WRITTEN TESTIMONY OF

DR. RICK SPINRAD
UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE
AND ADMINISTRATOR FOR THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

ON

OVERSIGHT OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

BEFORE THE

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION'S SUBCOMMITTEE ON OCEANS, FISHERIES, CLIMATE CHANGE, AND MANUFACTURING

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Chairs Cantwell and Baldwin, Ranking Members Cruz and Sullivan, and Members of the Subcommittee, thank you for the opportunity to testify today regarding the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). NOAA appreciates the continued support of Congress, the Administration, and our broad and diverse base of stakeholders.

For Fiscal Year (FY) 2024, NOAA proposes a budget of $6.8 billion in discretionary appropriations, an increase of $450.5 million from the FY 2023 Enacted. The FY 2024 budget builds on the $6.27 billion in investments through the Inflation Reduction Act (IRA) (P.L. 117-169) and Bipartisan Infrastructure Law (BIL) (P.L. 117-58) for Climate-Ready Coasts, climate data and services, and fisheries and protected resources.

All of our investments supports the following NOAA goals:

- ***Expanding NOAA's Climate Products and Services*** – As part of a whole of government approach, NOAA will provide actionable environmental information that is the basis of smart policy and decision-making, especially around initial risk and focus areas including wildfires, floods, drought, extreme heat, coasts, marine resources, and mitigation.
- ***Providing Science and Data to Inform Economic Development*** - NOAA will continue to foster environmental stewardship and optimize advances in science and

technology to create value-added, data-driven sustainable and equitable economic development, with a particular focus on the New Blue Economy[1].

- ***Equity and Workforce*** - NOAA will continue to integrate equity across the organization by improving capabilities and knowledge sharing, and honing product development and service delivery in Tribal and underserved communities.
- ***Satellites*** - NOAA will continue investments in future geostationary, low Earth orbit, and space weather observations to ensure continuity of critical data from legacy systems, while providing significant improvements in data and products.
- ***Facilities*** - NOAA will continue investments aligned with the NOAA Facilities Strategic Plan and Facilities Investment Plan.

Expanding NOAA's Climate Products and Services

Climate change is a threat to lives and livelihoods around the United States and the world. Heat is one of the leading causes of weather-related deaths[2] and temperature highs have increased and broken records over the past several decades. So far this year, the United States has already experienced 12 confirmed weather/climate disaster events, including winter storms, tornado outbreaks, flooding, and severe weather, with losses exceeding $1 billion each.[3] These events resulted in the deaths of 99 people and had significant economic impacts on the areas affected. And, while the 1980–2022 annual average is eight events, the annual average for the last five years (2018–2022) is 18 events. We are also seeing an increase in climate-related fishery disasters and an increase in the extent of and damage caused by wildfires.

NOAA provides actionable environmental information that is the basis for smart policy and decision-making in a changing world. NOAA is collaborating with other Federal agencies as part of the whole-of government effort to address the climate crisis, strengthen resilience, and promote economic growth. Together with its partners, NOAA will build the nation's climate resilience, a primary goal outlined in our FY 2022-2026 Strategic Plan. Our 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.

Through the historic BIL and IRA funding, we are investing more than $1.1 billion ($200 million from IRA, and $492 million in flood inundation and forecasting, $25 million in flood mapping, $100 million in wildfires, $1 million in soil moisture, $150 million in ocean and coastal observing systems, $56 million in Regional Ocean Partnerships, and $80 million in supercomputing from BIL) in expanding and improving NOAA's climate products and services. Investments through BIL will allow us to invest in science to better map and forecast floods;

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1 The New Blue Economy is a sustainable and equitable ocean and coastal economy that optimizes advances in science and technology to create value-added, data-driven economic opportunities and solutions to pressing societal needs. *See* www.noaa.gov/blue-economy.

[2] www.weather.gov/hazstat/

[3] www.ncei.noaa.gov/access/billions/

understand water resources, soil moisture, and wildfire; improve and expand ocean and coastal observations; expand our regional ocean partnerships; and, grow our supercomputing capacity.

IRA investments will allow us to provide research grants to address climate challenges such as the impacts of extreme events, water availability and quality, impacts of changing ocean conditions on marine life, improved greenhouse gas and ocean carbon monitoring, and coastal resilience and sea level rise. This science will accelerate advances and improvements in research, observation systems, modeling, forecasting, assessments, and, critically, the dissemination of climate information to the public. We will also improve our short-term, seasonal, and decadal climate modeling, to advance predictions of extreme weather events and our ability for long-term planning and adaptation. Additionally, we will work with industry in our proving grounds to put our information to work. Through BIL and IRA, we are expanding our dissemination of actionable, place-based information to save lives and property.

The FY 2024 budget builds on investments in the BIL and IRA to pave the way for NOAA's support for a climate-ready nation. **In FY 2024, NOAA is requesting an additional $78.2 million to implement Executive Order (EO) 14008 on *Tackling the Climate Crisis at Home and Abroad.*** Funding will support an earth systems approach to enhance NOAA's critical contributions to the U.S. climate modeling enterprise, prediction and projection, research and development, observational infrastructure, and service delivery and decision support tools. Establishing an end-to-end value chain for 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 weather and climate predictions and information must be reliably delivered to users to inform decision making. Forty percent of the U.S. population lives and works in coastal counties,[4] making a disproportionate segment of our society and economy at increasing risk to hazards such as hurricanes and coastal inundation. Therefore, the FY 2024 request will maintain investments to optimize the National Weather Service (NWS) Integrated Dissemination Program to ensure the provision of weather and climate predictions, forecasts, and warnings to the public, emergency management partners, and the U.S. weather enterprise. Funding will also allow first responders to immediately access imagery to assess and prioritize response efforts, improving positioning and processing, and delivering high resolution GIS ready imagery in real-time.

In coordination with other Federal climate service partners, NOAA will expand the proven capabilities of the Climate Adaptation Partnerships program and complement this work with NOAA's Regional Climate Services in order to advance adaptation measures and resilience

[4] NOAA Office of Coastal Management and U.S. Census Bureau, American Community Survey Five-Year Estimates (2015-2019), https://coast.noaa.gov/digitalcoast/data/acs.html (accessed March 1, 2023)

planning at regional and local scales, while also prioritizing environmental justice. These partnerships will increase the value of climate information to users and support more efficient, cost-effective delivery of products and services relevant to region-specific economic activity, hazards, and vulnerability.

NOAA provides timely and actionable environmental observations on global, national, and regional scales from satellites, radar, surface systems, atmospheric greenhouse gas sampling stations, ocean buoys, uncrewed systems, aircraft, and ships. With the funding requested in FY 2024, in addition to the funding provided through the IRA, NOAA will continue the acquisition of a second aircraft for its high-altitude jet program. With IRA funding, we are investing in vessel maintenance and in the construction of two Class B charting and mapping ships to improve our capabilities. With FY 2024 funding, NOAA will invest in Days at Sea and Flight Hours to support critical mission requirements, and the NOAA Corps officers needed to safely and effectively operate new ships and aircraft. In addition, uncrewed platforms have great potential to increase data collection efficiency and fill gaps not met by traditional platforms. NOAA will continue to explore using Uncrewed Systems to support the full spectrum of our aircraft and maritime missions.

NOAA will collaborate with our academic research partners to improve precipitation predictions across multiple weather and climate timescales through the Precipitation Prediction Grand Challenge Initiative. This effort will lead to improved precipitation forecasts using NOAA's Unified Forecast System. In addition, NOAA will develop a state-of-the-art global reanalysis capability to improve the prediction of high impact weather events, coastal inundation risk, and infrastructure failure, which will in turn improve our understanding of trends in extreme events, climate impacts on marine ecosystems and fisheries, and environmental change in under-observed polar regions.

As we increase our understanding of the changing climate in the short- and long-terms, we will simultaneously research and develop new and improved tools for decision makers to address climate impacts. For example, NOAA will support scientific monitoring and prediction of Arctic systems and the development of innovative observational technologies, and will ensure that satellite-derived data is provided to users as actionable information in support of high-priority applications in polar regions and coastal zones. NOAA will also address the ongoing needs identified by the NOAA-Alaska Tribal Health Consortium to further develop its Tribal climate program, and increase support in service to Alaska Natives. In addition, NOAA's research will address challenges faced by commercial fishing and marine resource managers and support tourism and recreation. The NOAA Climate-Ready Fisheries Initiative will provide decision-makers with climate-informed advice on best management strategies to reduce impacts and increase ecosystem and economic resilience.

NOAA will also invest in increasing conservation and protection in an expanded sanctuary system, which is an integral part of NOAA's implementation of the *America the Beautiful* initiative that includes the goal to conserve at least 30 percent of U.S. lands and waters by 2030. NOAA's FY 2024 request will enhance NOAA's sanctuary management capacity as new sanctuaries are designated. NOAA will work to identify gaps in marine protection, train the next generation of Marine Protected Area professionals, and expand technology use in sanctuaries to support management priorities. These efforts will be bolstered by our IRA investments to support the designation process, particularly for the sanctuary designations that are currently underway.

Providing Science and Data to Inform Economic Development

NOAA will continue to foster environmental stewardship and optimize advances in science and technology to create value-added, data-driven sustainable economic development, with a particular focus on the New Blue Economy by supporting development framed around an information and knowledge-based approach to support fisheries, transportation, shipping, renewable energy, recreation, and livelihoods. In 2022, the Bureau of Economic Analysis, in partnership with NOAA, released the official Marine Economy statistics, finding that the U.S. marine economy contributed approximately $361.4 billion to the Nation's gross domestic products[5] and supported 2.2 million jobs in 2020.[6]

Our investments through the IRA and BIL reflect the importance of our work to the marine economy. We are investing $1.1 billion in habitat restoration projects ($313 million in IRA funding, and $491 million to habitat restoration, $207 million for Coastal Zone Management, $77 million for the National Estuarine Research Reserves from BIL), $223 million for marine debris removal and interception as well as innovative research and community-based solutions for marine debris ($200 million from BIL and $23 million from IRA), and $40 million for improving the accuracy and efficiency of our permitting of activities, especially offshore wind.

We are also investing $335 million to ensure our management of fisheries has the best available science and accounts for climate change from IRA, $571 million in fish passage ($400 million from BIL and $172 million from IRA) to improve stocks and ecosystems, and $187 million specifically for the Pacific Coastal Salmon Recovery Fund, contributing to sustainable fisheries, Tribal treaty fishing rights, and native subsistence fishing. We are also providing $60 million to support Mitchell Act salmon hatcheries, and $240 million for non-Mitchell Act salmon hatcheries. In implementing our BIL and IRA programs we have placed specific emphasis on underserved communities in all competitive programs, and in response to community feedback

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[5] Bureau of Economic Analysis and NOAA, *Ocean Economy*, https://www.bea.gov/news/2022/marine-economy-satellite-account-2014-2020 (accessed March 1, 2023)

[6] Bureau of Economic Analysis and NOAA, *Ocean Economy*, https://www.noaa.gov/news-release/marine-economy-continues-to-power-american-prosperity-despite-2020-downturn (accessed March 1, 2023)

received during Tribal consultations, we also set aside more than $20 million for capacity building, allowing these areas to more fully participate in climate resilience planning.

In FY 2024, NOAA requests an additional $81.4 million in support of the expansion of offshore wind energy, the National Seafood Strategy, ocean and coastal mapping and charting, and development of key information systems in our tsunami, weather, and space observations infrastructure.

In support of the Administration's goal to deploy 30 gigawatts of offshore energy by 2030, NOAA will facilitate smart economic and ecological offshore wind development. In FY 2024, NOAA will continue to work closely with the Department of the Interior's Bureau of Ocean Energy Management (BOEM) to minimize the effects of offshore energy projects on protected marine resources, fisheries, and important habitats; reduce delays and minimize adverse economic impacts to the fishing industry and related coastal communities; and mitigate impacts to fisheries surveys in the Northeast and Mid-Atlantic.

NOAA's National Seafood Strategy outlines actions to rebuild and enhance the competitiveness of the seafood and fishing industries and associated communities. NOAA will support the Strategy by combating Illegal, Unreported, and Unregulated (IUU) fishing through increased capacity for existing programs. NOAA will use advanced technology, improve global fisheries management through international negotiations and capacity building, monitor U.S. imports to promote legal and sustainable seafood, and increase enforcement capacity and marine forensics. In FY 2024, NOAA will fill data gaps in the foundational data for ocean and coastal mapping and charting of the U.S. Exclusive Economic Zone, and build out geospatial and water level infrastructure in coastal areas benefiting local communities and Tribal populations. Also, to further address tsunamis' unpredictability and potentially disastrous consequences to life and property along vulnerable U.S. coastlines, NOAA will provide a common framework that supports the National Tsunami Warning Center, located in Alaska, and Pacific Tsunami Warning Center, located in Hawai'i. Funding will ensure continuity of operations by eliminating discontinuities within existing systems, and providing consistent guidance to all users, independent of location.

With the FY 2024 Budget request, NOAA will complete acquisition of a demonstration model to advance critical research and support industry engagement to evaluate a dual polarization Phased Array Radar (PAR) technology to meet NOAA's weather radar requirements. Investments in PAR will allow us to continue the research to best leverage advanced technology to make more accurate warnings and reduce false alarms for severe weather. PAR is a promising technology that could replace NOAA's current NEXRAD radar network by 2040. Additional funding will support improvement in the safety of commercial space activities as Earth's orbits become increasingly congested with space traffic and debris. This request will allow the Office of Space

Commerce to continue progress toward meeting its target of achieving Full Operating Capability in FY 2025 for space situational awareness services.

Equity and Workforce

As NOAA tackles the climate crisis by building a climate-ready nation, it will strive to engage and support the Nation's underserved and vulnerable communities. The Biden Administration's policies, including those described in EO 13985 on *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, and EO 14096 on *Revitalizing Our Nation's Commitment to Environmental Justice for All*, direct agencies to integrate equity into the DNA of their organizations—from management, to policies, to service delivery. To meet this challenge, NOAA is making equity central to every facet of mission delivery and working internally to create a model agency that incorporates diverse perspectives into our decision-making.

Our Climate Ready Workforce grants, a $60 million investment through the IRA, are grants that advance the President's Justice40 Initiative, and in which we are preparing the U.S. workforce for good jobs in the field of climate resilience such as a heat-health outreach assistant or Climate Resilience Officer for a town or city. These grants, along with a $60M investment through the Climate Resilience Accelerators competition, foster public-private partnerships to support commercialization of businesses working in climate resilience, and encouraging projects that reach historically underserved communities, as they are often the most impacted by and vulnerable to many effects of climate change.

In FY 2024, NOAA requests an additional $9.1 million to invest in science and management efforts in the U.S. Pacific and Caribbean territories, and support fisheries management and the seafood sector through training and workforce development.

NOAA will expand the use of social, economic, and climate change metrics that uniquely characterize a coastal community's vulnerability and resilience to disturbances (e.g., harvest declines, extreme weather, oil spills, sea level rise, etc.). This will enable users to analyze the climate vulnerability of over 4,600 coastal communities in 23 states thereby supporting the implementation of policies that address environmental, climate, and racial equity and justice considerations.

NOAA will support a diverse domestic seafood sector through a series of workforce development and training programs. Partnerships will span a wide range of entities, including diverse and historically underserved communities such as: minority serving institutions (MSIs), Historically Black Colleges and Universities (HBCUs), Tribal Colleges and Universities (TCUs), and community colleges. Training will focus on adaptation to disruptions in the market and the

regulations and science that underpin management, which will help improve cooperation and trust among the industry, public, scientists, and regulators.

Satellites

NOAA satellites are critical for NOAA's mission, as well as the security, safety, and prosperity of the Nation. Data from these satellites provide essential support to all segments of the U.S. economy. **In FY 2024, NOAA requests an additional $365.8 million for significant investments in NOAA's observational infrastructure, underscoring NOAA's commitment to making crucial, time-sensitive, and cost-effective investments to ensure that the Nation's next-generation satellite systems expand service delivery of essential earth system observations to meet the evolving needs of the American public**. The FY 2024 budget will help NOAA better observe environmental phenomena connected to climate change-related impacts and patterns, and deliver products, information, and climate services to inform decision makers.

The value of NOAA's world-class data is enhanced by NOAA applications and access by users. The FY 2024 budget supports much-needed improvements to NOAA's data infrastructure that will ensure that the data collected are preserved for the future and can be easily accessed in a cloud-based environment. This includes funding to transition NOAA to cloud computing for data ingest, processing, dissemination, and archiving, which will expand the size and diversity of NOAA user communities and data applications. In addition, NOAA will continue to implement vulnerability management against the latest threats on satellite ground systems to lower the operational risk, which ensures continuity of critical satellite data flow to key customers such as NOAA's NWS.

NOAA's current satellite constellation has proven its worth and will continue to do so for another decade. However, NOAA must concurrently invest in the next generation of environmental satellites with the needs of all of our communities in mind. FY 2024 funding for future geostationary, low earth orbit, and space weather observations will ensure critical data continuity from legacy systems, while providing significant improvements in data and products to meet the complex societal and environmental needs of the Nation. NOAA's program investments also allow us to immediately capitalize on the National Aeronautics and Space Administration (NASA)'s satellite observations for NOAA requirements and mission focus.

Facilities

NOAA's facilities portfolio is vast with over 620 facilities, including over 400 owned properties, and an estimated replacement value which exceeds $3 billion. Congress recognized the need to invest in NOAA facilities, and through funds in the IRA, we will be making a $279 million investment in facilities. **In FY 2024, NOAA is requesting an additional $55.7 million to support maintenance and repair of its aging infrastructure and significantly improve**

facilities across the nation. Each facility requires financial investments for maintenance, repairs, modernization, and even replacement to effectively sustain and evolve NOAA's science capabilities to support the current and future missions. NOAA proposes to significantly invest in facilities with an influx of funding to accompany the strategic priorities identified in the upcoming Facilities Strategic Plan.

Summary

NOAA is working hand-in-hand with partners locally and sharing best practices globally. People know they can turn to NOAA for reliable climate and extreme weather information to help make informed decisions that help save lives and livelihoods. With the funding from the IRA and BIL and increased funding in FY 2024, NOAA will ensure continuity from legacy systems while providing significant improvements in data and products and continuing investments aligned with our strategic vision. In doing so, it ensures that NOAA will continue to deploy the full breadth of its integrated services and capabilities necessary to ensure a climate-ready nation.