. This number shows increased efficiency of operations and a shift from more time consuming near-shore areas to deeper offshore areas. It is expected that FAIRWEATHER will still be outfitted with two, rather than four, survey launches during the 2006 field season. Production from a Time Charter vessel has been anticipated in 2006. Contracts for hydrographic services will continue to be focused in critical waters on the Alaskan coast and the Gulf of Mexico for FY 2005 and 2006.

Measure 4b: Percentage of U.S. counties rated as enabled or substantially enabled with accurate positioning capacity

Explanation of Measure

This new measure in FY 2006 tracks the progress of NOAA's Geodesy Program in facilitating the capacity of state and local governments and the private sector to utilize accurate positioning information. NOAA will track county level use of its Online Position User service (OPUS) to determine how well state and local governments are enabled with accurate positioning capacity. Assessing state and local government and private sector usage at the county level is the most appropriate geographic unit. County-level assessments offer entire U.S. coverage and an existing infrastructure for addressing spatial issues. Utilizing OPUS is the right indicator for how well a county is enabled with accurate positioning capacity, because its usage requires a high level of positioning sophistication. Further, OPUS is a necessary step in obtaining accurate positions.

The level of capacity varies across the nation. This variation is measured as deficient, sufficiently enabled, and enabled. Deficient capacity to conduct accurate positioning indicates that the county has not demonstrated it has the NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning. Substantially enabled capacity to conduct accurate positioning indicates county has demonstrated it has the NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning. Enabled capacity indicates county validated NOAA-enabled infrastructure, tools, and local capacity needed for accurate positioning. This is indicated by having local interaction through, for example, a submitted and accepted OPUS project for inclusion in the NOAA's geodetic database.

FY 2005 and FY 2006 Targets

The capability for OPUS Project submission and other validation methods will be refined in FY 2005. Based on NOAA data to date and consultation with stakeholders, 25 OPUS solutions per county per year is an appropriate threshold value. NOAA has found that surveying projects involving OPUS can be expected to produce 1-3 OPUS solutions over several days as marks are verified or established and 25 OPUS solutions represent 8–25 individual surveying projects. Number of projects shows a sustained activity of use over time. Preliminary discussions concerning this threshold value with the National Association of County Surveyors found that fewer than 25 solutions would not be indicative of consistent OPUS use and indicates a county has not demonstrated local capacity for accurate positioning. The targets for FY 2006 will be 28% of U.S. Counties rated as enabled or substantially enabled.

Measure 4c: Accuracy (%) and False Alarm Rate (FAR) (%) of Forecasts of Ceiling and Visibility (3 Miles/1000 Feet) (Aviation Forecasts)

Explanation of Measure

This measure originally covered "1/4 mile/200 feet." Conditions of a 200-foot ceiling and one quarter mile visibility are components of the FY 2002 and earlier performance measure accuracy and false alarm rate percentages. However, these conditions are rare events. Because of the infrequency of these conditions, the performance measure poorly captured the operational impact of NWS aviation forecasts. The NWS decided that a better criterion of performance is an aviation performance measure based on a 1000-foot ceiling and three miles of visibility for both accuracy and false alarm rate, and is related to Instrument Flight Rules (IFR) conditions.

In accordance with the NWS strategic plan, this measure was added in FY 2000 to reflect a segment of customers that had not been represented in other performance measures. Visibility and cloud ceiling forecasts are critical for the safety of aircraft operations. Accurately forecasting the transition between Visual Flight Rule and IFR conditions significantly improve general and commercial aviation flight planning capabilities, improving both flight safety and efficiencies.

FY 2005 and 2006 Targets

NWS expects to see continued improvement of aviation forecasts for low ceiling and visibility. This will be accomplished through the implementation of an improved observational sensing strategy, higher resolution forecast models, and improved guidance tools integrated into AWIPS and the Aviation Forecast Preparatory System for our meteorologists to focus on this forecast challenge. In addition, training in low ceiling and visibility forecasting will be received by more NWS meteorologists in FY 2005.

Measure 4d: Accuracy (%) of Forecast for Wind Speed and Wave Height (Marine Forecasts)

Explanation of Measure

This measure was originally a "combined accuracy forecast for marine wind and wave." The measure has been revised to reflect the individual wind speed and wave height components. This performance indicator measures the accuracy of wind and wave forecasts, which are important for marine commerce.

In accordance with the NWS strategic plan, this measure was added in FY 2000 to reflect another segment of customers (marine) that had not been represented in other performance measures. The FY 2005 and FY 2006 goals have been updated to reflect recent performance and reductions in ongoing NWS training, operations, and research funding in the FY 2005 enacted budget. Loss of funding for marine training workshops will directly affect partnering opportunities to bring in marine experts outside NWS and NOAA to help train in marine meteorology. Partnerships

make it possible for NWS to develop cost-effective expansion of the marine observation network and growth in research (i.e. GLERL wave model). Loss of research partnerships and fewer observations will translate into weaker scores.

FY 2005 and 2006 Targets

NWS will continue to improve marine forecast (wind speed and wave height) accuracy through the implementation of higher resolution models, denser observation networks, and expanded training in marine forecasting. More advanced smart tools applied to digital wind data should improve wave height forecasts. NWS partnerships with boating organizations (such as U.S. Power Squadron) have yielded more marine observations that can be displayed as plots on AWIPS. Future releases and upgrades to AWIPS software used by NWS forecasters an implementation of new wave forecast models will help NOAA attain outyear goals. The marine Professional Development Series is underway, with two modules already on-line and two more expected on-line by the end of FY 2005.

Program Evaluation

NOAA's goal to promote safe navigation is evaluated at a variety of levels, from peer reviews of products, papers, and projects, to internal and external reviews of entire programs and quarterly reviews of NOAA's overall performance in navigation products and services. Constituent input is an important part of the evaluation process and is solicited regularly through constituent workshops.

From 1992 to 1996, a number of National Research Council Marine Board studies examined the nautical charting program and its transition into the digital era. NOAA incorporated study recommendations on areas such as reducing the survey backlog, implementing new digital production techniques, and delivering new electronic chart products to the program. The Hydrographic Services Improvements Act of 1998 provided Congress and NOAA an opportunity to evaluate NOAA's capabilities for acquisition and dissemination of hydrographic data, develop standards and formats for hydrographic services, and contract for the acquisition of hydrographic data. NOAA now contracts out over 50 percent of its annual critical area hydrographic survey requirements while maintaining Federal competence and expertise with existing and developing surveying technologies. A 2001 KPMG Consulting cost analysis of survey platform options supported NOAA's concept of a time charter for continuous survey operations. NOAA has contracted for a time charter to test its effectiveness in real-world applications.

In 1998, Congress authorized the Height Modernization study to evaluate the technical, financial, legal, and economic aspects of modernizing the national height system with GPS. The study demonstrated the significant benefits to the Nation in terms of dollars and lives saved associated with GPS technology, and it led to current development of the vertical component of the National Spatial Reference System. In 1999, NOAA completed an assessment of its tidal currents program to develop guidelines for future current surveys to update U.S. reference stations for the Tidal Current Tables. Finally, the September 1999 Report to Congress that assessed the U.S. Marine Transportation System (MTS) further articulated the need for coordinated Federal leadership to achieve the MTS vision of becoming the world's most technologically advanced, safe,

efficient, globally competitive, and environmentally responsible system for moving goods and people. NOAA's navigation safety support functions underwent substantial review to identify opportunities for greater integration among Federal agencies.

Cross-cutting Activities

Intra-Department of Commerce

In partnership with the Technology Administration and National Telecommunications and Information Administration within the Department of Commerce and other civil agencies from all civil departments, NOAA participates on the Interagency GPS Executive Board, which with the Department of Defense jointly manages the GPS satellite program as a national asset. Now a dual-use system heavily employed by civilian and commercial sectors, GPS is a global information utility that the United States has committed to provide free to the world for use as the international standard for navigation, positioning, and timing.

Other Government Agencies

NOAA works closely with agencies such as the Department of Transportation, the U.S. Coast Guard, and the U.S. Army Corps of Engineers in support of Marine Transportation System goals and objectives to identify and improve navigation services for maritime commerce while preserving navigation and environmental safety. NOAA and the Department of Transportation also cooperate on the development of the Nationwide Differential GPS System, which employs NOAA's Continuously Operating Reference Stations to enable highly accurate GPS positioning in three dimensions across the nation. This system benefits from a multipurpose cooperative effort among government, academia, and the commercial sector and supports numerous NOAA objectives and activities.

External Factors and Mitigation Strategies

Weather has a significant impact on the promotion of safe navigation activities. Both in-house and contract hydrographic survey schedules can be affected by adverse weather conditions and equipment failure, as can aerial photography flights scheduled for shoreline photogrammetry. Storm damage frequently renders water-level stations inoperable, affecting surveying capabilities and real-time observations of water levels and currents so critical to safe navigation. Natural disasters such as earthquakes and hurricanes can elevate the need to survey an area because of shoreline changes or obstruction accumulation; man-made impacts such as shifts in shipping patterns, newly regulated shipping lanes, port expansions, or wrecks will also impact NOAA's survey schedule. Finally, in addition to mission activities, NOAA ships and aircraft provide immediate response capabilities for unpredictable events such as search and recovery efforts after the TWA Flight 800 and EgyptAir Flight 990 crashes; damage assessments after major oil spills such as the Exxon Valdez, the Persian Gulf War, and the grounding of the New Carissa off the Oregon coast in 1999; and severe hurricanes. NOAA mitigates these impacts with backup plans for relocating assets to other projects, or by reassessing survey schedules.

Discontinuation of Measure

Measure: Percentage of National Spatial Reference System (NSRS) Completed (Cumulative %)

	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
Target	**64%**	**75%**	**78%**	**84%**	**87%**	**87%**	
Actual	**71%**	**75%**	**83%**	**84%**	**88.2%**		
Met/Not Met	**Met**	**Met**	**Met**	**Met**	**Met**		

Continued, long-term use of the measure would be inadequate, because it is not readily understood or suitable for measuring outcomes of activities planned for the Geodesy Program. The measure is inflexible to respond to changing user requirements and technological advances. It is inadequate for rolling out to specific geographic areas, so it has no precise set of targets against which to effectively measure the system's expansion.

Performance Goal for Mission Support: Provide critical support for NOAA's Mission

DOC Strategic Goal 3: Observe, protect, and manage the earth's resources to promote environmental stewardship

Strong, effective, and efficient support activities are necessary for us to achieve our Mission Goals. Our facilities, ships, aircraft, environmental satellites, data-processing systems, computing and communication systems, financial and administrative offices, and our approach to management provide the foundation of support for all of our programs. This critical foundation must adapt to evolving mission needs and, therefore, is an integral part of our strategic planning. It also must support US homeland security by providing NOAA services, such as civil alert relays through NOAA Weather Radio and air dispersion forecasts, in response to national emergencies. NOAA ships, aircraft, and environmental satellites are the backbone of the global Earth observing system and provide many critical mission support services. To keep this capability strong and current with our Mission Goals, we will ensure that NOAA has adequate access to safe and efficient ships and aircraft through the use of both NOAA platforms and those of other agency, academic, and commercial partners. We will work with academia and partners in the public and private sectors to ensure that future satellite systems are designed, developed, and operated with the latest technology. In addition, safe and adequate facilities and state-of-the-art information technology are essential to the improvement of NOAA's operations and service delivery. NOAA's long-range facility planning and comprehensive maintenance planning are underway with the goal to ensure right-sized, cost-effective, and safe facilities.

To achieve our Mission Goals, we must also commit to organizational excellence through management and leadership across a "corporate" NOAA. We will provide effective administrative, financial, and information technology services that enable us to deliver effective products and services. We will continue to improve the policy, programmatic, and managerial functions that support our Mission Goals. Our administrative and finance programs will ensure effective communication inside and outside NOAA, and efficient management of our assets, business processes, and financial resources.

Program Initiative	FTE	Funding Request	Anticipated Impact
Satellite Command and Control	0	$1,408,000	Funds will be used for software and engineering support necessary to ensure uninterrupted flow of environmental data from NOAA and non-NOAA satellites, including Jason-2. Funding will also support increases in the rent, security, and above standard operations and maintenance costs associated with the occupancy of the NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland.
Product Processing and Distribution	0	$400,000	Enable NOAA to process expected increase in the amount of satellite data required to meet NOAA's mission requirements. Funding will provide additional contractor support for operations, and hardware and software maintenance, and allow NOAA to maintain critical services.

Product, Development, Readiness, and Application	0	$400,000	Continued development of satellite data applications and products in advance of the next generation instruments on future satellite systems, reducing the time between availability of the data and operational use.
GOES-R Series	0	$82,978,000	Weather and climate-sensitive industries (directly and indirectly) account for approximately $3.0 trillion of the U.S. Gross Domestic Product. Tornadoes, hurricanes, floods, and variations in climate can result in loss of economic efficiencies. GOES-R Series satellites alleviate the losses by reducing the uncertainty in long-term climate projections, improving forecasts with longer lead times for warnings of hurricanes, tornadoes, and other severe events, etc.
LANDSAT	0	$11,000,000	Supports LANDSAT integration..
National Polar-orbiting Operational Environmental Satellite Systems	0	$16,097,000	Supports the November 2006 launch of the NPOESS Preparatory Project by having the instruments and ground system in place and also to have the first NPOESS satellite (C1) available for launch in FY 2010.
Costs Associated with the Office of General Counsel FTEs	0	$1,600,000	To fund unanticipated cost growth that has resulted in unfunded full General Counsel FTE within the NOAA Under Secretary and Associate Offices (as opposed to GC staff directly assigned to NOAA Line Offices).
Office of Chief Information Officer (OCIO) – Capital Planning and Investment Control	1	$1,365,000	This funding increase is part of OCIO's Security and Information Technology Support Services request which would enable NOAA to address the management of information systems from an enterprise perspective.
Office of Chief Information Officer (OCIO) – NOAA IT Refreshment	0	$465,000	To provide information technology refreshment to high priority areas in NOAA in conjunction with Commerce IT review board input; specifically, for CAMS and Lan switch replacements.
OCIO – Information Technology Security	0	$4,050,000	Provide the enterprise level structure needed to efficiently respond to the new IT security architecture requirements.
Office of the Chief Financial Officer (CFO) – End-to-End Resource management System	0	$1,000,000	Provide an end-to-end formulation and execution capability for the financial management of NOAA's 41 programs.
CFO - Activity Based Budgeting and Planning	0	$500,000	Implement Business Management Fund using activity based budgeting and planning. Investing in technology to automate manual processes, and change business practices will reduce redundancies and unnecessary practices.

CAO – Consolidation of Support Centers	0	$1,500,000	To restructure the Administrative Support centers to more effectively support specific business functions. The costs would include costs associated with severance pay, retirement costs, lump sum leave payments, and relocation costs in some cases.
Facilities – Contractor/Software Costs and Training	0	$1,000,000	Improved facilities management system.
NOAA Center for Weather and Climate Prediction (NCWCP)	0	$6,200,000	Funds will finalize the design and implementation of the construction of the NOAA Center for Weather and Climate Prediction (NCWCP). The funding will also be used to initiate critical long lead procurements for data and communications infrastructure that will be installed in the building during construction; for furnishings, fixtures and equipment that must be procured prior to the completion of construction, and for project management tasks supporting technical oversight of the design and construction process and the detailed planning necessary to execute the relocation of critical 24x7 operational systems without interruption of service.
Fisheries Survey Vessel #4	0	$33,513,000	The requested funding will enable NOAA to exercise an option for the fourth ship on an existing, four-ship contract, thereby retaining current pricing. FSV4 would deploy state-of-the-art acoustic technologies, combined with very quiet radiated noise signatures, to enhance the effectiveness and efficiency of at-sea resource surveys. These capabilities would enable FSV4 to monitor up to nine times more volume of water for the same time and distance traveled by current ships. Enhanced data streams would allow assessment scientists to improve survey designs and ground-truth acoustic surveys using modern trawl gear. FSV4 would support NMFS' new FETCH Autonomous Underwater Vehicle to extend survey sampling beyond the trackline of the ship.
Facility Maintenance & Repair	0	$3,983,000	This program includes funds to reduce operating costs for NOAA's facilities through actively pursuing energy commodities at competitive prices, identifying and implementing energy-savings opportunities and applying renewable-energy technologies and sustainable designs at NOAA-managed facilities.
Restorations of FY 2005 program funds	0	$16,636,000	This increase will restore funds requested in FY 2005 to several programs that carry out base operations.

There are no GPRA measures for the Mission Support goal since the activities of this goal support the outcomes of the Mission goals. NOAA is developing new and improving existing internal management performance measures for the Mission Support Goal.

NOAA Data Validation and Verification

NOAA's Budget Office coordinates an annual review of the performance data to ensure that it is complete and accurate. During this process, significant deviations from projected targets, if any, are discussed with the appropriate NOAA Line Office so that changes or corrections can be made to help meet NOAA's performance goals. The actual validation process is conducted by individual NOAA Line Offices. The verification aspects depend on individual Line Office. For oceans and fisheries-related measures, stock assessments and reviews (internal, and/or peer) are common. For weather related measures, the verification process is, among other things, through comparison of predicted weather to the actual event. For the climate-related measures, verification is through, among other things, quality control of data. Satellite data are compared with on site data to help validate data accuracy.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 1a: Number of overfished major stocks of Fish	NOAA's National Marine Fisheries Service (NMFS) report to Congress, *Status of Fisheries of the United States*	Annual	NMFS Office of Sustainable Fisheries	Stock assessments and peer reviews (internal and outside the agency)	None	
Measure 1b: Number of major stocks with an "unknown" stock status	NOAA/National Marine Fisheries Service (NMFS), Report to Congress: Status of Fisheries of the United States.	Annual	NOAA/NMFS Office of Sustainable Fisheries	Stock assessments and peer reviews (internal and outside the agency).	None	

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 1c: Number of protected species designated as threatened, endangered, or depleted with stable or increasing population levels	NMFS	Annual	NMFS's Office of Protected Resources	Audits and internal peer review within NOAA and external peer review by regional fishery councils, the National Science Foundation, the National Academy of Science, and other organizations	None	
Measure 1g: Number of stocks of protected species with adequate population assessments	NMFS	Annual	NMFS's Office of Protected Resources	Audits and internal peer review within NOAA and external peer review by regional fishery councils, the National Science Foundation, the National Academy of Science, and other organizations	None	None
Measure 1h: Number of acres of coastal habitat restored (annual/cumulative)	Primary source is NMFS's Office of Habitat Conservation; NOS provides additional input	Annual	NMFS's Habitat Office will collect information, conduct assessments, and store data.	NMFS's Habitat Office will collect quality-controlled data to ensure performance data criteria are being met.	None	None
Measure 2a: U.S. temperature – skill score	Forecast data, observations from U.S. Weather Forecast Offices, and from a cooperative network maintained by volunteers across the nation	Annual	NWS's National Centers for Environmental Prediction	NOAA performs quality assurance analysis of the data (for example, error checking, elimination of duplicates, and interstation comparison) both at the national and U.S. Weather Forecast Office level	Given the difficulty of making advance temperature and precipitation forecasts for specific locations, a skill score of 20 is considered quite good and means the forecast was correct in almost 50% of the locations forecasted. Forecasts will likely be better in	None

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
					El Niño years than in non-El Niño years.	
Measure 2b: Reduce the Uncertainty in the Magnitude of the North American Carbon Uptake	NOAA's Global Carbon Cycle Research Program	Annual	Climate Monitoring and Diagnostics Laboratory	Quality assurance and calibration against known standards performed by NOAA	Number of profiling/ocean sites and our ability to incorporate these data into advanced carbon models	None
Measure 2c: Reduce the Uncertainty in Model Simulations of the Influence of Aerosols on Climate	NOAA's Atmospheric Composition and Climate Program	Annual	Aeronomy Laboratory	Quality assurance and comparisons against 2001 international assessments by leading experts in the aerosol-climate community	Number of monitoring sites, process studies, and our ability to include these in global models	None
Measure 2d: Determine the Actual Long-term Changes in Temperature and Precipitation Over the United States	NOAA's National Climatic Data Center	Annual	NOAA's National Climatic Data Center	Monte Carlo simulations based on operation stations	None	None
Measure 2e: Reduce the Error in Global Measurement of Sea Surface Temperature	NOAA's Office of Climate Observations	Annual	Pacific Marine Environmental Laboratory	Quarterly reporting mechanism on uncertainty in sea surface temperature measurements	Number of deployed observing platforms in the global ocean	None
Measure 2f: Improve society's ability to plan and respond to climate variability and change using NOAA climate products and information.	NOAA's Office of Global Programs	Annual	NOAA's Office of Global Programs	Annual assessments of grants awarded and published risk and impact assessment/evaluations communicated to decision makers.	Number of studies assessing societal impacts of climate information on stakeholders	None

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 3a: Lead time (minutes), accuracy (%), and false alarm rate (FAR, %) of severe weather warnings for tornadoes	National Weather Service (NWS) field offices	Monthly	NWS headquarters and the Office of Climate, Water, and Weather Services (OCWWS)	Verification is the process of comparing the predicted weather to the actual event. The process begins with the collection of warnings from every NWS office across the nation. The severe weather event program includes extensive quality control procedures to ensure the highest reliability of each report. The data in each report are entered into a database that contains severe weather warnings where the warnings and events are matched and appropriate statistics are calculated and made available to all echelons of the NWS.	There are limitations of scientific verification in assessing data. The fundamental purpose of scientific verification is to objectively assess program performance through the use of standard statistical analysis. However, a number of factors unique to the atmospheric sciences must be considered to ensure proper interpretation of objectively derived statistics. The primary factor to consider is the natural variation of this performance measure related to annual fluctuations in meteorological conditions associated with severe weather.	Review the storm data from individual events to pinpoint the causes and take corrective actions.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 3b: Lead Time (Minutes) and Accuracy (%) for Severe Weather Warnings for Flash Floods	National Weather Service (NWS) field offices	Monthly	NWS headquarters and the Office of Climate, Water, and Weather Services (OCWWS)	Verification is the process of comparing the predicted weather to the actual event. The process begins with the collection of warnings from every NWS office across the nation. The severe weather event program includes extensive quality control procedures to ensure the highest reliability of each report. The data in each report are entered into a database that contains severe weather warnings where the warnings and events are matched and appropriate statistics are calculated and made available to all echelons of the NWS.	There are limitations of scientific verification in assessing data. The fundamental purpose of scientific verification is to objectively assess program performance through the use of standard statistical analysis. However, a number of factors unique to the atmospheric sciences must be considered to ensure proper interpretation of objectively derived statistics. The primary factor to consider is the natural variation of this performance measure related to annual fluctuations in meteorological conditions associated with severe weather.	NOAA will continue to collect data while reporting additional measures in the future

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 3c: Hurricane Track Forecasts Error (48 Hours)	NWS/Tropical Prediction Center (TPC)	Annual	TPC	Hurricane storm verification is performed for hurricanes, tropical storms, and tropical depressions regardless of whether these systems are over land or water. The TPC issues track and intensity forecast throughout the life of a hurricane. The actual track and intensity are verified through surface and aircraft measurements. NOAA calculates the average accuracy of the TPC track and intensity forecasts for the Atlantic basin at the end of each hurricane season. Reported errors are for hurricane and tropical storm stages only because of a more limited historical verification record for tropical depressions.	Verification of actual track and intensity versus forecast is very accurate. However, actual annual scores vary up to 20% in some years due to the type and location of the hurricane events. Some types of systems can be more accurately forecasted than others. For example, hurricanes that begin in the northern sections of the hurricane formation zone tend to be much harder to accurately forecast. Out-year measures depend on a stable funding profile and take into account new satellites, improved forecast models, new and continued research activities of the U.S. Weather Research Program (USWRP), and investments in critical observing systems	NOAA will report on the tracking of forecasts at 24, 48 and 72-hour intervals.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 3d: Accuracy (%) (Threat Score) of day 1 precipitation forecasts Measure 3e: Lead Time (Hours) and Accuracy (%) of Winter Storm Warnings	The Hydrometeoro-logical Prediction Center and state agencies	Annual	World Weather Building	The Hydrometeorological Prediction Center has produced Quantitative Precipitation Forecasts since the early 1960s and has kept verification statistics related to the Quantitative Precipitation Forecast program since that time. All data are examined for accuracy and quality control procedures are applied. Verification is the process of comparing the predicted precipitation amounts to the observed amounts over the conterminous U.S.	The 40-year record of performance indicates there can be considerable variation in the performance measure from year to year. This variation is heavily dependent on the variation of weather regimes over the course of a year and from year to year. Scores are usually lower, for example, in years with considerable summertime precipitation not associated with tropical cyclones.	NOAA will implement planned weather observation and numerical modeling improvements along with ongoing research projects.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 3f: Cumulative percentage of U.S. shoreline and inland areas that have improved ability to reduce coastal hazard impacts					This measure tracks the cumulative percent of shoreline and inland areas with improved ability to reduce the impact of coastal hazards. The types of projects included in the reported results differ from one year to the next; therefore, the potential for counting a portion of the shoreline more than once exists. For example, one year a project may improve an area's ability to reduce the impacts of hurricanes, then another year a separate project may improve the same area's ability to reduce the impacts of another coastal hazard such as inland flooding.	

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 4a: Reduce Hydrographic survey backlog within navigationally significant areas (square nautical miles surveyed per year)	Progress reports on data collected from hydrographic survey platforms	Annual	National Ocean Service will store data and publish nautical charts.	National Ocean Service will apply established verification and validation methods.	Progress in reducing the backlog is measured against a baseline value of 43,000 square miles as determined in 1994. Weather can affect scheduled surveys.	None
Measure 4b: Percentage of U.S. counties rated as enabled or substantially enabled with accurate positioning capacity (Goal: Increase percentage of counties rated as substantially or fully enabled, with the infrastructure, tools, and demonstrated local capacity for accurate positioning, from 25% in 2004 to 90% in 2011).	NOAA's Online Position User Service (OPUS)	Ongoing, Annual Reporting	Automated database at National Ocean Service	NOAA will validate a County's capacity for local positioning through direct coordination with localities, such as OPUS project acceptance by NOAA. By assessing the user needs of county surveyors, counties, and their associations, NOAA will validate that the Geodesy Program is meeting local positioning needs. The new Geodesy GPRA measure will track progress toward these goals.	OPUS Customer data is limited and will be expanded through Paperwork Reduction Act-approved surveys of customers who use the OPUS web site for precision positioning.	Analyze OPUS e-mail domain names to categorize and inventory OPUS users. Validate OPUS web site hits as a measure of use and benefit. Conduct a socio-economic analysis to validate OPUS benefits and who OPUS users are. Develop schema based on census data for scaling counties by area, population, and economic activity. Develop "county-based accurate

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
						positioning scorecard" with our partners.
Measure 4c: Accuracy (%) and FAR (%) of Forecasts of Ceiling and Visibility (Aviation Forecasts)	NWS field offices	Daily	NWS headquarters and OCWWS	Verification is the process of comparing the predicted weather with the actual event. The process begins with the collection of forecasts and observations from each NWS office across the nation. The quality-controlled, collated data are transmitted to the National Centers for Environmental Prediction in Camp Springs, Maryland, where the data are stored as computer files. The data files are retrieved by the NWS headquarters' Office of Science and Technology. Following additional quality control the data are stored on an Office of Science and Technology workstation and used to generate semi-annual statistics on forecast accuracy.	Due to the large volume of data gathered and computed, documentation for this measure cannot be finalized until well into the following fiscal year. Out-year measures depend on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.	NOAA will improve and expand its training program work with the National Aeronautics and Space Administration and the Federal Aviation Administration to develop new software tools and forecast techniques.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
Measure 4d: Accuracy (%) of Forecast for Winds and Waves (Marine Forecasts)	NWS field offices	Daily	The NWS and the National Centers for Environmental Prediction's Ocean Modeling Branch	Verification is the process of comparing the predicted weather with the actual event. The process begins with the collection of forecasts and observations from each NWS office across the nation. The quality-controlled, collated data are transmitted to the National Centers for Environmental Prediction, where they are stored as computer files. The data files are retrieved by the NWS, and the National Centers for Environmental Protection's Ocean Modeling Branch. Following additional quality control the data are used to generate quarterly statistics on forecast accuracy.	Due to the large volume of data gathered and computed, documentation for the accuracy of forecast for wind and waves cannot be finalized until well into the following fiscal year. Out-year measures depend on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.	NOAA will deploy enhanced versions of AWIPS (Build 5), implement new wave forecast models, and improve communication and dissemination techniques to marine users.