FY 2016 Annual Performance Plan / FY 2014 Annual Performance Report

National Oceanic and Atmospheric Administration

Part 1: Agency and Mission Information

Section 1.1: Overview

NOAA provides environmental intelligence to advance our ability to understand and anticipate changes in the Earth's environment, improve society's ability to make scientifically informed decisions, deliver services vital to the economy and public safety, and conserve and manage ocean and coastal ecosystems and resources. NOAA's mission is best described as a triad of science, service, and stewardship. We operate from the surface of the sun to the bottom of the ocean. NOAA's science, services, and stewardship missions require a synthesis of space, ground, and ocean-based observations from satellites, ships, aircraft, buoys, weather stations, and radiosondes just to name a few. This synthesis, coupled with sound scientific understanding of Earth systems and processes and advance modeling capabilities, is essential to NOAA's ability to provide critical environmental intelligence to keep the Nation informed of the changing environment.

NOAA provides weather, water, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy 24 hours every day. NOAA provides environmental intelligence that decision-makers depend upon to guide decisions they must make every day. To meet that end NOAA must understand and predict changes in the climate, weather, oceans, and coasts. When it comes to severe weather preparedness, calculated near-term investments build capacity for savings – of life, property, and habitat – in the future. In the ten years from 2004 to 2013 the U.S. sustained 80 weather/climate disasters where overall damages/costs reached or exceeded $1 billion.[1] These included Hurricane Katrina, Hurricane Rita, Hurricane Sandy, wide spread tornado outbreaks, the most extensive drought since the 1930's in 2012 and 2013, and wildfires[2] that burned over 72 million acres collectively. In accordance with its strategic vision, NOAA launched its Weather-Ready Nation initiative to build community resilience in the face of increasing vulnerability to extreme weather and water events. The initiative will be enacted through improvements to demand-driven support services, innovative technology, and specialized training of our workforce.

NOAA protects and preserves the nation's living marine resources through scientific research, fisheries management, enforcement and habitat conservation. Commercial and recreational fishing industries depend on healthy and abundant fish stocks. NOAA must work to conserve and manage coastal and marine ecosystems and resources. In 2012, the U.S. seafood industry supported approximately 1.3 million full- and part-time jobs and generated $141 billion in sales impacts, $39 billion in income impacts, and $59 billion in value added impacts.[1] NOAA will sustain efforts to rebuild American fisheries and maintain them at sustainable levels to optimize fishing opportunities, jobs and environmental benefits. By investing in the management of vital marine resources now, NOAA works to ensure these resources will contribute to thriving communities and their economies now and in the future.

NOAA provides products, services and information that support coastal communities, promote safe navigation, sustain marine ecosystems, and mitigate coastal hazards. NOAA delivers nautical charts, real time tides and currents information, accurate positioning infrastructure, and

[1]Fisheries Economics of the United States, 2012.

emergency response support to benefit safe, efficient, and secure transportation on U.S. waterways. America's seaports support the employment of 13.3 million U.S. workers.[2] Coastal shoreline counties contributed $6.6 trillion to the Gross Domestic Product (GDP) in 2011, which is just under half of the U.S. GDP[3] and a total of 51 million jobs in 2011.[4] NOAA partners with states to implement a range of programs that help keep America's coasts healthy and resilient. As such, our vision for the future centers on resilience- resilient ecosystems, resilient communities and resilient economies.

NOAA's world-class science underpins NOAA's ability to provide accurate weather forecasts, to protect and manage the nation's coastal and ocean resources, and to enable society to plan for and respond to climate change. Research at NOAA is conducted in Federal laboratories and science centers, through partnerships with the university community, and through competitively awarded grants to both external and internal partners. NOAA's research provides solid science and policy-relevant findings to leaders in government and industry worldwide on topics such as ocean exploration, climate, and ecosystem protection.

Section 1.2: Mission Statement

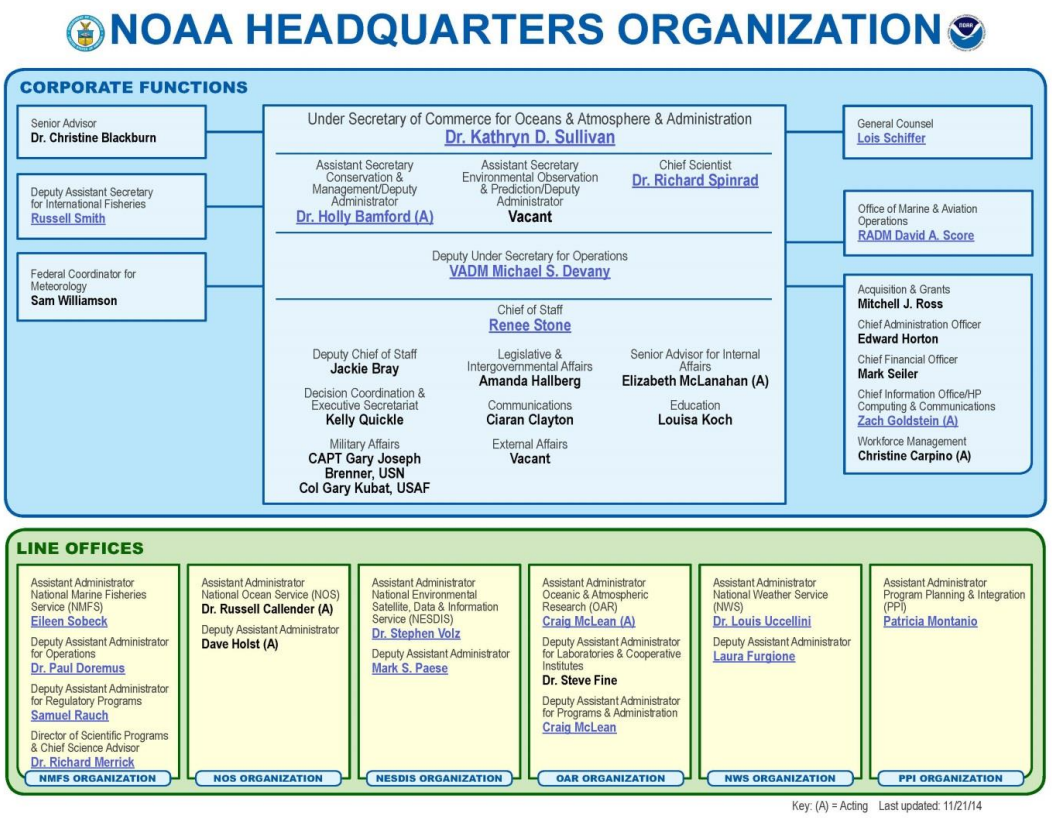
To understand and predict changes in climate, weather, oceans, and coasts, to share that knowledge and information with others, and to conserve and manage coastal and marine ecosystems and resources.

Section 1.3: Vision and Values (Optional)

Healthy ecosystems, communities, and economies that are resilient in the face of challenge.

[2] John Martin, Ph.D., "The Local and Regional Economic Impacts of the U.S. Deepwater Port System, 2007", prepared for the American Association of Port Authorities, June 2008, p. 5.
[3] Bureau of Economic Analysis. 2012. Gross Domestic Product (GDP) for the U.S. Territories. http://www.bea.gov/national/gdp_territory.htm.
[4] Bureau of Labor Statistics. 2012. 2010 Census of Employment and Wages. Available from: http://www.bls.gov/cew/

Section 1.4: *Organizational Structure*



Part 2: Cross-Agency Priority Goals

Section 2.1: *Overview*

The National Oceanic and Atmospheric Administration currently contributes to the following CAP Goals: Infrastructure Permitting Modernization, Lab-To-Market, and STEM Education. The website where these are located is: http://www.performance.gov/cap-goals-list?view=public

Part 3: Strategic Goals and Objectives

Section 3.1: Corresponding DoC Strategic Goals, and Objectives

Goal	Objective Number	Objective Name	Leader:
Trade and Investment Strategic Goal 1: Expand the U.S. economy through increased exports and inward foreign investment that lead to more and better American jobs	1.1	Increase opportunities for U.S. companies by opening markets globally	Stefan Selig, Undersecretary for International Trade, U.S. International Trade Administration
Environment Strategic Goal 3: Ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment	3.1	Advance the understanding and prediction of changes in the environment through world class science and observations	Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, National Oceanic and Atmospheric Administration
Environment Strategic Goal 3: Ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment	3.2	Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation	Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, National Oceanic and Atmospheric Administration
Environment Strategic Goal 3: Ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment	3.3	Strengthen the resiliency of communities and regions by delivering targeted services to build capacity	Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, National Oceanic and Atmospheric Administration
Environment Strategic Goal 3: Ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment	3.4	Foster healthy and sustainable marine resources, habitats, and ecosystems through improved management and partnerships	Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, National Oceanic and Atmospheric Administration
Environment Strategic Goal 3: Ensure communities and businesses have the necessary information, products, and services to prepare for and prosper in a changing environment	3.5	Enable U.S. businesses to adapt and prosper by developing environmental and climate informed solutions.	Dr. Kathryn Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, National Oceanic and Atmospheric Administration
Data Strategic Goal 4: Improve government, business, and community decisions and knowledge by transforming Department data capabilities and supporting a data-enabled economy	4.1	Transform the Department's data capacity to enhance the value, accessibility and usability of Commerce data for government, business and the public	Mark Doms, Under Secretary for Economic Affairs, Economics and Statistics Administration

Section 3.2: *Strategies for Objectives*

Objective 1.1 Strategies:

- Ensure U.S. commercial and economic interests are advanced in trade agreements and in other international fora
- Ensure U.S. commercial and economic interests are advanced with foreign governments

Objective 3.1 Strategies:

- Develop the next generation of satellites and observation and data gathering systems
- Advance holistic, integrative ecosystem research
- Develop the next generation environmental modeling system and transition models
- Improve understanding of Greenhouse Gas processes

Objective 3.2 Strategies:

- Evolve National Weather Service
- Improve Accuracy & usefulness of forecasts
- Enhance decision support services for emergency managers

Objective 3.3 Strategies:

- Build partnerships to produce and deliver climate information and services
- Enhance Coastal Intelligence
- Help communities and regions leverage assets to build capacity for resilience

Objective 3.4 Strategies:

- Strengthen capabilities to assess/monitor fish and protected resources
- Improve recovery of listed species through innovative partnerships
- Enhance place-based conservation

Objective 3.5 Strategies:

- Engage targeted business sectors to integrate natural capital values into business models

Objective 4.1 Strategies:

- Increase Commerce's capacity to make data accessible, discoverable and usable by the public
- Foster Growth of private sector weather, water and climate information and service providers

Section 3.3: *Progress Update for Strategic Objectives*

Benefits:

3.1 Advance the understanding and prediction in the environment through world class science and observations

Deploy the next generation of satellites and observation and data gathering systems.

Accurate and reliable data from sustained and integrated observation systems is essential. To maintain and improve this capability, NOAA will launch and operate the next generation of geostationary and polar-orbiting satellites and will sustain a modern survey vessel fleet. These capabilities will support NOAA's weather, climate, mapping, and ecosystem observation and prediction needs, as well as integrated federal observing requirements.

Advance holistic, integrative ecosystem research.

An integrated approach to research and development will improve the understanding of interrelated changes in ecosystems' biological, chemical, physical, and social processes and dynamics. With this focus, NOAA will deliver science solutions to further the evaluation of management strategies and tradeoffs and to make informed decisions about resource management and the changing environment.

Develop the next-generation environmental modeling system.

In many cases, what limits the ability to make predictions is the complex and dynamic interconnectedness of large-scale physical and ecological systems. NOAA will improve its predictive capability through sustained improvements in high-performance computing systems and by developing a suite of state-of-the-art models. These models will integrate physical and biological observations and processes, and provide earth-system predictions and projections at varying geographic scales across time scales from minutes to decades.

Improve the understanding of greenhouse gas processes.

As the effects of increased greenhouse gas become more apparent, there is a growing need for a better understanding of the processes that cause the increase. NOAA and NIST will work cooperatively to link measurements and standards supporting the atmospheric and emissions monitoring communities. The efforts of both bureaus will advance measurement capabilities of the monitoring networks and improve measurements of greenhouse gas emissions on scales ranging from global to metropolitan areas and cities.

3.2 Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation

Evolve NOAA's National Weather Service.

NOAA's National Weather Service has collaborated with stakeholders to become more responsive, engaged, and transparent. The resulting Weather-Ready Nation Road map 2.0 describes a more flexible and agile approach to management practices, services, workforce, science, and technology. As the roadmap's new approaches are implemented, the National Weather Service will be more effective in supporting emergency managers, first responders, government officials, businesses, and the public to help them make faster, smarter decisions that save lives and protect livelihoods.

Improve the accuracy and usefulness of forecasts.

A Weather-Ready Nation needs improved warning and forecast accuracy. Through improvements in high-performance computing, NOAA will deliver improved weather forecasts and warnings, monthly and seasonal drought outlooks, and other water resources prediction information. NOAA will also use social science to increase the effectiveness of forecast communications and to better to assist users in their decision-making.

Enhance decision support services for emergency managers.

Understanding and responding to the needs of emergency managers before a weather-related event occurs is vital. To build a Weather-Ready Nation, NOAA will partner more effectively with other government agencies at all levels to provide and integrate weather-related services into the National Response Framework. NOAA will deploy new forecasting and decision support tools and train users to assess and communicate weather risks to the emergency management community.

3.3 Strengthen the resiliency of communities and regions by delivering targeted services to build capacity

Build partnerships to produce and deliver climate information and services.

To improve community resilience, NOAA will support decision makers by building government, academic, and private partnerships. The input and collaboration will be used to develop regionally and locally-applied climate information and provide open-access data for catastrophe risk modeling. It will also produce new and improved information systems and visualization tools, refinement of the *Climate.gov* website, and communicate uncertainties when applying information to vulnerability assessments and preparedness solutions.

Enhance coastal intelligence.

Coastal intelligence includes nautical charts, environmental monitoring and assessment, and socioeconomic data and tools. NOAA, Census, and partners will increase the integration of science and services to provide targeted, actionable information that strengthens the resilience of communities and regions. More sophisticated ocean and coastal intelligence will improve the ability of public and private decision makers to make informed choices.

Help communities and regions leverage assets to build capacity for resilience.

The Department will provide tools, training, assistance, and grants to communities and regions for actions needed to adapt to environmental change before, during, and after events. The development and implementation of resiliency strategies will help them better understand and employ their regional assets for economic resiliency. In addition, coastal decision makers will benefit from updated decision-support tools, technical assistance, and training.

3.4 Foster healthy and sustainable marine resources, habitats, and ecosystems through improved management and partnerships

Strengthen capabilities to assess and monitor fish and protected resources.

Ensuring sustainable populations of living marine resources is a key Departmental mandate. NOAA will increase the precision of stock assessments, performing more robust monitoring, and applying ecosystem-based management to ensure healthy, sustainable populations of living marine resources. NOAA will incorporate integrated biological, physical, and chemical data and ecosystem modeling into fish stock and protected species assessments. NOAA will also produce more advanced technologies for monitoring of living marine resources and ecosystems.

Improve recovery of listed species through innovative partnerships.

International, federal, state, local, tribal, and nongovernmental organizations play a role in conservation. NOAA will strengthen partnerships with these stakeholder groups to ensure greater collaboration toward the recovery and conservation of protected species in marine and coastal ecosystems. Greater collaboration will improve the development and implementation of effective recovery and conservation plans for marine mammals and endangered and threatened species.

Enhance place-based conservation.

Through its coastal management and place-based conservation programs, NOAA will expand protections at current sites, add protections at new sites, and work with public and private partners. This place-based approach will preserve the economic and environmental benefits of these special places to local communities. NOAA will implement efforts such as the Habitat Blueprint framework, which employs partnerships to improve habitat conditions for fisheries, and coastal and marine life, to achieve economic, cultural, and environmental benefits.

FY 2014 Accomplishments:

- **Implemented High Resolution Rapid Refresh Model**
  On September 30, 2014, NOAA transitioned to operations the three kilometer High-Resolution Rapid Refresh (HRRR) severe weather forecast model. The HRRR better pinpoints neighborhood-sized threats such as tornadoes, heavy precipitation that can lead to flash flooding, and heavy snowfall, and provides advanced warnings so that residents can take precautions hours in advance. The HRRR model helps forecasters provide more information – and within a quicker timeframe – to air traffic managers and pilots about hazards, such as air turbulence and thunderstorms. The model is run every hour out to 15 hours with a domain slightly larger than the Continental United States and has a spatial resolution four times finer than previous numerical models. NOAA's recent increase in supercomputing capacity enabled the HRRR to better integrate radar data with traditional observations.

- **Removed 57 Tons of Marine Debris from World Heritage Site**
  In September-October 2014, a team of 17 NOAA divers operating from the Oscar Elton Sette removed 57 tons of marine debris consisting of derelict fishing nets and plastic litter from the Papahānaumokuākea Marine National Monument, a World Heritage Site and one of the largest marine conservation areas in the world. The divers worked out of small boats launched from the Sette systematically surveying coral reefs at Maro Reef, Pearl and Hermes Atoll, and Midway Atoll. NOAA has led this mission every year since 1996 and has removed a total of 904 tons of marine debris, including this year's haul. The nets are an entanglement hazard for monk seals, turtles and seabirds that depend on the shallow coral reef ecosystem for survival. They also break and damage corals as they drift through the currents, catching on anything in their path. Once they have settled, they can smother the corals and prevent growth.

- **Supported Response to Lake Erie Harmful Algal Bloom**
  NOAA scientists issued timely forecasts to aid in the response to a bloom of cyanobacteria that contaminated drinking water in Lake Erie on August 2nd, 2014. This event left nearly 400,000 people in Ohio without drinking water for two days. In response to requests from Ohio agencies, NOAA increased the frequency of Lake Erie Harmful Algal Bloom Bulletins from once to twice a week. These bulletins tracked the size and location of blooms and predicted their movement until the bloom season ended in the fall. The August 1st edition of the NOAA bulletin forecasted the intensification of this bloom and enabled Toledo to prepare for a potential hazard.

- **Continued to End Overfishing and Rebuilding Nation's Fish Stocks**
  In April 2014, in its release of the *Status of U.S. Fisheries, 2013* report, NOAA announced continued progress in ending overfishing and rebuilding fish stocks. The report notes that NOAA removed seven more stocks from the overfishing list and four more stocks from the list of overfished stocks. Additionally, recent assessments show that two stocks have been rebuilt, bringing the number of stocks rebuilt since 2000 to 34. Published at the same time, *Fisheries Economics of the United States, 2012* showed that the health of commercial and recreational fisheries overall continues to grow, supporting approximately 1.7 million jobs in 2012, up 100,000 from the previous year. This progress demonstrates the strength of the U.S. science-based management model under the Magnuson-Stevens Fishery Conservation and Management Act and underscores the importance of ending overfishing as a key to bolstering the health of the marine environment and coastal economies.

- **Awarded for Climate.gov Website**
  In June 2014, NOAA received two Webby wins for the agency's Climate.gov website. The Webby Award is the leading international award honoring excellence on the Internet. The site won in the Government and Green categories and was also selected as the People's Voice Award Winner in the Green category. Climate. gov includes news and information about climate trends, new science results, interactive maps, and learning resources and also supports the Administration's Climate Resilience Toolkit. The goals of the site are to promote public understanding of climate science and climate-related events, make NOAA's data products and services easy to access and use, and provide climate information and tools to local decision-makers.

- **Revealed Alaska Fisheries at risk from Ocean Acidification**
  NOAA, in collaboration with the University of Alaska, Bureau of Ocean Energy Management, and other partners, published a study that concluded that Alaska fisheries and communities in certain regions are at high risk from the effects of ocean acidification (OA). The study, "Ocean acidification risk assessment for Alaska's fishery sector," published on July 29, 2014 in *Progress in Oceanography*, showed that many of Alaska's economically valuable marine fisheries, such as red king crab and tanner crab, are located in waters with increasing OA. The economy and livelihood of communities in southeast and southwest Alaska are expected to be particularly vulnerable to these impacts due to their reliance on fisheries. The study recommends stakeholders develop response strategies to address this increasingly widespread environmental challenge.

- **Listed Threatened Coral Species under the Endangered Species Act**
  In August 2014, NOAA listed 20 species of coral as threatened under the Endangered Species Act (ESA) to provide additional protections and enable the recovery of corals throughout the Pacific and Caribbean regions. To make these listing determinations, NOAA collected and analyzed an unprecedented amount of scientific data, including information on threats to coral ecosystems, such as climate change (e.g., rising ocean temperatures, ocean acidification, and disease), effects from fishing, and land-based sources of pollution (e.g., sedimentation and nutrient enrichment). NOAA is working with states, territories, and other partners on conservation measures and recovery strategies for the newly listed corals.

- **Provided Advanced Warnings for Record Cold during Winter "Polar Vortex" Incursion**
  NOAA accurately predicted the unusual jet stream pattern that occurred in January 2014, known as the "Polar Vortex," more than eight days in advance. The "Polar Vortex" produced the coldest and most persistent frigid temperatures across the central and eastern United States in 20 years. Nearly 180 million people across 20 states experienced dangerous wind chill levels. Along with the extreme cold, heavy snow and ice plagued much of the Midwest, with up to a foot of wind-driven snow falling from Missouri to Michigan. The effective advanced warnings enabled federal, state, local and commercial decision makers to take action. NOAA's weather warnings highlighted dangers from exposure, frozen pipes and indoor fire/ carbon monoxide hazards in an attempt to educate the public and mitigate health and property risks from the cold. Although at least 10 people died as a direct result of the cold, NOAA warnings prevented greater calamity by ensuring that communities had the information they needed to take appropriate precautions.

- **Saved Lives with Cospas-Sarsat System**
  The international Cospas-Sarsat rescue network was inducted into the Space Foundation's Space Technology Hall of Fame in May 2014 at the 30th Space Symposium. The Search and Rescue Satellite Aided Tracking (SARSAT) system uses NOAA satellites in low-earth and geostationary orbits to detect and locate aviators, mariners, and land-based users in distress. The honor recognizes technologies

originally developed for space applications that now improve life on Earth. In FY 2014, 203 people were rescued in the U.S. with the aid of the Cospas-Sarsat system.

- **Completed World Ocean Atlas**
  In February 2014, NOAA released the World Ocean Atlas (WOA) 2013. The WOA is a data product of NOAA's Ocean Climate Laboratory. First produced in 1994, the WOA is a set of objectively analyzed climatological fields of in situ temperature, salinity, dissolved oxygen, Apparent Oxygen Utilization (AOU), percent oxygen saturation, phosphate, silicate, and nitrate at standard depth levels for annual, seasonal and monthly compositing periods for the World Ocean. After the sun, the ocean is the most important driver of weather and climate on the planet. The WOA is an indispensable tool that establishes a crucial baseline of comparison for scientists in their pursuit of understanding the impact of the ocean on the Earth's climate and environment.

- **Launched First Unmanned Aircraft Directly into the Eye of a Hurricane**
  In September 2014, a NOAA WP-3D aircraft launched the first-ever successful release of the Coyote, an unmanned aircraft system (UAS), directly into the eye of Hurricane Edouard. Once deployed, the UAS proceeded into the highest wind region of the storm, known as the "eyewall." At an approximate altitude of 2,900 feet, the UAS penetrated Edouard's western eyewall and documented record-breaking winds of 100 kt. as it orbited this high wind region during its historic 28 minute mission. Such deployments of UAS provide unique and groundbreaking insights into a critical region of the storm environment that is typically difficult to observe in sufficient detail since they are too dangerous for manned aircraft. Because the Coyote can fly near the surface of the ocean where warm ocean water fuels a hurricane, it will help provide vital information needed to better understand and predict hurricane intensity.

- **Opened the Inouye Regional Center in Oahu, Hawaii**
  From January-March 2014, NOAA moved into the $158 million LEED Gold Inouye Regional Center facility and campus in Hawaii (official occupancy occurred on October 8th, 2014). This effort consolidated nearly all NOAA programs across Oahu (650 employees and equipment at 12 locations) into a government owned multi-building. NOAA initiated disposal actions for the former leased and owned properties and awarded a $15 million design build contract for the Child Development Center, which is scheduled for completion in September 2015. This project has won two national awards for architecture and design, as well as a Hawaii historical society award.

Section 3.4: *Next Steps*

Department leaders and employees will use this plan to transform strategies into actions, and actions into results. Strategic plan execution will require the creation
of an annual action plan for each strategic objective. Progress toward achieving each objective will be routinely measured and collaboratively reviewed by
Department leadership. This strategic objective review process will facilitate thoughtful discussion on the Department's progress toward achieving the objectives
why, why not, and how the key strategies presented under each objective should be adjusted and improved.

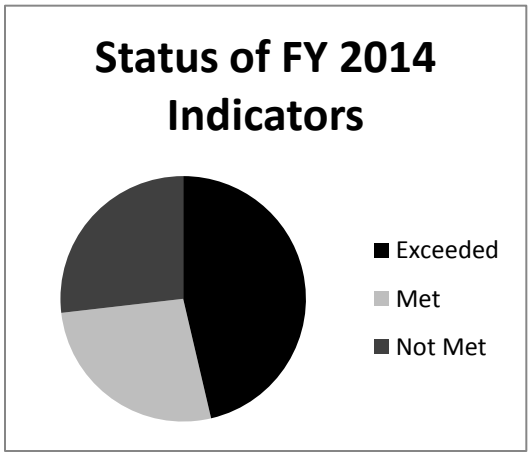
Part 4 Performance Goals / Indicators

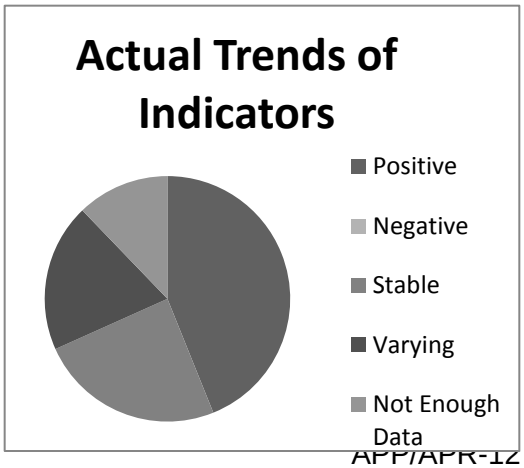
Section 4.1: Summary of Performance

Status is based on the following standard:

Exceeded	More than 100 percent of target
Met	90 - 100 percent of target
Not Met	Below 90% of target

An indicator with a positive trend is one in which performance is improving over time while a negative trend is an indicator that has declining performance. A stable trend is one in which the goal is to maintain a standard, and that that is occurring. A varying trend in one in which the data fluctuates too much to indicate a trend. A not enough data trend represents an indicator that does not meet any of the above criteria. At a minimum these indicators must have three years of data.





Section 4.2: Summary of Indicator Performance

Objective 3.1: Advance the understanding and prediction of changes in the environment through world class science and observations

Indicator	Target	Actual	Status	Trend
Annual number of peer-reviewed publications related to environmental understanding and prediction	1200	1,759	Exceeded	Positive
U.S. Temperature Forecasts (Cumulative Skill Score Computed Over the Regions Where Predictions are Made)	23	26	Exceeded	Varying
Uncertainty of the North American (NA) carbon sink to better understand the contribution of human activities toward increasing atmospheric CO2 and methane	410 M tons Carbon/Yr	405 M tons Carbon/Yr	Not Met	Positive
Error in Global Measurement of Sea Surface Temperature	0.63C	.63C	Met	Positive
Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (Pilot performance measure)	24	24	Met	Positive
Improved climate model performance and utility based on model advancements (planned milestones) and climate assessments benefited (Pilot performance measure).	24	24	Met	Positive
Percentage improvement in the Quality of Relationship between engagement personnel and the public they serve. (Pilot performance measure)	75	75.2	Exceeded	Positive
Number of forecast and other improvements, based on OAR research, to weather applications at operational US weather services and in the US weather commercial sector (New GPRA measure)	11	11	Met	Not enough data
Annual economic and societal benefits from Sea Grant activities as measured by jobs created/retained (reported by each individual Sea Grant College)	9,600	17,500	Exceeded	Positive
Number of publications that contribute to improved understanding of the climate system (new GPRA measure)	100	100	Met	Positive

Objective 3.2: Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation

Indicator	Target	Actual	Status	Trend
Severe Weather Warnings Tornados - Storm Based:				
Lead time (minutes)	13	9	Not Met	Varying
Accuracy (%)	72	60	Not Met	Varying
False Alarm Rate (%)	72	70	Exceeded	Stable
Severe Weather Warnings for Flash Floods				
Lead Time (minutes)	60	55	Met	Varying
Accuracy (%)	74	78*	Exceeded	Positive
Hurricane Forecast				
Track Error (48-Hour)	81	77**	Exceeded	Positive
Intensity Error (48 hour)	12	14**	Not Met	Varying
Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts	32	33	Exceeded	Positive
Winter Storm Warnings:				
Lead Time (Hours)	20	22	Exceeded	Positive
Accuracy (%)	90	89	Met	Stable
Marine Wind - Percentage of Accurate Forecasts	74	78	Exceeded	Positive
Marine Wave Heights - Percentage of Accurate Forecasts	76	83	Exceeded	Positive
Aviation Forecast Accuracy of Ceiling/Visibility (1 mi/500 ft to less than 3 mi/1000ft)	65	62	Met	Stable
Aviation Forecast False Alarm Rate (%)	38	36	Exceeded	Stable
Geomagnetic Storm Forecast Accuracy (%)	51	40	Not Met	Not enough data

** These values do not encompass the entire Calendar Year 2014 Hurricane Season which spans from June 1, 2014 and ends on November 30, 2014. CY 2014 GPRA preliminary values will be available in January 2015 and final values will be available in February 2014.

Objective 3.3: Strengthen the resiliency of communities and regions by delivering targeted services to build capacity

Indicator	Target	Actual	Status	Trend
Annual number of Coastal, Marine, and Great Lakes Ecological Characterizations that Meet Management Needs	48	48	Met	Stable
Cumulative number of coastal, marine and Great Lakes issue-based forecasting capabilities developed and used for management	69	69	Met	Stable
Percentage of Tools, Technologies, and Information Services that are used by NOAA Partners/Customers to Improve Ecosystem-based Management	90	100	Exceeded	Positive
Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (%/yr.)	46	54	Exceeded	Positive
Reduce the Hydrographic Survey Backlog within Navigationally Significant Areas (square nautical miles surveyed per year)	2,929	1,681	Not Met	Varying
Percent of U.S. and territories enabled to benefit from a new national vertical reference system for improved inundation management	36	38	Exceeded	Stable
Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts	11	11	Met	Stable

Objective 3.4: Foster healthy and sustainable marine resources, habitats, and ecosystems through improved management and partnerships

Indicator	Target	Actual	Status	Trend
Fish Stock Sustainability Index (FSSI)	645.5	640.5	Not Met	Positive
Revised Fish Stock Sustainability Index (FSSI)	760	746	Not Met	Not enough data
Percentage of FSSI Fish Stocks with Adequate Population Assessments and Forecasts	58.3 (134/230)	59.6 (137/230)	Exceeded	Stable
Revised Percentage of FSSI Fish Stocks with Adequate Population Assessments and Forecasts	64.8 (129/199)	63.8 (127/199)	Not Met	Not enough data
Percentage of Protected Species Stocks with Adequate Population Assessments and Forecasts	18.9 (78/412)	15.0 (62/412)	Not Met	Varying
Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels	28*/84	37/84 (34/72)	Exceeded	Stable
Number and Percentage of Recovery Actions Ongoing or Completed	44.4 (1,979/4,457)	45.2 (2013/4457)	Exceeded	Not enough data
Number of Habitat Acres Restored	40,820	29,407	Not Met	Varying
Annual Number of Coastal, Marine, and Great Lakes Habitat Acres Acquired or Designated for Long-term Protection	1,300	5,673	Exceeded	Positive

Section 4.3 Detailed Indicator Plans and Performance

Objective 3.1: Advance the understanding and prediction of changes in the environment through world class science and observations

Indicator	**3.1b - Annual number of peer-reviewed publications related to environmental understanding and prediction (NOAA only)**							
Description	The annual number of peer reviewed publications is an indicator of productivity and relevance and is tracked using on-line resources. Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target			1200	1200	1200	1200	1500	1500
Actual			1210	1800	1676	1759		
Status			Exceeded	Exceeded	Exceeded	Exceeded		
Trend	1) 3 years of data 2) Directional trend 3) Positive trend 4) Little to some degree of variability							
Information Gaps	This publication count is not currently capturing publications produced with NOAA grant support, NOAA's cooperative institutes, book chapters, and conference proceedings. In addition, publications not found in Thomson Reuters Web of Science or produced prior to FY 2012 have not been captured.							
Validation and Verification								
Data Source	NOAA Central Library							
Frequency	Quarterly							
Data Storage	NOAA Central Library							
Internal Control Procedures	Results are reported to NOAA Research Council; quarterly reports on performance data are submitted to the NOAA Deputy Under Secretary and DOC							
Data Limitations	Data is limited to Web of Science scientific journals.							
Actions to be Taken	None							

Indicator	3.1e U.S. Temperature Forecasts (Cumulative Skill Score Computed Over the Regions Where Predictions are Made)
Description	For each three month period, seasonal outlooks for U.S. surface temperature are produced by the Climate Prediction Center (CPC) and reported as either above normal, near normal, below normal or, where no definite seasonal guidance can be provided, equal chances. These forecasts are verified using a 48 month running mean of Heidke Skill scores computed for seasonal outlooks for each 3-month seasonal mean (e.g., January-February-March mean; February-March-April mean; March-April-May mean; and so on). It is calculated as follows: Heidke skill score: S = ((c-e)/(t-e)) x 100, where c = number of grid points where forecast was correct and e = number of grid points expected to be correct by chance alone and t = total number of grid points where the forecast was made. http://www.cpc.noaa.gov/products/predictions/long_range/tools/briefing/seas_veri.grid.php

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	23	24	21	21	22	23	24	25
Actual	28	18	22	29	26	26		
Status	exceeded	not met	exceeded	exceeded	exceeded	Exceeded		
Trend	Variable – a trend isn't evident because of the high variance of actuals.							

Actions to be taken / Future Plans	The following actions are being undertaken to meet out-year goals for this measure and improve seasonal predictions: (1) NOAA's Climate Test Bed (CTB) is focusing on accelerating improvements to operational seasonal climate predictions; and (2) NOAA will continue the successful collaborative forecast process, which includes research scientist and experimental forecast tools in operational seasonal forecast discussions each month. This infuses cutting-edge science into the operational process
Adjustments to targets	This GPRA indicator is based on a 4-year running mean of the annual score. Some phenomena known to impact climate variability such as El Niño and La Niña affect this long-term average by skewing it up or down over the course of the four years. The upgraded version of the NWS climate forecast system (CFS) was placed into operation during FY 2011. This version is being run at higher resolution and is anticipated to contribute to improved scores in the future. Since the performance measure is a four year running average, it will take a few years before anticipated improvements to the individual seasonal scores significantly impact the 48 month running mean. Because of natural variability of climate regimes, the skill score can fluctuate considerably from one season to another. For example, for the periods influenced by a strong El Niño Southern Oscillation (ENSO) forcing, the skill score tends to be high. To reduce the effects of natural variability, this measure is based on averaging 48 consecutive individual seasons. No changes were made to this indicator since the previous Congressional submission.

Validation and Verification	
Data Source	Forecast data, observations from U.S. Weather Forecast Offices, and from a cooperative network maintained by volunteers across the Nation
Frequency	Annual

Data Storage	NWS National Centers for Environmental Prediction CPC
Internal Control Procedures	NOAA performs quality control on the observed data (for example, error checking, elimination of duplicates, and inter-station comparison) both at the CPC and U.S. Weather Forecast Office level. In 2005, NOAA implemented an objective verification procedure to minimize the impact of human errors in the computation of skill score.
Data Limitations	Because of natural (and unpredictable) variability of climate regimes, the skill score can fluctuate considerably from one season to another. For example, for the periods influenced by a strong ENSO forcing, GPRA measure tends to be high. Lower scores occur during the periods when ENSO is in its neutral phase. Recently, a new consolidation tool has enable CPC to increase its skill during periods not featuring strong ENSO forcing.
Actions to be Taken	None

Indicator	**3.1f - Uncertainty of the North American (NA) carbon sink to better understand the contribution of human activities toward increasing atmospheric CO2 and methane**
Description	To provide scientific guidance to policymakers concerned with managing emissions of carbon dioxide, NOAA needs to assess and quantify the source of carbon variability. This GPRA measure demonstrates the scientifically accepted level of confidence in carbon measurement that is needed to accurately evaluate levels of carbon emissions in North America. Ecosystems across North America uptake one billion tons of atmospheric carbon (mainly as carbon dioxide) per year. That is about 1/2 of the current emissions from burning fossil fuels on the continent. To enable evaluation of annual changes in this ecosystem uptake, we must improve our carbon measurements to a level of uncertainty that is about 1/3 of the total, or 300 million tons per year. Having this information to this degree of certainty or better will support improved forecasts of future climate change and will provide verification for carbon dioxide emission reduction and mitigation efforts. Obtaining this minimum level of uncertainty requires the expanded observation network and improved modeling effort proposed here. The basis (flux estimates) for the measure is publicly available on the web (http://carbontracker.noaa.gov).

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	405 M tons Carbon/Yr	410 M tons Carbon/Yr	405 M tons Carbon/Yr	395 M tons Carbon/Yr
Actual	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	400 M tons Carbon/Yr	405 M tons Carbon/Yr	405 M tons Carbon/Yr		
Status	Met	Met	Met	Met	Met	Met		

Trend	1) 6 years of data available 2) Maintain Standards trend 3) Positive trend 4) Little variability
Explanation (if not met in FY 2014)	The uncertainty has started to increase as the network contracts and modeling efforts stagnate.
Information Gaps	In FY 2012, NOAA reduced observations and Carbon Tracker enhancements. With fewer observations across the North American continent, the carbon system is inherently less accurate in determining sources and sinks. Coupled with fewer CarbonTracker enhancements to deal with reduction in density of observations, the uncertainty will start to increase as the

	network contracts and the modeling effort stagnates.

Validation and Verification	
Data Source	NOAA's Global Carbon Cycle Research Program
Frequency	Annual
Data Storage	NOAA's Earth System Research Laboratory
Internal Control Procedures	Quality assurance and calibration against known standards performed by NOAA
Data Limitations	Number of tall tower/aircraft sites and our ability to incorporate these data into advanced carbon models
Actions to be Taken	None

Indicator	**3.1g - Error in Global Measurement of Sea Surface Temperature**
Description	This measure is intended to document progress in accurately measuring the global sea surface temperature (SST) using in-situ drifting buoys to verify that satellite SST data are accurate and representative. This reflects how improvements in ocean observations will decrease the uncertainty in global sea surface temperature measurements, which will ultimately play a role in calculations of the ocean-atmosphere exchange of heat and the heat storage in the global ocean. The sea surface, covering over 70% of the Earth surface, has a tremendous influence on global climate because it is where the atmosphere responds to the ocean via the transfer of heat either to or from the atmosphere. Since sea surface temperature is measured by buoys, ships, and satellites, this performance measure is well-suited as an indicator of the effectiveness of our integrated ocean observing system and the more accurate estimates of sea surface temperature will improve our ability to detect changes in the climate system. The goal is to reach an indicator value of 0.3 degrees Celsius, which has been specified by the international Global Ocean Observing System (GOOS) as the required accuracy for measurement of sea surface temperature.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	0.50C	0.53C	0.50C	0.50C	0.50C	0.63C	0.59C	Discontinued as a GPRA
Actual	0.50C	0.50C	0.51C	0.56C	0.66C	.63C		
Status	Met	Met	exceeded	Met	Not met	Met		
Trend	1) 6 years of data available 2) Variable trend 3) Negative trend. 4) Some degree of variability							
Adjustments to targets	Starting in 2013, the transmitters used to measure sea surface temperature were no longer available. In addition, there was a drifter shortage in 2013 along with a spending freeze during Q1/Q2 in FY 2013. Due to the FY 2013 actuals, it was determined that the FY 2014-2016 targets needed to be adjusted.							
Notes	The SST bias results are showing a steady drop (improvement) as the global drifter array has been restored to its designed capacity. Since April, when we reached our goal of 1250 drifters, the array has continued to grow and we've been able to turn more attention to getting gaps filled while we can scale back deployments in well-sampled regions. Problems with defective transmitters on the buoys are being addressed and deployed as budgets and cruise schedules allow.							

Information Gaps	Success in this performance measure requires the maintenance and increase of in situ ocean sensors. A predictive understanding of the Earth's climate is critically dependent on quantitative measurements of ocean parameters - the ocean is second only to the sun in effecting climate change and variability.

Validation and Verification	
Data Source	Office of Oceanic and Atmospheric Research's Climate Program Office (CPO)
Frequency	Quarterly
Data Storage	Office of Oceanic and Atmospheric Research's (OAR) CPO
Internal Control Procedures	Quarterly reporting mechanism on uncertainty in sea surface temperature measurements
Data Limitations	Number of deployed observing platforms in the global ocean
Actions to be Taken	None

Indicator	**3.1h - Annual percentage of U.S. states and territories that use NOAA climate information and services to improve decision-making in the face of a changing climate (Pilot performance measure)**
Description	Number of states and territories where climate information is integrated into state and territory planning and decision making (e.g., changes in policies, plans, and actions), as well as indicators of success such as training and technical assistance. Percentage of improvement in state and territory resilience to climate hazards. This indicator shows the societal benefit derived from the use of NOAA climate information in public decision making in states and territories. This performance measure will track the numbers of states and territories that are benefiting from the inclusion of NOAA climate information in their decision making processes. It will also show how these decisions lead to better results or improved decisions based on inclusion of this climate information. The measure accounts for all 50 states and five U.S. territories.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	22%	22%	24%	25%	Discontinue as GPRA
Actual	N/A	N/A	N/A	22%	22%	24%		
Status				Met	Met	Met		
Trend	Positive							

Actions to be taken / Future Plans	Tracking and reporting will be conducted for planned activities from at least five NOAA programs including Regional Integrated Sciences and Assessments (RISA), Sector Applications Research Program (SARP), NOS coastal programs, National Integrated Drought Information System (NIDIS), and Regional Climate Centers (RCC) (other programs will be added as the measure is developed).
Information Gaps	FY 2012 is the first year that this performance measure was fully implemented and is therefore established as the baseline year. The targets provided are estimated based on both established and growing programs that contribute to this measure.

Validation and Verification	
Data Source	Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO), National Environmental Satellite, Data, and Information Service (NESDIS), National Ocean Service (NOS). Tracking and reporting will be conducted for planned activities from at least five NOAA programs including Regional Integrated Sciences and Assessments (RISA), Sector Applications Research Program (SARP), NOS coastal programs, National Integrated Drought Information System (NIDIS), and Regional Climate Centers (RCC) (other programs will be added as the measure is developed).
Frequency	Annual
Data Storage	Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO), NESDIS, NOS.
Internal Control Procedures	Activities to be counted will include those that are adopted by states or regions for use in policies that directly address climate change impacts. An annual progress calculation in the demonstration phase will translate indicator data into target results. Assessment methods will be periodically reviewed for validation and verification.
Data Limitations	Potentially limited by ability to collect information from external sources such as state climatologists and other state and regional organizations.
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it. The target baseline will be established in FY 2012.

Indicator	**3.1i - Improved climate model performance and utility based on model advancements (planned milestones) and climate assessments benefited (Pilot performance measure).**
Description	This measure will reflect the major advancements made in the long-term development of models and will reflect the value of models as the outputs are used in major assessments such as the Intergovernmental Panel on Climate Change (IPCC) and the United States Global Change Research Program (USGCRP) National Assessment. Models are used to further research and discovery, are considered valuable for analysis in assessments, and improve the value of assessments for policy makers. A major outcome of this work will be improved regional forecast/ prediction/ projection products based on improved models and methodologies. This measure is based on the number of model advancements, model evaluations, and assessments and publications that use the model outputs. A. Model Advancements. The Geophysical Fluid Dynamics Laboratory (GFDL) will count and report on the significant model development milestones met based on their model development plans. This will document the milestones established for each model, preferably milestones that achieve significant advances such as changes in parameterizations and model simulations completed for assessments, performance evaluations, and upgrades. B. Climate Assessments will be counted that use NOAA climate model outputs, or publications based on them, in their production, including regional and sectoral assessments. This component of the measure will indirectly measure value of the research performed and the information provided.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	24	24	24	24	Discontinued as GPRA
Actual	N/A	N/A	N/A	24	28	24		
Status	N/A	N/A	N/A	Met	Exceeded	Met		
Trend	Positive							

Validation and Verification

Data Source	Office of Oceanic and Atmospheric Research (OAR) GFDL, CPO, NCEP, and ESRL.
Frequency	Annual (possibly quarterly)
Data Storage	Office of Oceanic and Atmospheric Research (OAR) GFDL
Internal Control Procedures	Tracking and reporting will be conducted for planned modeling activities in two areas: 1) Number of model advancements and 2) assessments and publications that use the model outputs. An annual progress calculation in the demonstration phase will translate indicator data into target results. Assessment methods and criteria will be periodically reviewed for validation and verification.
Data Limitations	None
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it. The target baseline was established in FY12.

Indicator	**3.1j - Percentage improvement in the Quality of Relationship between engagement personnel and the public they serve. (Pilot performance measure)**
Description	The Quality of Relationship (QoR) instrument measures, are comprised of, the following five elements: awareness, trust, satisfaction, use/usability, and control mutuality. Like the American Customer Satisfaction Index, the QoR instrument produces an index score from 0-100. The goal is to capture the increasing Quality of Relationship for each of our priority publics as they access, understand, and integrate climate information, products, and services into the tools and algorithms they use for decision-making, ultimately resulting in an increase in the frequency and proficiency with which they use NOAA climate data and services in their lives and livelihoods. The measure will be a combination of surveys and focus groups to establish a baseline measurement and perform annual follow-up measurements to determine the annual percentage improvement in the Quality of Relationship as climate services are increased and improved. The Quality of Relationship (QoR) instrument measures are Comprised of the following five elements: awareness, trust, satisfaction, use/usability, and control mutuality. Like the American Customer Satisfaction Index, the QoR instrument produces an index score from 0-100. The goal is to monitor and increase the Quality of Relationship with each of our priority publics as they access, understand, and integrate climate information, products, and services into their decision-making. The first QoR measure was made via a combination of a survey and focus groups, and established a baseline measurement of 72.6. We will perform follow-up measurements every other year to determine whether and how much we are improving our Quality of Relationship with our target publics.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	75%	N/A	Discontinued as a GPRA
Actual	N/A	N/A	N/A	72.6%	N/A	75.2%	N/A	
Status						Exceeded		
Trend	Not enough data to determine a trend							

Actions to be taken / Future Plans	The Climate Portal's initial "baseline" QoR score in FY 2012 was 72.6. Because it is both costly and time consuming to measure QoR, we plan to make updated measurements every other year, which gives us the intervening years to apply what we learn to the Climate.gov portal's design, scope, and functionality before we begin the next measurement cycle. Thus, our performance target will be to increase by 2 index points over the previous measure in subsequent years, as shown in the table above. This measure is in addition to our other Portal performance measures, which we make quarterly, including: unique visits per month and numbers of new content items published.

Validation and Verification	
Data Source	NOAA's Climate Program Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO)
Frequency	Biennial
Data Storage	Office of Oceanic and Atmospheric Research (OAR) Climate Program Office (CPO)
Internal Control Procedures	Biennial surveys will be conducted according to existing rules and established procedures. Assessment methods and criteria will be periodically reviewed for validation and verification.
Data Limitations	None
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it. The target baseline was established in FY12.

Indicator	**3.1l - Number of forecast and mission improvements, based on NOAA research, to weather applications at operational US weather services and in the US weather commercial sector.**
Description	The measure captures the count of significant and discrete NOAA research and development products that have transitioned to application at operational US weather services and in the US weather commercial sector. Examples of applications and the types of products transitioned include the following: 1. Transitions to operations (e.g., new observing technologies enter operations, updated models enter operations) 2. Providing information for decision-makers (e.g., completion of peer-reviewed assessments, external development of OAR resource management policies based on research findings.) 3. Transition to commercial applications(e.g., patent, new technology used in a commercial product)

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	11	12	9
Actual	N/A	N/A	N/A	N/A	N/A	11		
Status						Met		
Trend	Not enough data to determine a trend							

Validation and Verification	
Data Source	NOAA's Office of Oceanic and Atmospheric Research (OAR)
Frequency	Quarterly
Data Storage	Office of Oceanic and Atmospheric Research (OAR)
Internal Control Procedures	Assessment methods and criteria will be periodically reviewed for validation and verification.
Data Limitations	None
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it.

Indicator	3.1m - Annual economic and societal benefits from Sea Grant activities as measured by jobs created/retained (reported by each individual Sea Grant College
Description	This measure highlights change in jobs that communities or businesses generate or save due to Sea Grant assistance (i.e., providing information to help communities, industries or businesses expand, make better decisions or avoid mistakes). Sea Grant provides the information and training that informs business decisions, and in some cases firms create or sustain jobs as a result. A job created is a new position created and filled as a result of Sea Grant activities. An existing position that is filled with a Sea Grant-trained applicant should not be reported in this measure. A job sustained is an existing, filled position that is sustained as a direct result of Sea Grant activities. A job cannot be reported as both created and sustained in the same year.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	3,500	3,700	4,000	4,000	9,600	9,600	9,600
Actual	N/A	3,995	4,375	3,800	15,000	17,500		
Status		Exceeded	Exceeded	Not Met	Exceeded	Exceeded		
Trend	Not enough data to determine a trend							

Validation and Verification	
Data Source	NOAA's Office of Oceanic and Atmospheric Research (OAR) National Sea Grant College Office
Frequency	Annually
Data Storage	Office of Oceanic and Atmospheric Research (OAR) National Sea Grant College Office
Internal Control Procedures	Assessment methods and criteria will be periodically reviewed for validation and verification.
Data Limitations	Current efforts are focused on better defining the measure standards.
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it.

Indicator	3.1n Number of publications that contribute to improved understanding of the climate system (Pilot performance measure).
Description	This measure tracks the publications that result from awards made by OAR's Climate Program Office. This includes publications of climate related work that contributes to the understanding of the climate system and includes research on climate observations, climate modeling, earth system science and processes, and climate and societal interactions and applications. Publications are made throughout the fiscal year but are reported once a year as part of the grant agreement.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	100	275	300
Actual	N/A	N/A	N/A	N/A	N/A	100		
Status	N/A	N/A	N/A	N/A	N/A	Met		
Trend	n/a							
Actions to be taken / Future Plans	None							

Validation and Verification

Data Source	Office of Oceanic and Atmospheric Research's Climate Program Office (CPO)
Frequency	Quarterly
Data Storage	Office of Oceanic and Atmospheric Research's (OAR) CPO
Internal Control Procedures	Quarterly reporting mechanism on number of publications by CPO-funded awards as reported by CPO program managers as part of grants management and grants database.
Data Limitations	None
Actions to be Taken	This is a pilot measure. As the measure is developed and implemented, changes will be made to refine it.

Objective 3.2: Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation

Indicator	**3.2b - Severe Weather Warnings Tornados - Storm Based Lead Time (Minutes), Accuracy (%), and False Alarm Rate (%)**
Description	NWS forecasters issue approximately 3,300 Tornado Warnings per year, primarily between the Rockies and Appalachian Mountains. Tornado warning statistics are based on a comparison of warnings issued and weather spotter observations of tornadoes and/or storm damage surveys from Weather Forecast Offices in the United States. The metric includes all warned tornado events and all unwarned tornado events. The lead time for a tornado warning is the difference between the time the warning was issued and the time the tornado affected the area for which the warning was issued. The lead times for all tornado occurrences within the U.S. are averaged to get this statistic for a given fiscal year. This average includes all warned events with zero lead times and all unwarned events. Accuracy or probability of detection is the percentage of time a tornado actually occurred in an area that was covered by a tornado warning. The difference between the accuracy percentage figure and 100% represents the percentage of events occurring without warning. The false alarm rate is the percentage of times a tornado warning was issued but no tornado occurrence was verified. Tornado Warning Lead Time for an individual event is not available to an accuracy of half a minute of a report indicating a tornado has touched down. Although we record the timing of the warning transmission to the nearest second, we rarely have more than an estimate to the nearest minute of the time a tornado touches down. While we can compute the average tornado warning lead time to a precision of 30 second increments or less, the reporting of this value implies greater accuracy in the data than currently exists. The annual variation of tornado warning lead time is more closely tied to the variation in storm type than in the performance. Generally, long track tornadic supercell storms are easier to detect and track than tornadoes that develop in squall lines or tropical storms. Changes in performance can be detected over a period of several years, and are better measured to an accuracy of minutes.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Lead Time (min)								
Target	12	12	12	13	13	13	13	13
Actual	11	14	15	11	9	9		
Status	Met	Exceeded	Exceeded	Not Met	Not Met	Not Met		
Accuracy (%)								
Target	69	70	70	72	72	72	72	72
Actual	65	71	75	69	57	60		
Status	Met	Exceeded	Exceeded	Met	Not Met	Not Met		
False Alarm Ratio								

(%)								
Target	72	72	72	72	72	72	71	71
Actual	77	74	73	73	74	70		
Status	Met	Met	Met	Met	Not Met	Exceeded		
Trend	Varying							

Explanation (if not met in FY 2014)	Although NWS missed the FY 2014 goals for Tornado Warning Lead Time and Tornado Warning Accuracy for the first time in the last 10 years, we exceeded our Tornado Warning False Alarm Rate Goal. Missing the Tornado Warning Lead Time and Tornado Warning Accuracy goals in FY 2014 can be attributed to a general lack of organized convection. In comparison to an average year where the Nation experiences an average of 1,461 tornadoes (average for FY 2008-FY 2013), FY 2014 had a total of 1,027 tornadoes. The tornadoes in FY 2014 were fewer long track, violent supercell tornadoes, and percentage-wise were more weak short-lived tornadoes. The Nation experience had less than 65% of the number of tornadoes occurring in an average year, and less than 40% of the number of tornadoes that occurred in FY 2011 when NWS last exceeded Tornado Warning Lead Time and Tornado Warning Accuracy goals.
Actions to be taken / Future Plans	Automated Volume Scan Evaluation and Termination (AVSET), an advanced radar scanning method, has been implemented at all NEXRAD Dual Pol radar sites. AVSET can shorten scan time and give forecasters more information about developing tornado signatures nearer to the ground especially when storms are farther away from the radar location. Additionally, NOAA plans to deploy Supplemental Adaptive Intra-Volume Low-Level Scan (SAILS) in FY 2014. SAILS, scanning method used during severe weather, in combination with AVSET will further increase frequency of low-to-the ground Dual Pol radar scans.
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.

Validation and Verification	
Data Source	National Weather Service (NWS) Weather Forecast Offices
Frequency	Monthly
Data Storage	NWS Headquarters and the Office of Climate, Water, and Weather Services (OCWWS)
Internal Control Procedures	Verification is the process of comparing the predicted weather to reported event. Warnings are collected from each NWS office, quality controlled, and matched to confirmed tornado reports. Reports are validated by WFOs using concise and stringent guidelines outlined in NWS Instruction 10-1605. OCWWS monitors monthly performance throughout the NWS, and the regional headquarters monitor performance within their respective regions.
Data Limitations	Number of tornado events each fiscal year generally varies from 1,000 to 1,800. A higher number of annual events typically indicate that tornadic outbreaks occurred. Forecasters perform better during large outbreaks due a high level of situational awareness, well defined tornadic radar images, and increased confidence based on tornado reports which verify warnings. These three factors lead to longer lead times and higher accuracy. The peak level of tornadic activity occurs April through June each year. A secondary peak activity time period is October and November in the southeastern United States.
Actions to be Taken	Review all warnings and storm data after each event to learn from past experiences. Use the information learned to improve forecast skill and product quality in the future.

Indicator	**3.2c Severe Weather Warnings for Flash Floods - Lead Time (minutes) and Accuracy (%)**
Description	For each reported flash flood event, the flash flood warning lead-time is the difference in minutes between the issuance of a flash flood warning and the onset of a geographically corresponding flash flood event. The lead-times for all flash flood events, within the United States and territories served by the National Weather Service, are averaged to calculate the national average flash flood warning lead-time metric for a given fiscal year. This average includes all warned events with zero lead times and all

	unwarned events. The flash flood warning accuracy (probability of detection for storm-based warnings) represents the percentage, in both space and time, for which a flash flood event was warned. Both flash flood warning lead-time and accuracy metrics are cumulative over the fiscal year and, when reported prior to the end of the year, represent the year-to-date performance.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Lead Time (min)								
Target	49	38	38	42	58	60	61	61
Actual	66	72	73	53	63	55		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Met		
Accuracy (%)								
Target	90	72	72	74	74	74	76	76
Actual	91	80	80	76	78	78		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Varying							

Actions to be taken / Future Plans	NOAA anticipates future performance improvements from: • effective use of advanced data from Next-Generation Radar (NEXRAD), which were upgraded with a dual-polarization capability in FY 2013; • implementation of the enhanced NEXRAD Product Improvement (NPI) algorithm and associated enhancement to quantitative precipitation estimation and forecast software including MultiSensor Precipitation Estimator (MPE), and High-Resolution Precipitation Estimator and Nowcaster (HPE/HPN) in FY2015; • implementation of new water resource capabilities including distributed hydrologic modeling, which provides streamflow predictions at locations without water gages; and continued training on precipitation estimation techniques, software enhancements and water resources modeling capabilities, and decision support.
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.

Validation and Verification	
Data Source	National Weather Service (NWS) Field Offices
Frequency	Monthly
Data Storage	NWS Headquarters and the Office of Climate, Water, and Weather Services (OCWWS)
Internal Control Procedures	While long-term performance has shown a steady increase in forecast accuracy, inter-annual scores tend to fluctuate due to varying weather patterns from year to year. Some weather patterns are more difficult to forecast than others. Typically, 1st and 2nd Quarters have higher lead times, while the 3rd and 4th Quarters, during the convective season, bring the annual average down.
Data Limitations	There is a natural inter-annual variability for both lead time and accuracy. Typically, 1st and 2nd Quarters have higher lead times, while the 3rd and 4th Quarters, during the convective season, bring the annual average down. Precipitation generated in the Fall and Winter in the U.S. is typically produced by larger (synoptic) scale, more predictable events while precipitation generated in the Spring and Summer is typically produced by smaller (mesoscale) scale, convective events (e.g., thunderstorms) which are less predictable. A notable exception to this general rule is land falling tropical systems (i.e., tropical storms

	and hurricanes) whose predictability is much higher than that of a typical warm season thunderstorm.
Actions to be Taken	Routine review of warnings and verifying events collected by storm data to characterize program performance, and identify gaps to be addressed by training or technological investments.

Indicator	**3.2d Hurricane Forecast Track Error (48-Hour)**							
Description	The public, emergency managers, and government institutions at all levels in this country and abroad, and the private sector use NOAA tropical cyclone forecasts to make decisions on life and property. A tropical cyclone is a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. 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 targets are computed by averaging the differences (errors) for all the 48-hour forecasts occurring during the calendar year. This measure can show significant annual volatility based on the frequency and type of hurricanes that occur in a given season. Projecting the long-term trend, and basing out-year goals on that trend, is preferred over making large upward or downward changes to the targets each year.							
	CY 2009	CY 2010	CY 2011	FY 2012	CY 2013	CY 2014	CY 2015	CY 2016
Target	108	107	106	84	83	81	80	78
Actual	70	89	71	69	103	77**		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Not Met	Exceeded		
Trend	Positive							
Actions to be taken / Future Plans	The Hurricane Forecast Improvement Project (HFIP) has made significant progress towards the development of a next generation hurricane forecast system (HFS). Components of this HFS, such as global data assimilation system and improvements to the Weather Research and Forecasting model for Hurricanes (HWRF), have been transitioned to operations. NWS anticipates meeting HFIP goals of 20% improvement for both track and intensity in a demonstration mode using the prototype hurricane forecast system by the end of the 2015 hurricane season. The current prototype hurricane forecast system already supports track goals, but additional development and testing is needed to reliably achieve intensity goals.							
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.							
Notes	** These values do not encompass the entire Calendar Year 2014 Hurricane Season which spans from June 1, 2014 and ends on November 30, 2014. CY 2014 GPRA preliminary values will be available in January 2015 and final values will be available in February 2015							
Validation and Verification								
Data Source	National Weather Service (NWS)/National Centers for Environmental Prediction/National Hurricane Center (NHC)							
Frequency	Annual							
Data Storage	National Weather Service (NWS)/National Centers for Environmental Prediction/National Hurricane Center (NHC)							
Internal Control Procedures	Evaluation of forecast track errors is very accurate because the location of where hurricanes form is well known. However, factors other than forecast performance can affect forecast errors, even on an annual-average basis. Some systems are inherently more difficult to forecast than others. For example, hurricanes are easier to forecast than tropical storms or tropical depressions; storms at low-latitudes are easier to forecast than those at high latitudes. Thus the character of the season is a big driver in the value of this particular forecast performance measure.							

Data Limitations	None
Actions to be Taken	NWS/NHC prepares a comprehensive annual forecast verification report on the performance of the official forecasts and the performance of the numerical guidance.

Indicator	**3.2e Hurricane Forecast Intensity Error (48 hour)**							
Description	The public, emergency managers, and government institutions at all levels in this country and abroad, and the private sector use NOAA tropical cyclone intensity forecasts to make decisions on life and property. This measure represents the difference between the projected intensity of these storms and the actual intensity in knots (kt) for Atlantic Basin tropical cyclones (i.e., tropical depressions, tropical storms, and hurricanes). The measure is validated by computing the average difference (error) for all the 48-hour forecasts occurring during a calendar year. Because tropical cyclones are relatively rare events, this measure can show significant annual volatility. As a consequence, projecting the long-term trend (over a decade or more) and basing out-year goals on that trend is preferred over making upward or downward changes to the targets on an annual basis.							
	CY 2009	CY 2010	CY 2011	CY 2012	CY 2013	CY 2014	CY 2015	CY 2016
Target	13	13	13	15	12	12	10	9
Actual	18	16	14	12	10.5	14**		
Status	Not met	Not met	Not met	Exceeded	Exceeded	Not Met**		
Trend	Stable with variability							
Explanation (if not met in FY 2014)	**These values do not encompass the entire Calendar Year 2014 Hurricane Season which spans from June 1, 2014 and ends on November 30, 2014. CY 2014 GPRA preliminary values will be available in January 2015 and final values will be available in February 2014. A detailed analysis of the CY 2014 season including an explanation for the GPRA not being met has not yet been completed. This information will be available in January 2015.							
Actions to be taken / Future Plans	The Hurricane Forecast Improvement Project (HFIP) has made significant progress towards the development of a next generation hurricane forecast system (HFS). Components of this HFS, such as global data assimilation system and improvements to the Weather Research and Forecasting model for Hurricanes (HWRF), have been transitioned to operations. NWS anticipates meeting HFIP goals of 20% improvement for both track and intensity in a demonstration mode using the prototype hurricane forecast system by the end of the 2015 hurricane season. The current prototype hurricane forecast system already supports track goals, but additional development and testing is needed to reliably achieve intensity goals.							
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.							
Validation and Verification								
Data Source	National Weather Service (NWS)/National Centers for Environmental Prediction/National Hurricane Center (NHC)							
Frequency	Annual							
Data Storage	National Weather Service (NWS)/National Centers for Environmental Prediction/National Hurricane Center (NHC)							
Internal Control Procedures	None							
Data Limitations	Tropical cyclone intensity, defined as the maximum 1-minute mean wind at an elevation of 10 m associated with the circulation of the cyclone, is a difficult quantity to measure. NHC intensity estimates are believed to be accurate to within about 10% (e.g., 8 kt for an 80 kt hurricane). The current							

	targets are above, but are beginning to approach, this level of uncertainty. While not a problem at present, significant downward adjustments to the targets will not be attainable (or verifiable) without advances in our ability to monitor tropical cyclones.
Actions to be Taken	None

Indicator	**3.2f Accuracy (%) (Threat Score) of Day 1 Precipitation Forecasts**							
Description	This performance measure tracks the ability of the weather forecasters of NOAA's Hydrometeorological Prediction Center (HPC) to predict accurately the occurrence of one inch or more of precipitation (rain or the water equivalent of melted snow or ice pellets) twenty-four hours in advance across the contiguous U.S. Through this measure, the HPC focuses on relatively heavy amounts of precipitation, usually a half inch or more in a 24-hour period (short-term flood and flash flood warnings), because of the major safety and economic impacts such heavy precipitation can have in producing flooding, alleviating drought, and affecting river navigation.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	29	30	30	31	31	32	32	33
Actual	29	35	34	33	33	33		
Status	Met	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Positive							
Actions to be taken / Future Plans	The following actions are being undertaken to meet out-year goals for this measure: • NOAA Weather and Climate Operational Supercomputer System will be upgraded in its computational speed and memory storage capabilities allowing the running of more sophisticated numerical modeling systems of the hydrosphere. • During the next several years, NWS will implement a number of numerical weather prediction enhancements aimed at improving heavy precipitation forecasts, including increasing numerical model resolution, increasing the number of ensemble forecast members for both short- and medium-range forecast models, and improving the assimilation of satellite and other observational data used as the starting point for the numerical forecasts. • Improved training on the use of new model information will assist forecasters in making improved precipitation predictions.							
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.							
Validation and Verification								
Data Source	National Weather Service/National Centers for Environmental Prediction/Weather Prediction							
Frequency	Monthly							
Data Storage	National Weather Service/National Centers for Environmental Prediction/Weather Prediction							
Internal Control Procedures	The 50-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.							
Data Limitations	The Threat Score, an accuracy indicator, varies from 0, representing zero correct forecasts, to 100 representing an exact forecast of the observed areas of 1 inch or more of precipitation over the conterminous U.S. The scores vary seasonally during the year with higher values generally occurring during the fall							

	and winter when weather systems are generally larger and better defined and lower values occurring in the spring and summer when precipitation tends to be more scattered and on a smaller geographic scale.
Actions to be Taken	NOAA will implement planned weather observation and numerical modeling improvements along with ongoing research projects. The Hydrometeorological Testbed at WPC will be expanded to accelerate the transition of research and development advancements into the operational prediction of precipitation.

Indicator	**3.2g Winter Storm Warnings - Lead Time (Hours) and Accuracy (%)**							
Description	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**.**							
Lead Time (hrs)	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	15	15	15	19	20	20	20	20
Actual	18	21	20	18	22	22		
Status	Exceeded	Exceeded	Exceeded	Met	Exceeded	Exceeded		
Accuracy (%)								
Target	90	90	90	90	90	90	90	90
Actual	90	88	83	89	89	89		
Status	Met	Met	Not Met	Not Met	Met	Met		
Trend	Positive							
Actions to be taken / Future Plans	Improvement to Weather Research and Forecasting (WRF) model resolution will enable improved winter storm prediction. Action included follow. • Implementation advanced ensemble modeling techniques providing probabilistic information applicable to issuing winter storm warnings. • Effective use of advanced data from Next-Generation Radar (NEXRAD), which was upgraded with dual-polarization capability in FY 2013.Improved use of satellite data, and access to Terminal Doppler Weather Radar (TDWR) data which will enables forecasters to observe the formation and dissipation of mesoscale snow bands, which result in locally higher snow accumulation (such as lake effect snow). • NOAA operational Central Computer System will be upgraded in its computational speed and memory storage capabilities allowing the running of more sophisticated numerical modeling systems of the hydrosphere. Improved training on the use of new model information will assist forecasters in making improved predictions.							
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.							
Notes	Indicator is fairly stable, however there are inter-annual variability.							
Validation and Verification								
Data Source	National Weather Service (NWS) Field Offices							
Frequency	Monthly							
Data Storage	NWS Headquarters, NWS Regional Headquarters, and the Office of Climate, Water, and Weather Services (OCWWS)							

Internal Control Procedures	While long-term performance has shown a steady increase in forecast accuracy, inter-annual scores tend to fluctuate due to varying weather patterns from year to year. Some weather patterns are more difficult to forecast than others.
Data Limitations	The number of winter storm events each fiscal year varies from 3,500 to 7,800. Forecasters perform better during large winter storm events due to consistency in model guidance, well defined winter storm radar images, and increased confidence based on winter storm reports. These three factors lead to longer lead times and higher accuracy. The peak level of winter storm events occurs December through March—mainly in the second quarter. Storms that occur in the first quarter—early in the winter season (October through December)—are difficult to forecast due to marginal cold air in low levels and local impacts of relatively warm water bodies, including oceans, bays, lakes, and rivers. Storms that occur in the third and fourth quarters (April through September) are rare and difficult to predict due to warming low levels and greater insolation which strongly influences daytime accumulations. Also, some areas, especially in the West, have considerable year to year and sometime multi-year variability.
Actions to be Taken	Review all warnings and storm data after each event to learn from past experiences. Use the information learned to improve forecast skill and product quality in the future.

Indicator	**3.2h Marine Wind - Percentage of Accurate Forecasts & Marine Wave Heights - Percentage of Accurate Forecasts**							
Description	These performance indicators measure the accuracy of wind speed and wave height forecasts, which are important for marine commerce. These measures represent the Percentage of Accurate Forecasts, and accuracy is defined in terms of error. For the marine wind forecast, if the error is less than 5 knots, the forecast is accurate. For the wave height forecast, if the error is less than 2 feet, the forecast is accurate. These measures use complex skill scores to analyze individual wind speed and wave height components.							
Wind	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	69	69	69	71	74	74	75	75
Actual	74	74	75	76	76	78		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Wave Heights								
Target	74	74	74	75	75	76	76	76
Actual	79	76	77	78	81	84		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Positive							
Actions to be taken / Future Plans	Improvement efforts for marine forecast include efforts to expand use of local weather models such the Weather Research and Forecast (WRF) model at all marine Weather Forecast Offices. Additionally NOAA's marine program is perusing the use of new marine observations such as regional mesonets, expansion of National Water Level Observation Network (NWLON), Physical Oceanographic Real-Time System (PORTS), and National Data Buoy Center (NDBC) observations that fill in significant data gaps. NOAA continues to focus on forecaster training in the Rip Currents Forecasting, Shallow Water Waves, Wave Life Cycle I and II, Wave Types and Characteristics, and Winds in the Marine Boundary Layer topic areas.							
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.							

Validation and Verification	
Data Source	National Weather Service (NWS) Field Offices and national centers
Frequency	Monthly
Data Storage	NWS Headquarters, NWS Regional Headquarters, and the Office of Climate, Water, and Weather Services (OCWWS)
Internal Control Procedures	Due to the large volume of data gathered and computed, documentation for the accuracy of forecast for wind and waves cannot be finalized until 1-2 months into the following fiscal year. Out-year measures take into account new satellites, improved forecast models, new and continued research activities, sustainment of critical observing systems, and new and ongoing forecaster training. Within a Fiscal Year, scores drop in the late fall and winter then rise in late spring and summer. This is due to more volatile marine winds in winter.
Data Limitations	Marine wind speed and wave height forecast scores naturally vary (percent correct +/- 4% per year) due to fluctuations in the number of volatile wind speed/wave height conditions from year to year. Wind speed forecasts with an error margin of less than 5 knots are increasingly difficult to make as conditions increase from gale to storm to hurricane force speeds. Wave height forecasts with an error margin of less than 2 feet are increasingly difficult to make as swell and wind driven wave conditions increase and interact. In general, the more volatile the conditions, the greater the range in observed wind speeds and wave heights, and the more difficult to forecast wind speeds and wave heights.
Actions to be Taken	NOAA will continue to enhance its marine observation network, upgrade new forecaster models, and continue new and ongoing forecaster training.

Indicator	**3.2i Aviation Forecast Accuracy of Ceiling/Visibility (1 mi/500 ft to less than 3 mi/1000ft) & False Alarm Rate (%)**
Description	Visibility and cloud ceiling forecasts are critical for the safety of aircraft operation. Accurately forecasting the occurrence of Instrument Flight Rule (IFR) conditions significantly improves general and commercial aviation flight planning capabilities, improving both flight safety and efficiency. IFRs are rules and regulations established by the Federal Aviation Administration that govern flight under conditions where pilots navigate primarily through instrument guidance. The Accuracy or Probability of Detection is the number of times IFR occurs compared to the number of times predicted. For this measure, the false alarm ratio represents the number of times IFR does not occur to the number of times predicted. Greater accuracy and minimized false alarm rates result in safer flights and fewer flight delays; and conversely, poorer accuracy and increased false alarm rates result in a greater incidence of unnecessary flight delays. The forecast frequency of IFR occurrence and the observed frequency of IFR occurrence are within 0.5% of each other, indicating that forecast errors are likely in the timing of onset and duration rather than solely event occurrence.

Accuracy (%)	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	64	65	65	65	65	65	65	65
Actual	63	65	63	61	62	62		
Status	Met	Met	Met	Not Met	Not Met	Met		
False Alarm Ratio (%)	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	44	43	42	41	40	38	38	38
Actual	39	38	36	39	39	36		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							

Actions to be taken / Future Plans	Operational implementation of the High-Resolution Rapid Refresh (HRRR) model facilitated by the larger capacity of NOAA's operational Central Computer System will provide forecasters with improved guidance resulting in skill

	improvements in the out years.
Adjustments to targets	No changes were made to this indicator from previous Congressional submission.

Validation and Verification	
Data Source	National Weather Service (NWS) Field Offices
Frequency	Monthly
Data Storage	NWS Headquarters, NWS Regional Headquarters, and the Office of Climate, Water, and Weather Services (OCWWS)
Internal Control Procedures	Inter-annual scores tend to fluctuate due to varying weather patterns. Some patterns are more difficult to forecast than others. Month to month variability can swing from +/- 1% to +/- 15%, with season to season variability generally +/- 7% to +/-10%, and year to year variability +/-3% for both accuracy and FAR. At the same time the percent frequency of occurrence can vary +/- 10% or greater from year to year, season to season, or month to month depending on weather patterns. Typically 3rd and 4th quarter scores during the convective season have lower accuracy and increased FAR scores than the 1st and 2nd quarter cool season months.
Data Limitations	IFR conditions occur much more frequently (by order of magnitude) during the late fall through early spring and are typically associated with winter weather. Performance metric goals tied to the frequency of occurrence of IFR conditions accounts for areas with little IFR (e.g., Pacific Region or the desert southwest) and differences between the warm and cool seasons. After accounting for the frequency of IFR occurrence, the overall performance of accuracy and FAR variability is +/-3 percent.
Actions to be Taken	Since Aviation Forecasters are already predicting IFR conditions within 0.5% of the actual frequency of occurrence, the foreseeable adjustment to performance is the application of lead-time data as developed by researchers to metrics. NWS will investigate various methods to apply the data, and develop a sound metric relating the amount of forecast overlap as shown by lead time calculations to the difference in the forecast and observed frequency of IFR occurrence. This would become a secondary metric supporting the existing POD and FAR GPRA measures.

Indicator	**3.2j Geomagnetic Storm Forecast Accuracy (%)**
Description	This performance measures tracks the ability of forecasters at NOAA's Space Weather Prediction (SWPC) to accurately predict geomagnetic storms which potentially disrupt power systems, spacecraft operations, and navigation systems. The NOAA geomagnetic storm scale (G-scale) ranges from the G1 or minor level where weak power grid fluctuations can occur to the G5 or extreme level. During a G5 event, where aurora may be visible over most of the United States, the power grid can experience equipment damage causing system collapse or blackout; significant satellite damage can occur; and global positioning systems may be inaccurate or temporarily unavailable. Geomagnetic Storm Forecast Accuracy is the percentage of times that the 24 hour geomagnetic storm forecast is correct for the 60 most recent geomagnetic storms. The 24 hour geomagnetic storm forecast is considered accurate if a G1 or greater storm event was predicted. This calculation also includes geomagnetic storms which were not forecast. This measure is verified based on ground-based magnetometer observations. Due to the nature of the approximately 11-year solar cycle and variability of geomagnetic storm occurrence, this metric is assessed over the 60 most recent geomagnetic storms to maintain statistical significance.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	51	53	53
Actual	N/A	N/A	N/A	N/A	N/A	40		
Status	N/A	N/A	N/A	N/A	N/A	Not Met		
Trend	Not enough data							

Explanation (if not met in FY 2014)	Geomagnetic storm forecasting accuracy fell short of its FY 2014 performance target. The current eleven year solar cycle (number 24) which started in January 2008 has been the least active since 1904. Only 24 solar storms occurred in FY 2014 compared to 120 storms annually during previous solar cycles. Since the GPRA score for forecasting accuracy is averaged over the previous 60 storms, this means that storms from previous years also contribute to the FY 2014 actual value. Additionally, 21 of 24 storms in FY 2014 were weaker storms, not driven by significant solar eruptions, which are more difficult to forecast. Strong storms are more easily forecast; the solar eruptions that drive them are more easily detected and the impacts more certain.
Actions to be taken / Future Plans	In FY 2015 NOAA plans to enhance physic in the WSA-Enlil Solar Wind prediction model (solar wind forecast model), and implement advanced ensemble modeling techniques to provide uncertainty and probability information and forecaster training.
Adjustments to targets	No changes were made to this indicator from the previous Congressional submission. The targets for the Geomagnetic Storm Forecast Accuracy remain steady at 53% for the FY16–FY19 time period. No significant modeling improvements are awaiting transition to operations and no significant breakthroughs in the underlying science are expected in the near-term.

Validation and Verification	
Data Source	Observational Data from the SOHO coronagraph used in the forecast process is available from NASA. Verifying data is available from USGS and worldwide magnetic observatory partners. NOAA's NWS SWPC delivers forecast information.
Frequency	Running average values for this annual measure are reported on a monthly basis.
Data Storage	NWS NCEP SWPC stores all data and forecast information. NESDIS National Geophysical Data Center archives all relevant geomagnetic storm data.
Internal Control Procedures	In order to minimize the influence of solar variability this metric is averaged over the 60 most recent storms. Additionally, SWPC focuses on minimizing the False Alarm Ratio (FAR) which is tracked internally on a monthly basis. FAR is % of times a forecast is issued and no occurrence was verified.
Data Limitations	Number of geomagnetic storms varies from year to year during the approximate 11-year solar cycle. During solar maximum, significant geomagnetic storming will occur with greater frequency. During solar minimum, long time periods will occur with little to no geomagnetic storming. For this reason, yearly changes in this measure may not be as significant as longer term trend measurements that span the natural solar cycle
Actions to be Taken	Methods to improve performance for FY 2015 and beyond: WSA-Enlil Solar Wind Model enhancements; forecaster training on improved Model interpretation and application; WSA-Enlil Solar Wind Model continuing validation and improvement; implementation of ensemble modeling techniques; interpretation and application of NASA Solar Terrestrial Relations Observatory (STEREO) observations. Note STEREO has a finite mission lifetime due to the nature of its orbit.

Objective 3.3: Strengthen the resiliency of communities and regions by delivering targeted services to build capacity

Indicator	**3.3c - Annual number of Coastal, Marine, and Great Lakes Ecological Characterizations that Meet Management Needs**
Description	Sound management of coastal, marine, and Great Lakes ecosystems require scientifically based-information on their condition. To provide this information, ecosystem characterizations are: 1) inclusive of the identification of the ecosystem boundaries, spatial extent, and biological, chemical, and physical characteristics that improve understanding of the history, current state, and future condition of ecosystems, cornerstones to ecosystem-based approaches to management; 2) the basis for many coastal and ocean forecasts, assessments, and management plans; and 3) conducted in response to user community demand and priorities, including NOAA management programs, significance of issue, and consequences of management action or inaction. Key parameters for characterizing conditions and developing assessments of their present "health" will be identified with the key indicator being characterizations *that meet management needs* (whether conducted in essential fish habitat, National Marine Sanctuaries, National Estuarine Research Reserves, the Great Lakes, the depths of the oceans, the coastal zone, and coral reef ecosystems, where there are different management needs and associated ecological characterizations). "Management" is defined as Federal, state, local, regional, territorial, or other entities that need accurate, useful data to make science-based, ecologically

	sound decisions when conducting comprehensive ocean and coastal planning and management, including coastal and marine spatial planning multiple uses of ocean and coastal resources. As a result, the American public can better improve the long-term protection and management of coastal, marine, and Great Lakes resources.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	50	50	50	51	48	48	48	48
Actual	50	48	50	51	48	48		
Status	Met	Met	Met	Met	Met	Met		
Trend	Stable							

Validation and Verification	
Data Source	Characterizations focus on ecosystem sites: National Marine Sanctuaries, National Estuarine Research Reserves, coral reef ecosystems, the coastal zone, Great Lakes, essential fish habitat, ecological species units, and unexplored areas.
Frequency	Annual
Data Storage	Metadata from all contributing sources to the measure are managed in a secure OAR database for annual milestones and annual and long-term performance measures.
Internal Control Procedures	Results are reported to NOAA Chief Financial Officers; quarterly reports on performance data are submitted to the NOAA Deputy Under Secretary.
Data Limitations	NOAA focuses on protected areas or areas where NOAA has a clear management mandate. NOAA works to identify key parameters for characterizing their conditions and develop assessments of their present health. Characterizations from all contributors are being tracked in addition to criteria defining the indicator of what meets management needs for each ecosystem site because characterizations vary temporally and geographically.
Actions to be Taken	None

Indicator	**3.3d. - Cumulative number of coastal, marine and Great Lakes issue-based forecasting capabilities developed and used for management**
Description	Geographically specific forecasts will allow resource managers to: make decisions based on predicted environmental and socioeconomic impacts; predict the impacts of ecosystem stressors; and evaluate the potential options to mitigate those stressors to better manage ecosystem use and condition.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	41	42	45	55	63	69	73	90
Actual	41	42	55	58	63	69		
Status	Met	Met	Exceeded	Exceeded	Met	Met		
Trend	Stable							

Adjustments to targets	Targets for FY 2016 and beyond are being adjusted based on the FY 2015 budget submission.

Validation and Verification	
Data Source	Components that produce forecasting capabilities [National Ocean Service's (NOS) National Centers for Coastal Ocean Science (NCCOS) and the Oceans and Human Health Initiative; three programs of NOAA's Oceanic and Atmospheric Research (OAR) Sea Grant, Atlantic Oceanographic and

	Meteorological Laboratory (AOML, in part), and Great Lakes Environmental Research Laboratory (GLERL)]
Frequency	Annual
Data Storage	Metadata from all contributing sources to the measure is managed in a secure NOS database for annual milestones and annual and long-term performance measures.
Internal Control Procedures	Results are reported to NOAA Chief Financial Officers; quarterly reports on performance data are submitted to the NOAA Deputy Under Secretary.
Data Limitations	Forecasting capabilities under development focus on 1) habitat impacts from different types of human activity, such as land use; 2) recovery of ecosystem function once habitat restoration efforts have been implemented; and 3) NOAA Fisheries models that predict resource sustainability, such as for managed fisheries and protected species.
Actions to be Taken	NOAA will prioritize its efforts in developing new forecast capabilities and facilitating their transition to operational status based on user community priorities, including those for NOAA management, adequacy of data, significance of issue, and consequences of management action/inaction.

Indicator	**3.3e. - Percentage of Tools, Technologies, and Information Services that are used by NOAA Partners/Customers to Improve Ecosystem-based Management**
Description	This measure tracks NOAA's success in providing tools, technologies, and information services such as those for coastal and marine resource managers that enable progress toward the principles of ecosystem-based management (considering ecological, economic, social, and security concerns) for coastal, marine, and Great Lakes ecosystems. By cataloging and tracking each fiscal year the existing and new tools, technologies, and information services authorized and developed to meet stakeholders' needs (50 to 100), NOAA encourages their completion and use to advance ecosystem-based management. NOAA can also then ensure investments in the most effective programs and products for the Nation. NOAA partners and customers include Federal, state, local and tribal authorities who must make intelligent decisions affecting resources in the U.S. coastal zone, and other users impacting the condition of coastal ecosystems (e.g., private industry). Actuals are derived by dividing the number of tools/services developed by the end of the year by the number proposed at the beginning of the year. Targets are established based on historical patterns and the amount of funds being requested. Services can include on-line courses for managers, enhanced websites, broadcasts of live events, and workshops and other training techniques. New tools are developed with partners and customers that improve our products and services for ecosystem managers. Benefits of better management of the Nation's coastal, marine, and Great Lakes resources accrue to all citizen's through sustainable ecosystems that provide jobs, products and services that are unique to coastal and ocean areas.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	86%	86%	87%	88%	89%	90%	87%	91%
Actual	86%	88%	88%	88%	91%	100%		
Status	Met	Exceeded	Exceeded	Met	Exceeded	Exceeded		
Trend	Positive							

Validation and Verification	
Data Source	NOAA's Line Offices (OAR and NOS) executing the NOAA programs through the Strategic Plan goal/program structure.
Frequency	Annual
Data Storage	Each Line Office has an internal secure system for tracking the data contributions
Internal Control Procedures	Use values will be reported by program offices as X number of tools, technologies, and information services (TTIS) used out of X number of TTIS provided. Each Line Office will report total annual values to a central repository where a single percentage value will be determined and archived in a secure repository. Data is managed in a decentralized system by contributing line offices with validation and verification on any partner for TTIS to ensure no double counting of data.

Data Limitations	NOAA needs to ensure tracking systems are secure and data is validated and verified.
Actions to be Taken	A secure central NOAA repository for matrixed measures is under development for improved management and tracking purposes.

Indicator	**3.3g. - Percentage of U.S. coastal states and territories demonstrating 20% or more annual improvement in resilience capacity to weather and climate hazards (%/yr.)**							
Description	An index of a range of activities to mitigate coastal community risk and vulnerability to coastal hazards. It measures improvement in the Nation's capacity for end to end preparedness, response, recovery and resilience to hazards							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target			36%	34%	40%	46%	51%	60%
Actual	N/A	31%	43%	46%	57%	54%		
Status	N/A	N/A	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Positive							
Actions to be taken / Future Plans	NOS may need to relook at future targets if the trend for exceeding continues.							
Validation and Verification								
Data Source	National Ocean Service (NOS) Coastal Services Center (CSC), and Office of Ocean and Coastal Resource Management (OCRM) Oceanic and Atmospheric Research (OAR) National Sea Grant College Program (NSGP).							
Frequency	Annual measure that is monitored quarterly							
Data Storage	NOS and OAR will collect information, conduct assessments, and store data.							
Internal Control Procedures	A Coastal Resilience Report Card assembles and tracks data to create a cohesive performance audit to track coordinated results at state and local levels. An annual progress calculation translates indicator data into statistically valid annual improvement percentages. The annual progress calculation is the formula for determining whether or not a coastal state meets the 20% improvement target. The calculation defines improvement as either 1) the percentage of a state's coastal jurisdictions pursuing successful resilience efforts or 2) the percentage of a state's coastal population impacted by successful resilience efforts. The 20% improvement target was an appropriately ambitious goal. Assessment methodologies will be peer reviewed for validation and verification performance by the NOAA Deputy Under Secretary quarterly and by the Department of Commerce through periodic audits.							
Data Limitations	NOAA established an accurate performance baseline for the measure's permanent data collection and validation and verification processes. An advisory group was established to provide customer input on collection and validation processes to encourage effective use of existing data sources and survey mechanisms where possible and to avoid burdensome reporting. NOAA's social science expertise means the potential use of proxy data sources, customer survey feedback, and statistical sampling techniques are scientifically applied, grounded and statistically defensible							
Actions to be Taken	A NOAA team will continue to engage state and local partners to critique and improve data collection, verification, and reporting for the measure.							

Indicator	**3.3h. Reduce the Hydrographic Survey Backlog within Navigationally Significant Areas (square nautical miles surveyed per year)**
Description	NOAA conducts hydrographic surveys to determine the bathymetry of primarily in U.S. waters significant for navigation. This activity includes the detection, location, and identification of wrecks and obstructions with side scan and multi-beam sonar technology. NOAA uses the data to produce nautical charts in a variety of formats for safe and efficient navigation, in addition to the commercial shipping industry, other user communities that benefit from actionable information include recreational

	boaters, the commercial fishing industry, port authorities, coastal zone managers, marine spatial and emergency planners. Presently NOAA has the capacity to survey roughly 3,000 SNM of navigationally significant Exclusive Economic Zone (EEZ) waters, evaluate 12% of priority port area shoreline for change each year, and map 3% of the 95,000 miles of U.S. open coastal shoreline; this capacity does fall short of the 10,000 SNM and 20% to 10% total annual requirement. • The 50-year re-survey cycle is revised to consider that in addition to re-survey areas, the Nation's need to define emerging critical areas. In 2004, NOAA created this category to allow for designation of areas that currently meet the definition of critical area, but can be tracked separately from the 43,000 SNM estimate. NOAA delineated emerging critical areas in the Gulf of Mexico and in Alaskan waters surrounding Kodiak Island which had areas which were survey in the 1800's using leadline technology and are now experiencing an increase in commercial traffic. • NOAA is assessing emerging survey needs of the Arctic that had not been considered in previous assessments of the Hydrographic Priorities (approx. 1 million SNM. Arctic maritime community plan to address this vast (40,000 SNM) critical area survey requirement and efforts to understand changing requirements, have precluded integration of these Arctic SNM into priority areas described in NOAA's Hydrographic Survey Priorities (http://www.nauticalcharts.noaa.gov/hsd/docs/NHSP_2011.pdf), but is working to add them. Finally, NOAA needs to consider impacts of Panama Canal expansion, to be completed in 2014, making it wider and deeper, allowing huge freighters from Asia to head straight to terminals on the Gulf and East Coast. With the increase in maximum ship size from 4,400 TEUs (max of 1,000 ft. lengths by 100 ft. widths) to 12,600 TEU ships (1,400 ft. lengths by 160 ft. widths), NOAA must ensure areas transited by these vessels are surveyed soon and regularly especially with many ports looking to dredge so that they can accommodate these vessels. Dredging only includes the channels maintained by the USACE, NOAA is accountable for areas surrounding and out of the ports.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	3,000	5,160	2,400	2,200	3,000	2,671	2,828	2,828
w/supplemental					120	258		
Total Target	3,000	5,160	2,400	2,200	3,120	2,929	2,556	2,717
Actual (Original)	2,745	2,515	2,278	2,947	2,285	2,207		
Impact of Recovery Funds	474	1,880						
Total Actual (Adjustments reflecting Original and Recovery Act Funds	3,219	4,395	2,278	2,947	2,285	2,207		
Status	Met	Not Met	Met	Met	Not Met	Not Met		
Trend	Varying							

Explanation (if not met in FY 2014)	The Hydrographic Survey Backlog shortfall was due to several issues including the fleet not being able to execute the allotted days at sea (DAS) causing 40% of the planned field season to be unexecuted. Further, due to a lapse in the hydrographic surveys contract, half of the survey backlog funding was not obligated until late-July 2014. While the

	associated survey areas have been identified, acquisition has not yet commenced.
Validation and Verification	
Data Source	Progress reports on data collected from hydrographic survey platforms.
Frequency	Monthly
Data Storage	National Ocean Service maintains hydrographic survey performance data at NOAA Coast Survey's Hydrographic Surveys Division.
Internal Control Procedures	National Ocean Service applies its established verification and validation methods. The measure has a +/- 50 square nautical mile variance. Targets are set annually based on resources available; monthly reports on performance to NOAA Deputy Under Secretary.
Data Limitations	NOAA-owned ships and contractor survey changes in vessel availability or condition. Weather can also affect scheduled surveys, as well as unexpected events such as accidents and hurricanes that require redirection of resources.
Actions to be Taken	None

Indicator	**3.3i - Percent of U.S. and territories enabled to benefit from a new national vertical reference system for improved inundation management**
Description	This measure tracks progress of NOAA's National Geodetic Survey toward completing the Gravity for the Redefinition of the American Vertical Datum (GRAV-D) initiative and implementation of a new National Vertical Datum for a wide variety of applications including improved inundation management. This improved vertical reference system is critical for all observing systems and activities requiring accurate heights and is a key component of the enhanced geospatial framework required for success in achieving NOAA's strategic priorities. The need for foundational coast to coast intelligence networks is particularly important for community resilience by determining where water flows in order to make accurate inundation models and assessments as well as better management and planning decisions with improved water level predictions based on accurate elevations. "Enabled" is technically defined as having GRAV-D data necessary to support a 1 cm geoid supporting 2 cm orthometric heights (heights relative to sea-level) necessary to define a new national vertical datum. NGS will calculate the percentage of area enabled with regards to a pre-defined total area that includes U.S. territorial land and adjacent land and water areas necessary for final determination of a national vertical reference system. As progress is made, each survey area will be represented by a polygon that will define the completed areas. The performance measure will be tracked as a percent of the total area that is identified as complete.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	20%	28%	36%	45%	53%
Actual	N/A	7.83%	14.7%	23.9%	31%	38%		
Status				Exceeded	Exceeded	Exceeded		
Trend	Positive							

Validation and Verification	
Data Source	NOAA's Online Position User Service (OPUS)
Frequency	Annual
Data Storage	Gravity database at the National Ocean Service
Internal Control Procedures	NOAA will validate potential local benefit from improved heights through use of its Online Positioning User Service (OPUS) height tool to evaluate the differences between current vertical reference system heights (NAVD88) and true orthometric (relative to sea level) heights produced through improved gravity data collected by GRAV-D.

Data Limitations	Changes in availability or condition of aircraft or field crews for NOAA use. Weather can also affect scheduled surveys, as well as unexpected events such as accidents and hurricanes that require redirection of resources.
Actions to be Taken	None

Indicator	**3.3j - Percent of all coastal communities susceptible to harmful algal blooms verifying use of accurate HAB forecasts.**
Description	This is a pilot measure in FY 2013 which was developed to track the forecast communities (currently using operational forecasts) within a coastal region vulnerable to harmful algal blooms (HAB) and the utility and accuracy of HAB forecasts as verified through customer feedback responses before and after a forecast HAB event. This includes characterizing causes of HABs and their impacts to humans and coastal ecosystems, developing products that detect and forecast HAB species and toxins and collaborating with coastal managers and the academic community to develop proactive strategies to enable decision makers to mitigate effects of HABs to coastal communities and economies. This measure tracks Coastal Goal water quality objective and what communities are susceptible to HABs, which one will use HAB forecasts and report their accuracy to NOAA. NCCOS, CO-OPS and others are developing operational forecasts throughout the coastal U.S. to meet their needs. Western Florida is operational, as is eastern Texas. Future focal points through FY17 are the Great Lakes (Erie), Gulf of Maine, PAC Northwest, CA, and possibly the Chesapeake Bay. HABs are potentially devastating to coastal communities. HAB forecasts predict environmental conditions under different scenarios and will have capabilities specific to a geographic area and be counted for each ecosystem as they become operational. For example, harmful algal bloom forecasts in different regions are separate forecast capabilities that Federal, state, local, regional, territorial, or other entities need accurate, useful data from to make science-based, ecologically sound decisions to improve water quality in the long-term protection and management of coastal, marine, and Great Lakes resources.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	TBD	11%	11%	11%	11%
Actual	N/A	N/A	N/A	11%	11%	11%		
Status					Met	Met		
Trend	Stable							

Actions to be taken / Future Plans	NOAA is beginning to develop a realistic metric that describes vulnerability of coastal communities to HAB. As an example, aerosolized versions of some highly potent algal toxins (brevetoxins in the Gulf of Mexico) tend to affect a larger number of people (triggering respiratory ailments and aggravation from toxin exposure via air they breathe) and for an extended period of time. Toxins transferred to humans (and wildlife) through ingestion of tainted food would cause a different mode of exposure and levels of susceptibility and risk.

Validation and Verification	
Data Source	Components that produce HAB forecasting capabilities [National Ocean Service's (NOS) National Centers for Coastal Ocean Science (NCCOS) and Center for Oceanographic Operational Products and Services (CO-OPS).
Frequency	Annual
Data Storage	Metadata from all contributing sources to the measure is managed in a secure NOS server where files are stored but not archived for annual milestones and annual and long-term performance measures.
Internal Control Procedures	Changes to reporting data require approval by the NOS administrator (managed by an e-mail workflow approval system).

Data Limitations	Forecasting capabilities under development focus on NCCOS' intramural research efforts to respond to harmful algal blooms. NOAA will prioritize its efforts in developing new forecast capabilities and facilitating their transition to operational status based on user community priorities, including those for NOAA management, adequacy of data, significance of issue, and consequences of management action/inaction.
Actions to be Taken	None

Objective 3.4: Foster healthy and sustainable marine resources, habitats, and ecosystems through improved management and partnerships

Indicator	**3.4a - Fish Stock Sustainability Index (FSSI)**							
Description	The FSSI tracks the rebuilding and maintaining of fish stocks at sustainable levels, along with critical components of NOAA's efforts to achieve outcomes, such as managing fish harvest rates and increasing knowledge about the status of fish stocks. It is calculated by assigning a score between 0 and 4 to each of 230 stocks selected for their importance to commercial and recreational fisheries and then adding the scores together. This measure is transitioned to the Revised FSSI (see below) by FY 2016. For more information: http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	548.5	580	586	603.5	617	645.5	N/A	N/A
Actual	565.5	582.5	587	606	618.5	640.5		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Not Met		
Trend	Positive							
Explanation (if not met in FY 2014)	The index gained six points due to stock status improvements, but then lost six points due to unanticipated declines in other stocks. The largest of these was the reversion to unknown status of bonnethead shark, which caused its score to drop from 4 to 0. In addition, two stocks in the Gulf of Mexico became subject to overfishing, and two stock assessments were delayed.							
Actions to be taken / Future Plans	Annual catch limits for the two stocks newly subject to overfishing will be set using this data.							
Adjustments to targets	This measure is being replaced by the Revised FSSI (see below) starting in FY 2015.							

Validation and Verification	
Data Source	Stock assessments and status determinations
Frequency	Quarterly
Data Storage	NMFS Stock Information System (SIS)
Internal Control Procedures	Results will be reported quarterly in a signed memo from the Fishery Management Program Manager to the National Marine Fisheries Service (NMFS) Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Results can only be reported when the SIS is updated with new information from the field
Actions to be Taken	None

Indicator	**3.4a Revised Fish Stock Sustainability Index (FSSI)**
Description	The FSSI tracks the status of fish stocks at sustainable levels in relation to fishing mortality and biomass reference points supporting the policy established by Congress in the MSA, that fishing resources be managed so they can produce the

	maximum sustainable yield. The revised Index includes important domestic U.S. commercial and recreational stocks subject to the MSA requirement to have Annual Catch Limits. It will be calculated by assigning a score between 0 and 4 to each stock, then converting the scores to a 1,000-point scale by dividing the sum of all the individual scores by the maximum possible score and then multiplying by 1,000. This will be phased in with the intention of being introduced in FY 2015 and fully utilized by FY 2016.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	760 (599/788)	749 (596.5/796)	770.5 (613.5/796)
Actual	N/A	N/A	N/A	N/A	742	746 (594/796)		
Status						Not Met		
Trend	Not enough data							

Explanation (if not met in FY 2014)	Some expected improvements to stock status did not occur, mainly due to two delayed stock assessments, while some unexpected deterioration in stock status did occur. In particular, one stock with a score of 4 reverted to unknown status due to an unsuccessful assessment, reducing its score to 0, and two stocks became subject to overfishing. Also, the increase in the number of stocks in the index from 197 to 199 as the result of two stocks being split caused a score reduction of eight points. The shortfall is larger for FSSI 2.0 (revised) than for the original in part because some of the improvements in stock status were of international stocks, which are not included in the revised measure, and also because of the denominator increase.
Actions to be taken / Future Plans	Annual catch limits for the two stocks newly subject to overfishing will be set using this data.
Adjustments to targets	Targets have been revised to reflect the FY 2014 results as well as revisions to the assessment schedule.
Notes	The number of stocks included in the index increased from 197 to 199 between FY 2014 and FY 2015 due to the splitting of two shark stocks into four.

Validation and Verification	
Data Source	Stock assessments and status determinations
Frequency	Quarterly
Data Storage	NMFS Stock Information System (SIS)
Internal Control Procedures	Results will be reported quarterly in a signed memo from the Fishery Management Program Manager to the National Marine Fisheries Service (NMFS) Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Results can only be reported when the SIS is updated with new information from the field
Actions to be Taken	None

Indicator	**3.4b - Percentage of FSSI Fish Stocks with Adequate Population Assessments and Forecasts**
Description	This measure tracks the percentage of priority fish stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as “Level III” by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under

	different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	57.4% (132/230)	57.4% (132/230)	60.4% (139/230)	57.4% (132/230)	57.0% (131/230)	58.3% (134/230)	N/A	N/A
Actual	59.1% (136/230)	57.4% (132/230)	57.4% (132/230)	56.1% (129/230)	58.3% (134/230)	59.6% (137/230)		
Status	Exceeded	Met	Met	Met	Exceeded	Exceeded		
Trend	Stable							

Adjustments to targets	This measure is being replaced by a revised version (see below) beginning in FY 2015.

Validation and Verification	
Data Source	Stock assessment reports
Frequency	Quarterly
Data Storage	NMFS Stock Information System (SIS)
Internal Control Procedures	Science Advisor and reported quarterly in a signed memo from the Ecosystem Observations Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Results can only be reported when the SIS is updated with new information from the field
Actions to be Taken	None

Indicator	**3.4b Revised Percentage of FSSI Fish Stocks with Adequate Population Assessments and Forecasts**
Description	This measure tracks the percentage of fish stocks tracked by the revised FSSI for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as "Level III" by the Fisheries Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the same 230 fish stocks tracked by the FSSI.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	N/A	N/A	N/A	N/A	N/A	64.8% (129/199)	67.3% (134/199)	68.3% (136/199)
Actual						63.8% (127/199)		
Status						Not Met		
Trend	Not enough data							

Explanation (if not met in FY 2014)	One stock did not achieve adequate status as anticipated because the assessment approach was rejected. One other was listed erroneously as adequate, but then revised to inadequate.
Adjustments to	Targets were revised to reflect FY 2014 results and revisions to the assessment schedule.

targets	

Validation and Verification	
Data Source	Stock assessment reports
Frequency	Quarterly
Data Storage	NMFS Stock Information System (SIS)
Internal Control Procedures	Science Advisor and reported quarterly in a signed memo from the Ecosystem Observations Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Results can only be reported when the SIS is updated with new information from the field
Actions to be Taken	None

Indicator	**3.4c - Percentage of Protected Species Stocks with Adequate Population Assessments and Forecasts**
Description	This measure tracks the percentage of protected species stocks for which adequate assessments are available to determine the scientific basis for supporting and evaluating the impact of management actions. To reach this standard, which is defined as "Level III" by the Protected Species Stock Assessment Improvement Plan (SAIP), assessments must be based on recent quantitative information sufficient to determine current stock status (abundance and mortality) relative to established reference levels and to forecast stock status under different management scenarios. This measure covers the protected species stocks covered by the Marine Mammal Protection Act (MMPA) or listed under the Endangered Species Act (ESA). The number of such stocks can change as new species are listed and as new stocks of listed species and marine mammals are identified. The number increased from 230 in FY 2005 to 392 in FY 2011 but subsequently fell to 378.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	27.8% (69/248)	20.1% (75/373)	18.6% (73/392)	19.5% (78/400)	22.0% (88/400)	18.9% (78/412)	21.6% (89/412)	21.4% (92/429)
Actual	29.8% (74/248)	20.1% (75/373)	17.6% (69/392)	19.3% (77/400)	19.0% (76/400)	15.0% (62/412)		
Status	Exceeded	Met	Met	Met	Not Met	Not Met		
Trend	Varying							

Explanation (if not met in FY 2014)	The implementation of an automated tracking system during FY 2014 revealed inconsistencies in the application of the criteria to determine which assessments qualify as adequate. When the automated system applied the proper standard consistently across all stocks, 18 stocks were shown to have an incorrect designation. With the automated system now in place, these errors should not recur.
Adjustments to targets	Targets were revised to reflect the designation errors. Further revisions may be necessary.

Validation and Verification	
Data Source	ESA status reviews
Frequency	Quarterly
Data Storage	NMFS Stock Information System (SIS)
Internal Control	Science Advisor and reported quarterly in a signed memo from the Ecosystem Observations Program Manager to the NMFS Chief Financial Officer and are

Procedures	housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Results can only be reported when the SIS is updated with new information from the field
Actions to be Taken	The SIS module to house protected species data has been completed and implemented. No further action is required.

Indicator	**3.4d - Number of Protected Species Designated as Threatened, Endangered or Depleted with Stable or Increasing Population Levels**							
Description	This measure tracks progress at achieving partial recovery of endangered, threatened or depleted protected species under the jurisdiction of NMFS. These species include those listed as threatened or endangered under ESA as well as those marine mammal species listed as depleted under MMPA. Recovery of threatened, endangered or depleted species can take decades, so while it may not be possible to recover or de-list a species in the near term, progress can be made to stabilize or increase the species population. For some, it is trying to stop a steep decline, while for others it is trying to increase their numbers. For FY 2014, this measure tracks 84 species/stocks designated as threatened, endangered, or depleted.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	22	25	28	28	27	28 (84)	34 (74)	34 (91)
Actual	25	29	29	29	30	37 (84)		
Status	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded	Exceeded		
Trend	Stable							
Adjustments to targets	Targets have been adjusted to reflect the decrease in the number of listed species due to the consolidation of 17 whale stocks into 5 whale species. After this consolidation, the 37 actual for FY 2014 drops to 34, so the target of 34 for FY 2015 does not represent a decrease in performance.							
Notes	Additional species listings cause the total number of listed species to increase from 74 to 91 in FY 2016.							

Validation and Verification	
Data Source	MMPA stock assessment reports and ESA status reviews
Frequency	Annual
Data Storage	NMFS Stock Information System (SIS)
Internal Control Procedures	Results are reported quarterly in a signed memo from the Protected Species Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	MMPA stock assessment reports are updated only once a year and ESA status reviews are updated only every one to five years depending on priority and fund availability
Actions to be Taken	The SIS module housing protected species data has been completed and implemented. No further action is required.

Indicator	**3.4e - Number and Percentage of Recovery Actions Ongoing or Completed**
Description	This measure tracks progress of ongoing or completed recovery actions (including Priority 1 actions needed to prevent extinction) included in NMFS approved recovery plans for species listed as threatened or endangered under ESA. Recovery actions are those actions found to be necessary to remove species from the ESA. Actions may include items that can be completed in a year or other actions, including monitoring, that may take many years to complete or be ongoing. Recovery of threatened or endangered species is a gradual process that can take decades, and completed recovery actions can show incremental progress made in

	achieving recovery.

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target					44.6% (1,875/4,202)	44.4% (1,979/4,457)	46.2% (2,070/4,482)	47.3% (2,119/4,482)
Actual	NA	NA	NA	44.3% (1,862/4,202)	45.1% (1,897/4,202)	45.2% (2,013/4,457)		
Status					Met/Exceeded	Met/Exceeded		
Trend	Not enough data							

Adjustments to targets	Targets were adjusted to reflect FY 2014 results.
Notes	The total number of actions increased from 4,457 to 4,482 in FY 2015 due to the addition of a new recovery plan.

Validation and Verification	
Data Source	Existing sources of data including the Recovery Online Activity Reporting (ROAR) System
Frequency	Quarterly
Data Storage	Database maintained by the U.S. Fish and Wildlife Service (ROAR)
Internal Control Procedures	Results are reported quarterly to the NMFS Chief Financial Officer and made available to the NOAA Deputy Under Secretary
Data Limitations	NMFS will require Recovery Coordinators to update Recovery Actions in ROAR quarterly
Actions to be Taken	ROAR is now fully implemented. No further action is required.

Indicator	**3.4f - Number of Habitat Acres Restored**
Description	NOAA restores habitat areas lost or degraded as a result of development and other human activities, as well as specific pollution incidents and sources. Activities are geared toward NOAA trust resources found across the marine environment, including the Great Lakes region, and supportive of anadromous fish species, which are species of fish that swim in both saltwater and freshwater environments. 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 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	9,000	8,875	8,888	80,007	60,228 (8,228 + 52,000 PCSRF)	40,820 (11,820 program + 29,000 PCSRF)	32,460 (9,460 + 23,000 PCSRF)	45.000 (4,000 + 41,000 PCSRF)
Actual	9,232	6,907	79,381 (15,420 + 63,961 PCSRF)	58,120 (8,242 + 49,878 PCSRF)	46,857	29,407		
Status	Exceeded	Not Met	Exceeded	Not Met	Not Met	Not Met		
Trend	Varying							

Explanation (if not	The target was not met because 48 projects were delayed. The largest of these—4,500 acres—was completed in October.

met in FY 2014)	In addition, three projects for nearly 2,800 acres were terminated, and the acreage for one project fell short of estimates by nearly 2,200 acres.
Adjustments to targets	The FY 2015 target has been adjusted to reflect FY 2014 results.
Validation and Verification	
Data Source	Interim and final progress reports from each project
Frequency	Quarterly
Data Storage	The Restoration Center Database (RCDB)
Internal Control Procedures	Results are reported quarterly in a signed memo from the Habitat Program Manager to the NMFS Chief Financial Officer and are housed and made available in a database managed by the NMFS Office of Management and Budget.
Data Limitations	Data is primarily provided by grantees
Actions to be Taken	None

Indicator	**3.4g Annual Number of Coastal, Marine, and Great Lakes Habitat Acres Acquired or Designated for Long-term Protection.**
Description	NOAA protects and restores key habitats that provide critical ecosystem functions through and in support of the statutory responsibilities enhance coastal and marine resource conservation through place based management. These habitats support the health of endangered or threatened species and essential fish habitat, reduce coastal pollution, buffer the impacts of coastal storms and flooding, and provide the public with recreational access to the coast among other societal or economic benefits. NOAA maintains the health of coastal, marine and Great Lakes habitats by designating and managing important areas for long-term conservation and by providing support to state and local governments to protect additional key habitats by purchasing land from willing sellers. This *long-term protection* measure tracks the number of acres acquired with NOAA funds by state or local government agencies from willing sellers particularly through the Coastal and Estuarine Land Conservation Program (CELCP) and Coastal Zone Management Program (CZMP), and the number of acres designated for long-term protection by NOAA or by state partners, such as through the Office of National Marine Sanctuaries Program (ONMS) and National Estuarine Research Reserve System (NERRS). In FY 2010, NOAA protected acres through CELCP with funds from EPA's Great Lakes Restoration Initiative (GRLI).

	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Target	2,000	2,000	19,219	69,550	2,500 (CELCP)	1,300 (CELCP)	250 (CELCP)	550
Actual	2,247 acres verified for CELCP	21,341 total (21,170 for CELCP and 171 for GLRI through CELCP)	17,274	8,694,070	2,772	5,673		
Status	Exceeded	Exceeded	Not met	Exceeded	Exceeded	Exceeded		
Trend	Varying							

Validation and Verification	
Data Source	The cumulative total represents data on acres from the National Estuarine Research Reserve (NERRS) Program; National Marine Sanctuaries Program; and the Coastal and Estuarine Land Conservation Program. The APP targets show acres in the year the acquisition is completed, while the budget narrative shows the acres as the # that will be acquired in any future year with that year's funding.

Frequency	Annual
Data Storage	Metadata from all contributing sources to the measure is managed and stored in an Excel spreadsheet with limited access. The final performance data reported annually in performance reports is managed in a secure NOS database for annual milestones and annual and long-term performance measures.
Internal Control Procedures	Results are reported annually to the NOAA Chief Financial Officers for approval; monthly reports on performance data are submitted to the NOAA Deputy Under Secretary.
Data Limitations	The goal for the long-term protection indicator is variable, as the yearly target can vary from hundreds to thousands of acres each year. For example, the initial designation or acquisition for a new reserve or sanctuary may add hundreds of thousands of acres in one year, while in other years acquisition may result in several hundred or thousand acres protected. Other limitations are the timeliness of reporting by grant recipients, accuracy of conversion from hectares to acres for some data, and the time delay between funding and completion.
Actions to be Taken	Since this measure does not capture all NOAA's activities to protect habitat long-term, NOAA is expanding the measure as a pilot in the FY 2012 AOP to capture the CZM program contributions. NOAA continues to harmonize habitat management (to fulfill diverse but complementary requirements of 8 distinct mandates serving diverse but related communities that conduct scientific research, ecosystem monitoring, disaster response, restoration and conservation, and long-term protection.

Non-Recurring Indicators

None

Part 5: Other Indicators

Indicator	**3.1a (1) - Key Milestones completed on time for satellites deployments**							
Description	Key activities for the development and launch of weather satellites and fleet modernization and products are identified and tracked using a project management system.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual						6		

Indicator	**3.1a (2) - Key Milestones completed on time for ship deployments**							
Description	Key activities for the development and launch of weather satellites and fleet modernization and products are identified and tracked using a project management system.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual	n/a	n/a	n/a	n/a	n/a	1		

Indicator	**3.1c - Number of comparative greenhouse gas emissions studies completed**							
Description	Scientific studies comparing top-down and bottom-up emission estimation methodologies provide the means to improve the quality of GHG emissions data.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual	n/a	n/a	n/a	n/a	n/a	15		

Indicator	3.1d - Percentage of data processed and delivered to the user community (relative to all data transmitted to NOAA from NOAA-managed satellites)							
Description	Ensures that NOAA provides real time (or near real time) availability of critical satellite data and products without gaps.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual	99%	n/a	99.73%	99.60%	99.50%	99.7%		

Indicator	3.1k - Percentage of ingested data safely archived per National Archives & Records Administration (NARA) standards							
Description	Ensures that NOAA safely archives critical data and information according to NARA standards.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual	99%	99%	99%	99%	99%	99%		

Indicator	3.2a American Customer Satisfaction index (ACSI) for NOAA's National Weather Service							
Description	Weather information users are periodically surveyed using the American Customer Satisfaction Index. The survey rates customer satisfaction on a range of National Weather Service data and products.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual			84	84	82	84		
Notes	ACSI has been collected since FY 2011 and follows a flat trend. The NWS ACSI score is on average 14 points higher than the average Federal government ACSI.							
Information Gaps	Data is limited by the annual number of survey respondents.							

The FY 2014 survey was conducted on September 9th – 25th and had 31,306 respondents.

Indicator	3.3a Number of communities that utilize Digital Coast							
Description	Digital Coast is a web-platform providing coastal geospatial information. The number of communities using Digital Coast is based on Census-designated places within coastal states, including all Census-defined cities, towns, townships, boroughs, and incorporated municipalities.							
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual			1975	2807	2900	4750		

Indicator	4.1b Number of visits to NOAA information portals
Description	This indicator includes unique visits to NOAA websites including weather.gov, climate.gov and drought.gov. Weather.gov serves as an information portal to provide all customers weather, water, and climate data, forecasts, warnings and services for the protection of life and property and enhancement of the national economy. Weather.gov includes city forecast pages and the NWS mobile site, which is optimized for modern smartphones. Weather.gov allows visitors to view weather at a

	glance and save their location, and provides consistency and organization across all agency web sites. Weather.gov garners some 60 million unique visitors per month. Unique visitors refer to the number of distinct individuals requesting pages from the website during a given period, regardless of how often they visit. That number can jump from 3 to 10 times during high-impact weather events such as landfalling hurricanes, crippling blizzards, and tornado outbreaks. A redesign of weather.gov in 2012 was the beginning of a phased effort to update the NWS web presence and improve customer access to information and services. The design was developed in-house based on ongoing user feedback, search query analysis, surveys of NWS local offices, usability testing, and best practices. NWS received 35,000 comments during this public comment period. NOAA's Climate Services Portal (www.climate.gov) is designed to give users information on the current status of Earth's climate system and tools to apply that information to decision making and problem solving. Climate.gov is led by OAR and NESDIS and is hosted at National Climatic Data Center (NCDC), which uses standard statistics monitoring software package to record the total number of visits to the site every day. Each time a user enters into any part of the Climate.gov web domain on a given day, the system counts 1 unique visit. Use of drought.gov is generally increases when drought conditions get worse (and consequently usage decreases when drought conditions improve). For example, in 2012 when the United States experienced record drought in many parts of the country, many more users were looking for drought information. Users generally do not look for drought information when they are not being affected by drought. In 2013 conditions eased in many locations and usage statistics reflect this.

Actuals	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Visits to Weather.gov				1.34 billion	1.65 billion	0.62 billion		
Visits to climate portal		235,767	420,422	683,187	1,744,678	2,999,012		
Visits to drought portal	274,073	333,302	421,875	887,768	507,908	529,600		

Notes	These indicators support NOAA's effort within the weather enterprise to examine ways to provide additional content to users within existing infrastructure and make fully available to everyone. NWS has adopted a proactive approach of working with the Big Data Initiative. On 6/3/14 NWS issued a Public Information Statement seeking suggestions on new types of NCEP model output with a due date of 7/3/14. In 2014, NOAA Climate.gov was selected by the International Academy of the Digital Arts & Sciences to receive two prestigious Webby Awards in the "Government" and "Green" categories for websites. OAR and NESDIS continue to improve the website to provide innovative problem-focused climate information, tools, and case studies to help communities address climate change impacts. Drought.gov, data dates back to 2008. This measure captures page views instead of visits because this is the consistent

	metric available across the three different usage statistics packages that have been in place.
Information Gaps	For Weather.gov data is incomplete. Not all URLs are captured for statistics. Traffic to websites managed by NWS Southern Region Headquarters, Alaska Region Headquarters, Pacific Region Headquarters, NWS' Tsunami Warning Centers, and the National Centers for Environmental Prediction is not captured here.

Indicator	**4.1c Assigning permanent, citable Digital Object Identifiers (DOIs) to at least 10 new archival datasets per quarter**							
Description								
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Actual						N/A		

Part 6: Agency Priority Goals

Section 6.1: APG Statement, Overview (optional) and Goal Leader

Agency Priority Goal

By September 30, 2015, the Department of Commerce will confirm the elimination of overfishing on all 21 U.S. domestic stocks identified as subject to overfishing as of June 30, 2013 by comparing catch data relative to overfishing limits (OFLs).

The Magnuson-Stevens Act is the primary law that governs how fisheries are managed in U.S. federal waters. When the Magnuson-Stevens Act was reauthorized in 2007, it mandated that annual catch limits (ACLs) be put in place for all federally managed domestic fish stocks, with certain exceptions. ACLs are set at a level below the OFL to account for scientific uncertainty and to reduce the risk of overfishing. ACLs are in place for all fish stocks as required by the Magnuson-Stevens Act. These catch limits should keep catch below the OFL and prevent overfishing on these stocks. Preventing overfishing should increase the long-term economic and social benefits of the nation's fisheries.

At the time NOAA Fisheries developed this measure, there were 21 federally managed domestic fish stocks subject to overfishing. For these 21 stocks, we will monitor catch of each stock and compare to the OFL. We use a complex system of observers, dealer reporting, and logbook requirements to track and verify the catch numbers. If catch exceeds the ACL (always set below the OFL) for any of the 21 stocks, the Magnuson Stevens Act requires that we take steps, known as accountability measures, to end and prevent overfishing. These can include closing the fishery before the end of the planned fishing season, changing gear requirements, and reducing bag limits. We may also reduce allowable catch in the subsequent year.

The goal of this measure is to show that by implementing rigorous limits on annual catch, the U.S. can end and prevent overfishing of our fishery resources, a key step to ensuring the sustainable management of our nation's fisheries. Federal fishery management is based on the concept of maximum sustainable yield, which is the largest long-term average catch that can be taken from a stock under prevailing environmental and

fishery conditions. A stock that is subject to overfishing has a fishing mortality (harvest) rate higher than the rate that produces maximum sustainable yield. The amount of catch equivalent to this harvest rate is the overfishing limit (OFL).

Agency Priority Goal

By September 30, 2015, the Department of Commerce will improve its overall weather forecast model accuracy to 9 days which will enable more accurate, consistent, longer lead time for specific weather event forecasts and warnings.

The impact of major weather events demonstrates the importance of hazard preparedness and response in the United States. Improved weather forecast accuracy, combined with enhanced decision support services, allow emergency management and the American public more time to prepare for high-impact weather events. This enables protection of life and property and enhancement of the U.S. economy.

A key way to measure improvements in model performance is to examine how far into the future Numerical Weather Prediction (NWP) guidance demonstrates. Model output ceases have useful skill at predicting the weather at longer forecast lengths. Large scale weather patterns that affect the local weather that each of us experience on a daily basis, are driven by features in the mid-levels of the atmosphere. During the past 20 years, the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) has seen its ability to provide useful predictions of future high-impact weather events extend from 6 days to 8 days.

This goal focuses on improving the Global Forecast System model 2013 that currently has useful skill at forecasting the mid-levels of the atmosphere across the globe out to 8.0 days. Upon completion of forecasting upgrades over the next two years, the NWS expects to extend this out to 9 days.

Improving global weather prediction facilitates improvements to regional, local scale models that provide accurate information about the formation and movement of high impact storms in the right place at the right time. Knowing with a good level of confidence that the storm is coming 5 days in advance enables for significantly improved response. Evacuations from hurricanes require 3 full days, and thus accurate, consistent forecasts 4-7 days in advance are invaluable to people who have to make these critical decisions. Increased lead time means lives saved and property protected. NWS will also continue efforts to support the use of improved weather forecast data by emergency managers through better impact-based decision support services. Achieving this priority goal will allow NWS to predict farther into the future and enable the American public to make the right choices when extreme weather threatens.

Section 6.2: Strategies

NOAA will analyze catch data throughout the fishing year and expect to have final 2013 fishing year catch estimates for all 21 domestic stocks by December 31, 2014. Stocks for which the final catch is less than OFL in the 2013 fishing year will be considered to have met the goal. Any stock that doesn't meet the goal will be tracked into the 2014 fishing year. Each quarter, we evaluate the catch and if it exceeds the ACL, we implement measures to reduce fishing effort such as closing the fishery before the end of the planned fishing season, changing gear requirements, and reducing bag limits.

NOAA will invest in the following strategies to improve weather forecast accuracy and warning leads:

- Improve weather forecast models to enable NWS' forecast to be more specific and accurate.
- Improve hurricane forecast models to provide accurate information about the formation and movement of high impact storms, such as hurricanes.
- Deliver decision support services both to the emergency management community and the public including projects that improve observational capabilities, tools, and training.

Section 6.3 *Indicators*

Goal	By September 30, 2015, the Department of Commerce will confirm the elimination of overfishing on all 21 U.S. domestic stocks identified as subject to overfishing as of June 30, 2013 by comparing catch data relative to overfishing limits (OFLs).	
Performance Indicator	Number of domestic stocks listed as subject to overfishing as of June 30, 2013 for which the annual catch does not exceed the overfishing limit (OFL) in any fishing year	
Description	NOAA Fisheries will compare annual catch estimates to OFL for the 21 domestic stocks that were subject to overfishing as of June 30, 2013. In FY14, we will track the 2013 fishing year catch for each of the 21 stocks quarterly using the best catch estimates available at the time. In FY15, we will track the 2014 fishing year catch only for the stocks that exceeded the OFL in the 2013 fishing year.	
	Target	Actual
FY 2014	11	11

Goal	By September 30, 2015, the Department of Commerce will improve its overall weather forecast model accuracy to 9 days which will enable more accurate, consistent, longer lead time for specific weather event forecasts and warnings.					
Performance Indicators	Global Forecast Skill (GFS) 500 hPA Anomaly Correlation Length of Forecast Considered Accurate		High Performance Computing Capacity		Hurricane Forecast Track Error	
Description	The 500 hPA anomaly correlation is a proxy for skill of the GFS and computed over the range of forecast days into the future. The forecast length where the value drops to 0.6 indicates the point at which a forecast loses useful skill		A "Game Changer" in terms of being able to provide consistent, accurate forecasts with more lead time is the upgrade to the Weather and Climate Operational Supercomputing System (WCOSS). This effort focuses on upgrading WCOSS to exceed 1 Peta Floating-Point Operations Per Second (PFLOPS)		Improvements in the GFS allows for better information input for regional and local scale weather models that provide accurate information about the formation and movement of high impact storms, such as hurricanes. The updates to Hurricane Weather Research Forecast will improve hurricane track and intensity forecasts. Metric computed once a year in Q2 of the FY, after the hurricane season concludes (Hurricane Forecast Track – 48 hr Error – nautical miles)	
	Target	Actual	Target	Actual	Target	Actual
FY 2014	8	TBD*	200	200	81	77**

*Value is not available until FY 2015 2Q.

** These values do not encompass the entire Calendar Year 2014 Hurricane Season which spans from June 1, 2014 and ends on November 30, 2014. CY 2014 GPRA preliminary values will be available in January 2015 and final values will be available in February 2015.

Part 7: Resource Requirements Table

	FY 2009 Actual	FY 2010 Actual	FY 2011 Actual	FY 2012 Actual	FY 2013 Actual	FY 2014 Actual	FY 2015 Estimate	FY 2016 Base	Increase/ Decrease	FY 2016 Request
Objective 3.1: Advance the understanding and prediction of changes in the environment through world class science and observations										
Oceanic and Atmospheric Research										
Direct	488,690	539,820	428,357	377,294	378,569	478,886	462,173	452,909	54,126	507,035
FTE	696	718	752	741	666	699	711	727	13	740
National Environmental Satellite, Data and Information Service										
Direct	1,185,364	1,438,623	1,607,910	1,852,640	1,888,099	2,077,695	2,223,144	2,224,789	154,838	2,379,627
FTE	774	803	839	742	765	674	885	879	6	885
Subtotal Funding	**1,674,054**	**1,978,443**	**2,036,267**	**2,229,934**	**2,266,668**	**2,556,581**	**2,685,317**	**2,677,698**	**208,964**	**2,886,662**
Subtotal FTE	**1,470**	**1,521**	**1,591**	**1,483**	**1,431**	**1,373**	**1,596**	**1,606**	**19**	**1,625**
Objective 3.2: Improve preparedness, response, and recovery from weather and water events by building a Weather-Ready Nation										
National Weather Service										
Direct	963,626	1,003,304	988,442	988,859	945,803	1,058,910	1,087,453	1,106,796	(7,918)	1,098,878
FTE	4,673	4,725		4,679	4,465	4,356	4,638	4,638	(98)	4,540
Subtotal Funding	**963,626**	**1,003,304**	**988,442**	**988,859**	**945,803**	**1,058,910**	**1,087,453**	**1,106,796**	**(7,918)**	**1,098,878**
Subtotal FTE	**4,673**	**4,725**	**4,712**	**4,679**	**4,465**	**4,356**	**4,638**	**4,638**	**(98)**	**4,540**
Objective 3.3: Strengthen the resiliency of communities and regions by delivering targeted services to build capacity										

National Ocean Service										
Direct	497,096	464,774	471,255	545,903	510,804	547,171	412,435	417,512	60,780	478,292
FTE	1,054	1,050	1,062	1,063	997	940	1,007	1,007	0	1,007
Subtotal Funding	**497,096**	**464,774**	**370,846**	**546**	**510,804**	**547,171**	**412,435**	**417,512**	**60,780**	**478,292**
Subtotal FTE	**1,054**	**1,050**	**1,019**	**1,063**	**997**	**940**	**1,007**	**1,007**	**0**	**1,007**
Objective 3.4: Foster healthy and sustainable marine resources, habitats, and ecosystems through improved management and partnerships										
National Ocean Service										
Direct	106,864	106,256	94,749	97,368	91,299	93,458	95,800	97,061	(1,361)	95,700
FTE	213	208	212	222	207	190	209	209	0	209
National Marine Fisheries Service										
Direct	1,062,171	944,965	1,137,138	796,434	773,699	948,363	950,385	935,084	54,967	990,051
FTE	2,822	2,868	3,518	2,950	2,905	2,841	3	2,928	53	2,981
Other - Discretionary and Mandatory	96,561	100,496	112,789	102,769	85,253	190,087	112,687	96,769	3,300	92,118
FTE	64	46	70	102	93	90	56	56	0	56
Subtotal Funding	**1,265,596**	**1,151,717**	**1,344,676**	**996,571**	**950,251**	**1,231,908**	**1,158,872**	**1,128,194**	**56,906**	**1,177,869**
Subtotal FTE	**3,099**	**3,122**	**3,800**	**3,274**	**3,205**	**3,121**	**3,193**	**3,193**	**53**	**3,246**
Objective 5.1: Strengthen organizational capabilities to drive customer-focused, outcomes-driven mission performance										
Program Support										

Direct	499,469	575,479	1,427,828	460,875	442,487	445,901	490,705	528,199	148,841	677,040
FTE	1,896	1,926	5,360	1,836	1,742	1,693	1,845	1,836	15	1,851
Other - Discretionary and Mandatory	24,272	26,116	30,101	30,071	30,169	30,205	28,205	28,205	0	28,205
FTE	0	0	0	0	0	0	0	0	0	0
Subtotal Funding	523,741	601,595	1,457,929	490,946	472,656	476,106	518,910	556,404	148,841	705,245
Subtotal FTE	1,896	1,972	5,360	1,836	1,835	1,693	1,845	1,836	15	1,851
Sub Total Direct Funding	5,134,839	4,710,709	5,848,316	4,972,165	5,110,458	5,400,548	5,524,515	5,570,069	464,293	6,034,362
Sub Total FTE	12,135	12,301	16,243	12,233	11,747	11,393	12,223	12,224	(11)	12,224
Reimbursable	231,620	384,284	451,040	228,748	260,124	217,112	242,000	242,000	0	242,000
FTE	705	782	831	676	641	604	706	706	0	706
Total Funding	5,282,831	5,554,711	6,540,543	5,448,047	5,384,617	5,908,226	5,978,075	6,000,533	464,293	6,464,826
Total FTE	12,840	13,083	17,074	12,909	12,388	11,997	12,929	12,930	(11)	12,919

Part 8: Other Information

Section 8.1: Major Management Priorities, Challenges, and Risks

Challenge: Strengthen Oversight of National Oceanic and Atmospheric Administration (NOAA) Programs to Mitigate Potential Satellite Coverage and Gaps, Address Control Weaknesses in Accounting for Satellites, and Enhance Fisheries Management

NOAA Response:

Enhancing Weather Satellite Development and Mitigating Potential Coverage Gaps

The November 2013 report expressed a concern that budgetary challenges could delay the launch of the first GOES-R satellite. As a result of the FY2013 sequester and congressional rescission, the GOES-R launch commitment date was changed from October 2015 to Q2 FY2016. However, internally the program has been executing to a more aggressive schedule to minimize the risk of a gap to the on-orbit constellation. The GOES-R program recently completed its System Integration Review and is preparing for Key Decision Point D (KDP-D), which will mark the program's formal transition to the integration phase. The program expects that KDP-D will confirm the viability of the launch commitment date.

Addressing Material Weakness over Satellite Accounting

During FY 2014 NOAA Finance and NESDIS continue to meet on a monthly basis to discuss accounting issues impacting the major satellite programs through the NOAA Satellite Accounting Review Board (SARB). The NOAA SARB provides a forum for regular review and assessment of selected programmatic, fiscal, and accounting information to ensure that all impacts of decisions are considered and that the appropriate accounting treatment is applied. In addition to the SARB, NOAA Finance works closely with NESDIS headquarters staff and program staff to resolving all findings from the FY 2013 audit.

Enhancing Fisheries Management

NOAA Fisheries is on track for a successful year in FY 2014, in spite of the government shutdown and sequestration. As of September 30, 2014, the improvements to fish stocks included:

- Three stocks removed from the overfished list
- Four stocks removed from the overfishing list

- Three stocks rebuilt – bringing the total number of rebuilt stocks to 37

NOAA Fisheries is on track to confirm that overfishing (as measured by catch relative to overfishing limit) has ended for 11 of the 21 domestic stocks that were subject to overfishing as of June 30, 2013.

For the first time in 19 years NOAA Fisheries removed a species from the Endangered Species List due to recovery. The eastern population of the Steller sea lion was delisted after a five-year status review concluded that current population trends and threats no longer placed this species at risk of extinction.

Fisheries and protected resources achievements have been aided by successful habitat conservation and restoration activities. In FY 2014, the Habitat Blueprint has selected seven habitat focus areas across the country, which will increase the effectiveness of NOAA Fisheries' habitat conservation science and management efforts.

Challenge: Continue Enhancing Cybersecurity and Management of Information Technology Investments

NOAA Response:

<u>Continuing sustainable implementation of enterprise cybersecurity initiatives</u>

As part of Department of Commerce (DOC) enterprise initiatives, NOAA participates in Enterprise Cyber Security Monitoring and Operations (ECMO) and Enterprise Security Oversight Center (ESOC). NOAA has implemented ECMO on over 19,000 system components and expects to meet the department target of 95% of in scope components by September 30, 2014. NOAA has signed a Memorandum of Understanding to host the DOC ESOC at our Security Operations Center in Fairmont, WV.

Trusted Internet Connection (TIC): NOAA continues to make progress implementing the trusted internet connection requirements. NOAA has consolidated over 70% of our external connections to the Trusted Internet Connection Access Point (TICAP) locations and expects to be 95% complete in FY14. The remaining 5% will be complete in FY15. Security services continue to be enhanced at the approved TICAP locations and are on schedule for completion in Q2FY15. Additionally, NOAA is building redundancy into individual TICAPs and the overall TIC architecture to ensure availability and capacity meet our mission needs.

Preserving the CIO oversight responsibility of satellite-related IT investments

NOAA leadership, together with the DOC Deputy Secretary, conducts a Quarterly Satellite Review of NOAA's major satellite programs including GOES-R and JPSS. In addition, the NOAA Under Secretary of Commerce for Oceans and Atmosphere (the NOAA Administrator) through the PMC conducts monthly reviews of all major satellite programs including JASON 2, JASON 3, GOES-R Flight/Ground Segment, JPSS Flight/Ground Segment, Polar Follow-on, COSMIC, and DISCOVR. The NOAA CIO is an active participant in these reviews, which explicitly cover IT issues.

Continuing vigilant oversight of IT investments

NOAA has a strong oversight program on IT investments through reviews conducted by the NOAA Program Management Council (PMC) and the NOAA CIO Council. The PMC and CIO Council hold monthly and quarterly reviews on over a dozen major IT investments and projects including ASOS, CLASS, IDP (including NOAA Weather Radio and NOAA Weather Wire, and the Telecommunications Gateway), and AWIPS. The NOAA CIO is a member of the PMC.

Maintaining momentum in consolidating commodity IT to cut costs

NOAA employs an enterprise services operating model. Notable examples of NOAA's current enterprise IT services include: Mobile Device Management (MDM), Security Operations Center (SOC), Unified Messaging Service (UMS), High Performance Computing, and National Service Desk. All enterprise information services are designated, delivered, and managed using cost-effective, centralized, standard practices.

Section 8.2: Cross-Agency Collaborations

The National Oceanic and Atmospheric Administration currently contribute to the following CAP Goals: Infrastructure Permitting Modernization, Lab-To-Market, and STEM Education.

Section 8.3: Evidence Building

See Department of Commerce Strategic Plan Appendix C Evidence and Evaluation

Section 8.4: Hyperlinks

Department of Commerce Strategic Plan
http://www.commerce.gov/blog/2014/03/10/department-commerce-releases-fy-2014-2018-strategic-plan

Section 8.5: Data Validation and Verification

The FY 2014 Summary of Performance and Finance Information includes in the Secretary's Statement, an assessment of the reliability and completeness of the Department's performance data.

Section 8.6: Lower-Priority Program Activities

President's Budget identifies the lower-priority program activities, where applicable, as required under the GPRA Modernization Act, 31 U.S.C. 1115(b)(10). The public can access the volume at: http://www.whitehouse.gov/omb/budget.

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