BUILDING A CLIMATE READY NATION

NOAA FY22-26 **STRATEGIC PLAN**

MESSAGE FROM THE NOAA ADMINISTRATOR

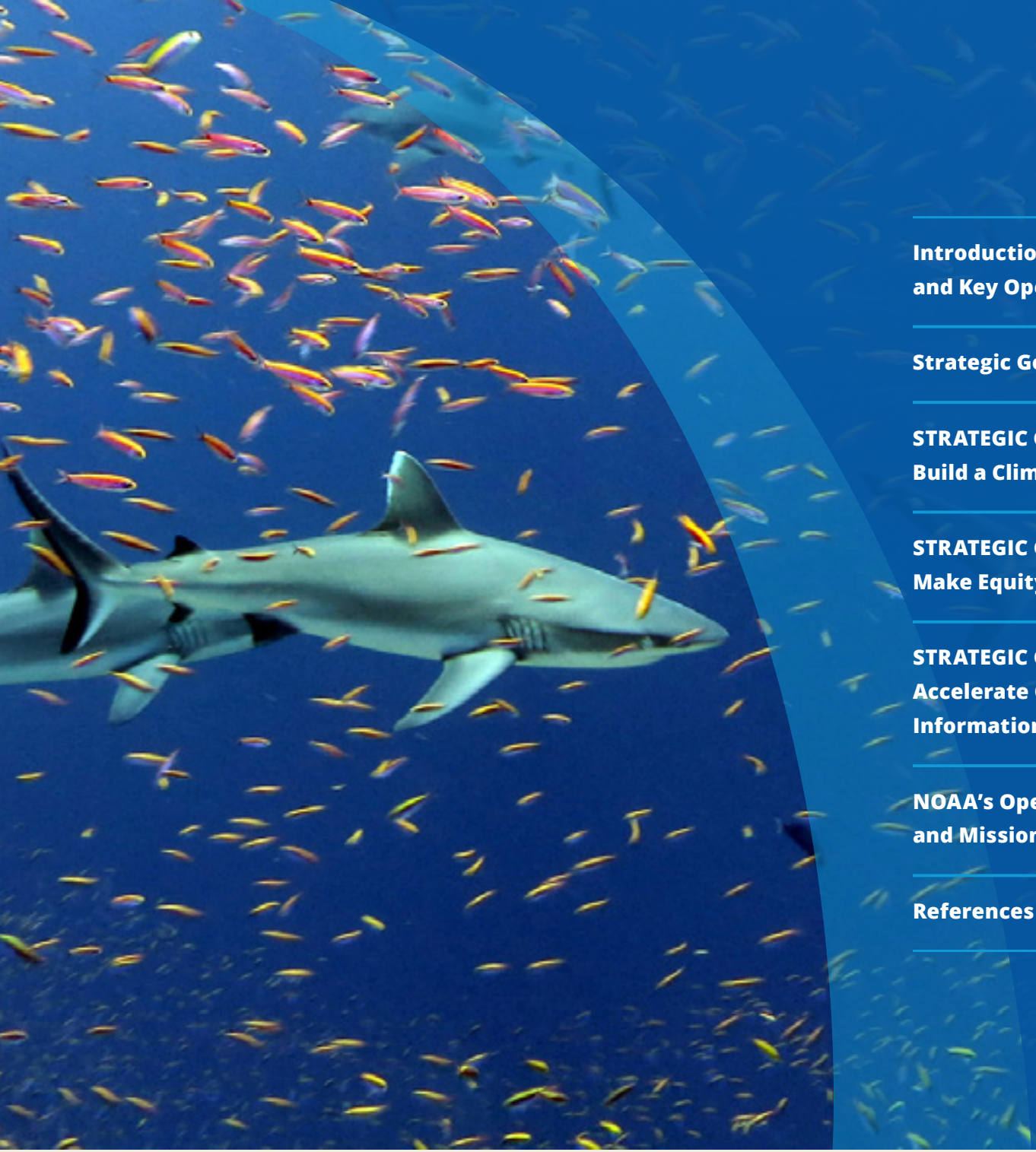
Each day every American is touched by some aspect of NOAA's mission. The breadth and depth of our work is awe inspiring, and it is my privilege to serve as NOAA Administrator. In my third tour of duty at NOAA, I am honored to lead the agency in pursuing three overarching priorities:

1. Building a Climate Ready Nation by establishing NOAA as the primary federal authoritative provider of climate information and services in the whole-of-government response to tackling the climate crisis
2. Integrating equity into our core operations
3. Promoting economic development while maintaining environmental stewardship with a focus on advancing the New Blue Economy

Underpinning all of the agency's achievements and day-to-day work is a commitment to scientific integrity by promoting a continuing culture of excellence and decision-making based on sound, transparent and reliable scientific activities. I am also committed to broadening the dialogue with existing and new partners — including federal, state, local, tribal, commercial, academic, international and philanthropic — to develop more effective and sustained approaches to meeting the growing demand for NOAA data, services and products from virtually every industry sector and governmental agency.

Finally, to maintain and grow our status as a preeminent science agency and global leader, NOAA must attract and retain a highly talented, innovative and diverse workforce dedicated to public service and the highest level of excellence and teamwork in achieving our mission. As an integral part of the U.S. Department of Commerce, I'm pleased that NOAA's mission is woven throughout its strategic plan, highlighting the central role NOAA plays in promoting a sustainable, inclusive and growing economy. I trust you will find in reading this plan that NOAA provides tremendous value for the public in moving the needle to solve difficult problems that provide significant societal, public safety and economic benefits that touch the lives of all Americans.

Richard W. Spinrad, Ph.D.
Under Secretary of Commerce for Oceans and Atmosphere & NOAA Administrator



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Front cover: A placid view in Tutka Bay, Alaska

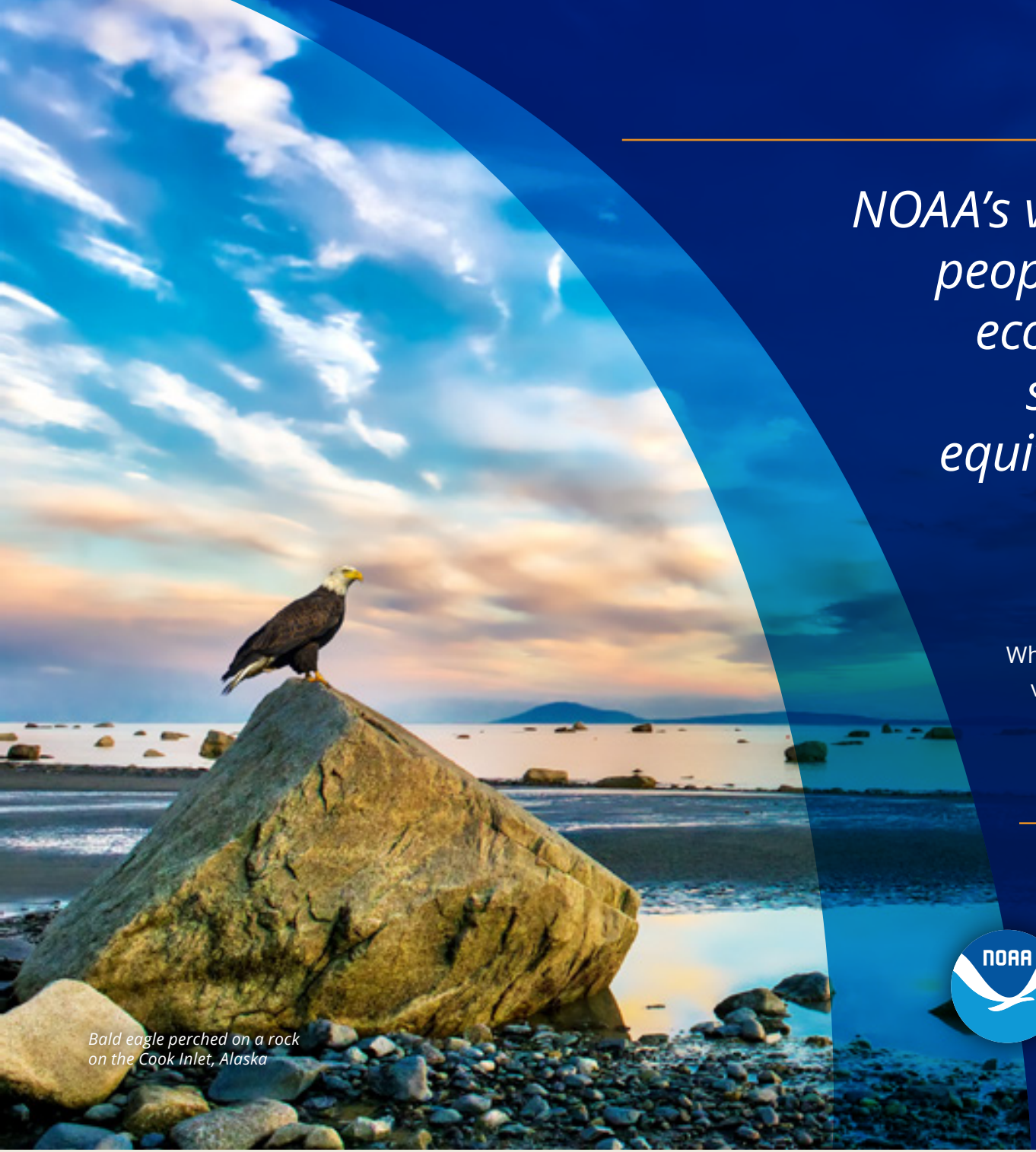
This page: Grey reef sharks and colorful schools of anthias in the waters of Jarvis Island, Pacific Remote Island Areas Marine National Monument

NOAA'S MISSION, VISION & OPERATING PRINCIPLES

Beautiful space view of the Earth with cloud formation

From the depths of the ocean to the surface of the sun,

NOAA is observing, measuring, monitoring, collecting and analyzing environmental data. NOAA translates those publicly available data into Earth system models and information as well as tools, predictions and projections for public use. The term "Earth system" refers to all of the Earth's interacting physical, chemical and biological processes and is inclusive of land, ocean and atmosphere. NOAA's trusted data are the basis for the daily weather and air-quality forecasts accessed on smartphones with a press of a button, they feed into models that predict the movement of wildfire smoke in real-time and they identify impacts of climate change on fisheries and living marine resources to improve management.



Bald eagle perched on a rock on the Cook Inlet, Alaska

NOAA's vision is one in which people, the economy and ecosystems are thriving, supported by NOAA's equitable and actionable weather, water and climate services.

While its dynamic and important mission and vision are vital for the future, the operating principles underlying that mission are foundational to NOAA's success.

Science. Service. Stewardship.

MISSION

NOAA's mission of science, service and stewardship are the three pillars supporting the agency's leadership in understanding and predicting changes in climate, weather, oceans and coasts — and getting actionable environmental information in the hands of decision makers.

SCIENCE

As the first pillar, science provides the critical foundation and future promise of the service and stewardship elements of NOAA's mission to better understand and predict changes in climate, weather, ocean and coasts. It is essential therefore that NOAA's data and information adhere to the principles of scientific integrity in order to maintain its trusted status whether in issuing lifesaving weather forecasts and warnings or managing marine fisheries. NOAA will promote a continued robust culture of scientific excellence and integrity — and ensure that management and policy decisions are based on sound, transparent and reliable science. Recognizing that science is not only done by or in service of a select few, NOAA's commitment to science will mirror its commitment to an equitable, diverse and inclusive workforce.

SERVICE

The second pillar of the agency's mission is service, and NOAA is expanding upon its authoritative ocean, coastal, climate and weather products and services to meet a diverse range of community, business and federal partner needs. NOAA plays a unique role in not only collecting data and conducting research, but also, by mandate, making its leading-edge research operational and accessible. This ensures the public and federal, state, tribal and private-sector partners have actionable environmental information to make decisions in the wake of a changing climate. Building toward a Climate Ready Nation will mean that partners trust they can turn to NOAA to communicate their needs and have them translated into more reliable, accurate, accessible, relevant and easy-to-use climate information for planning, adaptation and resilience decisions and actions.

STEWARDSHIP

The third pillar of our mission is stewardship. Stewardship means that NOAA conserves lands, waters and natural resources to protect people and the environment now and for generations to come. NOAA takes seriously its responsibility to promote economic development without sacrificing environmental stewardship. Through sound stewardship, NOAA will create jobs and opportunities for sustainable economic growth and innovation. NOAA will advance the knowledge-based ocean economy, looking to the ocean for data, information and knowledge that can be applied to innovative and sustainable business development, products and services that support new and established ocean-based sectors. This New Blue Economy offers opportunities for sustainable, climate-smart innovation and economic growth based on sound science and environmental stewardship.

KEY OPERATING PRINCIPLES

As NOAA implements its vision and executes its mission, the agency is guided by several operating principles. These guideposts are designed to help ensure it makes well-informed decisions that always keep its partners, stakeholders and end users top of mind.

The earth is a holistic system. NOAA's approach to problem solving should be equally holistic.

Policy, science and operations are equal partners, especially as NOAA balances its mission of Science, Service and Stewardship.

Clear and well validated requirements should drive the agency's priorities, which must include input from its partners, stakeholders and customers.

Equity is central to how the agency develops and delivers products and services, and how it builds a workforce.

Sustained successful partnerships are crucial and NOAA should continually identify and develop new ones.

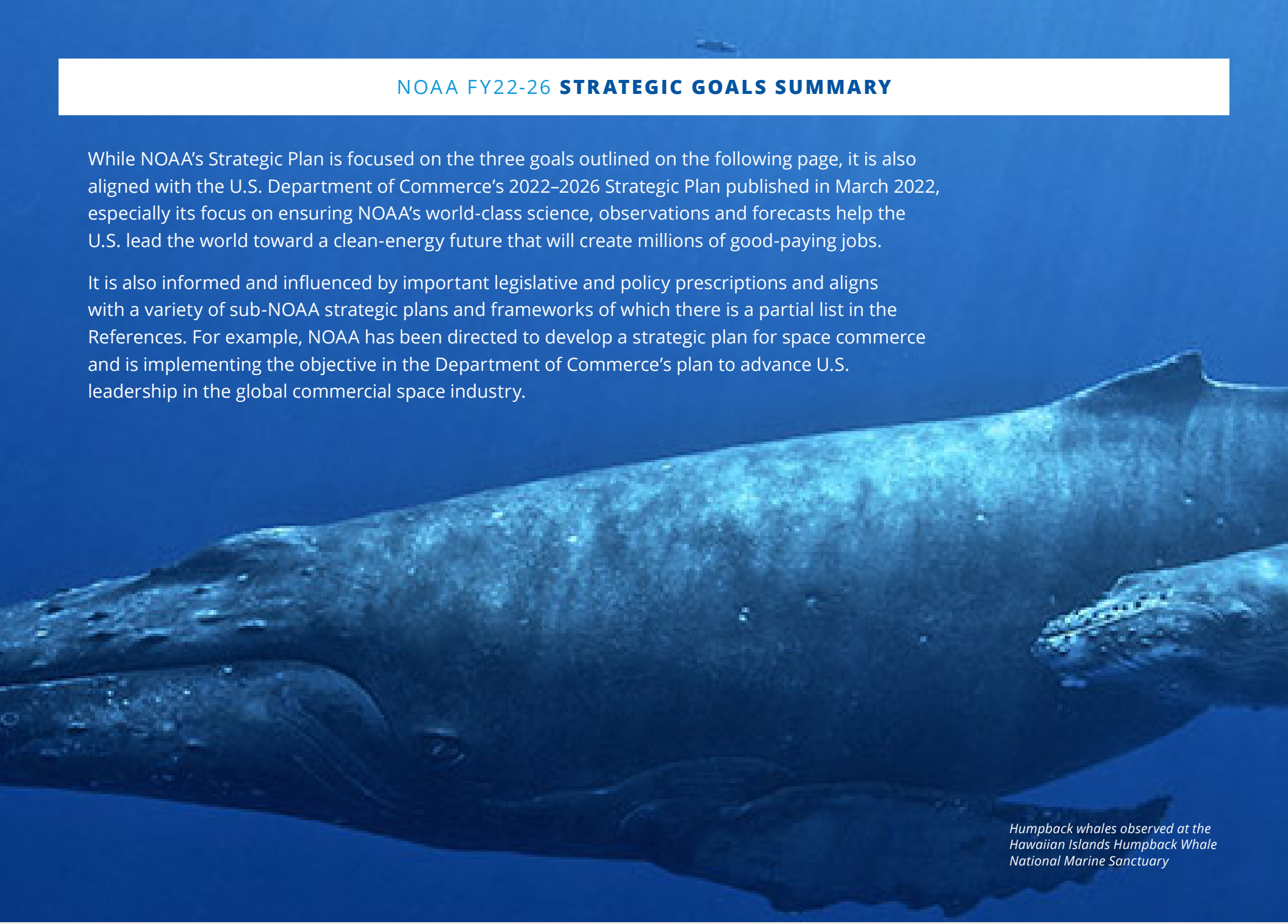
Honest, objective, highly quantitative assessments are critically important to improvement.

NOAA encourages a balance of tolerance for risk in what it undertakes, when framed around potential improvement.

NOAA FY22-26 **STRATEGIC GOALS SUMMARY**

While NOAA's Strategic Plan is focused on the three goals outlined on the following page, it is also aligned with the U.S. Department of Commerce's 2022–2026 Strategic Plan published in March 2022, especially its focus on ensuring NOAA's world-class science, observations and forecasts help the U.S. lead the world toward a clean-energy future that will create millions of good-paying jobs.

It is also informed and influenced by important legislative and policy prescriptions and aligns with a variety of sub-NOAA strategic plans and frameworks of which there is a partial list in the References. For example, NOAA has been directed to develop a strategic plan for space commerce and is implementing the objective in the Department of Commerce's plan to advance U.S. leadership in the global commercial space industry.



Humpback whales observed at the Hawaiian Islands Humpback Whale National Marine Sanctuary

01

BUILD A CLIMATE READY NATION

Through upgraded climate information, improved weather forecasts and enhanced infrastructure, NOAA will build a Climate Ready Nation, resilient and prepared for future climate change. NOAA will address mitigation efforts and ensure safety and preparedness for all Americans.

02

MAKE EQUITY CENTRAL TO NOAA'S MISSION

NOAA will strive to ensure the needs of America's underserved and vulnerable populations are met through delivery of services, education and training to prepare all communities for increasing extreme weather and climate hazards. Not only will NOAA focus on partnerships that will increase its reach to underserved and vulnerable communities, it will also implement practices within the agency to ensure equal opportunities and treatment of employees.

03

ACCELERATE GROWTH IN AN INFORMATION-BASED BLUE ECONOMY

Utilizing its deep understanding of ocean and coastal environments, NOAA will provide data, information and services to catalyze American competitiveness, accelerate growth of sustainable ocean industries and facilitate the technology advancements for coastal and marine solutions to climate challenges. To develop a robust blue economy, NOAA will continue to support a thriving ocean enterprise that adds sustainable economic opportunities while providing valuable climate, weather and ocean services and solutions.

01 BUILD A CLIMATE READY NATION

STRATEGIC OBJECTIVE 1.1: Enhance Service Delivery to Partners

1.1.1: Improve Continuous Engagement with Partners

1.1.2: Embed Climate Considerations across NOAA

1.1.3: Provide Science-Based Use-Inspired Decision Support Tools

STRATEGIC OBJECTIVE 1.2: Improve Environmental Predictions and Projections

1.2.1: Improve Weather, Water and Climate Predictions and Projections

1.2.2: Build Out Subseasonal to Annual Integrated Water Capabilities

1.2.3: Strengthen Coastal Integrated Water Capabilities

1.2.4: Enhance Monitoring and Modeling for Mitigation and Adaptation Strategies

1.2.5: Build Out an Integrated Climate and Ocean Modeling System

1.2.6: Enhance Ecological Forecasting of NOAA Trust Resources

STRATEGIC OBJECTIVE 1.3: Advance Integrated Breakthrough Climate Research

1.3.1: Mature World-Class Next-Generation Earth System Models

1.3.2: Strengthen Capacity for Social Science Research

1.3.3: Advance Cutting-Edge Integrated Research to Operations

STRATEGIC OBJECTIVE 1.4: Bolster Authoritative Data and Information Stewardship

1.4.1: Improve Data Stewardship

1.4.2: Optimize Platform-Agnostic Data and Information

1.4.3: Improve Enterprise-Level Data Management

STRATEGIC OBJECTIVE 1.5: Enhance Comprehensive Observations and Monitoring Systems

1.5.1: Improve Local/In-Situ Distributed Observations

1.5.2: Innovate Space-based Observations

1.5.3: Expand Commercial Partnerships and New Technology

1.5.4: Improve Common Source Data Integration and Common Ground Services

02 MAKE EQUITY CENTRAL TO NOAA'S MISSION

STRATEGIC OBJECTIVE 2.1: Build a Model Workplace

2.1.1: Advance EEO to Strengthen Accountability

2.1.2: Deepen Workforce Equity and Belonging

2.1.3: Diversify NOAA STEM Fields and Enhance Partnership with Minority-serving Institutions (MSIs)

2.1.4: Integrate Equity into Sexual Assault/Sexual Harassment (SASH) Prevention and Response Efforts

STRATEGIC OBJECTIVE 2.2: Support Underserved and Vulnerable Communities

2.2.1: Launch National Integrated Community Pilot Projects

2.2.2: Remove Administrative Burdens

2.2.3: Design Easy-to-Use Tools and Services

2.2.4: Develop New Community Engagement Approaches

2.2.5: Strengthen Social Science and Evaluation Capacity

03 ACCELERATE GROWTH IN AN INFORMATION-BASED BLUE ECONOMY

STRATEGIC OBJECTIVE 3.1: Improve Ocean-Related Data and Data Access

3.1.1: Promote the Development of the Ocean Enterprise

3.1.2: Innovate Approaches for Data Collection and Forecasting

3.1.3: Increase Stakeholder Engagement

STRATEGIC OBJECTIVE 3.2: Strengthen Established Sectors of the Blue Economy

3.2.1: Improve Adaptive Fisheries Management

3.2.2: Expand Sustainable Marine Tourism and Recreation Opportunities

3.2.3: Support Sustainable Development of Offshore Renewable Energy

3.2.4: Advance NOAA's Contribution to a Safe and Efficient Marine Transportation System

STRATEGIC OBJECTIVE 3.3: Improve Resilience of Coastal Communities and Economies

3.3.1: Advance Forecast Effects of Sea-Level Rise and Coastal Inundation

3.3.2: Reduce Risk from Coastal and Environmental Hazards

3.3.3: Support Responsible Coastal Development and Management

STRATEGIC OBJECTIVE 3.4: Protect and Restore Marine Life and Ocean, Coastal and Great Lakes Ecosystems

3.4.1: Recover and Conserve Protected Species

3.4.2: Protect, Conserve and Restore Coastal, Ocean and Great Lakes Lands, Waters and Resources

3.4.3: Advance Science for Stewardship and Conservation

NOAA STRATEGIC GOAL 01

BUILD A CLIMATE READY NATION

01

As a world leader in climate science and services, NOAA provides actionable environmental information that is the basis for smart policy and decision-making in a changing world. NOAA is uniquely positioned to support the whole-of government effort to address the climate crisis, strengthen resilience and promote economic growth. Together with its partners, NOAA will build a Climate Ready Nation whose prosperity, health, security and continued growth benefit from and depend upon a shared understanding of — and collective action to reduce — the impacts of climate change.

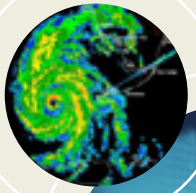
NOAA will deploy the full breadth of its integrated services and capabilities to build a Climate Ready Nation. The climate goal is organized into five objectives according to NOAA's value chain which makes the agency unique. This end-to-end value chain for authoritative climate and weather data and services starts with investing in observational infrastructure and culminates in delivering comprehensive services to meet a diverse set of missions. NOAA's partners — including businesses, federal agencies, emergency managers and underserved and vulnerable communities — can gain insights and take decisive action based on NOAA's data, tools and services.

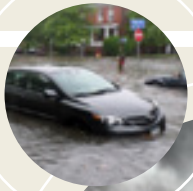
A firefighter walks in a field away from a wall of fire.

01 CLIMATE VALUE CHAIN

Building a Framework for a Climate Ready Nation

NOAA's climate value chain, around which Goal 1 objectives are organized, illustrates the five key activities necessary to successfully deliver critical services to the agency's customers and partners.





1

SERVICE DELIVERY & DECISION SUPPORT TOOLS

Comprehensive service delivery and decision support tools are necessary to build a Climate Ready Nation to meet the needs of businesses, federal partners and communities most vulnerable to climate and weather hazards.

2

MODELING, PREDICTION & PROJECTION

With state-of-the-science modeling, prediction and projection capabilities, NOAA leverages high-performance computing and the use of artificial intelligence.

3

RESEARCH & DEVELOPMENT

6,000 NOAA scientists and engineers develop cutting-edge applied research and applications to address pressing climate and weather challenges.

4

DATA & INFORMATION STEWARDSHIP

NOAA's world-class data and information stewardship is leveraging cloud infrastructure and working to store and to provide to the public more user friendly and authoritative data sets.

5

OBSERVATIONAL INFRASTRUCTURE

From the ocean floor to on orbit, NOAA's robust next-generation observational infrastructure and data dissemination observes and collects data 24/7.

01 CLIMATE

CLIMATE: STRATEGIC OBJECTIVE 1.1

ENHANCE SERVICE DELIVERY TO PARTNERS

NOAA will increase the accessibility and relevance of existing and new decision support products through more robust partnerships and stakeholder engagement. Combining the agency's deep expertise with partner relationships enables NOAA to deliver integrated and relevant services to inform stakeholder decisions at every level for emergency management, transportation, power generation, agriculture, coastal planning, natural resource management, recreation and more. NOAA will develop new, and improve upon existing, services to get them in the hands of decision-makers to support climate and weather resilience — especially to combat extreme events, such as floods, fire, drought, extreme heat and coastal inundation, that have a disproportionate impact on underserved and vulnerable communities and do significant economic damage in the U.S.

NOAA will also take action to confront the climate crisis in the Arctic as the impacts of human-caused climate change are propelling the Arctic region into a dramatically different state than it was just a few decades ago. Given that climate change is a global challenge, NOAA will also contribute to climate readiness internationally by improving early disaster warnings around the world, sharing knowledge about climate-proofing infrastructure and promoting lessons learned from its successful climate adaptation programs.

STRATEGIES INCLUDE:

IMPROVE CONTINUOUS ENGAGEMENT WITH PARTNERS

EMBED CLIMATE CONSIDERATIONS ACROSS NOAA

PROVIDE SCIENCE-BASED USE-INSPIRED DECISION SUPPORT TOOLS

01 CLIMATE

1.1.1 IMPROVE CONTINUOUS ENGAGEMENT WITH PARTNERS

NOAA will build toward a Climate Ready Nation by expanding its work with existing and new partners to equitably meet the needs of communities and businesses facing hazardous weather events and long-term climate impacts. NOAA will create more tailored and user-friendly climate tools by leveraging regional climate assessments, integrating research across natural, physical and social systems, and evaluating its climate resilience solutions. NOAA will collaborate with partners to develop new decision support tools, leveraging existing networks and tools where possible, to create accessible solutions that work across multiple platforms. NOAA will implement a community-based approach to service, education, engagement and preparedness. NOAA will also focus on expanding partnerships with community groups and organizations with a significant impact to reach underserved and vulnerable communities.

1.1.2 EMBED CLIMATE CONSIDERATIONS ACROSS NOAA

NOAA will adapt its own programs and functions to account for climate impacts. This includes surveying and assessing living marine resources and modeling and forecasting the effects of changing ocean conditions on those resources, fisheries and fishing communities. NOAA will develop and implement adaptation strategies for stewardship of the nation's marine and coastal resources, identify future data and information needs for NOAA's mission resulting from climate trends and assess and address the climate-related vulnerabilities of its own facilities and infrastructure.

1.1.3 PROVIDE SCIENCE-BASED USE-INSPIRED DECISION SUPPORT TOOLS

NOAA will work with its academic, international, U.S. governmental, commercial, nonprofit and community partners to transform the "bits and bytes" it receives from around the world into timely, actionable and reliable environmental information across the entire Earth-observing system. Through these engagements, NOAA will help develop the next generation of science-based products and services, focusing on meeting current and future user needs in a changing climate. NOAA will develop, support or adapt state-of-the-art algorithms to support more accurate and reliable products and applications and leverage the latest data science to extract accessible and usable information from large, complex data collections.

DID YOU KNOW?

THE NATIONAL WEATHER SERVICE HAS PLAYED A KEY ROLE IN PROTECTING AMERICAN LIVES AND PROPERTIES FOR OVER A CENTURY.

Through 2026, evidence of progress toward the Enhance Service Delivery to Partners objective will include:

- NOAA climate tools and services are better adapted to the unique and changing needs of communities and businesses, especially those most vulnerable to weather, water and climate hazards.
- NOAA is able to quickly mobilize its network of partners to communicate critical safety, preparedness and forecasting information to communities vulnerable to weather, water and climate hazards.
- NOAA's climate information, tools and services are effective and easy to use by the communities and businesses who need them.
- NOAA is prepared for, and resilient to, climate impacts in order to carry out its mission of science, service and stewardship now and in the future.
- Stakeholders have access to climate data necessary to generate living marine resource assessments and biological opinions for managing and conserving trust resources.
- More climate smart communities are identified and enabled for resilience planning, including in coastal areas.
- NOAA delivers early warnings on wildfire risk and engages with local, state and tribal partners to improve community preparation for, and resilience to, fire hazards.
- Resilience to extreme heat is improved through community collaboration, including with underserved and vulnerable communities, in producing more tailored heat-related services.
- NOAA provides data-driven and use-inspired decision support services that set the standard for transparency and quality.

01 CLIMATE

CLIMATE: STRATEGIC OBJECTIVE 1.2

IMPROVE ENVIRONMENTAL PREDICTIONS AND PROJECTIONS

NOAA will advance its weather, water and climate predictions by decreasing sub-seasonal forecast timescales and strengthening longer timescale baseline climate studies, including improving our understanding of climate variability and climate extremes. This will be achieved through improved modeling of land, ocean and ice ecosystems, atmosphere-land-ice interactions as well as coupled data assimilation of land, ocean, ice, biogeochemistry and ecosystems. NOAA will develop and operate next-generation Earth system models using state-of-the-science and community approaches in concert with advances in high-performance computing.

STRATEGIES INCLUDE:

IMPROVE WEATHER, WATER AND CLIMATE PREDICTIONS AND PROJECTIONS

BUILD OUT SUBSEASONAL TO ANNUAL INTEGRATED WATER CAPABILITIES

STRENGTHEN COASTAL INTEGRATED WATER CAPABILITIES

ENHANCE MONITORING AND MODELING FOR MITIGATION AND ADAPTATION STRATEGIES

BUILD OUT AN INTEGRATED CLIMATE AND OCEAN MODELING SYSTEM

ENHANCE ECOLOGICAL FORECASTING ON NOAA TRUST RESOURCES

01 CLIMATE

1.2.1 IMPROVE WEATHER, WATER AND CLIMATE PREDICTIONS AND PROJECTIONS

To help communities and businesses prepare for compounding risks from extreme weather, water and climate events, NOAA will improve its weather forecasts and climate projections. These advances will include more scalable and tailored information related to drought, air pollution, extreme heat and cold, fire weather, flooding, atmospheric rivers, tornadoes, winter storms, marine heat waves and marine tropical and extratropical cyclones. A key aspect of this strategy will be to execute successfully on projects funded through the Infrastructure Investment and Jobs Act and to implement the goals of the Weather Research and Forecasting Innovation Act and the National Integrated Drought Information System Act.

1.2.2 BUILD OUT SUBSEASONAL TO ANNUAL INTEGRATED WATER CAPABILITIES

NOAA will enhance predictions of water availability to inform policy, planning and decision-making to help protect lives and property, inform flood risk management, enable the delivery of safe drinking water and inform reservoir operations and water resource management. This will be done through a combination of hydrologic process modeling at subseasonal to seasonal and longer timescales, assimilation of observations, improved atmospheric forcings for hydrologic prediction and machine learning to enhance hydrologic forecasting. Subseasonal-to-seasonal timescales refer to the bridge between NOAA's daily and seasonal forecasts to help move toward a more seamless weather-climate prediction system and more integrated service offerings that benefit a number of industry sectors and the public.

1.2.3 STRENGTHEN COASTAL INTEGRATED WATER CAPABILITIES

The nation requires better predictions of hazardous coastal inundation caused by phenomena ranging from hurricanes to increased frequency of high-tide flooding due to sea-level rise. Improved prediction capability will be accomplished by coupling advanced hydrologic models to coastal and Great Lakes circulation models built into a framework that takes into account observed and predicted changes in land elevation.

01 CLIMATE

1.2.4 ENHANCE MONITORING AND MODELING FOR MITIGATION AND ADAPTATION STRATEGIES

NOAA will inform climate mitigation choices through improved greenhouse gas and climate system monitoring and modeling. The agency will enhance observations and modeling capabilities to assess the climate, atmospheric and oceanic implications of both current and proposed mitigation and climate intervention options including renewable energy, coastal and oceanic carbon removal and solar radiation management.

1.2.5 BUILD OUT AN INTEGRATED CLIMATE AND OCEAN MODELING SYSTEM

Climate change is significantly impacting oceans, the nation's marine resources and the people, businesses, communities and economies that depend on them. To effectively prepare and respond as part of the NOAA Climate and Fisheries Initiative, NOAA will integrate climate and ocean modeling systems to ensure improved predictions and projections of ocean conditions to inform decisions regarding living marine resources and other ocean uses.

1.2.6 ENHANCE ECOLOGICAL FORECASTING OF NOAA TRUST RESOURCES

NOAA has a history of issuing ecological forecasts to support those with the responsibility of managing human use of U.S. coastal, marine and Great Lakes resources. Understanding how ecological communities will adjust due to climate-associated impacts — and how human interaction with those resources will change as a result — are both necessary to effectively manage living resources for current and future generations. NOAA will enhance its ecological forecasting capabilities to provide improved information on the range and magnitude of such changes.

DID YOU KNOW?

95% OF THE DATA USED TO FORECAST WEATHER COMES FROM SATELLITES.

PARTNER **SPOTLIGHT**

DEVELOPING CLIMATE-READY INFRASTRUCTURE

NOAA Partners with Engineering Powerhouses

When we think of climate change, we are confronted by vast challenges as a result of rising temperatures, sea levels and extreme weather events. These changes have devastating consequences for animal species, the natural environment, public health and our built environment — comprised of the homes, stores and office buildings — which make lasting impacts on our communities and daily life.

It's crucially important to American lives — and livelihoods — to ensure building and infrastructure safety can stand the test of time, and that means the test of time under a changing climate. As current infrastructure ages, or when new infrastructure is built, we cannot assume that what was built in the past will continue to function in the face of a rapidly-changing climate.

Mexico Beach, Florida in the aftermath of Hurricane Michael

DEVELOPING CLIMATE-READY INFRASTRUCTURE *(cont.)*

We must take a new and flexible approach to our built environment and consider how all the important aspects of weather and climate for infrastructure design and safety — temperature, winds, precipitation, storm surge, permafrost stability — will change over the intended lifetimes of our infrastructure from a few years to several decades.

With an eye towards supporting the development of climate-ready infrastructure, in late 2021 NOAA forged a partnership with the University of Maryland Center for Technology and Systems Management and the American Society of Civil Engineers, the world's largest civil engineering professional society, to accelerate the development of climate-smart engineering codes and standards.

If standards continue to be based on the assumption of a historic, static climate system, many federal and non-federal investments may be exposed to significant, but avoidable, risk.

"This partnership can help us accelerate the move toward more climate-resilient infrastructure for the nation and globally," said Rick Spinrad, Ph.D., NOAA administrator.

"Our goal is to bring climate information into the nation's standard-setting process to increase the pace of climate adaptation and reduce design, construction and maintenance costs as well as the costs of climate-related natural disasters," said Dr. Spinrad.

As the nation's largest provider of climate information, NOAA's dynamic partnership with ASCE and the Center for Technology and Systems Management was established to help the U.S. account for climate change in future infrastructure design and construction. The vast majority of building codes in the nation and abroad rely on consensus guidance provided by ASCE.

"ASCE fully supports the partnership with NOAA and the university," said Tom Smith, Executive Director of ASCE. "The results will be of critical importance in supporting the development of standards for resilient infrastructure nationally and globally."

The collaboration will advance the use of NOAA-produced climate science and understanding within engineering practice for the design and construction of climate-resilient infrastructure, through developing and updating ASCE codes and standards.

This critical work will build on listening sessions NOAA held with key industry sectors in early 2022, including not only architecture and engineering but retail, travel and tourism, and insurance/reinsurance. NOAA will partner with these industry sectors, and others, to provide more customized climate data and information to protect lives and livelihoods.

Through 2026, evidence of progress toward the Climate, Improve Environmental Predictions and Projections objective will include:

- Information for creating ecosystem projections, assessing risks and identifying options for managing ocean resources in a changing climate is accessible to decision-makers and the public.
- Actionable subseasonal-to-seasonal forecasts of hazard risk, including drought, extreme heat and cold, fire weather, flooding, atmospheric rivers, tornadoes, marine heat waves and tropical cyclones, are available.
- NOAA provides actionable subseasonal-to-seasonal and longer-scale information on environmental threats, informed by social science.
- Underserved and vulnerable communities have equitable access to information that enables them to improve their preparedness, responsiveness and resilience to water availability and flood risks.
- Decision-makers and the public have access to actionable information to optimally manage, mitigate and build resilience to inland and coastal flood threats, optimize commercial port infrastructure, ensure safe and efficient navigation on inland waterways, optimally design, build and operate critical national infrastructure and support life-sustaining water management.
- Practical information, supported by social science, is available for decision-makers and the public to understand and manage water-quality risks to support recreation opportunities in rivers, lakes, estuaries, fisheries and coastal environments.
- Fire weather forecast accuracy and user response are measured to ensure highly accurate weather forecasts, products and messages are delivered to end users when and how they need them.

01 CLIMATE

CLIMATE: STRATEGIC OBJECTIVE 1.3

ADVANCE INTEGRATED BREAKTHROUGH CLIMATE RESEARCH

NOAA will develop interdisciplinary and integrated research that looks across Earth systems and social sciences to understand the complex, cascading and compounding impacts of climate change. NOAA's state-of-the-art research will cut across disciplines and specializations to encourage the growth of innovative data assimilation across data types, enhance model components and develop new model applications. Research to enhance climate adaptation will integrate information on extreme weather and climate across sectors and timescales with localized socioeconomic and behavioral data to assess impact and resilience scenarios, potential solutions and implementation strategies. NOAA will accelerate and facilitate the transition of research and development to operations, applications, commercialization and other uses.

STRATEGIES INCLUDE:

MATURE WORLD-CLASS NEXT-GENERATION EARTH SYSTEM MODELS

STRENGTHEN CAPACITY FOR SOCIAL SCIENCE RESEARCH

ADVANCE CUTTING-EDGE INTEGRATED RESEARCH TO OPERATIONS

01 CLIMATE

1.3.1 MATURE WORLD-CLASS NEXT-GENERATION EARTH SYSTEM MODELS

NOAA will develop next-generation Earth observations systems that reliably estimate weather, water and climate risks. This will include new process understanding by improving, standardizing, hardening and increasing observations of the ocean, atmosphere, tides, ice and land for better predictions, projections, monitoring and applied products. These models will capture a more comprehensive description of the complexity and interactions of climate and extreme weather events and their societal impacts. NOAA will complete the buildout of its critical climate observations networks to monitor changes that impact climate-vulnerable communities including expansion of and enhanced observations, mapping, future-conditions projections, data assimilation, quality control and dissemination across spatial and temporal scales.

1.3.2 STRENGTHEN CAPACITY FOR SOCIAL SCIENCE RESEARCH

NOAA will expand its social science data capacity in order to collect, store and integrate data on the vulnerabilities to and impacts of complex climate and extreme weather events on community resilience. Through investments in corporate human resources and enterprise-wide data infrastructure, NOAA will expand its ability to track and predict public risk and resilience across sectors and communities. These investments will also support the development of relevant and actionable information for resilience and management across multiple hazards.

1.3.3 ADVANCE CUTTING-EDGE INTEGRATED RESEARCH TO OPERATIONS

Actionable interdisciplinary Earth system research will be improved to integrate physical risks with social, behavioral and economic vulnerabilities to effectively develop and communicate tools and resources that reliably estimate weather, water and climate risks. Work to accelerate research to operations will enhance current modeling and projections work to integrate data across climate and extreme weather systems accounting for chronic and acute hazards and addressing needs across a range of audiences and timescales.

DID YOU KNOW?

NESDIS — NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE — OPERATES THE NATION'S WEATHER SATELLITES AROUND THE CLOCK, 365 DAYS A YEAR.

We must urgently reduce our emissions while also increasing our efforts to adapt to the impacts we can no longer avoid. Simply put, societies and ecosystems need to prepare now for the increasing effects of extreme heat, drought, sea level rise and other impacts of climate change.

DR. RICK SPINRAD

Fog cloaks Cape Perpetua in Oregon's Siuslaw National Forest

Through 2026, evidence of progress toward the Advance Integrated Breakthrough Climate Research objective will include:

- Decision-makers and the public have access to clear visualizations and communications of weather, water and climate risks leveraging social, behavioral and economic science.
- NOAA models integrate disciplines and specializations to reflect the Earth system and important intersecting human, ecosystem and environmental factors.
- NOAA's fire weather tools and technologies utilize social and behavioral science to transform the agency's ability to produce, disseminate and make accessible a full spectrum of fire-related information and services.
- Decision-makers and the public have access to the actionable information, supported by social science, to optimally manage water resources, water supply and risk in the face of water stress exacerbated by climate change.
- The public trusts and relies upon NOAA's forecasts for short- and long-term planning because its models are more informative, accurate and usable than ever before.
- NOAA efficiently advances new technologies from the beginning stages of research and development through the stages of testing and demonstration to their ultimate transition to operation, application, commercialization or other use.

01 CLIMATE

CLIMATE: STRATEGIC OBJECTIVE 1.4

BOLSTER AUTHORITATIVE DATA AND INFORMATION STEWARDSHIP

NOAA will maximize accessibility, transparency, reliability, usability and public trust in accordance with data community standards and by leveraging the burgeoning cloud infrastructure. NOAA's data will also be reproducible, easily discoverable and will work with other products or systems. NOAA will embrace quality-controlled and analysis-ready artificial intelligence and machine learning data processes and decision-ready information to meet growing customer demand. NOAA will manage its non-observational information with a similar rigor and will cultivate successful relationships with private-sector solution providers.

STRATEGIES INCLUDE:

IMPROVE DATA STEWARDSHIP

OPTIMIZE PLATFORM-AGNOSTIC DATA AND INFORMATION

IMPROVE ENTERPRISE-LEVEL DATA MANAGEMENT

01 CLIMATE

1.4.1 IMPROVE DATA STEWARDSHIP

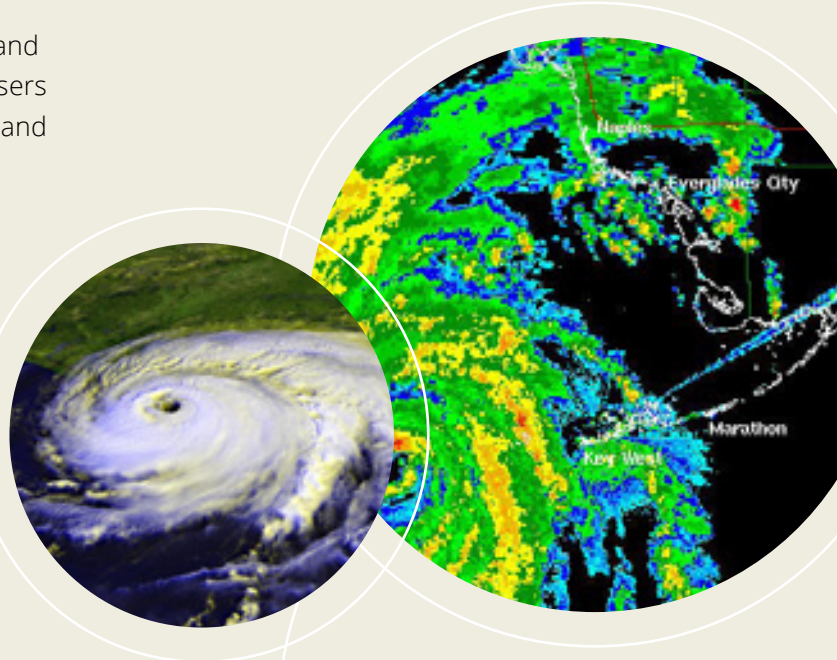
Data stewardship is a critical factor to realize the full value of the multi-billion dollar investment NOAA makes in Earth system observations and ensure these data are available for future generations. All NOAA observations supporting real-time analysis, forecasting and research will be treated as a vital public investment with lasting value. To achieve this, NOAA will continue to steward and curate its information holdings according to best practices among the data management community. NOAA will implement a comprehensive archival and stewardship process that ensures all of its data and critical information products and derived datasets are accessible, integrated, discoverable, traceable and reusable by ensuring NOAA data collection efforts incorporate and resource long-term stewardship plans.

1.4.2 OPTIMIZE PLATFORM-AGNOSTIC DATA AND INFORMATION

NOAA will pursue the continued development of platform-agnostic data and information sets that coalesce data from multiple sources. NOAA will leverage the lasting value of its observational holdings to create robust, sustainable and scientifically sound analysis and AI-ready climate records with the longevity, consistency and continuity needed to understand climate variability and change. NOAA will pursue an approach to incorporate historical, current and future information into datasets that help users more efficiently draw lessons from the past and better understand the future.

1.4.3 IMPROVE ENTERPRISE-LEVEL DATA MANAGEMENT

NOAA will pursue rigorous, technologically savvy and efficient enterprise management of its information infrastructure. Databases to support NOAA's institutional science holdings will utilize efficient, cloud-based enterprise solutions to maximize the availability of this information, and customer requirements and feedback will be managed through federated enterprise tools.



DID YOU KNOW?

CHARGED PARTICLES AND RADIATION FROM THE SUN, CALLED SPACE WEATHER, CAN POTENTIALLY AFFECT EARTH, OUR ATMOSPHERE AND THE NEAR-EARTH SPACE ENVIRONMENT.

Through 2026, evidence of progress toward the Bolster Authoritative Data and Information Stewardship objective will include:

- Customer feedback on the usability of NOAA information and tools is managed in a consistent way across the agency.
- NOAA successfully implements an enterprise-wide data dissemination plan.
- Agency partnerships with private industry are leveraged to deliver enhanced data, products and tools.
- NOAA's data customers are engaged and satisfied.
- The comprehensive data archival and stewardship process for data is enhanced to more efficiently and effectively support discovery, access, interoperability and reusability of NOAA's environmental data.
- NOAA datasets are openly available via partners' cloud platforms to the public and America's Weather Enterprise.
- Climate data records integrate historical NOAA datasets into more useful time series for climate-scale analysis and applications.
- NOAA establishes, implements and tracks clear guidance for metadata and stewardship requirements associated with an "authoritative" dataset.
- NOAA observational platforms incorporate and resource long-term stewardship in their project plans.

01 CLIMATE

CLIMATE: STRATEGIC OBJECTIVE 1.5

ENHANCE COMPREHENSIVE OBSERVATIONS AND MONITORING SYSTEMS

NOAA will sustain and improve its observing and data dissemination system infrastructure with new technologies while leveraging more observations through innovative public and private partnerships. The agency will develop a comprehensive observation portfolio and deploy next-generation satellite programs and data processing systems, and other remote sensing and in-situ observation platforms, to include advanced aircraft, ships and uncrewed systems.

STRATEGIES INCLUDE:

IMPROVE LOCAL/IN-SITU DISTRIBUTED OBSERVATIONS

INNOVATE SPACE-BASED OBSERVATIONS

EXPAND COMMERCIAL PARTNERSHIPS AND NEW TECHNOLOGY

IMPROVE COMMON SOURCE DATA INTEGRATION AND COMMON GROUND SERVICES

01 CLIMATE

1.5.1 IMPROVE LOCAL/IN-SITU DISTRIBUTED OBSERVATIONS

NOAA will maintain, harden and extend the spatial and temporal scale of existing climate, ocean and atmosphere in-situ observing platforms while seeking opportunities to maximize both the real-time collection of the observations and information dissemination to meet user needs. NOAA will also extend networks and increase the number of sites among programs to collect observations in data-sparse areas with land, sea and air assets including NOAA ships, planes, stationary and underway observing platforms and remote uncrewed operations. NOAA will augment its observing systems and develop new capabilities with targeted field campaigns and evaluate and continuously improve NOAA's ability to meet observational requirements with ships, aircraft and uncrewed operations.

1.5.2 INNOVATE SPACE-BASED OBSERVATIONS

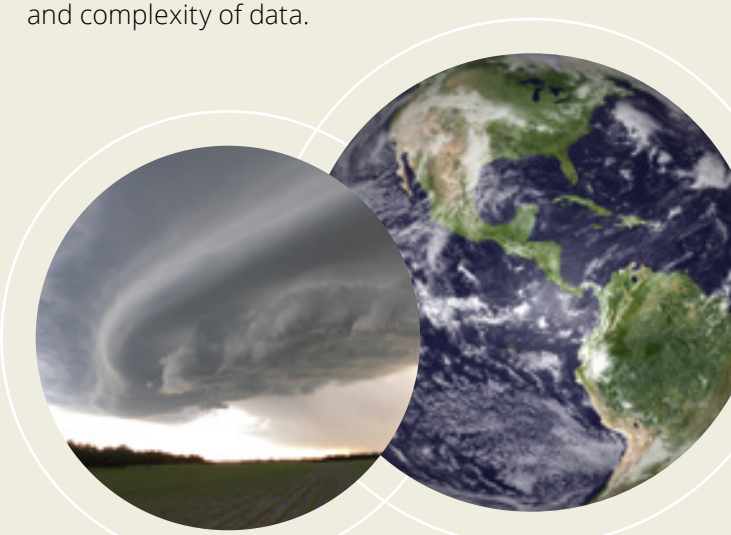
NOAA will deliver a wide array of climate, weather and environmental observations from geostationary and low-Earth orbits, space weather observations and common ground services while working with industry in innovative ways to build a hybrid, disaggregated architecture.

1.5.3 EXPAND COMMERCIAL PARTNERSHIPS AND NEW TECHNOLOGY

NOAA will strengthen existing partnerships while also leveraging new commercial partnerships, innovative small modular satellite technology and in situ observing platforms to optimize the operations and procurement of its fleet of environmental assets that provide critical observations of the Earth and space. NOAA will expand partnership opportunities to collect new observations to assist in better understanding changing weather, water and climate conditions.

1.5.4 IMPROVE COMMON SOURCE DATA INTEGRATION AND COMMON GROUND SERVICES

NOAA will enhance a common architecture and whole-agency approach to analyzing and disseminating data by transitioning the current hardware and software functions to a cloud-enabled framework to run updated software and generate products and services from any applicable data source. The increased infrastructure capacity will include the ability to securely and efficiently ingest, process, distribute and archive an increasing volume and complexity of data.



A stratus layer flows over neighboring peaks on Mount Washington, New Hampshire

> *No matter the need, people will know they can turn to NOAA for reliable, easy-to-use climate information. We are already seeing increasing demands for this, as demonstrated by the record-setting summer of extreme heat, exceptional drought, raging wildfires, unprecedented rains and damaging hurricanes. The climate crisis is upon us and NOAA is a key part of the whole-of-government response.*
>
> **DR. RICK SPINRAD**

Through 2026, evidence of progress toward the Enhance Comprehensive Observations and Monitoring Systems objective will include:

- New observations and monitoring enable detection of key parameters beyond current norms to improve understanding of future climate changes.
- Satellite constellation and ground systems continue to operate with the high-reliability, secure and timely delivery of data and services that the nation requires.
- Enhanced or new products and services result from a combination of NOAA and partner data sources for use in monitoring Earth system health and sustainability.
- NOAA maintains and extends the longevity of existing observing platforms while seeking opportunities to maximize the collection and benefit of observations.
- Technologies and approaches to share relevant information are leveraged to heighten the understanding of the Earth system, the management of its resources and the effects on society.
- NOAA continues to steward and lead long-term global atmospheric sampling and observations to provide the world with uninterrupted data going back decades to support atmospheric and climate data analyses, satellite observation validations and improvements in model development and predictions.

NOAA STRATEGIC GOAL 02

MAKE EQUITY CENTRAL TO NOAA'S MISSION

02

As NOAA tackles the climate crisis by building a Climate Ready Nation, it will strive to ensure the needs of the nation's underserved and vulnerable communities are met.

To meet this challenge, NOAA is making equity central to every facet of its mission delivery services and is working internally to create a model agency that draws from the full diversity of the nation, where everyone is treated with dignity and respect.

Teachers participate in watershed education experience at Matagorda Bay, Texas

02 EQUITY

EQUITY: STRATEGIC OBJECTIVE 2.1

BUILD A MODEL WORKPLACE

NOAA is firmly committed to increasing the diversity of its workforce and creating a more inclusive work environment where everyone feels valued, is treated fairly and experiences a true sense of belonging. A key outcome of this plan is to fully integrate diversity, equity, inclusion and accessibility (DEIA) into NOAA's business practices and organizational culture by pursuing the following strategies to strengthen NOAA's ability to recruit, hire, develop, promote and retain diverse talent and remove barriers to equal opportunities.

STRATEGIES INCLUDE:

ADVANCE EEO TO STRENGTHEN ACCOUNTABILITY

DEEPEN WORKFORCE EQUITY AND BELONGING

DIVERSIFY NOAA STEM FIELDS AND ENHANCE PARTNERSHIP WITH MINORITY-SERVING INSTITUTIONS (MSIS)

INTEGRATE EQUITY INTO SEXUAL ASSAULT/ SEXUAL HARASSMENT (SASH) PREVENTION AND RESPONSE EFFORTS

02 EQUITY

2.1.1 ADVANCE EEO TO STRENGTHEN ACCOUNTABILITY

NOAA is dedicated to creating workplaces that are free of discrimination and harassment where every employee has equal opportunities for success. NOAA will further establish model workplace practices and will evaluate progress using an annual self-assessment that benchmarks agency progress against established best practices in equal employment opportunity. NOAA will also increase the number of barrier analyses conducted to identify and address root causes of employment-related disparities. To ensure fairness and openness in hiring, NOAA will increase the use of diverse hiring panels and enhance training for hiring officials. Finally, NOAA will improve the timely and efficient processing of EEO complaints by applying interagency-derived best practices.

2.1.2 DEEPEN WORKFORCE EQUITY AND BELONGING

For continued success, NOAA will create a model workplace that will continue to improve employee satisfaction and belonging by refining its organizational values, updating recruitment practices, exploring new retention programs and expanding employee development and engagement programs at all career levels. As NOAA strengthens its organizational culture of accountability for its equity initiatives, it will leverage insights from internal employee groups and external affinity organizations to drive outcomes that ensure NOAA achieves its talent management goals. NOAA is committed to building and strengthening efforts to share the agency's exciting and important mission with children, youth and adults through outreach and education while increasing the pipeline of diverse talent.

DID YOU KNOW?

THE OFFICE OF MARINE AND AVIATION OPERATIONS MANAGES AND OPERATES NOAA'S FLEET OF 15 RESEARCH AND SURVEY SHIPS AND NINE AIRCRAFT, THE NATION'S LARGEST.

DID YOU KNOW?

OCEANIC AND ATMOSPHERIC RESEARCH — OR NOAA RESEARCH — PROVIDES THE RESEARCH FOUNDATION FOR UNDERSTANDING THE COMPLEX SYSTEMS THAT SUPPORT OUR PLANET.

2.1.3 DIVERSIFY NOAA STEM FIELDS AND ENHANCE PARTNERSHIP WITH MINORITY-SERVING INSTITUTIONS (MSIS)

NOAA will leverage its large education community to expand efforts to promote STEM careers to underrepresented minorities and communities at the K–12 and college levels while also connecting a diverse set of students with exciting scholarship opportunities and making it easier to hire them through use of direct hire authority. NOAA will also provide paid internships and fellowships to NOAA education program participants, including MSI undergraduate and graduate students, allowing them to gain hands-on experience and conduct important research with NOAA scientists and other STEM experts. Finally, NOAA will increase engagement with academic research partners and provide financial support directly to MSIs to build capacity to conduct research and offer degrees in NOAA mission-related fields.

2.1.4 INTEGRATE EQUITY INTO SEXUAL ASSAULT/SEXUAL HARASSMENT (SASH) PREVENTION AND RESPONSE EFFORTS

NOAA will build on its highly successful workplace safety programs to focus on a more robust SASH prevention and response process including expanding resources to regions with a higher prevalence of SASH-related incidents. NOAA will also ensure its workforce recognizes and effectively responds to SASH incidents by providing more robust training that addresses inappropriate workplace behaviors, bystander intervention and unconscious bias.

Through 2026, evidence of progress toward the Build a Model Workplace objective will include:

- NOAA's workforce reflects the diversity of the American people including its STEM professionals and leaders.
- The NOAA workplace celebrates diversity and fosters safety, belonging and career advancement for all employees.
- NOAA continuously nurtures a pipeline of young, diverse future employees by creating interest in and providing avenues to STEM careers.
- Barriers and biases in NOAA's hiring of diverse, highly-qualified candidates are reduced.
- NOAA creates a culture that promotes the employment of individuals with disabilities.
- NOAA cultivates an inclusive work environment that empowers and engages every team member.
- All NOAA staff have equal access to career development opportunities.
- NOAA leadership is accountable for managing diversity, equity, inclusion and accessibility across NOAA.
- The agency removes racial inequalities and all forms of discrimination and harassment in its workplaces, especially sexual assault and sexual harassment (SASH).

02 EQUITY

EQUITY: STRATEGIC OBJECTIVE 2.2

SUPPORT UNDERSERVED AND VULNERABLE COMMUNITIES

Underserved and vulnerable communities are often disproportionately impacted by increasing extreme weather, water, ocean and climate events. This includes floods, drought, wildfires, heat waves and poor air quality. Underserved and vulnerable communities are those that have been systematically denied a full opportunity to participate in aspects of economic, social and civic life. NOAA will expand equity-focused solution development to address these impacts by leveraging its deep experience in service delivery and regional collaboration and partnerships with underserved and vulnerable communities. NOAA will advance five key strategies to help underserved and vulnerable communities most threatened by weather and climate hazards.

STRATEGIES INCLUDE:

LAUNCH NATIONAL INTEGRATED COMMUNITY PILOT PROJECTS

REMOVE ADMINISTRATIVE BURDENS

DESIGN EASY-TO-USE CLIMATE TOOLS AND SERVICES

DEVELOP NEW COMMUNITY ENGAGEMENT APPROACHES

STRENGTHEN SOCIAL SCIENCE AND EVALUATION CAPACITY

CLIMATE EQUITY PILOT PROJECTS

Building Climate Resilience in Underserved and Vulnerable Communities

NOAA is collaborating with partners in underserved and vulnerable communities on pilot projects to develop tailored, place-based climate adaptation strategies that will enhance resilience to climate hazards such as flooding, heat and coastal inundation.

ALASKA
Expanding and connecting tribal-led climate change capacity to serve indigenous community needs in Alaska

CENTRAL
Increase flood and drought resilience within the Upper Mississippi River Basin Plan

GREAT LAKES
Address urban flooding with Climate Action Plan

NORTH ATLANTIC
Enhance community engagement in climate risk communication

WEST
Address heat-health risks in vulnerable populations

Hawaii

Guam and Northern Marianas

American Samoa

PACIFIC ISLANDS
Utilize agroforestry dashboard blending western and traditional knowledge

GULF OF MEXICO
Develop tribal community resilience tools for coastal impacts

SOUTHEAST & CARIBBEAN
Address heat-health risks in vulnerable populations

Puerto Rico and U.S. Virgin Islands

02 EQUITY

2.2.1 LAUNCH NATIONAL INTEGRATED COMMUNITY PILOT PROJECTS

NOAA will complete regional pilots to enhance resilience to flooding, heat and coastal inundation, leveraging recommendations from its Climate and Equity Roundtables conducted around the nation (see graphic on previous page). NOAA will work more closely with community partners on these pilots to increase participation from underserved and vulnerable populations for planning and training sessions and to tailor NOAA's products and services where appropriate to address place- and community-based needs, as illustrated by the partnership to address coastal flooding in Connecticut described on page 42.

2.2.2 REMOVE ADMINISTRATIVE BURDENS

Applying for federal funding opportunities and participating in federal programs may be challenging for underserved and vulnerable populations and can exacerbate inequities. NOAA will take additional steps to review its administrative processes for key programs to ensure they reduce administrative burdens and are more accessible to underserved and vulnerable populations. To help direct funds to underserved and vulnerable communities, NOAA will continue reviewing funding opportunities as they are developed for accessibility, eligibility, review criteria, use of funds, matching or grantee contribution and expected outcomes.

DID YOU KNOW?

2021 WAS THE WORLD'S 6TH-WARMEST YEAR ON RECORD.

02 EQUITY

2.2.3 DESIGN EASY-TO-USE TOOLS AND SERVICES

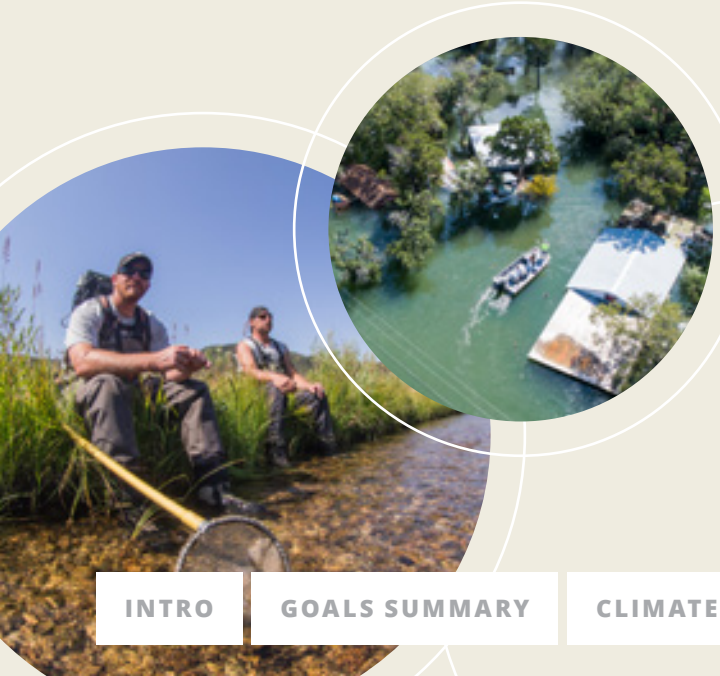
NOAA will continue improving service delivery and leveraging customer experience tools to ensure that new products and services consider the needs of underserved and vulnerable communities, help build trust and are effective and user-friendly. NOAA will also promote community social vulnerability indicators paired with commercial and recreational fisheries data to describe and evaluate a coastal community's ability to respond to changing social, economic and environmental conditions.

2.2.4 DEVELOP NEW COMMUNITY ENGAGEMENT APPROACHES

NOAA will implement a holistic Community Engagement Program within the National Weather Service to ensure that underserved and vulnerable communities have greater access to key disaster preparedness programs. As part of the Community Engagement Program, NOAA will increase education and outreach to underserved and vulnerable communities and launch pilot programs to increase understanding of and responsiveness to important forecasts, watches and warnings, such as flooding and extreme temperature events.

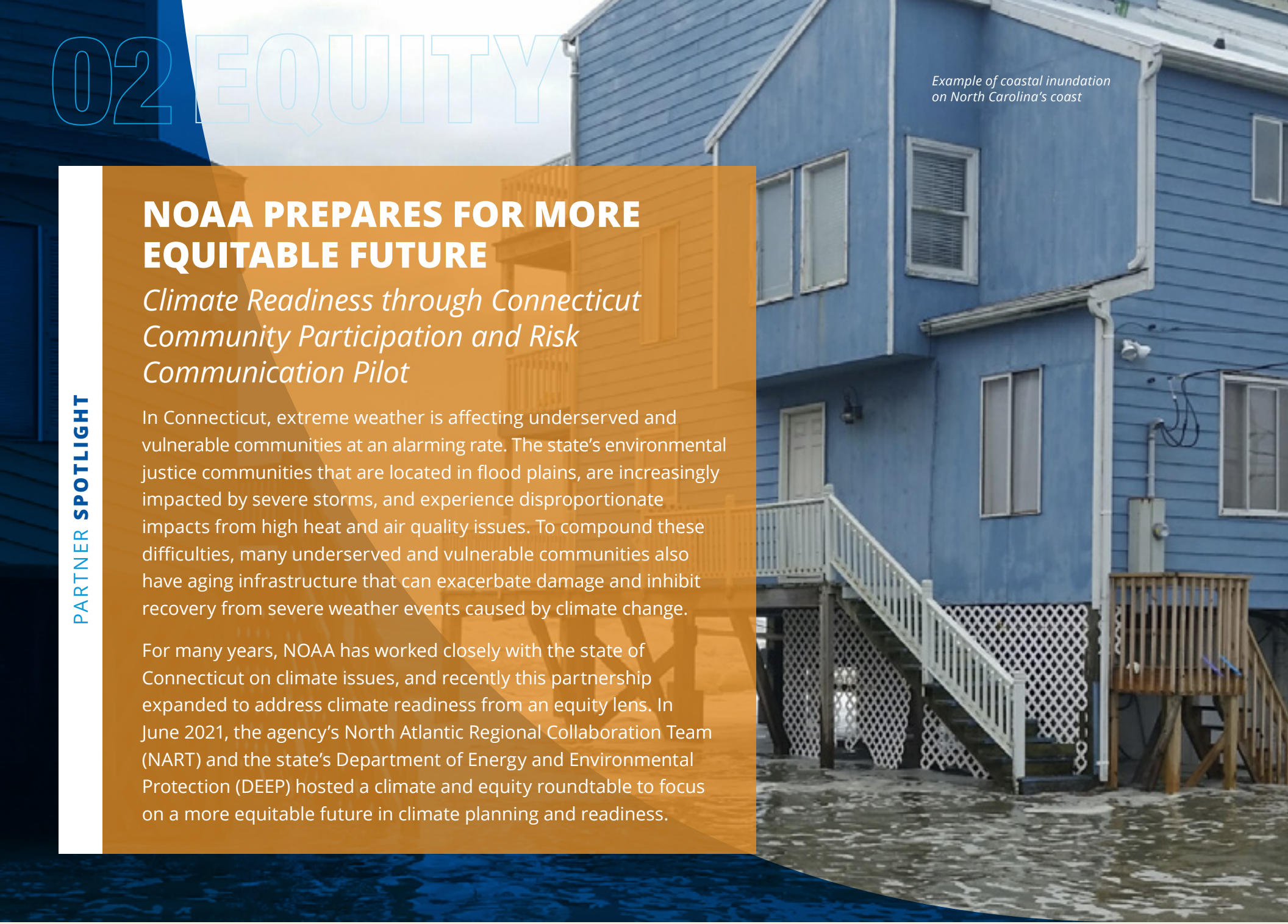
2.2.5 STRENGTHEN SOCIAL SCIENCE AND EVALUATION CAPACITY

NOAA's equity-focused outcomes will be supported by an increase in social science expertise, applying the latest information on social, behavioral and economic factors to communities, households and individuals. NOAA will study fishing engagement and reliance indicators to help understand and manage for social vulnerability and community resilience. NOAA will continue developing mechanisms to integrate this information across multiple programs in collaboration with the communities themselves. NOAA will also strengthen its program assessments to determine whether they are meeting and exceeding requirements including effectively serving underserved and vulnerable communities.



DID YOU KNOW?

AT LEAST HALF OF EARTH'S OXYGEN COMES FROM THE OCEAN.



Example of coastal inundation on North Carolina's coast

PARTNER **SPOTLIGHT**

NOAA PREPARES FOR MORE EQUITABLE FUTURE

Climate Readiness through Connecticut Community Participation and Risk Communication Pilot

In Connecticut, extreme weather is affecting underserved and vulnerable communities at an alarming rate. The state's environmental justice communities that are located in flood plains, are increasingly impacted by severe storms, and experience disproportionate impacts from high heat and air quality issues. To compound these difficulties, many underserved and vulnerable communities also have aging infrastructure that can exacerbate damage and inhibit recovery from severe weather events caused by climate change.

For many years, NOAA has worked closely with the state of Connecticut on climate issues, and recently this partnership expanded to address climate readiness from an equity lens. In June 2021, the agency's North Atlantic Regional Collaboration Team (NART) and the state's Department of Energy and Environmental Protection (DEEP) hosted a climate and equity roundtable to focus on a more equitable future in climate planning and readiness.

MORE EQUITABLE FUTURE (cont.)

"It is incredibly important to have this conversation with our federal partner and ground truth with NOAA the issues that we are facing," said Dr. Rebecca French, DEEP's Director of the Office of Climate Planning.

Despite the development of resources that illustrate and assess the effects of sea level rise, storm surge, vulnerability and resilience to a variety of stressors such as heat, coastal and inland flooding, extreme precipitation and key mitigation efforts (e.g., living shorelines, protection of critical infrastructure), many of these tools are underutilized by citizens in Connecticut's most underserved and vulnerable communities.

Key factors to underutilization include organizational capacity limitations, barriers to accessibility (e.g., language, culturally appropriate messaging), users not being engaged at the beginning of product development to ensure relevancy and need, or limited knowledge about what tools are available and/or how to use them effectively. According to Dr. French, training, investment and education are all necessary to increase the understanding and use of NOAA tools and technical assistance.

During the roundtable, it became clear that co-development of NOAA resources alongside community members and decision-makers must happen in order for underserved and vulnerable communities to take advantage of the services and tools that already exist and to ensure residents are fully prepared for rising sea levels and the resulting increased frequency of coastal flooding.

The resulting Connecticut Community Participation and Risk Communication Pilot specifically supports relationship building

DID YOU KNOW?

FROM 2005 TO 2021 THERE HAVE BEEN 210 SEPARATE BILLION-DOLLAR WEATHER OR CLIMATE DISASTERS IN THE U.S. THAT HAVE COST A COMBINED $1.53 TRILLION IN DAMAGES

MORE EQUITABLE FUTURE (cont.)

with organizations and leaders that are trusted among local residents of these communities. These entities, known as bridge organizations, bring a depth of knowledge that is vital in the co-development of NOAA resources. Bridge organizations unite community members and decision makers to take advantage of existing tools and services, and ensure that future products are maximally relevant, accessible and impactful.

This pilot will help NOAA understand what activities are most meaningful to these communities and provide resources to nurture trusted relationships with bridge organizations that can help guide the co-development of future NOAA tools, products and services. Doing so will equip underserved and vulnerable populations to prepare and respond to the real-life impacts of extreme weather and climate change.

"Having the attention of a federal agency on these issues is a new, valuable experience for the community organizations who participated. This pilot will build a strong foundation for ongoing partnerships with NOAA as they continue their equity work," said Dr. French.

Following completion of the pilot, projected to be in fall 2023, a debrief will be held with partners, identified through the Connecticut Governor's Council on Climate Change's Equity and Environmental Justice Working Group, to evaluate the success of the pilot and determine how the effective processes can be scaled to serve other North Atlantic communities.

Additionally, this process and the lessons learned will be presented to the other NOAA regional teams so we can make certain challenges are clearly documented and shared in order to continually expand and improve our relationships with underserved and vulnerable communities and ensure a more equitable future in climate preparedness for all Americans.

Children play in nuisance flooding from the Elizabeth River in Norfolk, Virginia

It is important to achieve something visible to a community. To identify a problem these communities care about and take action. That's what NOAA is doing with these [climate equity] pilots.

DR. REBECCA FRENCH

Director of the Office of Climate Planning
Connecticut Department of Energy and Environmental Protection

Through 2026, evidence of progress toward the Support Underserved and Vulnerable Communities objective will include:

- Underserved and vulnerable communities will have more equitable access to information, delivered in traditional and non-traditional ways, to improve their resilience to climate and extreme weather impacts.
- Decision-makers have access to forecast and other services translated into multiple languages and delivered in formats that communicate risk in context-specific ways, emphasizing new media as appropriate.
- Mechanisms for the identification of and development of partnerships with underserved and vulnerable communities ensure relevant and effective science, services and tools reach decision-makers.
- New coastal resilience services are available for highly vulnerable communities in Alaska and in underserved rural coastal communities.
- NOAA develops new tools, information and training to inform adaptation plans to manage risks from changing oceans, especially in marine-dependent communities, including underserved communities in the Arctic.
- Barriers are removed that make applying for federal funding opportunities and engaging in federal programs challenging for underserved and vulnerable populations.
- Designs are modified to make NOAA data and tools more accessible for people with disabilities and user-friendly to underserved and vulnerable communities.

NOAA STRATEGIC GOAL 03

ACCELERATE GROWTH IN AN INFORMATION-BASED BLUE ECONOMY

03

The U.S. will develop a robust blue economy — that is, the sustainable use of ocean resources for economic growth, improved livelihoods and job creation — to realize the untapped potential of America's ocean and coastal environments, contribute to equitable climate change adaptation strategies and unleash innovation.

An information-based blue economy relies on the development and dissemination of ocean and coastally derived data and information services to enhance our understanding and predictive capabilities regarding the impacts of climate change as the ocean changes at an unprecedented rate. To advance this goal, NOAA will provide data, information and services to catalyze American competitiveness, accelerate growth of sustainable ocean industries and facilitate the technology advancements for coastal and marine solutions to climate challenges.

Aerial view of a heavy loaded container cargo vessel traveling over calm, blue sea

03 BLUE ECONOMY

BLUE ECONOMY: STRATEGIC OBJECTIVE 3.1

IMPROVE OCEAN-RELATED DATA AND DATA ACCESS

NOAA will make its environmental information available on a free and open basis supporting the development of a New Blue Economy. The New Blue Economy, founded on capabilities for acquiring data and developing information, will enable the nation to spur responsible, long-term economic growth by protecting ocean health and ensuring social equity. NOAA will take steps to facilitate the use of its data and services by governmental, tribal, indigenous, academic, commercial and other partners to foster new economic opportunities including the development of value-added services.

STRATEGIES INCLUDE:

PROMOTE THE DEVELOPMENT OF THE OCEAN ENTERPRISE

INNOVATE APPROACHES FOR DATA COLLECTION AND FORECASTING

INCREASE STAKEHOLDER ENGAGEMENT

03 BLUE ECONOMY

3.1.1 PROMOTE THE DEVELOPMENT OF THE OCEAN ENTERPRISE

The business component of the New Blue Economy, the Ocean Enterprise, comprises the manufacturers and providers of the technological means to collect ocean data and the intermediary businesses creating value-added information services. Through effective dialogue and partnering, NOAA will establish core principles and processes for information exchange and encourage commercial development of customized information services supported by NOAA's data and information.

3.1.2 INNOVATE APPROACHES FOR DATA COLLECTION AND FORECASTING

To ensure the New Blue Economy has the ocean and atmospheric data and information needed to address societal challenges and grow the economy, NOAA and its partners will collaborate to improve data collection, data management and forecasting capabilities. NOAA will increase data collection to include industry-based data collection and real-time reporting of ocean and atmospheric observations. NOAA will also explore artificial intelligence, machine learning and data visualization technologies for use in at-sea observing, data and video analysis and stock assessments.

3.1.3 INCREASE STAKEHOLDER ENGAGEMENT

The New Blue Economy presents NOAA with opportunities to create innovative and sustainable climate-smart products, services and businesses in traditional and novel blue economy sectors. NOAA will increase stakeholder engagement to better capture evolving societal challenges and user needs. NOAA will prioritize social inclusion and equity in every aspect of stakeholder engagement and service delivery. The agency will provide public indications of its anticipated new ocean-climate information and services as a means to offer predictability for industry and others endeavoring to develop their own new products.

DID YOU KNOW?

NOAA FISHERIES HELPS ENSURE U.S. FISHERIES ARE AMONG THE WORLD'S LARGEST AND MOST SUSTAINABLE.

PARTNER **SPOTLIGHT**

PARTNERING WITH INDUSTRY

Key to Growing the New Blue Economy

Collaboration and partnership with private sector organizations are central to NOAA's mission to support the development and growth of the New Blue Economy, helping to deliver the information and knowledge needed to support sustainable use of the ocean and coastal resources, while protecting ocean health and ecosystem services.

One such partnership is with Fugro, one of the world's leading geo-data specialists. With more than 1,150 US employees in 21 offices across nine states, Fugro acquires, analyzes and provides advice on critical data about the ocean, informing opportunities for economic benefit and delivering information needed to manage and protect the ocean and coastal environment.

Offshore wind turbines in Block Island Sound off Southern New England

PARTNERING WITH INDUSTRY (cont.)

Working with organizations like Fugro, NOAA is able to amplify its efforts to provide the data, information and knowledge needed to support growth of the blue economy, the creation of American jobs and the response to pressing challenges such as mitigating and adapting to climate change.

Private industries are a major user of NOAA's authoritative ocean data and information to support advancement of offshore renewable energy development. Offshore wind is a sustainable energy source that will play a crucial role in the US response to climate change and NOAA's mission to build a climate ready nation.

"The private sector is generating ocean data throughout US waters, but most visibly now in Northeast and Mid-Atlantic waters in support of offshore wind development. These data have wider value to NOAA's mission around fisheries, marine habitat protection and general understanding of ocean conditions," said David Millar, Government Accounts Director for Fugro in the Americas. "This creates a tremendous opportunity for public-private partnerships to co-invest in ocean data for public and private benefit."

Through contracts with industry partnerships such as that with Fugro, NOAA brings together the public and private sectors in the collection and use of ocean data to advance NOAA's science mission and foster sustainable development while responding to societal challenges such as climate change, energy and food security.

DID YOU KNOW?

THE NEW BLUE ECONOMY PROMOTES THE GATHERING AND USE OF NEW INFORMATION ABOUT THE OCEAN TO ADDRESS SOCIETAL CHALLENGES.

We are working to show how we can build a $100 billion climate services enterprise, a key portion of which is this New Blue Economy. Private sector businesses are key partners for NOAA in delivering these endeavors.

DR. RICHARD W. SPINRAD

Fisherman's Wharf at sunset in Monterey, California

Through 2026, evidence of progress toward the Improve Ocean-Related Data and Data Access objective include:

- Through the development of customized information services, NOAA supports a thriving ocean enterprise that adds sustainable economic opportunities while providing valuable climate and ocean services and solutions.
- NOAA continues to pioneer the development and use of innovative technologies to advance marine data collection methods.
- Living marine resource managers and resource-dependent sectors have access to robust forecasts, projections, risk assessments and management strategies to optimize fisheries management and increase the resilience of marine resources and the communities that depend on them.
- Growth is achieved in Marine Economy Satellite Account industries that encompass New Blue Economy products and services.
- NOAA enhances coastal and ocean observing systems and ensures data availability in response to user needs.
- NOAA strategically uses private data buys to support NOAA marine forecasts and information.

03 BLUE ECONOMY

BLUE ECONOMY: STRATEGIC OBJECTIVE 3.2

STRENGTHEN ESTABLISHED SECTORS OF THE BLUE ECONOMY

In 2020 the American marine economy supported 2.2 million jobs and contributed approximately $361 billion to the nation's gross domestic product. NOAA will explore, develop and advance state-of-the-science technology to enhance its data and services that support existing missions to reduce risk, increase safety and efficiency and manage and conserve marine resources. Working with industry partners, NOAA will help plan for climate-resilient infrastructure and encourage more sustainable operations — particularly with regard to conservation, nature-based solutions, aquaculture, renewable energy and other sectors with emerging interests in ocean co-benefits.

STRATEGIES INCLUDE:

IMPROVE ADAPTIVE FISHERIES MANAGEMENT

EXPAND SUSTAINABLE MARINE TOURISM AND RECREATION OPPORTUNITIES

SUPPORT SUSTAINABLE DEVELOPMENT OF OFFSHORE RENEWABLE ENERGY

ADVANCE NOAA'S CONTRIBUTION TO A SAFE AND EFFICIENT MARINE TRANSPORTATION SYSTEM

03 BLUE ECONOMY

3.2.1 IMPROVE ADAPTIVE FISHERIES MANAGEMENT

NOAA will provide the science needed to further integrate changing ocean conditions into an ecosystem approach to fisheries management and to model and forecast those effects on fish stocks, their habitat and seafood productivity. By deploying economic tools and forecasts to promote responsible and sustainable industry growth, diversify market opportunities, strengthen supply chains and ensure participation of underrepresented communities, NOAA will build resilience to future crises and market shocks in the fishing and aquaculture industries. NOAA will also provide technical assistance on the siting and permitting of aquaculture enterprises. NOAA's leadership in combating the growing threat of illegal, unreported and unregulated fishing, and ensuring fair and reciprocal trade in fish products, will also protect U.S. competitiveness and sustainability goals to prevent harm to protected resources globally.

3.2.2 EXPAND SUSTAINABLE MARINE TOURISM AND RECREATION OPPORTUNITIES

From Maine to Guam, marine recreation is both a cultural cornerstone and an important economic driver in the U.S., with coastal tourism and recreation in 2020 valued at $195.7 billion in sales. NOAA plays a critical role in protecting and promoting access to special coastal and marine places including managing a network of underwater parks encompassing more than 600,000 square miles of coastal, marine and Great Lakes waters. NOAA will tailor its sustainable management of special places and marine fisheries and promotion of conservation to ensure recreational opportunities for generations to come.

DID YOU KNOW?

NOAA SERVICES SUPPORT MORE THAN ONE-THIRD OF U.S. GDP.

03 OFFSHORE WIND

Propelling the New Blue Economy Forward

Sustainable energy sources such as offshore wind are key drivers in developing the New Blue Economy. NOAA provides technical assistance to help identify compatible sites for offshore wind development while minimizing impacts to fisheries, fishing communities, protected marine species and their habitats.

THE OFFSHORE WIND PIPELINE HAS GROWN TO **35,324 MEGAWATTS** NOW IN VARIOUS STAGES OF DEVELOPMENT.

THE NATIONAL **10-YR GOAL** IS TO DEPLOY **30 GIGAWATTS** OF OFFSHORE WINDPOWER BY THE YEAR 2030.

2020

REDUCE CARBON EMISSIONS BY **78 MILLION** METRIC TONS

GENERATE POWER FOR **10 MILLION** AMERICAN HOMES

SUPPORT **77,000 JOBS** INCLUDING 44,000 EMPLOYED IN OFFSHORE WIND

2030

DID YOU KNOW?

SHIPS MOVE $1.5 TRILLION WORTH OF PRODUCTS IN AND OUT OF U.S. PORTS EVERY YEAR.

3.2.3 SUPPORT SUSTAINABLE DEVELOPMENT OF OFFSHORE RENEWABLE ENERGY

The proliferation of the offshore wind sector is a prime example of how the blue economy offers opportunities for sustainable business development and illustrates how NOAA can promote economic development while maintaining environmental stewardship. The installation and deployment of offshore wind and other renewable energy sources requires data and information about the conditions of the ocean and how they will change over time. NOAA will work with industry and federal action agencies to provide scientific and social analyses to help balance competing uses and minimize impacts to fisheries, fishing communities, protected marine species and their habitat and NOAA observational systems.

3.2.4 ADVANCE NOAA'S CONTRIBUTION TO A SAFE AND EFFICIENT MARINE TRANSPORTATION SYSTEM

NOAA will provide new services that will optimize the safety and utility of the nation's marine highways. Massive container ships are testing the limits of U.S. ports with drafts reaching the seafloor and superstructures so high that air gap under bridges is a real challenge. The "just-in-time" supply chain upon which the U.S. economy depends requires that ports operate safely and efficiently. NOAA's Precision Marine Navigation program will offer mariners support throughout every step of a voyage by integrating existing NOAA datasets and products in a way that better meets their requirements. Mariners, shippers, port authorities and other decision makers will also receive access to more robust information, such as high-resolution bathymetry, more accurate water levels and surface currents and improved forecasts of marine hazards.

Through 2026, evidence of progress toward the Strengthen Established Sectors of the Blue Economy objective will include:

- NOAA makes advancements in fisheries forecasting, environmental stewardship, community outreach and aquaculture to establish a more sustainable and resilient U.S. seafood industry.
- The agency's conservation efforts and sustainable management of America's coastal and marine natural treasures ensure robust recreational opportunities for generations to come.
- NOAA's expertise enables the U.S. to expand its offshore wind sector with minimal impacts to fisheries, fishing communities, protected marine species and their habitat.
- The Precision Marine Navigation program optimizes the safety and utility of the nation's marine highways, supporting the U.S. economy and supply chain reliant upon an efficient marine transportation system.
- Decision-makers have access to new services for safe and efficient marine transportation including new and more accurate forecasts of coastal and ocean wave and sea state, sea ice conditions, marine weather, tides and electronic chart displays of oceanographic and meteorological hazards.
- Aquaculture-based industries and economies are supported by a comprehensive national framework for sustainable and productive aquaculture.

03 BLUE ECONOMY

BLUE ECONOMY: STRATEGIC OBJECTIVE 3.3

IMPROVE RESILIENCE OF COASTAL COMMUNITIES AND ECONOMIES

Coastal counties in the U.S. are home to 127 million people — or about 40 percent of the population. If American coastal counties were an individual country, they would rank third in the world in GDP. To ensure responsible development and growth of the coastal communities and economies, NOAA will connect tools for resilience and climate science with coastal communities and will engage in co-development of those tools to support planning and management decision-making. NOAA will also expand its marine debris removal and prevention efforts by advancing innovative approaches in concert with a broadening network of partners to increase impact. NOAA's diverse coastal resilience programs and missions produce vital science and provide decision support services for planning, preparedness, response, recovery and restoration to address diverse coastal issues across the U.S.

STRATEGIES INCLUDE:

ADVANCE FORECAST EFFECTS OF SEA-LEVEL RISE AND COASTAL INUNDATION

REDUCE RISK FROM COASTAL AND ENVIRONMENTAL HAZARDS

SUPPORT RESPONSIBLE COASTAL DEVELOPMENT AND MANAGEMENT

03 BLUE ECONOMY

3.3.1 ADVANCE FORECAST EFFECTS OF SEA-LEVEL RISE AND COASTAL INUNDATION

Sea-level rise will create a profound shift in coastal flooding by causing tide and storm surge heights to increase and reach further inland. By 2050, moderate — typically damaging — flooding is expected to occur more than 10 times as often as it does today. Through improved forecasts of hurricanes and coastal storms, NOAA will better inform emergency managers, coastal resource managers, industry and the public to prepare and adapt to more frequent coastal inundation. NOAA will improve coastal mapping, increase observations and updates to digital elevation models and improve and integrate modeling to contribute to better coastal inundation forecasts. NOAA will also maintain current impact information to forecast the effects of sea-level rise and coastal inundation and work to develop forecasts for longer timescales, from subseasonal to multi-annual, to better inform long-term planning for coastal communities.

3.3.2 REDUCE RISK FROM COASTAL AND ENVIRONMENTAL HAZARDS

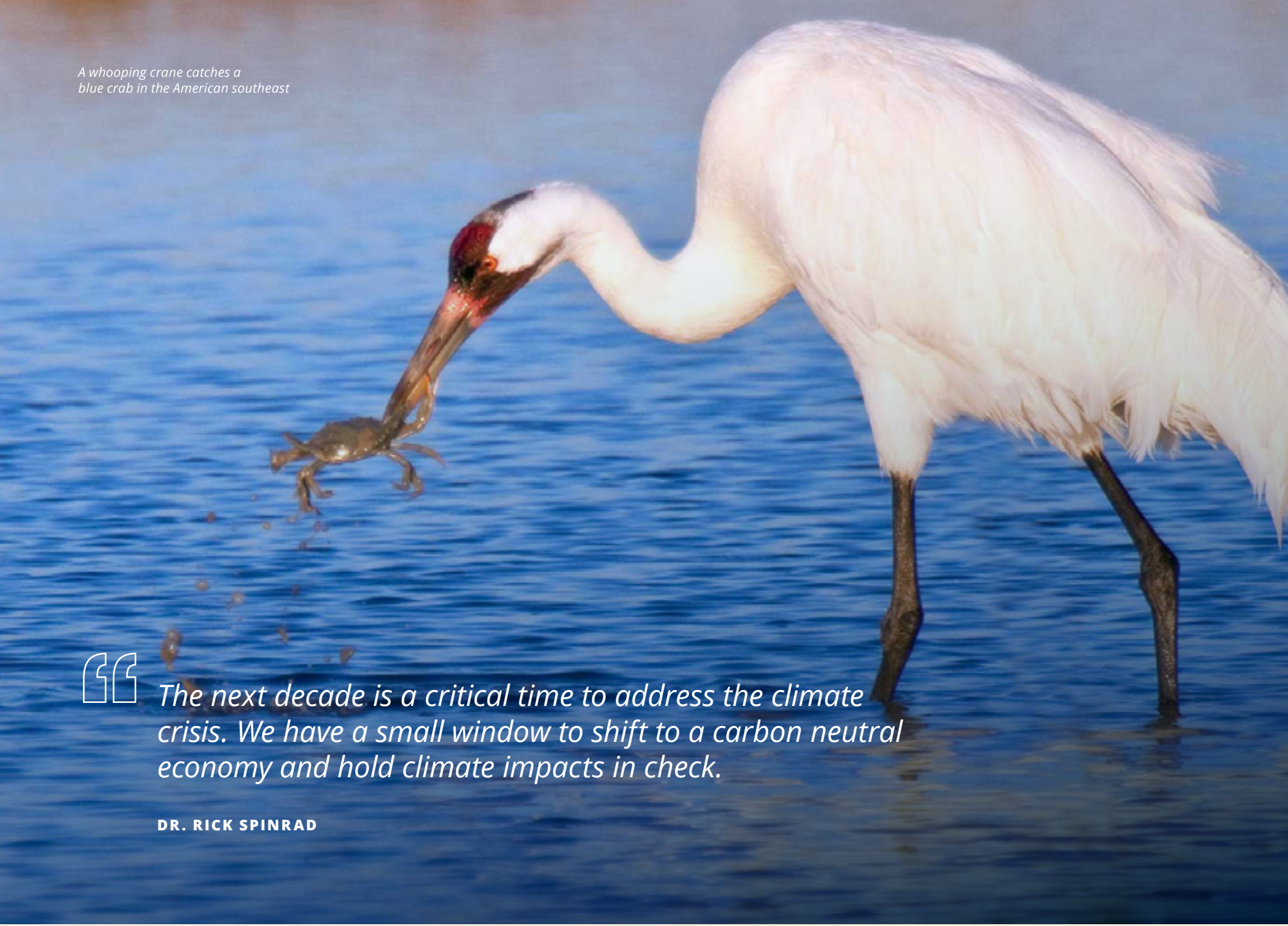
Coastal communities face numerous threats including extreme natural events such as hurricanes, coastal storms, tsunamis and landslides as well as longer-term risks of coastal erosion, oil spills, marine debris, ocean acidification, harmful algal blooms and hypoxia. These hazards can endanger lives, contaminate drinking water, reduce food security, damage coastal infrastructure, degrade coastal ecosystems and harm coastal economies. NOAA will ensure that decision-makers and the public in coastal communities have access to innovative products and services for effective preparation and response to ocean-related threats to health and economies including innovative approaches to marine debris prevention and removal.

3.3.3 SUPPORT RESPONSIBLE COASTAL DEVELOPMENT AND MANAGEMENT

NOAA will engage and consult with partners at all levels to ensure investments and development, including substantial infrastructure investments under the Infrastructure Investment and Jobs Act, are sustainable, environmentally responsible and climate ready. NOAA will consult with federal agencies to ensure the sustainability and conservation of living marine resources and provide grants, research and technical assistance to help communities increase carbon capture and select natural and nature-based solutions to protect life, property and health systems

DID YOU KNOW?

EVERY SHIP MOVING IN AND OUT OF U.S. PORTS RELIES ON NAVIGATION CHARTS AND WATER LEVEL INFORMATION THAT THE NATIONAL OCEAN SERVICE ALONE PROVIDES.



A whooping crane catches a blue crab in the American southeast

The next decade is a critical time to address the climate crisis. We have a small window to shift to a carbon neutral economy and hold climate impacts in check.

DR. RICK SPINRAD

Through 2026, evidence of progress toward the Improve Resilience of Coastal Communities and Economies objective will include:

- Marine-dependent communities, including underserved and vulnerable communities in the Arctic, tropical islands and other areas, have new tools, information and training to help them develop and implement adaptation plans to manage risk from changing oceans and other stressors.
- Coastal counties are engaged with NOAA to improve resilience and climate-smart communities are identified and enabled for resilience planning.
- Decision-makers and the public have access to the actionable information, supported by social science, to optimally manage, mitigate and build resilience to inland and coastal flood threats.
- NOAA programs ensure a measurable impact in preventing and removing marine debris in U.S. coastal and Great Lakes ecosystems.
- Through newly developed coastal services, decision-makers have access to new analysis, scenario planning and other tools for managing inundation and protecting coastal infrastructure on 20-, 50- and 100-year time horizons.
- Decision-makers in coastal communities have access to new products and services for effective preparation and response to ocean-related threats to health, including harmful coastal algal blooms, shellfish poisoning, marine pollution and oil spills.
- Through a comprehensive, operational near-shore coastal forecast system, decision-makers have access to new total water level and inundation risk forecasts and mapping that are tied to the built environment and vital infrastructure in all coastal communities.
- NOAA is engaged to ensure new coastal development projects are sustainable, environmentally responsible and climate-ready.

03 BLUE ECONOMY

BLUE ECONOMY: STRATEGIC OBJECTIVE 3.4

PROTECT AND RESTORE MARINE LIFE AND OCEAN, COASTAL AND GREAT LAKES ECOSYSTEMS

A healthy blue economy depends on responsible management of our ocean, coastal and Great Lakes resources. Through stewardship, NOAA creates jobs and other opportunities for sustainable economic growth and innovation. NOAA will continue to manage more than 620,000 square miles of ocean and Great Lakes waters as well as 430 domestic protected marine species. More broadly, NOAA will provide science and information to support conservation and stewardship of U.S. coastal areas, the Exclusive Economic Zone and Extended Continental Shelf.

STRATEGIES INCLUDE:

RECOVER AND CONSERVE PROTECTED SPECIES

PROTECT, CONSERVE AND RESTORE COASTAL, OCEAN AND GREAT LAKES LANDS, WATERS AND RESOURCES

ADVANCE SCIENCE FOR STEWARDSHIP AND CONSERVATION

03 BLUE ECONOMY

3.4.1 RECOVER AND CONSERVE PROTECTED SPECIES

NOAA will implement conservation-based statutes to protect and recover endangered marine and migratory fish species and conserve and protect marine mammals through science-based policy, management and stewardship. Many of these species are key components of their ecosystems and have particular social and cultural importance. Specifically, NOAA will focus on species recovery using its understanding of environmental and anthropogenic threats. NOAA will use a climate-informed approach to implement actions to stabilize and recover endangered and threatened species protected by the Endangered Species Act, conserve marine mammals, conduct emergency interventions for protection or recovery of animals in poor health and bring greater attention and marshal resources towards saving the species at greatest risk of extinction.

3.4.2 PROTECT, CONSERVE AND RESTORE COASTAL, OCEAN AND GREAT LAKES LANDS, WATERS AND RESOURCES

NOAA will use its 50 years of area-based conservation and restoration expertise to conserve and restore high-priority areas of coastal habitat that provide major ecological functions or are impacted from a variety of societal and environmental stressors. NOAA will advance locally led conservation and restoration efforts to address climate change, the disappearance of nature and inequitable access to the outdoors. NOAA will use a climate-informed approach to restore access to spawning habitat in streams, rivers and coastal habitats as well as conserve adjacent areas to improve resilience in consideration of shifting coastlines from the impact of sea-level rise and increasing coastal storms.

3.4.3 ADVANCE SCIENCE FOR STEWARDSHIP AND CONSERVATION

NOAA will increase its understanding of stewardship and conservation resources to improve its management into the future. Quality, observations and data are the foundations for safe and efficient management of these resources and serve as the critical starting point for predicting likely impacts of environmental and anthropogenic drivers and management decisions on the future state of U.S. oceans, coasts and Great Lakes. NOAA will augment its current efforts by incorporating citizen- and industry-based science and traditional knowledge to feed the resulting information into the burgeoning New Blue Economy enterprise.

DID YOU KNOW?

THERE ARE 4000 ARGO BUOYS CURRENTLY DEPLOYED ACROSS THE WORLD'S OCEANS TO MEASURE TEMPERATURE AND SALINITY.

OUTCOMES

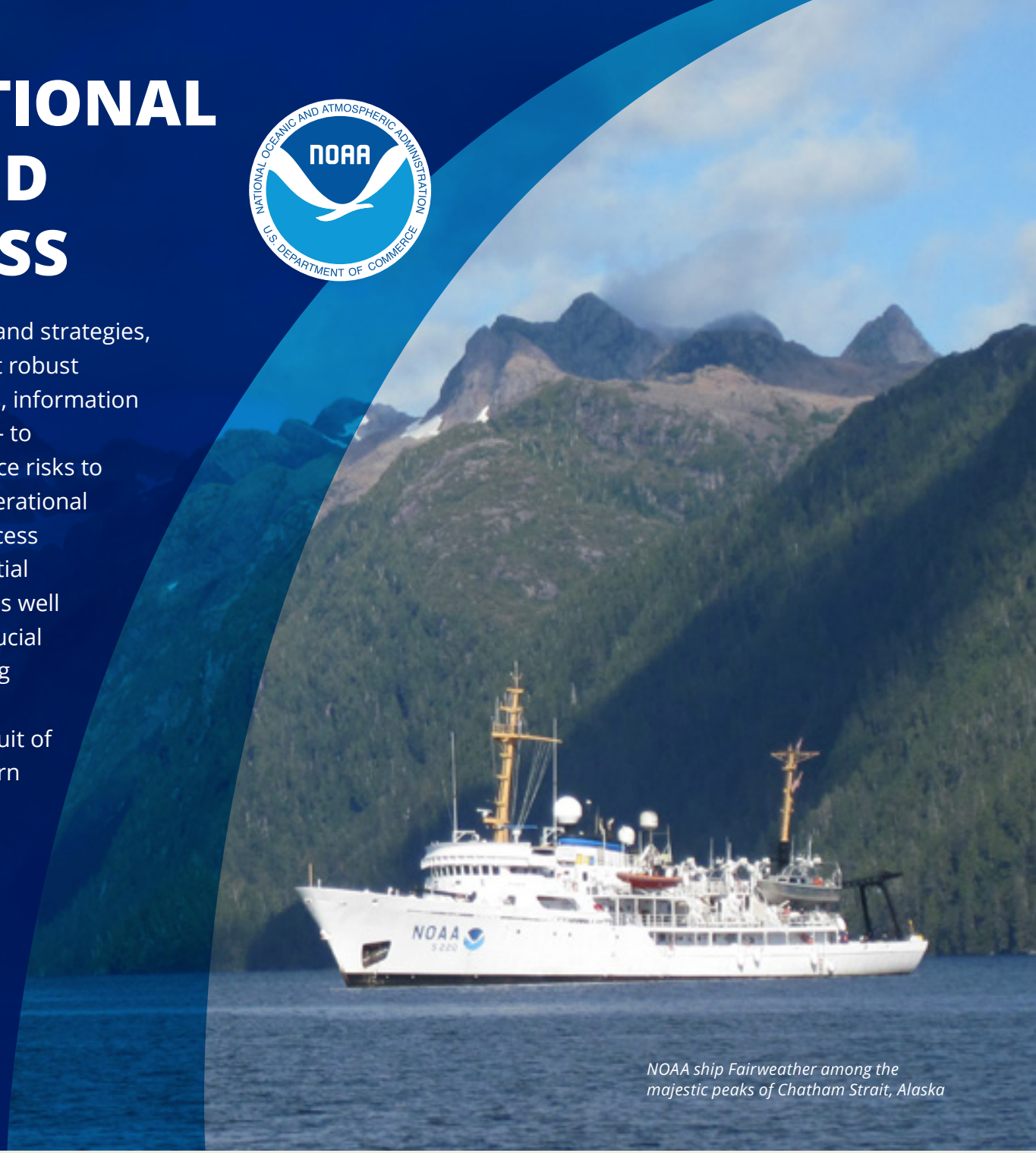
BLUE ECONOMY: STRATEGIC OBJECTIVE 3.4

Through 2026, evidence of progress toward the Protect and Restore Marine Life and Ocean, Coastal and Great Lakes Ecosystems objective will include:

- By establishing new National Estuarine Research Reserves and National Marine Sanctuaries, leading habitat restoration programs and expanding access to Coastal Zone Management Programs, NOAA contributes to the national goal of conserving at least 30 percent of U.S. lands and waters by 2030.
- Restoration results in ecological change and community resilience through habitat-based approaches to rebuild productive and sustainable fisheries, contribute to the recovery and conservation of protected resources and promote resilient ecosystems and communities.
- Decision-makers supporting endangered and threatened species under the Endangered Species Act have increased capacity to support resilient, thriving marine and coastal ecosystems, support responsible recreation and tourism and educate and inspire people around the world.
- Communities are engaged in strengthening coastal resilience and economic vitality through the conservation and restoration of coastal ecosystems by pursuing locally-led and collaborative stewardship efforts.
- NOAA focuses science, recovery actions and partnerships to stabilize the highest priority protected species and protect and restore critical habitat where it limits species recovery.
- NOAA's educational programs for children and the public increase environmental literacy and encourage individual planet stewardship actions.

NOAA'S OPERATIONAL EXCELLENCE AND MISSION SUCCESS

To excel at achieving NOAA's goals, objectives and strategies, NOAA will develop and successfully implement robust strategic plans and frameworks for its facilities, information resources management and service delivery — to advance key operational priorities and to reduce risks to mission success. To achieve excellence, the operational priorities described below include people, process and technology-related functions — the essential human, physical and virtual infrastructure — as well as business process improvements that are crucial to building a Climate Ready Nation and growing the New Blue Economy. NOAA's value chain is supported and sustained by the agency's pursuit of becoming a model workplace, providing modern and sustainable facilities and investing in IT and next-generation observing infrastructure. Each of these elements are critical to address current gaps and keep pace with a rapidly changing environment. Outlined below is a snapshot of NOAA's human, physical and virtual infrastructure investments, as well as customer-focused data and service delivery frameworks, needed to deliver on this plan.



NOAA ship Fairweather among the majestic peaks of Chatham Strait, Alaska

WORLD CLASS WORKFORCE

NOAA will hire, develop and retain a diverse, world-class workforce that is committed to using the best science, engineering and technology to ensure mission delivery. The agency's workforce requires advanced skills in scientific and engineering disciplines as well as the best skills in project and organizational management, social science and interdisciplinary work. NOAA will also take measurable steps to enhance the NOAA employee experience by creating a culture of belonging, inclusion and diversity. With a substantial percentage of the workforce approaching retirement eligibility, NOAA will bolster efforts to attract, hire and develop a new generation of diverse professionals to accomplish its mission. Over the coming years the agency will implement comprehensive workforce training and professional development, enable leaders to manage and lead in a flexible work environment and support strong labor-management relations.

SAFE AND SUSTAINABLE FACILITIES

The 2030 NOAA Facilities Strategic Plan envisions an efficient facilities footprint equipped with the highest caliber scientific capabilities in the world. This will enhance the quality and prestige of NOAA products, services and information while providing safe and climate-resilient environments to enable the NOAA mission, attract and retain a world-class workforce and support a flexible workplace. To address significant facilities challenges, including an aging and disjointed footprint that has a large maintenance and repair backlog, NOAA will reduce its facilities deferred maintenance through repair, recapitalization, leasing or disposal of its real property.

DID YOU KNOW?

NOAA WAS FOUNDED IN 1970.

HIGH PERFORMANCE COMPUTING

NOAA will continue to make critical investments in high performance computing and associated research, operations and maintenance programs. These include significant investments in the Weather and Climate Operational Supercomputing System by transitioning to WCOSS-2 and investing in the high performance computing systems supporting NOAA's research activities and laboratories. The NOAA High Performance Computing Board will provide holistic management promoting balance and efficiency between the powerful computing needed to develop the next generation of numerical prediction systems and the agency's imperative to deliver numerical guidance operationally.

CLOUD COMPUTING

NOAA has and will continue to use the Cloud Smart approach to harness the capabilities of the commercial cloud and internal cloud systems. The agency collects, integrates and uses a formidable amount of data daily to monitor and model complex Earth systems. Increased cloud use will provide reliable, resilient and scalable infrastructure and computing resources for developing efficient solutions to enhance NOAA's capabilities and performance. New investments in cloud computing will also support improvements in satellite data products and services, numerical weather, water, and climate prediction, coastal and ocean models, big data analysis, storage and dissemination.

DID YOU KNOW?

NOAA INCLUDES THE OLDEST CIVILIAN SCIENCE ORGANIZATION — ESTABLISHED IN 1807 BY THOMAS JEFFERSON.

OPEN DATA DISSEMINATION/OPEN SCIENCE

NOAA will ensure the agency's data and information are broadly available on a free and open basis and easy to use across economic sectors, geography and socioeconomic context to realize the full value of NOAA's data. NOAA will continue to share its knowledge by keeping open its data, codes, algorithms, models and research outputs, including manuscripts, publications, processes and methods. NOAA will invest across the organization in infrastructure and the data workforce needed to provide appropriate data management throughout the entire data lifecycle from collection to broad data access and associated information services. Leveraging commercial partnerships, cloud, artificial intelligence and machine learning technologies and collaborating across NOAA to preserve, curate, document and disseminate data will be paramount. NOAA will further leverage commercial partnerships, big data projects and contractual arrangements with commercial cloud providers to make more of its data publicly accessible. Innovative partnerships with cloud service providers are well-suited to provide free public access to NOAA's rapidly increasing data, including climate and Earth system dynamics. NOAA also hosts several openly accessible global databases, such as the World Ocean Database. Advocating more forcefully for open data sharing within the international community will facilitate NOAA's access to more data. This also incorporates supporting information services to improve data literacy, equitable access and the value of NOAA data in the public and private sectors.

CYBERSECURITY

NOAA will invest in IT innovation to accelerate modernization of its legacy infrastructure, deliver cost-effective solutions to employees and enable mission success. NOAA will continue to move from a compliance-based to a risk-based approach to defend its information, data, networks, equipment, intellectual property and personnel against a wide variety of adversaries ranging from nation states to lone-wolf attacks to insider threats. NOAA will advance critical cybersecurity activities to address vulnerabilities of specific Federal Information Security Management Act systems as well as strengthening the agency's overall cyber posture and ability to handle evolving threats.

OBSERVING SYSTEMS PORTFOLIO

NOAA's vision is to achieve and sustain an observing system portfolio that is mission effective, integrated, adaptable and affordable. NOAA will continue to use its sophisticated portfolio analysis databases and tools to ensure its extensive observing system portfolio will meet or exceed current and future mission requirements in a balanced, cost-effective manner. NOAA will leverage partnerships to continually examine, coordinate and improve its diverse array of observing systems within and across domains including space, atmosphere, land, ocean and cryosphere. NOAA has carefully and strategically developed fleet and aircraft plans to support their recapitalization and maintenance and is expanding the strategic use of uncrewed systems across the agency.

NOAA will continue to develop plans for the next-generation satellite architecture to meet NOAA's Earth observing system requirements. NOAA will undertake formulation studies with industry for all satellite systems to ensure an efficient, effective and cohesive space architecture that meets NOAA's mission and can adapt to future needs. NOAA will advance critical research on weather radar technologies and operations to meet the unprecedented challenges of weather observing and forecasting in the coming decades. Additionally, next-generation ocean observation architecture will be strengthened in-situ and real-time ocean observations. The use of foundational platforms will provide crucial data to inform the Earth system dynamics critical to improving climate modeling and forecasting.

SERVICE DELIVERY

Users look to NOAA for a range of data, information, tools and services, but sometimes find them difficult to efficiently and effectively access and understand. The nation benefits from enhanced service delivery and a better customer experience through improved decision making, reduced risk to lives, property and the economy as well as increased resilience to weather and climate hazards. NOAA's commitment is to mature the service delivery, user engagement and customer experience enterprise functions and move toward being a government leader in equitable service delivery. NOAA will center equitable service delivery as a core element of its value chain, actively promote the incorporation of the Service Delivery Framework and customer experience tools across its services and strengthen and broaden support for its customer-facing communities of practice.

DID YOU KNOW?

NOAA EMPLOYS 12,000 PERSONS WORLDWIDE, INCLUDING OVER 6,000 SCIENTISTS AND ENGINEERS.

NOAA is in every community in the U.S. working hand-in-hand with partners locally and sharing best practices globally. No matter the need, people know they can turn to us for reliable, easy-to-use climate and extreme weather information to help make informed decisions that help save lives and livelihoods.

DR. RICK SPINRAD

Atmospheric optical phenomena called sun dogs and light pillars are created by the refraction of sunlight through ice crystals in the Arctic Ocean

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NOAA STRATEGIC GOALS	DOC STRATEGIC GOALS	DOC STRATEGIC PLAN OBJECTIVES (Commerce lead bureau is in parentheses)
Goal 1 - Build a Climate Ready Nation	*Goal 3 - Address the Climate Crisis through Mitigation, Adaptation and Resilience Efforts*	3.1 – (NOAA) Increase the impact of climate data and services for decision makers through enhanced service delivery and improved weather, water and climate forecasts 3.2 – (NOAA) Strengthen coastal resilience and restoration of lands and waters for current and future generations 3.3 – (ITA) Accelerate development and deployment of clean technologies 3.4 – (All bureaus) Embed climate considerations across Department programs
Goal 2 - Make Equity Central to NOAA's Mission *Operational Excellence*	*Goal 5 - Provide 21st Century Service with 21st Century Capabilities*	5.1 – (All bureaus) Effectively implement new Department of Commerce authorities and investments 5.2 – (All bureaus) Optimize workforce and diversity, equity and inclusion practices 5.3 – (All bureaus) Equitably deliver exceptional customer experience 5.5 – (All bureaus) Modernize mission support processes and infrastructure
Goal 3 - Foster an Information Based Blue Economy	*Goal 2 - Foster Inclusive Capitalism and Equitable Economic Growth*	2.1 – (EDA) Drive equitable, resilient, place-based economic development and job growth 2.2 – (EDA, All bureaus) Build sustainable, employer-driven career pathways to meet employer's need for talent and to connect Americans to quality jobs
Operational Excellence *All*	*Goal 1 - Drive U.S. Innovation and Global Competitiveness*	1.7 – (NOAA) Advance U.S. leadership in the global commercial space industry 1.2 – (NIST) Accelerate the development, commercialization and deployment of critical and emerging technologies
All	*Goal 4 - Expand Opportunity and Discovery through Data*	4.1 – (OUSEA, All bureaus) Implement evidence-based decision making within the Department of Commerce to increase program and policy impact 4.3 – (OUSEA, All bureaus) Improve Commerce data usability and advance ethical, responsible and equitable data practices