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U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

New Priorities for the 21st Century

NOAA's Strategic Plan for FY 2003 - FY 2008 and Beyond



Foreword: NOAA's Fourth Decade

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

This Strategic Plan is NOAA's response to all of these challenges. It forges a path for meeting the needs of America today and addressing the critical issues of tomorrow. It responds to the President's Management Agenda for a citizen-centered, performance-driven organization that serves every American every day. And it provides a blueprint for ensuring value and corporate accountability in NOAA's daily operations, and for improving NOAA's services – and the benefits from our services – to all Americans.

This Plan resulted from consultations with more than a thousand stakeholders and NOAA employees across the Nation to identify present and future environmental, economic, and public safety issues. Based on their input, the Plan sets an agenda for wise investment of finite resources through four mission goals for achieving NOAA's mission:

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

This Plan's elevation of ecosystem management and climate science to high-priority goals is especially noteworthy to meet the challenges of the 21st century. In recent years, extreme drought and flooding conditions in large regions of the Nation combine to make improved water resources prediction an urgent requirement for NOAA's future weather and climate mission. Human health linkages with weather, climate, and ecosystem goals are also priorities. Sound environmental policy is a solid foundation for economic growth. Emphasis on the Nation's needs for expanded commerce and economic development throughout the Plan directly relates to the Administration's focus on a healthy and growing economy.

In an effort to build specific core strengths, NOAA has selected six core capabilities that it recognizes as essential to support its mission goals. In 2002, NOAA's stakeholders and employees felt strongly that NOAA needed to make a priority for improving NOAA's core capabilities that support all of NOAA's mission goals. In response to this urging, NOAA is establishing the following six CROSS-CUTTING PRIORITIES FOR THE 21st CENTURY:

- Integrated Global Environmental Observation and Data Management System
- Environmental Literacy, Outreach, and Education
- Sound, Reliable State-of-the-Art Research
- International Cooperation and Collaboration
- Homeland Security
- Organizational Excellence: Leadership, Human Capital, Facilities, Information Technology and Administrative Products and Services

In working toward these goals, NOAA will stress two Corporate Practices: **Effective Strategic Partnerships** and **Integrated Information Services**. To achieve its desired results, NOAA must

collaborate with numerous partners. NOAA will continue to seek out, build, and support strategic partnerships with other Federal, state, local and tribal agencies, the private sector, academia and non-government organizations, to work together to meet our shared goals. Our constituents and employees also identified the need for NOAA's components to take a more unified and integrated approach to information services. NOAA has begun pilot programs in selected areas to test various methods of providing integrated information services. Over the next two years, NOAA will evaluate these tests, develop a detailed plan with public input and implement Integrated Information Services throughout the Nation.

Applying NOAA's core values as the anchor for the goals and cross-cutting priorities outlined in this Plan will be critical to the success of this planning effort. This Strategic Plan will guide all of NOAA's management decisions and will provide a consistent, coherent framework for Line Office and cross-organizational plans, initiatives, and performance measures for the next decade. Ultimately, our success will be measured in the quality of service and benefits we provide to our customers – the American public.

I am proud to present this blueprint for future service. I thank our valued customers and the women and men of NOAA for helping to shape this document and for providing valuable input and direction. I look forward to your comments and your participation in building on the high quality of NOAA science, the effectiveness of our partnerships, and our overall organizational excellence.

Conrad C. Lautenbacher, Jr.
Vice Admiral, U.S. Navy (Ret.)
Under Secretary for Oceans and Atmosphere
United States Department of Commerce

Contents

NOAA's Mission Goals	2
Organization of the Mission Goals	2
Mission Goal 1: Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management	2
Mission Goal 2. Understand climate variability and change to enhance society's ability to plan and respond	7
Mission Goal 3. Serve society's needs for weather and water information	8
Mission Goal 4. Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation	10
NOAA's Cross-Cutting Priorities:	12
Integrated global environmental observation and data management system	12
Environmental literacy, outreach and education	13
Sound, state-of-the-art research	13
International cooperation and collaboration	14
Homeland security	14
Organizational excellence: leadership, human capital, facilities, information technology and administrative products and services	15
Building a New NOAA Corporate Culture to Serve America Better	16
Appendix A - Government Performance and Results Act	
Appendix B - Organizational Abbreviations	

New Priorities for the 21st Century: One NOAA

In the 21st century every aspect of NOAA's mission faces new urgency given the intensifying national needs of the environment, the economy, and public safety. NOAA's role in facing these challenges is to assess and predict environmental changes, protect life and property, provide decision makers with reliable scientific information, manage the Nation's living marine and coastal resources, and foster global environmental stewardship. This Strategic Plan is NOAA's response to these challenges for the next five years and beyond, setting the framework to build NOAA's capacity to address new priorities and realize its Vision and Mission.

NOAA's VISION

To move NOAA into the 21st Century scientifically and operationally, in the same interrelated manner as the environment that we observe and forecast, while recognizing the link between the global economy and our planet's environment.

NOAA's MISSION

To understand and predict changes in the Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

NOAA's CORE VALUES

*People, Integrity, Excellence, Teamwork, and Ingenuity
Science, Service and Stewardship*

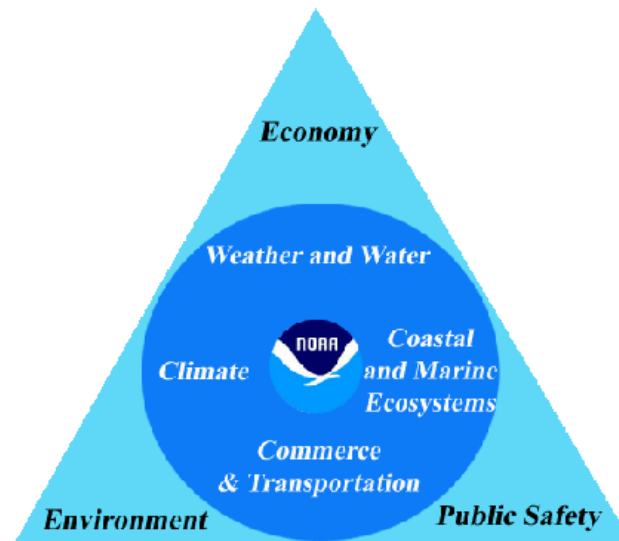
BENEFITS TO THE NATION

Consistent with its results-oriented approach to strategic planning, NOAA is committed to maximizing the benefits of its products and services to our Nation's:

•Environment

•Public Safety

•Economy



NOAA's Mission Goals

To achieve its mission, NOAA's focus through 2008 will be on four mission goals:

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

ORGANIZATION OF THE MISSION GOALS

In this Plan, each mission goal is first presented with a *background description* of its strategic context. Each goal is then followed by a short list of *high-level outcome measures* that are intended to either encompass a broad measure of NOAA's performance or be an indicator of NOAA's performance.

To provide consistency throughout this Strategic Plan, each of the mission goals is organized according to **five types of mission strategies and measures of success** that reflect NOAA's general, daily activities that are common across almost every NOAA office:

1. **Monitor and observe** the land, sea, atmosphere, and space and create a data collection network to track Earth's changing systems.
2. **Understand and describe** how natural systems work together through investigation and interpretation of information.
3. **Assess and predict** the changes of natural systems, and provide information about the future.
4. **Engage, advise, and inform** individuals, partners, communities, and industries to facilitate information flow, assure coordination and cooperation, and provide assistance in the use, evaluation, and application of information.
5. **Manage** coastal and ocean resources to optimize benefits to the environment, the economy, and public safety.

This Strategic Plan establishes, at a high level, the strategic goals for NOAA and the approaches we will take to establish accountability for results. The organizational elements that make up NOAA will conform their strategic plans to this Plan and will establish more detailed performance measures to guide NOAA activities and specific measurable targets to determine progress. All NOAA programs, and the entire NOAA budget, will be traceable to this Strategic Plan.

This Plan will guide all NOAA's management decisions and will provide a consistent framework for Line Office (LO) and cross-organizational plans, initiatives, and performance measures to be implemented. Through this plan, our employees and contractors will also better understand their role in meeting NOAA's strategic priorities and goals.

Mission Goal 1: PROTECT, RESTORE, AND MANAGE THE USE OF COASTAL AND OCEAN RESOURCES THROUGH ECOSYSTEM-BASED MANAGEMENT

Coastal areas are among the most developed in the Nation, with over half of our population residing within less than one-fifth of the land area in the contiguous United States. Coastal counties are growing three times faster than counties elsewhere, adding more than 3,600 people a day to their populations. Coastal and marine waters support over 28 million jobs, generate over \$54 billion in goods and services a year, and provide a tourism destination for 180 million Americans a year. The value added to the national economy by the commercial fishing industry is over \$28 billion annually, and about 18 million Americans engage in marine recreational fishing every year. Within this context, NOAA works with its partners to achieve a balance between the use and protection of these resources to ensure their sustainability, health,

and vitality for the benefit of this and future generations and their optimal contribution to the Nation's economy and society.

OUTCOME MEASURES

- Increased number of coastal and marine ecosystems maintained at a healthy and sustainable level.
- Increased social and economic value of the marine environment and resources (e.g., seafood, recreation, and tourism).
- Increased number of acres and stream-miles restored for coastal and ocean species.
- Increased number of protected species in a stable condition or an upward trend.
- Increased number of managed species that are at optimum levels.
- Improved ecological conditions in coastal and ocean protected areas.

STRATEGIC OBJECTIVES

NOAA has identified three strategic objectives to further delineate what it does under this mission goal:

- A. Protect and restore ocean, coastal, and Great Lakes resources;
- B. Recover protected species; and
- C. Rebuild and maintain sustainable fisheries.

NOAA recognizes that these three objectives are scientifically, socially and economically interdependent and is moving toward managing living marine and other ocean and coastal resources using a truly integrated ecosystem management approach. Until we are able to more fully adopt ecosystem approaches, we will continue to manage on a more narrowly focused species- and site-specific basis. However, we will be improving our science, management, and regulatory processes to implement a more comprehensive ecosystem approach that will allow us to make better management decisions for the Nation's ocean, coastal, and Great Lakes resources. In a first move toward this integrated approach, the strategies and measures under Objective A also apply to protected resources and fishery management that have been placed under Objectives B and C. Increasingly, we will turn to international cooperation to protect large marine ecosystems and areas beyond our national jurisdiction. (See the Cross-Cutting Priority for International Cooperation and Collaboration.)

In the short term, NOAA will apply this new focus by giving increased priority to: habitat protection and restoration for all species; interactions of target species management decisions with nontarget species and ecosystem effects; and partnerships with international organizations, foreign governments, Federal agencies, state and local governments, academia, and nongovernmental organizations in applying ecosystem approaches to coastal, ocean, and Great Lakes resource management.

In the longer term, NOAA will strive to manage multiple aspects of sustainable ecosystems, including fisheries resources, threatened and endangered species, marine mammals, biodiversity, important habitats that support those resources, and the impacts of ecosystem-based management decisions on the economy and communities. Ecosystem management will also require improved understanding of the pressures--both natural and human-induced--that change ecosystems.

Goal-wide Ecosystem Strategy

To accomplish this longer-term objective NOAA will adopt the following Goal-wide Ecosystem Strategy that will be implemented to support each of the three Objectives:

NOAA will invest in improved understanding of ecosystems, identification of regional ecosystems, development of ecosystem health indicators, and new methods of governance to establish the necessary knowledge, tools, and capabilities to fully implement ecosystem-based management of coastal, ocean, and Great Lakes resources.

- Increased number of regional ecosystems identified and monitored with agreed-to indicators of ecosystem health.
- Increased number of ecosystems where ecological functions and linkage to human activities and impacts are adequately understood for management purposes.
- Increased number of models linking climate/weather/atmosphere with ecosystem/hydrology made operational to assess and predict natural and human-induced changes in the ocean and coastal environment.
- Increased number of coastal, ocean, and Great Lakes areas (including coastal watersheds) with Federal, state, and local government or nongovernmental management plans using ecosystem best management practices and approaches.

STRATEGIES and MEASURES OF SUCCESS for OBJECTIVES A, B, and C

Objective A: Protect, Restore and Manage Use of Ocean, Coastal, and Great Lakes Resources

NOAA is responsible, in partnership with Federal agencies and state and local governments, for managing, the Nation's coastal zone and protected areas; planning for, mitigating and responding to hazardous events; restoring degraded habitats; protecting ocean, coastal and Great Lakes resources; ensuring wise and appropriate use of ocean, coastal and Great Lakes resources; and providing advice, technical tools, information, and training to coastal residents, communities, and other decision makers and users of oceans, coastal and Great Lakes areas.

Monitor and Observe: NOAA and its partners will monitor and observe aspects of ocean, coastal and Great Lakes areas and associated communities to provide basic information on habitats, resources, human activities, and uses that may impact coastal ecosystems.

- Increased area covered and number of ecological conditions monitored by state-of-the-art observation systems and platforms that provide necessary information for NOAA's stewardship responsibilities.

Understand and Describe: NOAA will characterize coastal, ocean, and Great Lakes resources and conduct research to understand and describe the linkages among the resource components and processes and human impacts on them, and will develop new tools and techniques to facilitate sound management decisions.

- Increased ocean, coastal and Great Lakes areas explored, mapped, characterized, and inventoried.
- Increased number of impacted human communities where sufficient data exist to analyze and understand the economic and social benefits, costs, and impacts of management decisions.
- Increased number of techniques and tools that can be used to restore and protect ocean, coastal, and Great Lakes resources.
- Increased number of marine resources potentially available for commercial use (e.g., pharmaceuticals, aquaculture species for human uses).

Assess and Predict: NOAA will develop and implement models and integrate data sets to assess current ecosystems and predict their future state and the causes for ecological changes.

- Increased number and accuracy of forecasts of significant ecological events and trends (e.g., harmful algal blooms, coral bleaching, and population shifts).
- Increased number and accuracy of models to understand and predict the interactions of species and their environment.

Engage, Advise, and Inform: NOAA will ensure that decision makers are well informed about safe and wise uses of ocean, coastal and Great Lakes resources, and about factors, especially hazards, that affect

environmental health and safety. NOAA will also endeavor to provide the state-of-the-art tools and techniques needed for effective resource management.

- Increased percentage of resource consultations that result in “no net negative impact”.
- Increased percentage of coastal communities and coastal inhabitants aware of, and acting appropriately to minimize, their impacts on ocean, coastal and Great Lakes resources.

Manage: NOAA will develop and implement appropriate plans, regulations, permits, and enforcement activities for the protection, restoration, and wise use of ocean, coastal, and Great Lakes resources.

- Increased percentage of coastal, ocean, and Great Lakes areas for which management, restoration, and response plans have been successfully developed and implemented in conjunction with NOAA’s international, Federal, state, local, and tribal partners.
- Increased number of invasive species under control.
- Increased number of acres and stream-miles of habitat restored for ocean, coastal, and Great Lakes resources.
- Increased ocean fisheries production through environmentally sound aquaculture technology.

Objective B: Recover Protected Species

NOAA is responsible for protecting, restoring and managing species and their habitats listed under the Endangered Species Act and Marine Mammal Protection Act as well as their habitats.

Monitor and Observe: NOAA will monitor and observe all aspects of protected resources to provide basic information on those resources, their habitats, and human activities that affect them.

- Increased number of protected species with adequate information to assess their condition.
- Increased number of protected species with adequate information to identify human or other interactions that affect their condition.

Understand and Describe: NOAA will conduct research to understand and describe the ecological and biological population aspects of protected species as a basis for sound management decisions.

- Increased number of protected species where the biological and ecological factors related to population abundance are adequately understood for management purposes.
- Increased number of protected species whose habitat or other environmental conditions are adequately understood for management purposes.
- Increased number and adequacy of techniques and tools that can be used to restore and conserve protected species.

Assess and Predict: NOAA will develop and implement models and integrated data sets to assess current protected species populations and predict their future abundance.

- Increased number of protected species with adequate population assessments, including estimates of human-caused mortality and injury and, in particular, injury from interactions with commercial fishing.

Engage, Advise, and Inform: NOAA will ensure that decision makers and the public are well informed about the condition of, and adverse effects of human interactions with, protected species. NOAA will also endeavor to provide the state-of-the-art tools and techniques needed for effective resource management.

- Increased early coordination with applicants on protected species consultation issues, so that conservation measures can be incorporated into the activity, resulting in fewer adverse conclusions of Biological Opinions.

- Increased percentage of coastal inhabitants aware of, and acting appropriately to minimize, their impacts on protected resources.

Manage: NOAA will develop and implement appropriate plans, regulations, permits, and enforcement activities for the conservation and restoration of protected resources.

- Increased number of protected species for which management, restoration, and take-reduction plans have been successfully implemented.
- Increased number of acres and stream-miles of habitat that have been restored for protected species.
- Increased number of protected species being recovered or maintained at optimum population levels.
- Improved management of protected resources toward recovery and sustainability through updated recovery plans and technology development and transfer.

Objective C: Rebuild and Maintain Sustainable Fisheries

NOAA is responsible for managing and rebuilding fish species to population levels that will support economically viable and sustainable harvest opportunities.

Monitor and Observe: NOAA will monitor and observe all aspects of fish species to provide basic information on fish species, their habitats, and the human activities that affect them.

- Increased number of fish species with adequate information to assess their condition.

Understand and Describe: NOAA will conduct research to understand and describe the ecological and biological aspects of fish species and social and economic impacts as a basis for sound management decisions.

- Increased number of fish species where the biological and ecological factors related to population abundance are adequately understood for management purposes.
- Increased number of fish species whose habitat or other environmental conditions are adequately understood for management purposes.
- Increased number or adequacy of techniques (including stock enhancement) and tools that can be used to restore and conserve fish species.

Assess and Predict: NOAA will develop and implement models and integrated data sets to assess fish species populations and predict their future abundance.

- Increased number of fish species with adequate population assessments, including adequate estimates of fishing or other sources of mortality.
- Increased number of species whose essential fish habitat is adequately mapped and understood .
- Increased use of physical-biological models for forecasting stock abundance.

Engage, Advise, and Inform: NOAA will ensure that decision makers are well informed about the health of fish species and impacts of fishing or other activities on fish species. NOAA will also endeavor to provide the state-of-the-art tools and techniques needed for effective resource management.

- Increased percentage of essential fish habitat consultations that result in “no net negative impact”.
- Increased percentage of coastal inhabitants aware of ways to reduce adverse human impacts on fish and acting appropriately to conserve fish species.
- Increased number of NOAA technologies and techniques that have been transferred for appropriate resource use and managed species conservation to state and local managers, as well as to the public.

Manage: NOAA will develop and implement appropriate plans, regulations, permits, and enforcement activities for the conservation, rebuilding, and wise use of fish species.

- Increased number of overfished species with rebuilding plans that are in conformance with rebuilding schedules.
- Increased number of acres and stream-miles of essential fish habitat that have been restored .
- Increased number of fisheries where the harvest capacity is consistent with sustainable fish populations.

Mission Goal 2. UNDERSTAND CLIMATE VARIABILITY AND CHANGE TO ENHANCE SOCIETY'S ABILITY TO PLAN AND RESPOND

Society exists in a highly variable climate system, with conditions changing over the span of seasons, years, decades, and longer. Weather- and climate-sensitive industries, both directly and indirectly, account for about one-third of the Nation's gross domestic product, or \$3.0 trillion.

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

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

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

OUTCOME MEASURES

- Increased use and effectiveness of climate observations to improve long-range climate, weather, and water predictions.
- Increased use and effectiveness of climate information for decision makers and managers (e.g., for industry, natural resource and water managers, community planners, and public health professionals).
- Increased use of the knowledge of how climate variability and change affect commerce.

STRATEGIES and MEASURES of SUCCESS

Monitor and Observe: NOAA will invest in needed climate quality observations and encourage other national and international investments to provide a comprehensive observing system in support of climate assessments and forecasts.

- Increased number of long-term observations collected, archived, available, and accessible where random errors and time-dependent biases have been minimized and assessed.

Understand and Describe: NOAA will work with national and international partners to increase understanding of the dynamics and impacts of coupled atmosphere/ocean/land systems through research on climate variability and change.

- Increased number of new research findings and progress toward their implementation into NOAA operations.
- Decreased degree of uncertainty of climate system processes, including radiative forcing, in climate forecast products.

Assess and Predict: NOAA will improve its intraseasonal and interannual climate forecasts to enable regional and national managers to plan better for the impacts of climate variability and change and will provide improved regional, national, and international assessments and projections to support policy decisions with objective information.

- Improved skill of climate variability forecasts.
- Increased number, accuracy, and regional specificity of U.S. climate, water, and coastal resource products.
- Reduced uncertainty regarding long-term climate projections, as measured through improvements in climate change models and increases in the range of their application.
- Increased involvement of NOAA researchers and use of NOAA scientific results in national and international assessments.
- Reduced uncertainty in the estimation of the U.S. terrestrial carbon sink.
- Increased number of new indicators of climate impacts on marine ecosystems.

Engage, Advise, and Inform: NOAA will work with users of climate information to enable and increase the application of climate information for health and safety, environmental, economic, and community planning, especially for freshwater supply, water quality, and coastal impacts.

- Increased volume of NOAA climate data and information used by NOAA customers.
- Increased number of new instances where NOAA information is integrated into decision-support and management systems, including fishery management plans.
- Increased user satisfaction, determined through surveys.

Mission Goal 3. SERVE SOCIETY'S NEEDS FOR WEATHER AND WATER INFORMATION

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

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

NOAA is committed to excellent customer service. We depend on our partners in the private sector,

academia, and government to help disseminate critical environmental information. We will work even closer with our existing partners and will develop new partnerships to achieve greater public and industry satisfaction with our weather, air quality and water information. We will expand our services to support evolving national needs, including space weather, freshwater and coastal ecosystems, and air quality predictions throughout the Nation.

OUTCOME MEASURES

- Increased accuracy and amount of lead time (by category of storm type e.g., hurricanes).
- Increased satisfaction with and benefits from NOAA information and warning services, as determined by surveys and analysis of emergency managers, first responders, natural resource and water managers, public health professionals, industry, government and the public.

STRATEGIES AND MEASURES OF SUCCESS

Monitor and Observe: NOAA will use cost-effective observation systems that meet diverse and expanding societal needs for accuracy, parameters observed, and temporal and geographic coverage.

- Increased observations obtained and used from partners, both international and domestic.
- Increased observations archived, available, and accessible.
- Increased number of new multi-use observing systems deployed.
- Improved effectiveness of NOAA's observing systems.

Understand and Describe: NOAA will invest in new technologies, techniques, and weather and water forecast modeling.

- Increased number of modeling advances by government and academia demonstrated to improve the NOAA operational prediction suite.
- Shortened cycle times from research (government and academic) to operations (e.g., models, technology, and techniques) through the use of testbeds and other methods.
- Improved accuracy of weather and air quality prediction models.
- Increased number of new research findings and progress toward their implementation in NOAA operations.

Assess and Predict: NOAA will improve forecast and warning capabilities to reduce uncertainty and increase economic benefits.

- Increased use of observation data for verification of and assimilated into weather, ocean, water, and climate prediction models.
- Increased number of forecasters trained in the newest techniques.
- Increased volume of forecast and warning information formatted to clarify the uncertainty of an event (e.g., space weather, air quality, water and weather forecasts).
- Improved performance of NOAA's weather and water, air quality, and space weather prediction suite.

Engage, Advise, and Inform: NOAA will promote appropriate responses to hazardous weather- and water-related conditions, in order to enhance human preparedness. Traditional delivery methods, the Internet, and other e-commerce approaches will be used to deliver products that customers need for safety-related decisions, operating efficiencies, and better resource management. NOAA will also provide information to support effective air quality decision-making.

- Increased number of favorable scores on public surveys of citizen knowledge about appropriate actions under hazardous weather- and water-related conditions.
- Increased percentage of the public reporting timely receipt of warnings as measured by public surveys.

- Increased number of communities with plans in place to act on weather warnings and to reduce the impacts of coastal hazards.
- Increased community knowledge of, use of, and satisfaction with NOAA information that supports local air quality monitoring and forecast programs.
- Increased assistance to international partners to improve response capabilities to weather and water predictions.

Mission Goal 4. SUPPORT THE NATION'S COMMERCE WITH INFORMATION FOR SAFE, EFFICIENT, AND ENVIRONMENTALLY SOUND TRANSPORTATION

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

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

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

In short, working with partners to put NOAA information in the driver's seat, on the bridge, and in the cockpit will make transportation on land, sea, and air safer and more efficient.

OUTCOME MEASURES

- C Increased use and effectiveness of environmental information for planning for marine, air, and surface transportation systems.
- C Reduced number of and harm from navigation-related accidents due to grounding and allisions (hitting fixed objects).

- C Increased number of ports where the environmental consequences of port development and operations are minimized.
- C Increased number of ports with an improved vessel cargo carriage capacity due to use of NOAA's marine navigation information products and services.
- C Increased safety and productivity of transportation systems.

STRATEGIES and MEASURES of SUCCESS

Monitor and Observe: NOAA will expand its advanced technology monitoring and observation systems to provide accurate, up-to-date environmental data, such as weather and oceanographic observations, hydrographic surveys, and precise positioning coordinates.

- C Increased percentage of navigationally significant U.S. waters where hydrographic surveys provide accurate and up-to-date information on depth and obstructions.
- C Increased reliability, frequency, and use of marine, aviation, and surface transportation-related observations.
- C Increased number of new mapping and assessment tools made available through a nationwide vertical-datum transformation tool and topographic/bathymetrical mapping.
- C Increased percentage of counties with a demonstrated capacity to provide accurate positioning.

Understand and Describe: NOAA will develop and apply new technologies, techniques, and models.

- C Shortened cycle time from research (government and academia) to operations (e.g., new techniques, improved products).
- C Increased efficiencies and accuracy of the Global Positioning System through the application of innovative technologies.
- C Increased capabilities of data acquisition technologies, processing, and analysis.
- C Development of viable alternatives to ballast water exchange to prevent the introduction of exotic species to U.S. coastal waters.

Assess and Predict: NOAA will develop and implement sophisticated assessment and prediction capabilities to support decisions on aviation, marine, and surface navigation efficiencies, coastal resource management, and transportation system management, operations and planning.

- C Increased percentage of major U.S. ports where oceanographic "nowcast" (present conditions) and weather and marine forecast models are implemented.
- C Increased number of port communities where the risks of operations and development have been assessed for impacts on coastal resources, coastal erosion, and coastal flooding.
- C Increased accuracy and use of weather and marine forecasts to increase efficiency of all land, water and air transportation systems.

Engage, Advise, and Inform: NOAA will work at the national and regional levels and will use advanced delivery systems, such as the Internet and other e-commerce approaches, to provide customers with the products and services they need for safety-related decisions, operating efficiencies, better management of coastal resources, and improved transportation system management and planning.

- C Increased percentage of charts available in the state-of-the-art Electronic Navigational Chart format.
- C Increased number of ports with plans, procedures, policies, and best management practices that minimize the environmental consequences of port operations and development.
- C Increased number and timeliness of responses to spills and other hazards threatening coastal environments and communities.
- C Increased percentage of U.S. ports where oceanographic and weather data are delivered in real time.

- C Increased user satisfaction with NOAA information within the transportation and coastal management sectors.

NOAA's CROSS-CUTTING PRIORITIES

When NOAA met with stakeholders and employees to identify strategic directions for the next decade, both groups emphasized that NOAA needs to increase its priority on improving the core capabilities that support the Agency's four mission goals. As a result, NOAA has selected six essential areas of growth for the future. These cross-cutting priorities describe the programmatic and managerial underpinnings that facilitate NOAA's delivery of services and enable effective operations. In addition to supporting NOAA's mission goals, each priority maintains a budget identity and has its own performance measures.

INTEGRATED GLOBAL ENVIRONMENTAL OBSERVATION AND DATA MANAGEMENT SYSTEM

NOAA will work with its local, state, regional, national, and international partners to develop global-to-local environmental observations and data management for comprehensive, continuous monitoring of coupled ocean/atmosphere/land systems. This network will enhance NOAA's ability to protect lives and property, expand economic opportunities, understand climate variability, and promote healthy ecosystems. As part of building this capability, NOAA has begun to inventory its observing and data management capabilities, and has designed an architectural process for evaluating the efficiency of its data observation and management system and increasing the multiple use of observation platforms and availability of real time data.

STRATEGIES and MEASURES of SUCCESS

1. NOAA will develop an Integrated Global Environmental Observation and Data Management System based on user requirements and an integrated architecture.
 - C Milestone - By the end of FY 2003, NOAA will develop an agency-wide Strategic Plan responding to user needs and its multiple user requirements that integrates atmospheric, oceanic, terrestrial, coastal and freshwater observations and data management to enhance all NOAA's mission goals.
 - C Percent of user observation and data management requirements met by system.
 - C Decreased uncertainty in observational measures and elimination of observation gaps, redundancies, and losses to achieve better coverage, timeliness, reliability, and maintainability of observations for users.
 - C Increased number and types of users of the system to meet growing user requirements.
2. NOAA will promote national and international cooperation in developing this system.
 - C Increased use of other nations' observation platforms, resources, and assets to meet user observation and data management requirements.
 - C Increased number of partnerships that promote international cooperation in global observations and data management programs.
3. NOAA will promote regional and local cooperation in developing this system.
 - C Increased use of other regional monitoring and observation platforms, resources, and assets to meet user observation and data management requirements.
 - C Increased number of partnerships that promote regional and local cooperation in global and coastal observations and data management programs.

ENVIRONMENTAL LITERACY, OUTREACH, AND EDUCATION

NOAA will apply its broad spectrum of environmental and social science expertise to establish an environmental literacy program for educating present and future generations about the changing Earth and its processes. NOAA hopes to inspire our Nation's youth to pursue scientific careers, thereby advancing the future talent of NOAA and its mission partners. This program will improve the public's understanding and response to natural hazards, will assist state and local natural resource managers, and will ensure that decision makers have access to the information they need to appropriately reduce significant human impact on the environment and to respond to storm warning and environmental change. Due to the high priority of enhancing NOAA's capabilities for Environmental Literacy, Outreach and Education, NOAA will produce a strategic plan on the subject during FY 03.

STRATEGIES and MEASURES of SUCCESS

1. NOAA will improve community and public awareness of its mission goals and accomplishments, as well as basic knowledge of the environment and human interactions with it.

C Increased number of favorable public survey scores of NOAA's role and achievements.

2. NOAA will create an agency-wide mechanism for distributing and using its educational outreach materials and services, and for measuring the effectiveness of its outreach efforts.

C Increased number of favorable survey scores of NOAA's performance in delivering accurate, prompt, and comprehensible information.

3. NOAA will actively encourage and promote careers in the environmental sciences.

C Increased number and diversity of college students graduating each year in fields related to fisheries, coastal, ocean, climate, atmospheric, and social sciences.

C Increased number of M.S.- and Ph.D.-level environmental scientists receiving degrees from minority-serving institutions.

C Increased number of NOAA staff serving as judges for, and NOAA awards presented at, American primary and secondary school science fairs.

SOUND, STATE-OF-THE-ART RESEARCH

NOAA will support high-quality research underpinning its environmental assessments, prediction, and ecosystem management missions. The Agency will develop and implement the new products, services, and approaches to ecosystem management needed by a Nation facing urgent environmental, economic, and public safety challenges.

STRATEGIES and MEASURES of SUCCESS

1. NOAA will increase its investments in short- and long-term research and in development of advanced technology to understand, describe, and predict changes in the natural environment.

C Recognized high standards by researchers and decision makers for utility, objectivity, and integrity.

C Increased number of recognized new discoveries, findings, or applications.

C Increased accuracy in predictions and assessments.

2. NOAA will accelerate the transfer of knowledge and technology into operational use and ecosystem management.

C Increased interactions among NOAA researchers, operations, and resource managers to identify operational and policy needs.

- C Increased use of models and assessments among scientists, economists, social scientists, operations, and ecosystem managers inside and outside NOAA.
- C Increased transfer of NOAA models, forecasts, products, and services from research into operations and ecosystem management.

3. NOAA will strengthen external partnerships and increase interactions by ensuring that 50% of new research funds are spent within the external community (e.g., university, private sector) via competitive, peer-reviewed proposals.

- C Increased innovation and diversity of talent in NOAA related research and development.
- C Increased number of research students trained on NOAA related research.

INTERNATIONAL COOPERATION AND COLLABORATION

A rapidly shifting political, cultural, and economic world requires Federal agencies involved in world affairs to cultivate fresh approaches and new services to maintain U.S. leadership in these fields. NOAA will support and promote national policies and interests in ecosystem management, climate change, Earth observation, and weather forecasting and will seek to maximize the mutual benefits of international exchange with its global partners. World-wide benefits of NOAA's El Niño forecasts are at least \$450 million annually. Better ship routing from U.S. satellites are worth nearly \$100 million a year, \$20 million of which is realized by U.S. consumers. Such international collaboration in scientific understanding will significantly benefit the American public economically and socially.

STRATEGIES and MEASURES of SUCCESS

1. NOAA will leverage United Nations Specialized Agency agreements, as well as bilateral relationships with individual countries, to maximize the development and use of research, observations, environmental science services, and environmental management for the mutual benefit of all parties.

- C Increased number of NOAA technical assistance initiatives and capacity-building transfers implemented.

2. NOAA will promote international consensus and cooperation in support of its mission and U.S. foreign policy through multilateral and bilateral conferences and relationships.

- C Increased number of organizational objectives achieved through multilateral conferences or bilateral relationships.

HOMELAND SECURITY

NOAA's core missions of environmental prediction and management are manifested in more than eighty capabilities that support America's efforts to prepare for and, if necessary, respond to terrorist attacks. Best known are NOAA's hazardous materials spill response, atmospheric and waterborne dispersion forecasting, vessel monitoring systems, and support for communities and first responders, including training, decision-making tools, rapid on-site weather forecasts to support emergency operations, and civil emergency alert relay through NOAA Weather Radio. NOAA is also ready to quickly provide its other assets—ships, aircraft, global observation systems, and professional law enforcement officers—to serve the Nation when the need arises. The commercial and academic sectors are critical partners in these efforts—developing and applying new technologies to get the warning message out quickly, deploying important observing systems available in time of need, and advancing science and technology applicable to our common security.

STRATEGIES and MEASURES of SUCCESS

1. Through its core capabilities, strategic investments, and partnerships, NOAA will expand its support for homeland security, coordinating delivery of its products, services, and capabilities to Federal, state, and local emergency managers and responders, and strengthening its own infrastructure to protect agency personnel, facilities, and information services.

- C Increased use of NOAA Weather Radios.
- C Increased NOAA Weather Radio broadcast coverage.
- C Increased number of ships with vessel monitoring systems.
- C Improved forecast capabilities for atmospheric and waterborne dispersion.
- C Increased number of communities with improved capacity to respond to a terrorist-related incident using NOAA information and products.
- C Enhanced responsiveness to Federal, state, and local requests for support after the release of hazardous materials and during other emergencies.
- C Increased number of jurisdictions with the capability to access civil emergency information through NOAA/NWS dissemination systems.
- C Improved certainty of continuance of operations for critical NOAA services in the event of national crises.

ORGANIZATIONAL EXCELLENCE: Leadership, Human Capital, Facilities, Information Technology and Administrative Products and Services

This Strategic Plan provides a framework for raising the bar of performance for NOAA. Improvements in these areas will increase the satisfaction of the customers of NOAA's administrative processes, both inside and outside the Agency; increase employee satisfaction; and improve organizational performance and productivity. They will also address the reforms necessary to comply with the President's Management Agenda.

STRATEGIES and MEASURES of SUCCESS

1. Leadership - NOAA will improve the policy, programmatic and managerial foundations to build a "Corporate" NOAA that allow for the effective delivery of all programs and services.

- Increased ability of NOAA Headquarters to respond in a timely and effective manner to constituents, the Department of Commerce, the Administration and the United States Congress.
- Increased program planning and integration across NOAA.

2. Human Capital - NOAA will expand workforce training, incentives, succession planning, and other administrative tools to recruit and retain a skilled workforce.

- Milestone - Completed Human Resources Strategic Plan by the end of FY 2003.

3. Facilities - NOAA will improve processes for requirements development, construction processes, consolidation of services and facilities and increase funding for maintenance.

- Milestone - Completed Facilities Management Strategic Plan by the end of FY 2003.
- C Increased number of facilities with improved collocation of NOAA services and/or strategic partners.

4. Information Technology - NOAA will maintain and improve its technology infrastructure in order to enhance its scientific productivity through seamless sets of observational and forecast products, advanced high-bandwidth networks, super-computing capabilities, and support for increasingly flexible sources for the delivery of information.

- Implemented on-line NOAA training resources.
- Established security accreditation for mission-critical systems.

- Elimination of all single points of failures for critical infrastructure.
- Migration to NOAA IT Enterprise Architecture with an initial focus on NOAA's Network.
- Implement cited 'best practice' life-cycle costing models from industry and other Federal agencies.
- Increased number and quality of analyses of economic benefits and costs of major investments and forecast systems using techniques from economics, decision analysis, risk management, and social sciences.

5. Administrative Programs and Services - NOAA will improve the efficiency, accountability and transparency of its administrative programs and services including financial performance, human resources, information technology and electronic government, grants management, competitive sourcing, and budget and performance integration through process optimization and assessing customer satisfaction.

- Increased use of information technology to improve internal and external services.
- Improved customer satisfaction with administrative services (e.g., management of human resources, grants, procurement, and financial operations) as determined through customer surveys.
- Improved performance and accountability in management of administrative services, including financial and human resources, electronic government, competitive outsourcing, grants management, and budget and performance integration.

Building a New NOAA Corporate Culture to Serve America Better

Considerable rigor and commitment to customer service have been devoted to developing this Strategic Plan. The next step--aligning every NOAA project and program to this entrepreneurial framework--will require the dedication and discipline of everyone in the NOAA family. During FY 2003, all NOAA line and staff units will be developing robust and highly structured strategic and operating plans with elements directly linked to the final NOAA Strategic Plan.

In this new corporate NOAA, strategic planning will be a coordinated, ongoing process involving a continuous dialogue with stakeholders and employees. Though innovative thought and constructive criticism will be promoted, the Agency's planning goal will be a true consensus reflecting the uniting of diverse elements committed to a common cause. Periodic reviews and surveys, monitoring of performance measures, and the free flow of ideas will be used to generate updates of and revisions to this Plan.

NOAA expresses its sincere thanks to our constituents and employees who gave their time and energy to the stakeholder dialogue sessions, who developed detailed suggestions, and who reviewed draft materials throughout the planning process. NOAA looks forward to your continued input into future updates of our Strategic Plan.

Appendix A - Government Performance Results Act

NOAA's 1997 Strategic Plan conformed with the Government Performance Results Act (GPRA) with the inclusion of seven primary strategic goals and performance measures for each. The performance measures listed below are those for which NOAA reported performance under GPRA. They are listed here because the performance will continue to be tracked through FY 04 to complete those budget cycles. As part of the ongoing strategic plan process, it will be determined whether these measures will be continued or replaced by new measures.

These performance measures are as reported in the Department of Commerce 2002 Annual Program Performance Report.

Mission Goal 1. Protect, Restore and Use Coastal and Ocean Resources through Ecosystem Management Approaches

Objective A:

Manage:

- Reduced introductions and impacts of invasive species (total of six regions within the U.S.)
- Increased number of acres of coastal habitat benefitted (cumulative)

Objective B:

Manage:

- Reduced by 10 (from a FY2000 baseline of 27) by FY2007, the number of threatened species at risk of extinction.
- Reduced by 11 (from a FY2000 baseline of 29) by FY2007, the number of endangered species at risk of extinction.
- Increased number of commercial fisheries that have insignificant marine mammal mortality.

Objective C:

Assess and Predict:

- Reduced number of major stocks with an "unknown" stock status to no more than 98 by 2007.

Manage:

- Reduced number of overfished major stocks of fish from 56 to 45 by 2007.
- Increased percentage of plans to rebuild overfished major stocks to sustainable levels

Mission Goal 2. Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond

Monitor and Observe:

- New climate observations introduced.
- Results of 90% of the research activities cited in the 2001 IPCC Third Assessment of Climate Change.

Understand and Describe:

- Number of new monitoring or forecast products that become operational / year.

Assess and Predict:

- Determine the accuracy of the correlation between forecasts of the Southern Oscillation Index (SOI) and El Niño/La Niña events.
- U.S. temperature – skill score.
- Determine actual long term changes in temperature and precipitation over the U.S.
- Assess and model carbon sources and sinks over U.S.
- Assess and model carbon sources and sinks globally.

Mission Goal 3. Serve Society's Needs for Weather and Water Information

Outcome Measures:

- Lead time (minutes), accuracy (%), and false alarm rate (%) for severe weather warnings for tornadoes.
- Lead time (minutes) and accuracy (%), for severe weather warnings for flash floods.
- Accuracy of Hurricane Track Forecasts (48 hour).
- Accuracy (%) of 3-day forecast of precipitation.
- Lead time (hours) and accuracy (%), for winter storm warnings.

Engage, Advise and Inform:

- Percentage of U.S. shoreline and inland areas that have improved ability to reduce coastal hazard impacts.

Mission Goal 4. Support the Nation's Commerce with Information for Safe and Efficient Transportation

Monitor and Observe:

- Reduced hydrographic survey backlog (square nautical miles) for critical navigation areas (cumulative percentage).
- Percentage of National Spatial Reference System (NSRS) completed (cumulative).

Assess and Predict:

- Accuracy (%), and false alarm rate (FAR) (%) of forecasts of ceiling and visibility (aviation forecasts).
- Accuracy (%) of forecast for winds and waves (marine forecasts).

Appendix B - Organizational Abbreviations

NOAA	National Oceanic and Atmospheric Administration
ESD	NOAA Office of Education and Sustainable Development
NESDIS	NOAA's National Environmental Satellite, Data and Information Service
NFA	NOAA Finance and Administration
NMAO	NOAA Marine and Aviation Operations
NMFS	NOAA's National Marine Fisheries Service
NOS	NOAA's National Ocean Service
NWS	NOAA's National Weather Service
OAR	NOAA's Office of Oceanic and Atmospheric Research
OCIO	NOAA Office of the Chief Information Officer
OIA	NOAA Office of International Affairs
OPA	NOAA Office of Public Affairs
PPI	NOAA Office of Program Planning and Integration