

# BUDGET OVERSIGHT OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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## HEARING

BEFORE THE

SUBCOMMITTEE ON OCEANS, FISHERIES, CLIMATE  
CHANGE, AND MANUFACTURING

OF THE

COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE

ONE HUNDRED EIGHTEENTH CONGRESS

FIRST SESSION

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JULY 20, 2023

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED EIGHTEENTH CONGRESS

FIRST SESSION

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**BUDGET OVERSIGHT  
OF THE NATIONAL OCEANIC  
AND ATMOSPHERIC ADMINISTRATION**

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**THURSDAY, JULY 20, 2023**

U.S. SENATE,  
SUBCOMMITTEE ON OCEANS, FISHERIES, CLIMATE  
CHANGE, AND MANUFACTURING,  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,  
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 9:30 a.m. in room SR-253, Russell Senate Office Building, Hon. Tammy Baldwin, Chairwoman of the Subcommittee, presiding.

Present: Senators Baldwin [presiding], Cantwell, Markey, and Sullivan.

**OPENING STATEMENT OF HON. TAMMY BALDWIN,  
U.S. SENATOR FROM WISCONSIN**

Senator BALDWIN. I call the Subcommittee on Oceans, Fisheries, Climate Change, and Manufacturing to order and for this oversight hearing on the National Oceanic and Atmospheric Administration's budget.

Good morning. Under Secretary Spinrad and Rear Admiral Hann, thank you for being here today. I look forward to hearing from you about how Congress can support the budgetary needs of the National Oceanic and Atmospheric Administration, better known as NOAA.

The topic is especially pertinent to addressing the growing challenges posed by climate change. Climate change is not a distant threat. It's here and now, impacting communities across our Nation and around the globe. NOAA plays a central role in understanding and addressing these impacts and it's imperative that we invest in the vital work carried out by the agency as we confront this reality.

The passage of the Inflation Reduction Act and the Bipartisan Infrastructure Law are critical to the missions of Federal agencies like NOAA, but we must ensure that sufficient resources continue to be allocated annually to maintain our cutting edge research capabilities to support local community and coastal resilience and to build our climate ready nation.

NOAA's expertise in coastal mapping, weather modeling, and climate impact assessments is crucial for planning and designing resilient infrastructure that can withstand extreme weather events and the changing climate.

By adequately funding NOAA, we ensure that our infrastructure investments are informed by the best available science. Severe weather events, rising sea levels, and changing precipitation patterns are a challenge not only for coastal communities but also our rural and agricultural communities.

By investing in NOAA, we invest in the science and data necessary to understand and mitigate these risks in order to safeguard our communities.

As Chair of this subcommittee, I also proudly represent the Great Lakes Region, an area of immense natural beauty, economic significance, and cultural importance.

The Great Lakes are not only a national treasure but a global asset that demands our utmost attention and investment. NOAA's role in protecting and preserving the Great Lakes cannot be overstated.

The Great Lakes hold over 20 percent of the world's freshwater, providing drinking water for over 40 million people and supporting countless industries and ecosystems. It is our duty to ensure that this invaluable resource remains healthy and vibrant for generations to come.

However, the Great Lakes face an ever-growing array of challenges that demand our immediate attention. Climate change poses an existential threat to the Great Lakes, exacerbating issues, such as lake level rise, shoreline erosion, increased storm intensity, invasive species, and altered seasonal patterns.

NOAA's Research and Monitoring Programs are instrumental in understanding the complex dynamics of the Great Lakes ecosystem. NOAA contributes crucial insights into water quality and ecosystem health. These findings empower local communities and industries to make informed choices about the future of our shared resources.

Reliable funding for monitoring, research, and resilience at NOAA will enable us to protect the ecological integrity of the Great Lakes and preserve the livelihoods of communities that depend upon them.

Investing in NOAA's Great Lakes Initiative is an investment in our economy. The Great Lakes Region supports a wide range of industries, including shipping, fishing, tourism, and recreation, contributing billions of dollars to our national GDP.

By supporting NOAA's programs, we foster sustainable economic growth. We create jobs and ensure that future generations can enjoy the countless opportunities that the Great Lakes provide.

This historic legacy of the Great Lakes stretches back centuries. As the vessels traversed these vast inland seas, they became a vital lifeline for trade, transportation, and exploration, shaping the development of the region. To preserve and honor this unique heritage, I was very proud to work with NOAA on the establishment of the Marine Sanctuary in Manitowoc, Wisconsin, anchored there, and along with the Shipwreck Coast.

Through this designation, we are fostering research, education, and ensuring future generations can explore and appreciate the stories and artifacts of our maritime past.

Finally, I cannot overemphasize the deep cultural and historic significance of the Great Lakes Region to the tribal nations that

call it home. Indigenous communities have thrived along the shores of the Great Lakes for centuries, relying on these waters for sustenance, transportation, and spiritual practices. They are stewards of the land and water, implementing sustainable practices and protecting the natural resources upon which we all rely.

By investing in NOAA, we invest in the empowerment and resilience of these communities. However, it is essential that NOAA engages with tribal nations as true partners respecting sovereignty and conducting meaningful consultation. By doing so, we demonstrate our commitment to the tribes.

In my role as Chair of the Subcommittee for Oceans, Great Lakes, Fisheries, and Manufacturing, I am proud to champion investments in both our salty and freshwater coasts so that we may protect them for generations to come. By investing in NOAA, we invest in our future, our economy, and the resilience of our Nation.

With that, I will hand it over to my colleague, Ranking Member Sullivan, for his opening remarks.

**STATEMENT OF HON. DAN SULLIVAN,  
U.S. SENATOR FROM ALASKA**

Senator SULLIVAN. Thank you, Madam Chair, and thank you for your leadership in calling this hearing.

I'd like to welcome Dr. Spinrad, Rear Admiral Hann, and I'm looking forward to discussing NOAA's opportunities and challenges as we can work together to ensure that your agency's important work is equipped with the resources, support, and guidance needed to fulfill your responsibilities, particularly since the passage of the Bipartisan Infrastructure Law and the Inflation Reduction Act.

I always emphasize the importance of having Federal officials come from Washington, D.C., to actually see the great state of Alaska firsthand and luckily for both of you, you have been there and it wasn't just to fly in. I appreciate the time that both of you have spent in Alaska.

I look forward to hosting you again in August as we celebrate the NOAA Ketchikan Port Facility Completion and the return of the NOAA *Fairweather* Vessel to its homeport in Ketchikan.

Real Admiral Hann, thank you for coming to the ground-breaking ceremony for the facility 2 years ago.

The homeporting of the *Fairweather* in Alaska is an important achievement that has been the goal of the Alaska delegation for years.

Alaska has more coastline than any other state. Indeed, we have more coastline than the rest of the Lower 48 states combined and we need ships taking residency in Alaska to support sustainable management of our oceans and ocean resources.

Dr. Spinrad, it was a pleasure to have you in Juneau last August to talk about issues, such as the Marine Debris Foundation established under my Save Our Seas 2.0 legislation which was signed into law almost 2 years ago, what CRS called the most comprehensive ocean cleanup legislation to ever pass the Congress.

Thank you for your work serving as a Member on the Marine Debris Foundation's Board of Directors. As you know, the search is underway for an executive director right now.

Once this position is filled, the Foundation can vote on a home for its headquarters. I hope it will be Alaska. I look forward to continuing to work with you on this and seeing how the Foundation and the rest of the Save Our Seas 2.0 Act can be implemented and work in tandem with the NOAA Marine Debris Program in the future.

Of vital importance to Alaska are our fisheries. Approximately two-thirds of all the Nation's wild seafood harvest comes from my state every year, two thirds. We are the super power of seafood for America, generating billions of dollars in our economy and tens of thousands of jobs in my state for my constituents.

Key to this harvest continues to be funding and support for fisheries surveys in Alaskan waters so that we can sustainably manage our fisheries with the best available science.

We believe we are the most data-driven best-managed fisheries probably in the world and I'm a strong advocate for maintaining good science and good data and investing in applied research at NOAA.

Now speaking of bad data and bad science, the Washington-based Wild Fish Conservancy, an extreme NGO, filed a lawsuit against the Southeast Alaska Chinook Salmon Troll Fishery, claiming that salmon harvests in Alaska kills Southern Resident Whales in Puget Sound hundreds and hundreds of miles away. This lawsuit defies logic. It's frivolous and it threatens the livelihoods of our small boat Southeast Alaska fishing communities.

Congress has allocated millions of dollars for hatchery-based prey increase programs to increase food sources to Puget Sound Orcas and mitigate any potential impacts from our fisheries whose harvests limits our carefully set, as you know, by the Pacific Salmon Treaty.

I thank the National Marine Fishery Service for joining the State of Alaska, the Alaska Trawlers Association, and me and my two congressional colleagues in an amicus brief in the appeal for this ridiculous case. I'm glad the 9th Circuit sided with us and we have the people of Southeast actually fishing this summer which was, as you know, very much in doubt.

I urge NMFS to continue to fight this in court with us and in tandem carefully and quickly revise the 2019 Biological Opinion from which this lawsuit first gained traction based on technical errors as soon as possible so that fishermen can continue to fish uninterrupted.

Speaking of NMFS, just yesterday the Alaska delegation sent a letter to Janet Coit concerning the designation of the Southern Southeast Alaska Harbor Porpoise as a stock of concern under the Marine Mammal Protection Act. This designation is not based on sound science and puts Southeast Alaska fisheries also at risk.

I call upon NOAA to conduct updated research on harbor porpoises and their mortalities from fishery interactions before finalizing any stock of concern designation.

Additionally, the NOAA National Weather Service provides an essential service that we all use in our every-day lives. We thank you for that great work. It is of vital importance to Alaska where inclement weather is a huge challenge, increasingly so as the cli-



mate shifts. Alaska experienced seven severe weather-related Federal disasters in 2022 alone.

I am committed to ensuring that the funds are effectively allocated to the National Weather Service.

NOAA received a historic level of funding last Congress. The Bipartisan Infrastructure Law appropriated nearly \$3 billion to establish infrastructure for coastal resilience, habitat restoration, and weather forecasting through 2026.

The Inflation Reduction Act appropriated \$3.3 billion to NOAA. It is my goal and the goal of this committee in terms of our oversight capacity, to ensure that these funds are being appropriately allocated to ensure effective implementation of these initiatives and, importantly, to make sure NOAA stays focused on its core mission, which is data and stock surveys.

As we have discussed, Dr. Spinrad, there has been disappointment in the last few years on the lack of surveys which are so critical to effective management of our fisheries and I know that there has been some claims about staff shortages but that should not keep us from doing the job that NOAA does on surveys.

Another issue of great importance to me is the increased variability we are seeing in salmon returns across Alaska. Some areas we're seeing record returns with different salmon species. Some areas we're seeing historically poor dramatic decrease in returns.

My Alaska Salmon Research Task Force Act that was signed into law at the end of last year established the Salmon Research Task Force for Alaska which is required to review existing salmon science in Alaska and identify salmon research priorities.

It is critical that a robust science plan is developed to support and better understand the salmon populations that my constituents depend on, particularly along the Yukon River, the Kuskokwim River, the Kenai River where the returns of King salmon have been very dramatically reduced.

As I've highlighted, there are many issues under NOAA's jurisdiction concerning Alaska and our country but probably more under Alaska than any other state. We need to strategically invest so that our needs are met in the future.

I look forward to the discussion concerning NOAA's oversight today and I want to thank you again, both of you, for being here.

Senator BALDWIN. Thank you.

We will now turn to our witnesses for their opening testimony. We'll start with Under Secretary Spinrad and then turn to Rear Admiral Hann. We will include your full testimony, written testimony for the record. So if you can summarize in roughly 5 minutes that would be wonderful. Thank you.

We'll start with Under Secretary Spinrad.

**STATEMENT OF DR. RICHARD W. SPINRAD,  
UNDER SECRETARY OF COMMERCE FOR OCEANS  
AND ATMOSPHERE, AND ADMINISTRATOR,  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**

Dr. SPINRAD. Thank you.

Chairs Cantwell and Baldwin and Ranking Members Cruz and Sullivan, Members of the Subcommittee, thank you for the opportunity to testify today.

Earth just had its warmest June in our 174-year NOAA record. In 2023 so far, there have been 12 confirmed billion dollar disasters that have killed 100 people and cost the Nation upwards of \$32 billion already.

Climate-related fishery disasters and the extent of and damage caused by wildfires are increasing. These impacts are happening in each and every one of your states and we're working hard to mitigate the impacts to your constituents.

NOAA is uniquely qualified to prepare our Nation for climate change and America is in need of NOAA's authoritative data, tools, products, and services now more than ever. Taken together, NOAA's Fiscal Year 2024 Budget Request and implementation of the Inflation Reduction Act and the Bipartisan Infrastructure Law represent historic investments to create a climate-ready nation in the face of the climate crisis.

Our budget and our IRA and BIL investments support NOAA's goal of scaling up critical efforts to understand and mitigate the impacts of the climate crisis. Specifically, NOAA will make investments in research, observations, forecasting, restoration, and resilience, offshore wind development, and equity both within the agency and around the Nation.

We'll also invest in our fleet and aircraft, satellites, and space weather observations and predictions to ensure that NOAA continues to provide actionable environmental intelligence that is the basis for a smart policy and decisionmaking in the changing world.

As we increase our understanding of the changing climate, we'll simultaneously research and develop new and improved tools for decisionmakers to address climate impacts. For example, NOAA will support scientific monitoring and prediction of Arctic systems and ensure that satellite-derived data are provided to users of actionable information.

In addition, NOAA's research will address challenges faced by fishing communities and marine resource managers and support tourism, recreation, and trust responsibilities.

The NOAA Climate Ready Fisheries Initiative, part of our Fiscal Year 2024 Request and bolstered by our IRA investments, will provide decisionmakers with climate-informed advice on best management strategies to reduce impacts and increase ecosystem and economic resilience.

Not only are we adapting our management and improving the science but we're also likely making the single largest investment by the Federal Government in fish hatchery maintenance and upgrades ever seen.

Through this process, we're setting a new standard for tribal consultations within our agency and honoring the U.S. Government's treaty and trust responsibilities to tribes.

NOAA will also invest in increasing conservation and protection in an expanded sanctuary system. NOAA's Fiscal Year 2024 Request and funding through the Inflation Reduction Act will enhance both our ability to designate new sanctuaries and our sanctuary management capacity as new sanctuaries are designated.

We will continue to foster environmental stewardship and optimize advances in science and technology with a particular focus on the new blue economy.

In support of the Administration's goal to deploy 30 gigawatts of offshore energy by 2030, NOAA will facilitate smart economic and ecologically sustainable offshore wind development. These efforts are bolstered by our BIL and IRA investments of \$40 million to provide efficient, accurate, and timely permitting.

NOAA's National Seafood Strategy outlines actions to rebuild and enhance the competitiveness of the seafood and fishing industries and associated communities. NOAA will improve global fisheries management through international negotiations and capacity building, monitor U.S. imports from legal and sustainable seafood, and increase enforcement capacity and marine forensics.

NOAA continues to prioritize equity in every facet of our mission delivery. In Fiscal Year 2024, NOAA will support a diverse domestic seafood sector through a series of workforce development and training programs. Through these partnerships and through our Climate Ready Workforce Initiative, we will train people for good jobs and bolster participation from historically underserved and under-represented communities.

Training and investments will focus on building skills and understanding the regulations and science that underpin management which will help improve cooperation and trust among the private sector, public scientists, and regulators.

All of these investments are intended to support the lives, livelihoods, and lifestyles of individuals, industries, and communities in your states.

I look forward to working closely with the Committee as we develop our science and services in Fiscal Year 2024 and beyond and I look forward to discussing NOAA's mission more with you today.

Thank you.

[The prepared statement of Dr. Spinrad follows:]

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

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.<sup>1</sup>

- **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<sup>2</sup> 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.<sup>3</sup> 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; 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.

<sup>1</sup> 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](http://www.noaa.gov/blue-economy).

<sup>2</sup> [www.weather.gov/hazstat/](http://www.weather.gov/hazstat/)

<sup>3</sup> [www.ncei.noaa.gov/access/billions/](http://www.ncei.noaa.gov/access/billions/)

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,<sup>4</sup> 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 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

<sup>4</sup>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)

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<sup>5</sup> and supported 2.2 million jobs in 2020.<sup>6</sup>

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 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.

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

<sup>6</sup> 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)

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.

Senator BALDWIN. Thank you.  
Rear Admiral Hann.

#### **STATEMENT OF REAR ADMIRAL NANCY HANN, DIRECTOR, NOAA OFFICE OF MARINE AND AVIATION OPERATIONS; AND DIRECTOR, NOAA COMMISSIONED OFFICER CORPS**

Admiral HANN. Chairs Cantwell and Baldwin, thank you, Members Cruz and Sullivan, Members of the Subcommittee, thank you for the opportunity to testify on the President's Fiscal Year 2024 Budget for the NOAA Commissioned Officers Corps and the Office of the Marine and Aviation Operations or OMAO.

As both the Director of OMAO and the Service Chief of the NOAA Officer Commissioned Corps, I represent a unique part of NOAA that manages and operates NOAA's fleet of 15 ships, nine aircraft, and our own crewed Operations Center.

We provide critical environmental observations every day which are fundamental to weather forecasts, fishery quotas, and nautical charts. What OMAO does for the Nation cannot be replicated.



In 2024, our fleet will grow to 16 ships and 10 aircraft, necessitating additional crew and shoreside support. OMAO relies on NOAA core officers, our civilian professional mariners, our shore-side support, and operational funds to run our fleet.

As of this week, OMAO has just over 350 professional mariners, far short of what we need. The mariner labor market is the tightest it has been in decades and we're working aggressively to recruit and retain mariners. Our attrition is down more than 40 percent since last year and it's well below the industry average.

With the Fiscal Year 2024 Budget Request, NOAA will provide 6,283 flight hours, a 37 percent increase from last Fiscal Year. These flight hours inform forecasting of hurricanes, atmospheric rivers, and tornados, informs coastal resilience and flooding models, disaster impacts and protected species.

Similar to our other Uniformed Services, the competitive hiring environment has made it challenging to retain our pilots. We are working to recruit as many as possible and have doubled the size of our officer training class this summer, bringing pilots directly into our aviation operations.

Our specially trained pilots operate in uniquely challenging conditions. We fly directly into hurricanes, atmospheric rivers, low level flying in mountainous regions, and near tornados. We provide data that protects public safety, economic, and national security.

OMAO cannot conduct its mission without our assets and our infrastructure and while NOAA has upheld the highest standards of maintenance for our vessels and aircraft, service flight cannot be extended indefinitely.

With your support, NOAA is embarking on the most significant recapitalization of our assets ever and we are sincerely grateful to Congress for its support in this effort.

Last year NOAA updated its Aircraft Recapitalization Plan. We're currently working on updating our 2016 Vessel Recapitalization Plan. With this budget request and consistent with our Aircraft Plan, we are on track to bring a G550 Jet online in 2025, expanding the critical data that G4 currently collects.

With funds from the Fiscal Year 2023 Disaster Supplemental, we are aggressively working toward the procurement of C-130J aircraft to replace the P-3s.

We plan to award a pre-production contract soon and the production contract by 2024 for one aircraft with options for three additional aircraft.

We are committed to working with you to ensure we have the aircraft needed to meet our mission requirements. These aircrafts are essential to protecting life and property from hurricanes on the East Coast and Gulf of Mexico to tornado research in the Midwest and atmospheric rivers on the West Coast.

Furthermore, the \$75 million that Congress has appropriated annually for vessel recapitalization since 2016 has allowed us to contract for the construction of two new vessels for oceanographic monitoring.

Additionally, just less than 2 weeks ago, we announced an award for two new charting and mapping vessels, a total of four new ships or 25 percent of our fleet.

OMAO is working across NOAA with Federal partners, like the Navy, academia, and industry to develop and apply uncrewed systems. We have seen significant gains when we add these capabilities to our ships and aircraft.

Currently, we're operating an uncrewed system from the NOAA ship Oscar Dyson to expand data collection on the critical North Pacific Pollock Stock.

Fiscal Year 2024 is a pivotal year. NOAA's Uncrewed Systems Operations Center has supported nine projects since Fiscal Year 2021. With your continued support, we will transition these projects into operations.

We also appreciate Congress's support to increase the number of NOAA Corps Officers. As appropriations allow, we are growing the NOAA Corps Officers to meet the authorization for 500 officers. The current number of NOAA Corps Officers is well below the number required for operations.

We're managing this through extended deployments, employing officers from shoreside duty to operational assignments. This is not sustainable.

The number of NOAA Corps Officers must increase annually through 2030 to meet expected mission requirements, including the operation of our new ships and aircraft.

The NOAA Corps is unique Uniformed Service of just over 330 officers, most whom possess an advanced degree and have a STEM background. Our officers lead NOAA's fleet of ships and aircraft, serve in positions across the Federal Government, including management across NOAA and the Department of Commerce, serve in congressional offices, the Coast Guard, and the DoD Combatant Commands, including a new liaison officer who will report to NORTHCOM/NORAD in January.

I am proud to be a NOAA Corps Officer and I'm proud to represent them here today.

Thank you for the opportunity to testify on the Fiscal Year 2024 Budget and I look forward to answering your questions.

[The prepared statement of Admiral Hann follows:]

PREPARED STATEMENT OF REAR ADMIRAL NANCY HANN, DIRECTOR, NOAA OFFICE OF MARINE AND AVIATION OPERATIONS AND DIRECTOR, NOAA COMMISSIONED OFFICER CORPS

Chair Cantwell, Ranking Member Cruz, Subcommittee Chair Baldwin, and Subcommittee Ranking Member Sullivan, thank you for the opportunity to testify on the President's Fiscal Year (FY) 2024 Budget for the NOAA Commissioned Officer Corps and the Office of Marine and Aviation Operations (OMAO).

As both the Director of NOAA's Marine and Aviation Operations, and the Director of the NOAA Commissioned Officer Corps, I represent a unique part of NOAA that brings together five distinct personnel systems to manage and operate NOAA's fleet of 15 ships, 9 aircraft, and our Uncrewed Systems Operations Center. From these platforms, we monitor the oceans and atmosphere every day to provide the products and services that the Nation depends on. In FY 2024, NOAA's fleet will grow to 16 ships and 10 aircraft as long anticipated additions to these fleets come online. This will necessitate additional crew and shore-side support commensurate with our responsibility to operate these platforms in service of NOAA's broader missions.

Our diverse workforce of 1,252 professionals includes civilians to support our operations, acquisitions, maintenance, and administration; professional civilian mariners from five different unions to support our ships; NOAA Corps Officers; U.S. Public Health Service Officers who run our medical program; and visiting scientists and career professionals who sail on our ships or fly on our aircraft to conduct cutting edge research. From fisheries surveys and mapping the Nation's Exclusive Economic

Zone (EEZ), to deploying buoys for tsunami and El Niño/La Niña monitoring, to post hurricane mapping of harbors and ports to restart transoceanic trade, the services that OMAO

provides to the Nation are essential. OMAO works with all the NOAA line offices to help them achieve their missions. The data collected on our ships is critical to the products that NOAA produces. With Congressional support, we have invested in cutting edge technology to ensure the high-speed transmission of our data to scientists, as well as archiving it within the NOAA National Centers for Environmental Information to support retrospective and longitudinal research and management.

For FY 2024, the President's budget request for the NOAA Corps and OMAO is \$495,576,000 in discretionary and mandatory funds. Our funding request breaks into the following areas:

#### **Marine Operations and Maintenance—\$224,148,000**

NOAA's current fleet of 15 research vessels, and the forthcoming NOAA Ship *Oceanographer*, are deployed throughout the U.S. and international waters to collect critical environmental observations for U.S. fisheries management and protected species assessments and conservation, mapping and charting data to ensure safe navigation, ocean exploration and other research expeditions, and atmospheric data to inform our climate and weather models. To operate these ships, OMAO relies on NOAA Corps officers, civilian mariners, shoreside support, and operational funds. As of July 12, 2023, OMAO has 356 civilian mariners—far short of our current requirement. OMAO faces civilian mariner shortages similar to other parts of the domestic and international maritime industry. We have worked aggressively to set up recruiting in key maritime areas around the country, and have offered recruiting and retention bonuses. OMAO uses direct hiring authority, a personnel team with mariner experience, and a web portal that makes it easier for mariners to apply. In addition, we have the ability to make conditional job offers to expedite hiring mariners into our workforce. The FY 2024 funding request supports the hiring of additional mariners, and OMAO will continue to aggressively recruit and improve retention.

This FY 2024 request will also support our vessel maintenance program. The average age of NOAA's research vessels is 30 years old. Typically, ships are built with a 25–30 year service life. Five of NOAA's ships were acquired from the U.S. Navy or Coast Guard at the end of their service life. We currently have three ships operating that are over 55 years old, almost twice as long as their expected service life. Therefore, having a robust maintenance program is critical for the continued successful operations of our fleet. With Congressional support, we have strategically improved our maintenance practices, systematically reducing our maintenance backlog through a regular cadence of repair packages to ensure the operation of the fleet.

#### **Marine and Aviation Capital Investments—\$106,500,000**

NOAA's Mapping and Charting vessels on the West Coast and Pacific started sailing in 1968, predating NOAA's creation by two years. NOAA's WP-3D "Hurricane Hunters," which fly repeatedly into hurricanes every season to collect crucial scientific data, started flying in 1975. While NOAA has upheld the highest standards of maintenance, inspection, and service to its vessel and aircraft fleets, service life cannot continue to be extended while maintaining safety and cost effectiveness. In 2022, NOAA updated its Aircraft Recapitalization Plan and is currently working on an update to its Fleet Recapitalization Plan.

Congressional support for much-needed recapitalization efforts have been critical. Congress provided funds to support replacement of the aging G-IV jet. With the FY 2024 budget request, we plan to bring the G-550 jet on-line in 2025 to assume, and expand upon, the critical work the G-IV currently provides during hurricane and atmospheric river seasons. Furthermore, Congress has appropriated approximately \$75 million annually for vessel recapitalization since 2016. That has allowed us to contract for the construction of two new vessels for oceanographic monitoring, exploration, and atmospheric research, and we recently announced an award for new Charting and Mapping vessels. We were also able to commence a mid-life repair for NOAA Ship Ronald H. Brown which will extend the life of the ship by 15 years. The FY24 budget will continue these efforts to recapitalize NOAA's aging aircraft and vessels and increase our capability to collect critical environmental data.

#### **Aviation Operations and Aircraft—\$43,372,000**

NOAA currently operates a fleet of 9 aircraft. With our FY 2024 request, NOAA will provide 6,283 flight hours to support monitoring of hurricanes, atmospheric rivers, air chemistry, coastal changes and disaster impacts, and protected species. The FY 2024 budget is responsive to the increased demand for NOAA's services in these

mission areas, largely driven by the rapidly changing climate. Your support is especially critical as we add a tenth plane, an additional King Air, to the aircraft fleet to support NOAA's missions in the Arctic. Previously, NOAA's deployment to Alaska had been limited due to a pressing need in emergency response throughout the lower 48 states. With this new King Air, NOAA will have an improved capacity to predict flooding and monitor protected species in remote Alaskan communities. Improving our data collection efforts underpins our ability to ensure the Nation is climate ready.

#### **Autonomous Uncrewed Technology Operations—\$14,560,000**

OMAO, in coordination with other NOAA line offices, is increasingly operationalizing NOAA-owned and operated uncrewed systems to support our aviation and ship-based assets. Our Uncrewed Systems Operations Center has been working to stand up field offices in Gulfport, MS, Lakeland, FL, and Newport, OR. We have collaborated across the NOAA line offices to support testing and operationalization of uncrewed systems to augment NOAA's charting, mapping, and fisheries and protected species surveys, where possible. For instance, right now, the NOAA Ship *Oscar Dyson* is conducting a pilot on how to operate the Drix uncrewed maritime platform in coordination with the North Pacific pollock survey. The information obtained from this pilot will help us best determine how we can use the Drix and other uncrewed systems with our fisheries surveys in the future.

FY 2024 is a pivotal year for NOAA's uncrewed systems. NOAA's Uncrewed Systems Operations Center has supported nine projects in partnership with NOAA line offices and NOAA Cooperative Institutes since FY 2021. This year, with your support, we will start transitioning these projects from research to operations.

#### **NOAA Commissioned Officer Corps—\$70,381,000**

The key to implementing our operational missions has always been our NOAA Commissioned Officer Corps. We are a unique uniformed service of 333 officers, the majority of whom have a science, technology, engineering, or math background, with more than half possessing an advanced graduate degree. NOAA Corps officers operate and command NOAA's fleet of ships and aircraft. Officers also serve in positions of leadership and command across the Federal government, including in additional roles in NOAA and the Department of Commerce, with the U.S. Coast Guard, Congressional offices, and the Combatant Commands. NOAA Corps officers may also be transferred to the armed forces during times of war or national emergency.

The 2024 Budget proposes to increase the NOAA Corps by 13 officers for a total of 353. These additional officers will decrease extended deployments and the need to pull officers from shore-side duty to operational assignments. This is the maximum NOAA predicts it can grow in FY 2024.

Similar to other uniformed services, the competitive hiring environment has made it challenging to retain our pilots. Our specially trained pilots operate our aircraft in various uniquely challenging conditions, such as hurricanes, atmospheric rivers, mountainous regions, and tornadoes. Therefore, they must undergo specialized and rigorous training in these environments to safely carry out these missions. Recruiting new officers, especially for aviation, is critical to our mission. During Hurricane Ian in 2022, OMAO conducted 24-hour operations on our three hurricane aircraft for six straight days with only six pilots, who accumulated over 120 flight hours in that time. Followed by the rapid succession of Hurricanes Earl, Fiona, and Ian, each of these pilots agreed to sign waivers to exceed the recommended safety limit of 120 hours per 30 days. Our pilots and crew are dedicated to collecting critical data to inform hurricane forecasts, in order to protect life and property. Growing the NOAA Corps reduces the likelihood that NOAA will exceed these limits in the future and will better meet the growing demand for NOAA Corps services.

#### **Inflation Reduction Act and 2023 Disaster Supplemental Appropriation**

Finally, I wanted to report on our implementation of the Inflation Reduction Act (IRA) and the 2023 Disaster Supplemental Appropriation. We appreciate Congress' support for the acquisition of the first plane for the recapitalization of NOAA's WP-3Ds in the FY 2023 disaster supplemental. The \$328 million we received was consistent with the Administration's request, and we are developing a contract to begin procurement of one plane with the option for three additional planes. The 2022 Aircraft Recap Plan reflects the benefits improved forecasts provide to protect life and property, monitoring of atmospheric rivers which contribute to 90 percent of all flood damage in West Coast states, and continuing missions surveying tornadoes, calibrating satellite instrumentation, and collecting air chemistry data. We are committed to working with you through the budget process to ensure NOAA has the aircraft needed to meet our mission requirements.

NOAA allocated \$98 million in funding from the IRA to support acquisition of the next generation of Charting and Mapping vessels. We recently awarded the contract, which used both IRA funds and annual appropriations for these vessels. These vessels will replace our aging ships in the Pacific and are scheduled to come online in 2027 and 2028. We will also utilize funding from the IRA to provide \$85 million for NOAA Ship *Oscar Dyson* to extend the life of this fisheries survey vessel, which provides critical data to managers for North Pacific fisheries and associated ecosystems. This will be the first of the mid-life repairs for the five NOAA fisheries survey vessels, which will take place over the next decade.

With the FY 2024 budget request, in addition to the funding provided through the IRA, NOAA will continue the acquisition of a second G-550 for its high-altitude jet program. A second high altitude jet allows redundancy in our aircraft fleet as required by the Weather Act of 2017. Thus, if one plane needs maintenance, NOAA can continue to provide vital data on hurricanes or with two fully operational planes provide forecasting on concurrent storms, and fully support the atmospheric rivers season. With the addition of another aircraft, we will significantly increase our capabilities and mission readiness.

Finally, we are leveraging funding in the IRA to provide \$99 million for the Newport, RI pier which will serve as the new Marine Operations Center for the Atlantic, and \$35 million for a dedicated pier for Charleston, SC. Modern shoreside infrastructure with shore power supports the safe operation and docking of our vessels and crew.

#### Summary

Thank you for the opportunity to testify today on the FY 2024 President's budget and the operational status of the Office of Marine and Aviation Operations. I look forward to answering any questions you may have.

Senator BALDWIN. Thank you both for your testimony.

We're now going to begin a round of 5-minute questions from members and I will start us off here. I want to begin with my favorite topic, the Great Lakes.

So, Dr. Spinrad, in December, just after passage of the Inflation Reduction Act, I wrote to you underscoring my expectation that funds would be directed toward advancing research, enhancing resilience, and supporting management of the Great Lakes.

As NOAA works to implement the Inflation Reduction Act and the Bipartisan Infrastructure Law, can I count on your commitment to ensure parity in Federal investments made in both our salty and our freshwater coasts ecosystems, tribes, communities, and economies?

Dr. SPINRAD. Thank you for the question, Senator, and in short, absolutely is the answer.

We're trying through the releases of our Federal funding opportunity announcements to ensure that the Great Lakes and the coasts are well represented in parity with respect to our efforts toward climate resilient coasts. That's not meant to mean just the salty coasts but the fresh coasts, as well, and history is evidence of that.

We've spent over a quarter billion dollars in the last 4 years or so on grant awards in the Great Lakes and as you indicated in your opening statement, we're working hard on designation of both sanctuaries and national estuarine research reserves.

So, yes, we're committed for parity with the Great Lakes.

Senator BALDWIN. Thank you.

Wisconsin is fortunate to have two Great Lake coasts, including Lake Superior as our north coast. The Bad River Band of Lake Superior Ojibwa and the Red Cliff Band of Lake Superior Ojibwa have resided along this northern coast for centuries. They have a

deep understanding and knowledge of the Great Lakes ecosystem gathered over generations.

I highlight that expertise for you because it's essential and required that NOAA consult with tribal nations.

Dr. Spinrad, to be frank, NOAA did not meet my expectations for tribal consultation during early implementation of the Inflation Reduction Act and the Infrastructure Law.

Meaningful consultation and engagement with tribal communities, including those in the Great Lakes, ensures inclusive decisionmaking and parity in the distribution of resources.

Unfortunately, Great Lakes tribes appear to have been an afterthought in the process and the implementation of Inflation Reduction Act funds to date reflects that shortcoming and failure.

I'd like to ask you what your understanding is of appropriate and meaningful tribal consultation and investments and can you share how NOAA plans to improve the consultation process as required by Executive Orders of this Administration?

Let me ask you that first and then I'll have a follow-up.

Dr. SPINRAD. Yes. Thank you, Chair Baldwin.

I will also say that our performance didn't meet my expectations with respect to activity associated with consultation, more than just consultation.

This Administration has been very forward-leaning with respect to attention to needs of tribes and tribal communities and tribal organizations, as well, and you called out one of the important aspects and that's the incorporation of Indigenous or traditional knowledge in the products that we develop. So I take very seriously that role.

We've learned a lot of lessons and especially with regard to how we conduct the consultations in IRA. At the end of the day, I'm pleased that we were able to attend to the needs of tribal communities.

I would say that focus on the Great Lakes tribes is something that's high in my mind. I have brought on board from Day 1 a senior tribal advisor, Dr. Zach Penney, whose job it is to make sure that we do attend to the needs of all of the federally recognized tribes around the country.

We have followed up with IRA with a series of five listening sessions during June, in addition to the consultations. It's my commitment to make sure that we get in front of the curve as we move forward, not just on IRA spending or BIL spending, but on appropriations writ large and on policy development, as well. So, yes, I'm committed.

Senator BALDWIN. So let me ask in followup. Are there specific measures or guidelines that will be implemented to strengthen the involvement of tribal nations and organizations moving forward and, in particular, how do you plan to ensure parity in the distribution of resources to tribal nations in the Great Lakes Region?

Dr. SPINRAD. So there are a number of things we've done. Obviously we've taken a close look at our tribal engagement. We've actually updated our Handbook and our Administrative Orders with respect to working with tribes.

I'd love to come talk with you and your staff about what we're doing in that arena, and I think the bottom line is looking at every

action that we take and, first and foremost, asking what are the tribal implications and opportunities here and making that part of our psyche, if you will, on moving forward.

Senator BALDWIN. Thank you.

Next, I'm going to recognize Senator Sullivan for his first round of questions.

Senator SULLIVAN. Thank you, Madam Chair.

I want to go to the issue of surveys and as you know, this is a really big deal for my state and it's interesting because we're trying to always get you more money for surveys, more data, more science, which we think is critical to maintain healthy fisheries, and it's the core mission of NOAA, and yet I meet with our fishing community on a very regular basis.

Recently just out in Bristol Bay a couple weeks ago, and once again they have emphasized that NOAA continues to fall short on the needs for surveys in Alaska. It's something that I've discussed with both of you, that I've discussed with Janet Coit, as well, and it's a frustration because it's the core mission of NOAA, the core mission.

When I see all this funding coming to NOAA and we're going to talk about some of the other funding and you're not getting the surveys done, I'm kinda like, well, wait a minute, you got all these other things you talk about. Your core mission is data science for surveys.

So, for example, during COVID, you did one survey and as you know, Dr. Spinrad, when you miss a survey, it's a big deal because then you can't build on what happened the previous year. So you get behind and behind and behind. You did one survey during COVID.

The State of Alaska did all its surveys. So there was this, well, we can't go, COVID, it's dangerous. I was disappointed by that.

So what I'd like to get from you is a plan to make sure you're doing full robust surveys for our fisheries and like I said, probably the best managed fishery on the planet earth, not a lot of places can claim that. We do it in conjunction with you and we've always viewed you as partners.

This is again our coastal communities begging NOAA for more surveys and data and we're getting you the money. So can you commit to me to support and expand your current survey efforts in Alaska to support our fisheries and then have contingency plans to ensure that fisheries surveys occur as scheduled?

So, for example, if you have staffing needs and I know that's been an issue and I understand that, but to not just say, well, we have staffing needs, therefore we can't do the surveys, to have plans to address this?

This is an issue I've raised with every NOAA Administrator and it's frustrating because we're trying to get you the money to do your core job and some people, a number of people, important people in my state don't feel you're doing that.

Can I get a commitment from both of you on this and maybe you want to unpack some of my comments and if you disagree, please let me know, but there is a huge frustration in my state on the lack of surveys which is your mission, core mission which you should want to do.

Dr. Spinrad?

Dr. SPINRAD. Yes. Thank you, Senator, and let me start by thanking you for the appropriations that you alluded to.

Certainly 2022, 2023 appropriations, the increases in appropriations, on top of that the IRA investments provide——

Senator SULLIVAN. Historic NOAA funding by any metric.

Dr. SPINRAD. Roger that. I'm going to make a couple comments and then I'd like to ask Admiral Hann to talk about workforce and fleet readiness——

Senator SULLIVAN. Yes.

Dr. SPINRAD.—and consistent with your question.

We're required to assess 200 stocks every year. This year we've already conducted 147 surveys and we're on track to do 213 this year. So I think the statistics you cited were compounded by issues like COVID and work force.

I'm confident that we're on a much better track now than we were in years past and I would like to come back to you and talk in more detail about that.

Senator SULLIVAN. I would appreciate that plan. Look, I know you have all the different surveys, but again we're the place in America, in the world that is an enormous consumer of your surveys. We need them.

Dr. SPINRAD. Yes.

Senator SULLIVAN. The Councils need them. The Councils make huge decisions based on your surveys and when they don't have the data, you know, they have this precautionary principle that will then shrink and limit the decisions that they make because we want sustainable fisheries. So that's the right thing to do.

So when we don't have the data, as you know, it kind of rolls downhill into many other ramifications. So I would like to sit down with you and your staff and get some real strong commitments on these surveys.

We're getting you the money. Well, now we need you to get out there and do them and if there are workforce issues or other things that we need to work together to create contingency plans on, well, we're open for doing that.

What we're not satisfied with is just the lack of surveys and again I heard it again just 3 weeks ago with many of my constituents when I was out in Bristol Bay which is a really important part of Alaska.

Dr. SPINRAD. Understand and completely agree on the issues of being able to make accurate estimates of what the stock capacity is and also the data are going to serve in our forecasts.

So when we're looking at longer-term projections not only of what stocks are but as you know, where they're going, where the Alaska Pollock are going, for example, that kind of thing.

The other thing I would just add before throwing it over to the Admiral is that we are looking at supplementing our capabilities using things like autonomous systems. That shows great promise because at the end of the day, there's a limit to how much we can do and what we can do with our large vessels. If we can supplement that with uncrewed systems and get even more data that's even better, but with your concurrence I'd like to ask Admiral Hann to comment——



Senator SULLIVAN. Yes.

Dr. SPINRAD.—about some of the other things.

Senator SULLIVAN. Admiral?

Admiral HANN. Senator, thank you for the appropriations. It is making a difference and I'd like to touch on it in four key areas.

So, first, you mentioned stocking. It is a reality. It's not an excuse. There has never been a wider gap than the maritime workforce internationally and that certainly applies to us. A 9-percent gap which is up two times from last year, but with the appropriations we are making strides.

We're looking at hiring and we're looking at retention at the same time. In hiring, we've hired nearly a hundred mariners, which is the most we've ever hired in a Fiscal Year, and we're on track for our goal of a 120. That's great but not if we don't fix attrition.

Attrition, we are down to 13 percent attrition. It was 23 percent this time last year and the industry average is 25 percent. So we're tackling this from both ends. Appropriation is allowing us to grant retention bonuses, recruitment bonuses.

We've improved our VSAT on the ship which improves quality of life and the transmission of science data.

Second, as Dr. Spinrad mentioned, we are leaning into uncrewed systems. So getting the ship out there is one thing but we need to make sure we maximize every day at sea. So right now, as I mentioned, we have a Dirks uncrewed system operating from the Dyson specifically for Pollock surveys. They've done over 20 launches to this point and while they're still evaluating the data, it definitely looks like a useful tool as other uncrewed systems have been.

So we're looking to increase the complement of the ships to maximize the data collection while we're out there.

The funding that's been provided for facilities is absolutely critical. So finishing that facility in Ketchikan, we've owned it 14 years. We've never operated from there. Being able to operate from there not just for the *Fairweather* which is homeported there but for all of our ships that pass through there as well as Coast Guard partnerships, working in conjunction with them.

It's critical to have that homeport for our ships and for our missions so we can base from there.

For the Inflation Reduction Act, it enabled us to award the contract for those two new survey vessels, those charting and mapping vessels, to make sure we can provide safe navigation for all of the maritime industry up there.

In addition, it provided funds for the *Dyson Midlife*. So we have five survey fishery survey vessels as you're well familiar with. The first one, the *Dyson*, will be due for a midlife in 2026, I believe, and so the funds in IRA will allow us to do the midlife on that vessel and extend the service life for that vessel.

So we are also tackling maintenance. I will tell you that's been a consistent, persistent ever since 2018. We're making significant strides. For example, we'll have our first Industry Day ever in the first week of August and we have 50 vendors that will attend. That's shipyards. That's maintenance people. I'm going out, meeting with the shipyards and meeting with the maintainers. I'm meeting with everyone involved in that cycle so they understand

what we need to make sure that we are ready to meet the biological window and get the data that you need.

I understand. I've had the opportunity to spend the first two years of my career as a corps officer on the *Miller Freeman*, you probably remember that ship, doing Pollock surveys, and I really gained an understanding of the importance of that data and how the communities in Alaska depend on it. Their survival depends on it and so I'm very familiar with it.

I spend every day making sure we can get better and show up for the surveys we need to do. Our job is to mitigate risk, get out there and collect the data. We're absolutely making strides in that and we will continue to improve and do better.

Senator SULLIVAN. Well, thank you, and I do want to follow up with some more details on this and contingency plans and ops in the event that we can't get through some of these workforce shortages. Thank you.

Thank you, Madam Chair.

Senator BALDWIN. Over the past several years communities across the state of Wisconsin have faced extreme weather events, severe storms and flooding, that have caused substantial damage.

I was always intrigued with what we described as thousand year events or 500 year events but then seeing several of those happen in short order is quite terrifying.

Our colleague on this committee, Senator Welch, is working to respond to the ongoing situation in Vermont where roughly 2 months' worth of rain came down in a matter of a few days.

The reality is storms thought to occur once every 100 years or 500 years are now occurring with far greater frequency. In some places these previously rare events are now occurring as often as every five to 10 years.

The Bipartisan Infrastructure Law is making an historic investment in our Nation's infrastructure. I have been sounding the alarm about the need to ensure that we build and rebuild our infrastructure so that it is forward-looking and that they be guided by forward-looking codes and standards.

At present, NOAA's Precipitation Frequency Estimates published in Atlas 14 do not consider forward-looking impacts of climate change and thus do not accurately reflect current or future rainfall and flooding conditions.

This model is currently widely used by states and localities to design, plan, and manage much of the Nation's infrastructure.

The Bipartisan Infrastructure Law directed NOAA to update Atlas to account for climate change and develop precipitation frequency estimates for the entire United States.

So, Number 1, can you please provide an updated timeline for the development and the deployment of Atlas 15, and understanding that those updates may not be incorporated for another few years, how is NOAA adjusting the distribution of resources during the current rounds of the Infrastructure Investment and ensuring that up-to-date climate-informed data is being used to direct that deployment of funding?

Dr. SPINRAD. Thank you, Madam Chair.

There's a lot to unpack there and I'll do my best to try to address it.

I'll start simply by saying I'd asked my staff prior to this hearing to give me a sense of what's happened across the country in the last week or so. This sheet, two sides, small font, gives you some indication of everything from wildfires to the extreme weather, extreme rain events to the hurricane we saw in Hawaii just earlier this week.

So this is putting incredible pressure on the organization to be able to provide not just the standard set of products, if you will, but those products that are particularly focused on what we call impact-based decision support, so the decisions that need to be made over and above what would normally be made associated with weather forecasts.

As you indicated with the BIL funding and the IRA funding, we are making significant investments in a number of components of our ability to get that decision support environmental intelligence out into the hands of communities, individuals, corporations, legislators, policymakers.

With respect to Atlas 14, we're taking the resources that we received from BIL and applying those toward the Atlas 15 development which is effectively the updated Precipitation Model.

Right now, part of the reason it's taking as long as it is is it's a data-gathering activity and getting the information from the many different kinds and many different geographies of providers. It's a time-consuming process.

So it will be next year when we expect to have that, late next year when we expect to have that updated and readily available, but that's not precluding us from providing the localized forecasts on an emergency or hazard-based case basis and so our precipitation forecasts are vastly improving.

We've just incorporated the new Hurricane Forecast System. We're updating the Global Forecast System. Those incidentally are being built on the Hewlett-Packard Enterprise Cray computers that we've purchased and placed in Arizona and in Virginia, and we're seeing dramatic improvement in forecast of specifically the hurricane tracking intensity forecasts of 10 to 15 percent.

So, in short, it's a data collection activity. It's a modeling improvement activity using high-performance computing, and the last part of that is how do we get the products out into the hands of the users and that's a close coordination with development of a number of web-based portals as well as improvements in the communication tools that we have in the National Weather Service or our communication there, as well. So again a variety of different approaches.

Thank you.

Senator BALDWIN. We're going to continue with a round of questioning before I recognize our Full Committee Chair for comments.

So, Senator Sullivan.

Senator SULLIVAN. Thank you, Madam Chair.

Dr. Spinrad, I want to go to another area that is a frustration. We've talked about it a lot. It's the Pacific Coastal Salmon Recovery Fund and there's a billion dollars for covert programs in the Infrastructure Bill, numerous habitat restoration programs. There's going to be about \$300 million largely going to Washington State,

about almost \$500 million to other habitat restoration in fish passage programs which will largely benefit the Lower 48.

The real salmon challenge in America right now, though, is happening in Alaska and as you know, we have very different challenges there. We have nearly pristine habitat in Alaska.

So the habitat programs where you focus a lot of your money, they don't really apply that much to us, and with no offense to the Chair and I know this is a concern of hers, but I don't want to see Alaska becoming like Washington State before we can get Federal support for crashing salmon stocks that have to be listed as ESA species.

This is particularly an issue with Alaska Native subsistence users who depend on salmon for food security, culture, heritage. It's very important. My wife's family has a fish camp on the Yukon River. Her family's been fishing that thousands of years. They haven't been able to fish in three to 4 years.

Some Alaska tribes have been told that they would fare better in the Pac-Serf Program if Alaska had some ESA-listed salmon stocks. That's been told by your staff. That is not where we want to go. It seems almost crazy that you say if you want the money to help on this, you got to get to the point where your salmon declines have crashed to such a degree that we'll help you once you're listed in the ESA.

It just seems nonsensical and really frustrating but that is some of the messages that my team and I and Alaskans and Alaska Natives are hearing from NOAA on this really important issue.

I already talked about my Salmon Recovery Research Task Force that passed, but bottom line, habitat restoration is certainly one element of healthy salmon stocks, but there are many other elements affecting Pacific salmon populations. Prey quality, ocean warming, pollution, bycatch, many things that are going on in the big ocean not in terms of habitat.

So will you commit to taking steps to revise the current funding priorities under the Pac-Serf Program which were independently established by NOAA, not mandated by Congress, to emphasize research and monitoring of declining populations as a top priority because right now tribes in Alaska have been told that research and monitoring is not priority 1 category of Pac-Serf funding priorities which again is, seems to me, crazy?

We have a big challenge. We do not want to end up like the Lower 48 and, no offense, Washington State. We want healthy salmon returns all over our state and yet we can't seem to be getting NOAA to help us with funding unless we come to them saying, look, we're already at ESA-listed species, therefore you guys are then saying so we can help you.

Do you understand the problem? It's a huge issue. I know I raised this with you in Juneau when you were there, but the frustration again is billions of dollars and it all seems to be going to the Lower 48. The big salmon runs that are still healthy in America are in Alaska. We want to keep them that way. We have challenges with some. Some are hitting records, like you know, sock-eye salmon in Bristol Bay.

But the prioritization of the ability of funding to help on this seems to be very Lower 48 focused to salmon species that are al-

ready decimated. We don't want our salmon species decimated in Alaska, but we can't seem to get you guys to prioritize that kind of funding.

Can you comment on that and commit to me to revising the current funding priorities under Pac-Serf?

Dr. SPINRAD. So thank you, Senator.

The interesting thing right now with respect to salmon research and getting a better handle on what's happening with salmon in the Pacific writ large is that we have the benefit of having not just the appropriated funds through the, for example, Fiscal Year 2024 appropriations that we're asking for but we also have the BIL and IRA funds and when you look at all of that, there is plenty of opportunity for conducting research, conducting management improvements when we look at how we manage the BIL and IRA funds, some of which are through Pac-Serf, I would also point out.

I do want to say, though, that—and the experience I had in going up to Alaska, talking to the tribes who are dealing with the decimation of the Kuskokwim and Yukon River salmon populations at the same time, as you said, that we're looking at what's happening in Bristol Bay, and the question of how much of that is in fact bycatch issue, how much of that is perhaps related to climate-related effects in the North Pacific,—

Senator SULLIVAN. Yes.

Dr. SPINRAD.—has resulted in extensive increases of activity in our Alaska Fishery Science Center on understanding. One of the aspects of research you didn't mention is the genetics aspect to allow us to get a better handle so that—

Senator SULLIVAN. Yes.

Dr. SPINRAD.—we can manage—

Senator SULLIVAN. And the Science Center in Juneau's doing—

Dr. SPINRAD. That's right.

Senator SULLIVAN.—extraordinary work in that regard.

Dr. SPINRAD. And that's how we're going to make some clear decisions.

If we have to address bycatch issues, it's going to be based on the best available science. If this is in fact a climate signal that we're seeing in terms of impacts on the salmon populations, especially in Kuskokwim and Yukon Rivers, then we're going to have to take different management approaches.

So we have to get the resources into the research activity and I think between the appropriations, BIL and IRA, we are doing that.

Senator SULLIVAN. Well, respectfully, I feel that and a lot of my constituents feel that the funding priorities, particularly in Pac-Serf, are prioritized in areas that don't benefit our state because we don't have ESA-listed salmon. We don't want ESA-listed salmon. That's the whole point, and we are getting the message from some in NOAA, well, wait till you get listed and then we'll give you money. That's nuts. That's not what we want and you shouldn't be sending that message.

So I'll have more questions. I know the Chairman wants to speak, as well, but it's a huge issue for us, as you know, and it's a continuing frustration.

Senator BALDWIN. Thank you.

Chairwoman Cantwell.

**STATEMENT OF HON. MARIA CANTWELL,  
U.S. SENATOR FROM WASHINGTON**

The CHAIR. Thank you.

Thank you, Chair Baldwin and Ranking Member Sullivan, for holding this important subcommittee hearing, and thank you, Dr. Spinrad and Rear Admiral Hann, for being here, very much appreciate the opportunity.

I want to say to my colleague from Alaska I certainly want a holistic approach to our salmon and making sure that we have the appropriate science and recovery methods and one of the reasons why I fought so hard to stop the Pebble Mine, which would have been built on the largest sock-eye run of salmon in the world, is because we definitely get the connectivity between Alaska and the state of Washington.

But my colleague's point is correct. We have to invest in all sorts of activities to make sure that we are robust in our approach.

I do want to talk, Dr. Spinrad, about NOAA and the distribution of hatchery funds. You know, one of the issues I think is the Inflation Reduction Act really was a shot in the arm in my opinion to where we are with our hatcheries but it's only the beginning and so I think we really need an established permanent program for infrastructure on our hatcheries to ensure the long-term sustainable management investment will continue.

I understand that NOAA is consulting with tribes on this, but I want to get your feedback on how we make this a long-term investment and what we need to continue to do.

Dr. SPINRAD. Yes. Thank you, Chair Cantwell, for that question and appreciate the dialogue with you and your staff throughout this.

I want to be very candid and upfront with respect to the tribal component on IRA and as I stated a little earlier in my testimony here, we can do better and in fact I think at the end of the game, the fact that we now have within IRA \$390 million or 15 percent of the resources going to tribal activities, not just with respect to hatcheries and, of course, the largest Federal investment in hatcheries restoration we've ever seen, but also in some of the habitat restoration capacity-building work, as well.

Because we have begun this as a result of the consultations and I might add the listening sessions, five of which we conducted during June, we have a much more active and interactive dialogue with the tribes and I think I want to take your question under advisement because I want to see what comes out of these listening sessions, what comes out of the proposed efforts associated with the hatchery repairs and maintenance and be able to come back to you and say based on that investment, based on the plans, based on what we're hearing from the tribes, this is the sort of sustainable long-term effort that we need and that's something that I'll take as a get-back, but until we have that further interaction, oh, by the way, now that we're working with the Bureau of Indian Affairs, also, on this, I'd like to get their perspective on how to build this as a sustainable effort.

The CHAIR. I'm going to say something that's going to kind of shock people. I need to understand that the Biden Administration understands tribal consultation.

We in the West understand it, but we're spending an enormous amount of time trying to make sure this Administration understands it, as well.

So I hope that it doesn't take more listening sessions because we've already forced Commerce to have many listening sessions and, you know, I would say that, as you said, there's more work to be done there and I don't understand. I don't know if it's like some historical perspective that people are missing. I don't know what it is, but we got to do better.

So will you commit to a permanent hatchery infrastructure program? Do you think that's wise?

Dr. SPINRAD. At this point, I want to get more information about what a permanent hatchery infrastructure program might look like and I don't have that information, but I will commit to getting back to you with a perspective on that once we're better informed.

The CHAIR. OK. Let me ask you this. How important do you think hatcheries are to our efforts in sustaining salmon?

Dr. SPINRAD. As an Oregonian, I think they're very important.

The CHAIR. OK. So why wouldn't we want to make sure that we have a well-managed program from your viewpoint to whoever's next in line to take over in a new Administration?

I think this is what we're looking for. The standardization of what we already know. I joined my colleague on the stock assessment. I mean, that was another big priority for us is making sure there were resources there for stock assessment. Why? This isn't, you know, a game of like 20 questions when we come here to whoever the Administrator is.

It is about what do we know today about the science and what do we need to do to move forward and so I personally think a NOAA organic act gets you that. It gets you standardized programs with oversight and real answers as to the progress that we're making.

So here I believe in a permanent and specific stock assessment and I certainly believe in a hatchery program, as well. So keep me posted on the, you know, coming back to us on tribal consultation.

And if I could, Rear Admiral Hann, ask you about the Coast Guard Authorization Act was signed into law in December authorized six hurricane hunter aircraft. These planes are needed to replace the P-3s which will be at the end of their service of life in 2030.

The Omnibus provided NOAA with 320 million in a contract to acquire a new fleet of hurricane hunter aircraft. I understand that NOAA has entered into a contract for only one plane. With only one aircraft, NOAA will have fewer resources in 2030 than they do today and as we can see, these are really important weather information tools for us. They reach some of the most intense levels of 4 and 5 and this is why we need this information.

So what is holding us up in acquiring these new aircraft?

Admiral HANN. Chair Cantwell, thank you for the question and thank you for the support for the recapitalization.

As you mentioned, there's an authorization for six aircraft and our Aircraft Recapitalization Plan cites the operational requirement for four aircraft. So we've been aggressively working toward

those contracts to ensure that we have the capabilities online in 2030 when the P-3s need to go offline.

So as you mentioned, we're working toward awarding a contract. We'll award a pre-production contract in the next month. So that will be one aircraft with an option for at least three more aircraft in a production contract in early 2024, Fiscal Year 2024, for the full production contract.

So working with the manufacturer, Lockheed-Martin, that space is in their production schedule to ensure we can get through the building of the aircraft, the extensive modifications, instrumentation that we do to collect that data and have at least two of the aircraft online and operating by 2030 when the P-3s go offline.

The CHAIR. So you're saying what's holding us up is prototyping?

Admiral HANN. I would say at this point we're working to spend the funds that we have, the appropriated funds that we have, and working with the manufacturer within their production schedule and all the orders we have to make sure that we are in their plans, we're in their orders, so that it's a 6-year process to build and modify the aircraft.

We're making sure that we're in their production schedules with the funds that we have appropriated to get those aircraft delivered and we look forward to continuing to work with Congress and the Administration to fully execute the aircraft and the Aircraft Recapitalization Plan.

The CHAIR. Is it true that there are only four qualified G4 pilots currently in the NOAA Corps?

Admiral HANN. I believe we have six right now that are fully qualified, but you do make a very good point. NOAA core staffing is critical. The only way that we're meeting tasking right now is to have them sign high-time waivers which means that they fly more than 120 hours in 30 days. They have to ask for and be approved by a flight surgeon to fly more than a 120 hours. That's a lot of hours in extreme flying.

You know, as you're well familiar with, it's not just important for hurricanes, it's critically important for atmospheric rivers. So we are working to increase the recruitment of the NOAA Corps, specifically pilots. We've instituted a couple new things in the next officer class which swears in today and starts at the Coast Guard Academy on Monday.

Eight of those officer candidates will go to Aviation upon completion at the Coast Guard Academy in January which is our next class of officer candidates at Coast Guard Academy. For the first time ever, I directed an Aviation Board and a Mariner Board. Within that Aviation Board, the selections are going on right now, but we have many qualified pilots with all of their pilot licenses which means immediately upon completion of training at the Coast Guard Academy, they will go to the Aviation Operations Center and start flying.

So we're taking some pretty radical measures to make sure we can get the pilots onboard, and to your point, it takes years of training to get to be a qualified hurricane aircraft commander.

The CHAIR. How many years do you think?

Admiral HANN. If someone comes in with experience, they have all their license and experience, probably the quickest we can get



them in there is three to 4 years to be a qualified hurricane aircraft commander. It depends largely on the hurricane activity. You have to have a minimum number of flights into the environment, into the hurricane to get your qualification, but with bringing in people with their license and flight experience, that allows us to expedite the process up to four to 5 years.

The CHAIR. Is OMB blocking the contract for more than one plane?

Admiral HANN. At this point, we're working with them, with the Administration on the funds that you appropriated, thank you very much, to make sure we spend them as efficiently as possible to meet that operational demand in 2030.

The CHAIR. Well, we're definitely going to need the information and the pilots.

So thank you very much. Thank you, Madam Chair. I'm going to submit an opening statement for the record, but very much appreciate your leadership here and helping us continue to focus on making sure our fisheries and our oceans policy continue to work well.

Thank you.

Senator BALDWIN. Thank you, Madam Chair.

The Bipartisan Infrastructure Law provides funding for NOAA to enhance high-performance computing capabilities.

Dr. SPINRAD, I know you just mentioned in answer to my previous question about some of the work you've done with HPE Cray.

It's crucial that NOAA effectively utilizes these resources to bolster its mission of accurate weather forecasting, climate modeling, and environmental research.

So I wonder if you could provide us with an update on NOAA's strategies and investments in this particular area.

Dr. SPINRAD. Thank you for the question, Chair Baldwin.

When I look at high-performance computing, there are a few ways to break that up and I did want to bring up what we're doing with respect to the new capabilities of the HPE Cray system, but when you look at it at sort of a higher strategic level, we use high-performance computing to do a number of things, mostly our research activities and our operational activities, think about what goes on in the lab to build new models for forecasting weather compared to what goes on at, say, the Hurricane Forecast Center where they're using operational products to put it out.

At the same time, I look at our high-performance computing in terms of what we call On-prem capability. That is the hardware that we have located at our facilities versus cloud-based computing and so the resources that we've gotten not just through BIL, IRA, but also through our regular appropriations are now being used to look at what the appropriate balance in the future is.

You asked about strategy. I would hope that when I come back here in 3 years, that's as the NOAA Administrator, I'll be able to talk to you about how we are working with the cloud providers, the Amazons, the Microsofts, the IBMs, the rest, to actually do a more efficient balance of cloud-based high-performance computing and On-prem computing and that we have a well-structured decision process for where we do the processing within that space and I've

asked my Assistant Secretary, Dr. Michael Morgan, to focus on that and develop exactly that strategy.

So within NOAA, we're developing concepts for that break-out, looking at the research and the operational requirements and what the balance of cloud-based and On-prem computing will be.

Senator BALDWIN. OK. Great. I'm going to sort of have you elaborate a little bit further about the partnerships you've just been describing and collaboration.

What opportunities are there that NOAA is exploring with other government agencies, research institutions, or private entities to optimize its high-performance computing infrastructure? Are there any ongoing or potential cooperative endeavors that can really amplify NOAA's computing capabilities and facilitate maybe groundbreaking advancements in weather prediction or climate modeling or other relevant domains?

Dr. SPINRAD. Absolutely. I'd love to take another three hours and go into great detail on that.

The short answer, though, is that we have a number of agreements, including with groups like Microsoft and others, and it's not just on the computing side and the distribution, say, of cloud-based capabilities, but it's also in applications of artificial intelligence and as you know, the Federal Government is going through a very rigorous assessment of what's the right place, for example, for generative AI and machine learning and deep learning for a data-rich organization like NOAA. Applications of machine learning and deep learning are very, very important new ways forward, groundbreaking approaches to improving our capabilities.

I would also add it's not just on the sort of front end processing piece where we collect data and turn it through a system and they get an output, but it's also in the dissemination piece, and I couldn't be prouder of our relationship with partners like ESRI who is the secret sauce in a lot of the portals, like the Climate Mapping for Resilience and Adaptation product that almost everyone in the country now has been using to determine what is my seasonal outlook for precipitation or what can I expect over the next couple of years in terms of sea level rise, and that partnership with ESRI, a private corporation, is one that is paying off enormous dividends.

In fact, it will probably be the mainstay of some of additional work that we'll be able to do for even more kinds of products around heat health, drought, flooding, all of those sort of hazards associated with climate change.

Senator BALDWIN. Thank you.

I want to then ask a future-oriented question about this. So what's your long-term vision or roadmap for sustaining and expanding your computing infrastructure beyond the immediate appropriations that are available to you? What can you see asking for in the future in terms of investment to, you know, or development in emerging computing technologies, such as Quantum computing, an interest I have, that could further enhance NOAA's capabilities?

Dr. SPINRAD. Yes. It's interesting. I was going to bring up Quantum because one of the interesting dialogues I'm having with the head of NSF is how we can take advantage of the great research that NSF is doing in computing, specifically information technology writ large, and apply that to our capabilities.

So I think the long-term vision has to start with a requirements-based. So you look at the breadth of our mission responsibilities, whether it's in fisheries, whether it's in terms of ocean prediction, whether it's in terms of climate, what are the computational requirements, and then being able to have a rigorous process that says this is how we are going to allocate resources again for cloud-based services, On-prem capability, research vice operational, and that's my vision is that we would be able to come in and say if one more dollar came in for high-performance computing, this is the mission space that it would apply to, this is the allocation that's associated with On-prem or cloud computing, and, oh, by the way, this is how we will work with the private sector, as well, because we have a responsibility in the Department of Commerce to stimulate that kind of economic development.

So if there's a startup that has a very clever way of using Quantum computing to enhance weather forecasting, we want to partner with them, as well.

Senator BALDWIN. Exciting. Senator Sullivan.

Senator SULLIVAN. Thank you, Madam Chair.

Dr. Spinrad, I just want to kind of go back to the last two points just very quickly again on my Alaska Salmon Research Task Force Act.

If you can commit as we're implementing that to work with all the key stakeholders. NOAA obviously is going to play an important role on that critical piece of legislation, as I mentioned in my opening statement. It's just really focused on, hey, what exactly is happening with regard to some of these really important salmon runs, Kuskokwim, Yukon, Kenai, primarily the King salmon runs, and how do we address that, what's the research shortfalls, and how do we bring Federal dollars to bear on addressing that.

So can I just get your commitment to work with us on that? I know you already have given it to us, but I just want to finish up the last conversation.

Dr. SPINRAD. Yes. I do want to commit to that and I would say that, as you well know, the applications of research to the seafood issues writ large in Alaska, I mean, we can talk about snow crab, we can talk about any number of different applications.

Senator SULLIVAN. Right. It's not just salmon.

Dr. SPINRAD. Yes.

Senator SULLIVAN. You're correct. I mean, the crab—yes. It's obviously another big one.

And then another quick one that we were talking about, work force, you know, I've raised this with every NOAA Administrator since I've been in the Senate. I do want a commitment.

One thing that I've seen over the years, I think you're working on it now, but I just want you to stay focused on it, both you and Admiral Hann. You know, what I've seen over decades was kind of this migration of NOAA staff, NOAA scientists who have Alaska-focused missions, right, to—they kind of migrated to the Lower 48. The *Fairweather* was an example of that.

Washington State has the Alaska Fisheries Research Center in Washington State, right. You know, you wouldn't put the study of the Grand Canyon in Illinois.

So I just want you to stay focused on when it's an Alaska-focused NOAA mission, the people of NOAA and the scientists in my view should be based in Alaska.

Let me give you one example. Several years ago I met with your Marine Debris Director for the Alaska Marine Debris Program from NOAA. Great. Met with me in Anchorage, had a great meeting with him. Said where are you based? I thought he was going to say Juneau. Oh, I'm based in Seattle. What? You're the head of the Alaska Marine Debris Program for NOAA. Why the hell are you based in Seattle?

So can you just commit to me to keep a focus on if it's a NOAA mission primarily related to Alaska, those people should be in Alaska? Would you agree with that and can you commit to me on that because I know I've raised with you, I've raised with every NOAA Director. You'd be amazed at how many NOAA scientists and employees who have a NOAA Alaska focus mission who don't live in Alaska. I don't think any other state would tolerate that and I know you're working on it, but I just want to raise it in this hearing because it has been a frustration of mine and my constituents.

Dr. SPINRAD. Thank you, Senator.

I would have been surprised if we didn't have this discussion in this hearing. So thank you for bringing it up.

Senator SULLIVAN. I mean, come on. It's a legit issue, right?

Dr. SPINRAD. Well, and I'd also point out—

Senator SULLIVAN. Wouldn't want to have the NOAA Great Lakes expert in Florida.

Dr. SPINRAD. You used the phrase in your opening statement about ensuring mission accomplishment, ensuring that we do what we need to do for our mission. That to me is of primary importance and then the second issue is how, where, and when we do that, with what workforce.

Having said that, though, as you and I shared when I visited Alaska last summer,—

Senator SULLIVAN. Yes.

Dr. SPINRAD.—and specifically in Nome, for example, where I had the opportunity to talk with folks who were relying on the Weather Service for their forecasts and we realized there was a staffing issue there and in fact one person shared with me that a problem that we're having in the Weather Service in Alaska is that people get trained up in the Lower 48 and come up and after some period of time decide they want to go back to the Lower 48 and so the head of the Weather Service, Ken Graham, is taking a real strong forward—leaning approach on this, saying, well, why are we doing that? Why aren't we training in flights as it were?

Senator SULLIVAN. Yes.

Dr. SPINRAD. And so we now have a program we've started and I look forward to briefing you on this. We're working with the community college structure which fortunately is done through the University of Alaska structure, so it's kind of one-stop shopping, where we can train up especially some of the Alaska Native tribal members and get qualified meteorologist forecasters in the Weather Forecast Offices in Alaska. I think that's one step.

We talked about the homeporting the *Fairweather* in the Ketchikan Port. That's another step toward work force.

The third, I would say, it's small but I think we're going to see significant consequences of this. Admiral Hann indicated that we have worked very hard with NORTHCOM—

Senator SULLIVAN. Oh, right.

Dr. SPINRAD.—to place an 06 as a liaison with NORTHCOM and my intent is that that be a particular focus on outcome and I think between our regional coordinator in Alaska with a NOAA 06 in NORTHCOM, we'll start seeing a lot of other opportunities, especially with emphasis on all of the Arctic activities that we can expect to emerge soon.

So hold this space available. I think you and I may have a different conversation here in a year or two on that aspect.

Senator SULLIVAN. Well, you know, I serve on the Armed Services Committee and if there are any issues with ALCOM, on that 06 being placed at ALCOM, because, you know, NORTHCOM's in Colorado, but ALCOM's in Alaska. So if there are any issues, let me know because I think that's a great idea and I appreciate your innovative thinking on that.

Dr. SPINRAD. Thank you.

Admiral HANN. And if I may add, Senator, I know this is an issue discussed at the Coast Guard hearing last week with Admiral Fagan and it's definitely an issue that I'm paying attention to, but with the completion of the Ketchikan facility which is an exceptional opportunity for us,—

Senator SULLIVAN. Oh, right.

Admiral HANN.—the *Fairweather* does have the largest complement of NOAA Corps officers and professional mariners on that ship. So one thing I'm concerned about—

Senator SULLIVAN. And they're going to be homeported in Ketchikan?

Admiral HANN. Yes, sir, and one thing that—

Senator SULLIVAN. We love it. It's great.

Admiral HANN.—I'm paying close attention to is just access to affordable housing, health care, dependent employment. That will influence decisions for people that base their dependents there. So that's—

Senator SULLIVAN. Well, look, these are the issues that we're more than willing to work with you on. As you know, I had to pass legislation, a Federal law, to make it so NOAA and the Federal Government could accept funding from the State of Alaska to help build the NOAA facility. That's how motivated we were to help the state of Alaska. Our legislature appropriated dollars and the Feds said we can't take your money. OK. Well, we passed the law to say we own it, now you can take our money.

So we're more than willing to put our fair share and into those kind of issues, housing, other issues that make it more attractive. We know that, you know, being in Alaska, some of these challenges on cost of living and things like that are challenges, but we're more than willing to do our part, the state is, and I think we proved that on the NOAA facility—

Dr. SPINRAD. Thank you.

Senator SULLIVAN.—in Ketchikan.

Admiral HANN. Thank you.

Senator BALDWIN. I have two more topics I want to delve into. So I'm going to do one more round. If you have further than one more round, we can see how the timing works.

I wanted to start with a focus on the Digital Coast. I was able to secure passage of the Digital Coast Act in 2020. That bill was intended to enable local governments, businesses, and citizens to make informed decisions regarding coastal planning, resource management, and hazard mitigation.

Dr. Spinrad, I understand that since the program came online, it has been instrumental in providing coastal communities with valuable geospatial data and tools and resources.

I wonder if you can bring the Committee up to speed on the economic benefits and returns that result from the wide availability and utilization of the Digital Coast Program's data and tools. Specifically, how does the program contribute to job creation, economic growth, and resilience of coastal communities?

Dr. SPINRAD. Thank you, Chair Baldwin, and, yes, the Digital Coast Act has been a valuable and enormous shot in the arm for a lot of coastal communities to be able to get access to the sort of decision support that I was alluding to earlier, the environmental intelligence associated with things like storm surge vulnerabilities, sea level rise, as well as information that will help communities adapt to and become more resilient to climate change by doing things like hybrid green and gray infrastructure solutions to sea level rise and increased storm surge.

These resilience investments, what we have found, and we can certainly follow up with more information, is that typically a dollar spent on resilience/adaptation in a coastal community returns anywhere from \$6 to \$12 in a number of different ways: cost avoidance from storm mitigation to job opportunities associated with enhanced ecotourism, for example, or increased real estate values.

So we have undertaken a number of ocean economic studies and we'd be glad to come brief your staff on what those look like specifically with regard to the use of the kind of tools that the Digital Coast Act made available.

Senator BALDWIN. Thank you, and you've already opined what my next questions are going to be relating to coastal resilience.

So I'm wondering specifically can you provide some examples of successful partnerships or initiatives between NOAA's Coastal Zone Management Programs and state and local governments or nonprofit organizations or community groups that have effectively enhanced coastal resilience and how have these collaborations contributed to building resilient infrastructure, promoting ecosystem restoration, and supporting sustainable economic development?

Dr. SPINRAD. There are a lot of examples and we're documenting those as part of our Climate Ready Coasts Initiative in the Climate Ready Nation Approach.

One that sticks out in my mind I'll bring up because it is a BIL-related investment is actually in Cape Cod with the Mashpee Tribe in Cape Cod who was looking at trying to build out a much more robust aquaculture industry for shellfish and they had, I would say, a small operation going with the investments that we're now able to make in restoration in that area.

We've been able to do—well, we will be able to do a couple of things. The restoration itself is going to support a conservation agenda. It's going to support tourism on Cape Cod, and it's also going to support the buildout of that particular shellfish industry for that tribe.

Numbers to be determined, but having visited the spot, kicked the tires, walked the property with the tribal elders, I can tell you that that's just one example of the kind of return-on-investment that we're going to see from coastal resilience and adaptation funds.

Senator BALDWIN. Thank you.

Senator Sullivan.

Senator SULLIVAN. Thank you, Madam Chair.

Dr. Spinrad, over the last 2 years the Nation's eight Regional Fishery Management Councils developed the first Synthesis of Conservation Areas in Federal Waters of the United States, identifying hundreds of conservation areas covering more than 72 percent of Federal waters.

The purpose was to provide an in-depth examination of existing fishing gear restrictions and a clear robust methodology to facilitate inclusion in the Administration's American Conservation and Stewardship Program.

The Councils' report, and I think you guys supported that, is that their conclusion is that fishery management measures through the existing regulatory process, that's the Magnuson-Stevens Act Councils, can directly result in improved conservation outcomes that benefit fisheries, work with you guys with that and science, benefit fish populations and other marine species and habitat, and can be responsive to changes in the ecosystem or populations that warrant conservation which is the whole point of the Council process in the MSA.

Two questions for you. Is NOAA still focused on these Councils and the work that you do with them, critical work you do, as the primary tool on these conservation approaches or is NOAA changing its views of other tools to accomplish more targeted protections that can be supported by both science and local and regional stakeholders?

Dr. SPINRAD. The Councils by law, of course, are a critical tool and they are a key component in our ensuring a balance of fisheries management and conservation.

Senator SULLIVAN. Let me ask. You know, I've talked to you, the Secretary of Commerce, Janet Coit, Admiral Hann, you know, on making sure that if there's any sanctuary designation, it comes from stakeholder input, not some kind of top-down, you know, driven by certain special interests.

Dr. Spinrad, I appreciated your recent letter regarding the marine sanctuary proposal in Alaska. The April 8th hearing that I think you got a lot of—and again I appreciate you guys having that, but I think you got a lot of stakeholder input which was the whole point in the hearing.

Your letter led me to believe that NOAA's not pursuing the scoping project to designate the sanctuary in question from your letter.

Can you confirm that is the case right now?

Dr. SPINRAD. Yes, I can confirm that we have no plans to initiate the designation process.

Senator SULLIVAN. Great. Thank you.

Let me turn to another issue that you guys, in my view, have done a really important job at and I want to do a particular shout-out to Ryan Wolfe of the NOAA Team and this is something that's very unique to Alaska but so, so important to my constituents and that's NOAA's support and work with over the years, decades really, the Alaska Eskimo Whaling Commission and the Aboriginal Subsistence Whaling issues at the International Whaling Commission at the IWC.

As you know, these subsistence hunts are an enormously important part of the culture and heritage of the communities on the North Slope and the Northwest Arctic part of Alaska that undertake this important activity which they've been doing for literally tens of thousands of years.

I just want to make sure to get your commitment, no issues right now, but that NOAA will continue to work with the AAWC to address the different impacts on subsistence whale hunting and work with the IWC.

As you know, we had this huge success in the Brazil IWC meeting in 2018. Ryan Wolfe again played a critical role. My team was actually down there in Brazil with you guys at the IWC meetings, but I just want to make sure that you from the top here continue to commit to working with these great Alaskans, great Americans, our whaling captains, and it's something that's real special.

It's hard to explain sometimes. I've literally explained this to Presidents, to Secretaries of State. Hey, we have a culture here that's really important. You guys get it. You've been great. I just want to get your commitment in this hearing on those issues.

Dr. SPINRAD. Thank you.

As somebody who enjoyed Mukluk with the Mayor of the North Slope Borough, I can tell you that I have personal experience with the community of subsistence hunters and fishers.

We are committed to support the needs of the Indigenous hunting and fishing communities. As you know, we've gone the extra mile in some cases. We created a specific product for the walrus hunting community, the Sea Ice for Walrus Outlook Product. So, yes, that's evidence of our approach that we will support those activities.

Senator SULLIVAN. Great. Thank you.

Senator BALDWIN. I'm just going to excuse myself to vote in another committee and Senator Sullivan will take over the gavel and close out the hearing when he's done with his questions.

Thank you again for your testimony.

Senator SULLIVAN. Thank you, Madam Chair, very much.

Let me turn to the issue of hydrographic surveys. Where are we on the Hydrographic Services Improvement Act which was included in the Coast Guard Reauthorization Bill and really tries to get NOAA to finish and update its hydrographic surveys.

Of course, you know, Admiral, it's a big issue in Alaska because most people would be surprised there are a lot of places in Alaska that aren't mapped and that's dangerous if you don't know where the reef is in the middle of the ocean or things like that.



Where are we on that, and can you provide an update to the Committee?

Admiral HANN. Thank you for the question, Senator Sullivan.

I can come back to you with a gift bag on where we are on executing that plan, but I can say the award of the two new charting and mapping vessels 2 weeks ago tomorrow was absolutely critical to make sure that we have that capacity.

In addition, we are leaning into uncrewed systems with the current vessels that do that work and it will be a corps complement of the new vessels. So again maximizing every single day that we're at sea to make sure we're collecting as much data as possible.

To your point, there's a lot that remains to be mapped in Alaska and as the Maritime Commerce is getting larger, moving in new areas, it's critically important that we provide accurate navigation information, but I will provide you a get back of exactly where we are in executing that plan.

Senator SULLIVAN. Great. Let me turn to the Marine Debris Program and NOAA does a good job, although, like I said, I would like your Marine Debris, your Alaska Marine Debris NOAA official to be stationed in Alaska. I think that kind of makes sense but it's just me. You might want to check into that one.

But this is an area of strong bipartisan support. Senator Whitehouse and I have led the efforts here in the Senate. We've made a lot of progress. It's an issue that I know both of you care deeply about. It's an issue that I think, you know, really unites Members of Congress, members of the country, regardless of political party, because we all want clean sustainable oceans and my Save Our Seas Act and then Save Our Seas Act 2.0 goes a long way in addressing some of these challenges and not just domestically and from an innovation standpoint but also internationally with regard to some of the challenges overseas.

A lot of the ocean debris that ends up on the shores of Alaska comes from Asia, comes from other countries overseas.

So can you give an update on the fully funded Marine Debris Program that NOAA is undertaking and the implementation of the Save Our Seas 2.0 Act? As I mentioned, Dr. Spinrad, you're the Chair of the new Marine Debris Foundation, which I think has enormous potential, particularly given that kind of like the Ketchikan Pier can accept both public and private sector funds and has the ability to really revolutionize the way in which we're trying to address marine debris issues, particularly given the emphasis on trying to make sure the private sector innovation that is so critical, in my view, to cleaning up our oceans is viewed as a key part of that Foundation and the solution and so I'd just like an update on where you think we are on the Save Our Seas 2.0 Act implementation and the Marine Debris Foundation?

Dr. SPINRAD. Yes. Thank you, Senator, for that, and thank you for the work that you've done in this area with Senator Whitehouse, the leadership you've shown on the Save Our Seas and Save Our Seas 2.0, our seminal pieces of legislation to address a truly insidious problem.

I think one of the most important things that those pieces of legislation have done collectively is elevate the visibility of this problem to a broader community and also kind of call to task some of

the responsible parties who are contributing and have contributed to the problems.

So in a general sense, the activity associated with—and the Marine Debris Program is consistent with all the objectives in Save Our Seas and Save Our Seas 2.0. One minor point of clarification. The Marine Debris Foundation is actually chaired by Ginny Eckert, the Sea Grant Director from the state of Alaska.

Senator SULLIVAN. Right. You're correct. I apologize.

Dr. SPINRAD. But I do serve in an ex-officio capacity, as you well know, and currently serving as the Chair of the Search Committee for the Executive Director, and we're right in the middle—pardon me?

Senator SULLIVAN. How's that going?

Dr. SPINRAD. We're going to be starting interviews for candidates. We got over 200 expressions of interest or applications. So, yes, a lot of folks out there very interested.

Senator SULLIVAN. That's incredible.

Dr. SPINRAD. It is incredible. I haven't had a chance to look at the portfolio, but we're using a hiring firm to do the down select for us. We got a great committee, search committee, and we should be able to do final interviews, I would hope, sometime in September and have somebody onboard shortly after that.

Senator SULLIVAN. Fantastic.

Dr. SPINRAD. The other thing I want to report out is the Foundation is up and running, doing its thing. Thanks to the Department of State, we have some nominal resources that we can use for issuing grants, small grants for activities, and right now I feel my role on the Board is to ensure exactly what the Act expresses, that there be close coordination between and not duplication of effort between the Foundation and Nancy Wallace, whose program, the Marine Debris Program at NOAA,—

Senator SULLIVAN. Right.

Dr. SPINRAD.—and so when you look at that, for example, some of the things that we tend not to focus on in our program are the upstream aspect, the manufacturing, the production, the delivery of debris through rivers and other mechanisms.

So how can the Foundation in its solicitation of primarily private donors' funds coupled with what we're doing with public funds, which is really about fate and effects, if you will,—

Senator SULLIVAN. Yes.

Dr. SPINRAD.—of not just plastics but marine debris writ large, I mean,—excuse me—abandoned vessels are part of that program, as well.

So marine debris goes from the micron to the 20 meter size and make sure that we have a much more comprehensive view to limiting the delivery of marine debris into the ocean and then removing the debris once it's there and right now it's early.

The other part of what the Foundation is doing is addressing a fundraising strategy so we have—

Senator SULLIVAN. Yes.

Dr. SPINRAD.—both a grant-making and a fundraising strategy that we are developing and I'm confident, thanks to the leadership of Ginny Eckert, we're making great progress in being able to es-

establish the Foundation as a very effective complement to what we're doing in NOAA's Marine Debris Program.

Senator SULLIVAN. No. I think it's a great initiative that has enormous potential and I appreciate your continued focus on it. So thanks.

Dr. SPINRAD. Thank you.

Senator SULLIVAN. Let me ask just two final questions on two final topics.

One is the topic of IUU fishing. So this is illegal unreported unregulated fishing, and this is a topic that I think we all care about. NOAA's been very involved with it.

I have a new bill that I introduced with Senator Whitehouse that we're trying to advance here on the Commerce Committee called The FISH Act which we worked with you and the Coast Guard on to enhance the Coast Guard's enforcement capabilities and advancing international bilateral negotiations to achieve enforceable agreements and treaties, including blacklisting offending foreign vessels from U.S. ports and waters.

Now the secret—it's not a secret that everybody knows. This is the main IUU violator by far is China with their gray fleets that they go out off the coast of Africa, Latin America, and the High Seas in many ways ravage the oceans and this is a problem and it's a problem again that unites Americans because it's dangerous. It oftentimes involves, you know, human trafficking and, you know, labor issues.

So I wanted to make sure if you wanted to comment on that. NOAA was actually helpful in providing us expertise as we were working on drafting The FISH Act, but I want to make sure that it's clear and I think that you guys can help on this.

I'm concerned that sometimes there's reporting in our own media that fails to distinguish fisheries that operate—American fisheries in sustainable manners in our own EEZs and then the foreign fleets which are the real source of the IUU fishing violations.

Over decades the Alaska fishing industry has built an incredible brand because of our sustainable practices in partnership with NOAA and yet sometimes recently in media there are suggestions that IUU fishing is occurring in U.S. waters on U.S. vessels.

For example, in a recent episode of the Deadliest Catch, there was a subplot where a Coast Guard officer wrongly implies IUU fishing is occurring in the U.S. EEZ side of the Bering Sea from U.S. vessels.

Can you just dispel this plot line and confirm that the focus of IUU enforcement is on foreign fleets, particularly China, and that's where the data shows that this is a problem, and any other comments you want to make on the importance of the IUU fishing issue?

Dr. SPINRAD. Thank you, Senator.

This is unfortunately another one of those insidious problems and certainly from an economic perspective, from a labor perspective, as you indicated, we have got to deal with this.

So it is very much an open seas international issue, by and large. Our challenge is the detection, the deterrence, and the traceability of the seafood and so we have a small increase in the Fiscal Year 2024 Budget to address that.

I would say the greatest success is going to be in the sort of all of government approach. I had the opportunity just a few weeks ago to talk to Secretary of the Navy Dal Toro about this. How do we cooperate with the Coast Guard about this, as well? There is an interagency working group that's attending to this.

As you know, there was a National Security memo a year ago June that identified some actions along those lines. Still a lot of work to be done, but I think the elevation of this issue here in Congress as well as in the Executive Branch is at the place now where we're ready to start making some considerable improvements.

On the policy side, there are a number of things we can do. I think you know we're looking at a rulemaking associated with the Seafood Import Monitoring Program. That's part of the solution there.

So I think there are a mix of actions, collaborative activity with our partner agencies in the Federal Government, and then some policy changes, as well.

Senator SULLIVAN. Good. Well, I appreciate that.

Admiral, do you have a view on that, as well?

Admiral HANN. Yes. If I may answer to the point of whole of government effort and intelligence, which is key to tackling this problem, there are two actions we're taking that we've seen pay significant benefits.

We have a NOAA Corps liaison officer in INDOPACOM and so we've seen him serve directly as a connective tissue between the different agencies of government that have intelligence and knowledge and access to information and he's really brought those skillsets together and has informed some key decisions to make sure the right people are in the right room with all the information so that we can make traction on this issue.

Assigning the NORTHCOM liaison officer is building upon the success that we've seen at INDOPACOM. We've established an MOU between INDOPACOM and NOAA and so it enables us to directly move funds and knowledge and intelligence back and forth between everyone represented at that combatant command and NOAA and we'll do the same at NORTHCOM.

Senator SULLIVAN. Great. Wow! That's good news. I didn't know that. Thank you very much.

You know, you talk about seafood traceability issues. I'm glad to see my friend from Massachusetts is here, Senator Markey. He and I work on those that relate to Russian and Chinese imports that we're trying to sanction.

Before I turn it over to Senator Markey, I have one final question. It's for you, Admiral Hann.

So again we're really excited about the Fairweather collaboration that we did. We have this beautiful new functional port facility. Of course, we need a ship to utilize it.

So two quick questions on that. I plan on being out at the ribbon-cutting. I hope you and maybe both of you can make it.

What is your timeframe and plan to recapitalize the *Fairweather*? We wouldn't want this beautiful facility that you, the Federal Government, and the State of Alaska paid for without our ship and the great men and women of NOAA to be homeported

there, and then a second related question, you know, we appreciate the seasonal rotation of NOAA's aviation assets.

You were actually talking about those earlier. In Alaska, given our Arctic interests, the harsh weather, year-round fisheries and remote locations, such as the Bering Sea, the aviation assets can be really, really important.

What strategies or services are needed for a more permanent NOAA aviation presence in Alaska to house not only seasonal C-130 rotations but additional NOAA aviation assets on a permanent basis, kind of what we're doing on the *Fairweather*, and if either of you want to respond to that and then I'll turn it over to Senator Markey for his questions.

Admiral HANN. Thank you for the question.

So we believe—

Senator SULLIVAN. Both the *Fairweather* and aviation.

Admiral HANN. Yes, sir. So we awarded the contract that will pick up the tasking requirements of the *Fairweather*. I believe that ship is to be delivered in 2027, but I will get back to you with the exact date, but the period of performance has started on the Thomas Sea Marine Constructors, which is the same yard where the first two ships are being built, and they've been exceptional partners. So I'm confident they're going to deliver a good ship on time. We're going to be able to pick up those capabilities.

The *Fairweather* is currently doing with even more capabilities than we see in that 55-year-old ship, as you're well aware. So we're excited to get the new ship and the new facility. We're looking forward to that.

As far as the aircraft and Aircraft Recapitalization Plan, being able to meet the requirements in Alaska was one of the drivers, one of the gap in requirements that we identified. So specifically we identified needing a fifth Twin Otter. Again, I had the opportunity to fly the Twin Otter, spent a lot of time flying it in Alaska which was exceptional flying, exceptional experience, but there are far more demands and many of them in Alaska than we can meet with the four Twin Otter aircraft we have. So a fifth will help us meet those requirements.

You also mentioned the C-130s. So if we can recapitalize beyond the two C-130s right now, we would definitely look to expand our ability to meet requirements in Alaska.

Senator SULLIVAN. And are you looking at any plans or I'd like to discuss maybe, you know, with our staffs any plans for permanent aviation presence in Alaska?

Admiral HANN. It's a good question. So during my career, we had decentralized aviation operations. At one point we had assets based in Minnesota, assets based in Alabama, assets based in California, and then our main operation center in Tampa.

The problem that we saw is we did not meet a standardization of training and qualification and that was a real concern is the operational commanders. So we've pulled all assets back to Florida where the Aircraft Operations Center is. So to standardize that training, that maintenance, the engineering, everything we do that makes us able to so nimbly meet those requirements, but we do base aircraft for months at a time wherever the mission needs to be. So we spend months every year in Alaska, whether we're up-

dating the perimeter data, collecting protected species data, which directly reduces the uncertainty in the fishery forecasts.

We are committed to operating out of wherever we need to be to collect the data but from a centralization standpoint, we found having one hub of aircraft operations was the best way to safely conduct our mission.

Senator SULLIVAN. OK. Well, let's discuss that perhaps later because, as you know, there's flying and then there's flying in Alaska as—

Admiral HANN. There is.

Senator SULLIVAN.—you just talked about and just ask the Coast Guard Air Stations in Sitka and in Kodiak. I mean, their best pilots in the Coast Guard have to come to Alaska because that's the toughest flying and then they deploy there. They're permanently stationed there and, you know, they become the best pilots in the Coast Guard. There's no doubt about it, and I think permanent presence provides that permanent training and operations skill set which is what you need to operate in Alaska safely.

Admiral HANN. Understood.

Senator SULLIVAN. So thank you.

Admiral HANN. Thank you.

Senator SULLIVAN. You have a comment on that?

Admiral HANN. No. Thank you, sir.

Senator SULLIVAN. All right. OK.

Senator Markey.

**STATEMENT OF HON. EDWARD MARKEY,  
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Senator Sullivan, and I am continuing to look forward to working with you on the Russian fishing issue.

Earlier this month, we experienced what might have been Earth's hottest day in 125,000 years. In Phoenix, Arizona, the temperature has been 110 degrees or higher for nearly 3 weeks in a row, and on July 15, nearly one in three Americans were living under an extreme heat alert. This national problem requires a national response.

There is a heat dome over the United States right now. The ongoing forest fires in Canada are like an exhaust pipe sending those toxic fumes into the lungs of Americans. The water off of the coast of Florida right now is 100 degrees. The water off the coast of Florida is 100 degrees. That's going to be super charging hurricanes in terms of the impact on our country and that's why I'll be working with my colleagues to reintroduce the Preventing Heat Illness and Deaths Act to formalize NOAA's National Integrated Heat Health Information System to study extreme heat and provide the resources and planning we need to combat it.

Administrator Spinrad, what is NIHHS doing now to address extreme heat and what more could we do if we had the right resources to support it?

Dr. SPINRAD. Thank you, Senator Markey, and I couldn't agree more with your characterization. In fact, a few minutes ago I showed the Committee a two-page document that was listing all of these record-setting weather events just from the last week or so

here in the country and you emphasized that in your point. Let's talk about heat health.

So, first, I co-chair with Secretary Becerra from HHS and EPA Administrator Regan a White House Committee on Heat Health specifically looking at what the needs are, what the products are that we can develop. NIHHS, the National Integrated Heat Health Information System that you alluded to, is something that we started a few years back. We use that as a model. NIDIS, which was the National Integrated Drought Information System, we developed 10 or 15 years ago when we started seeing the Western U.S. developing drought conditions.

It serves as a great model first for collecting information from users, communities, cities, counties, and developing the forecast needs and the dissemination mechanisms.

So we are improving our models, our weather models to make sure we can characterize not just when we're going to see a heat health event but as you probably know, the temperature in Downtown Boston could be 95 degrees but in another part of the city, in Chelsea, it could be 115 degrees, and so we're trying to get higher resolution in our models to be able to predict that.

And then the last piece of this is getting the information into the hands of the users. So we have built a climate.gov portal in conjunction with our colleagues at ESRI which is now the place, the go-to place for all government information on heat and heat health impacts.

Senator MARKEY. And again the United States is running a fever right now and how do we know that? Just use thermometers, not sophisticated equipment. We just know how hot it is in the ocean and on land all across the country, and there are no emergency rooms for countries. So we have to engage in preventative care. All the warning signs are there. So——

Dr. SPINRAD. Can I make another comment on that because there's another aspect to this and that is there are contributions that can be made from sectors we hadn't thought of before.

So I've had discussions with the faith-based communities about how we might use houses of prayer as cooling centers and they are interested in knowing how we might do that.

If we could give them an accurate three-to-four-to-5 day lead time, can we take a mosque, a synagogue, a church and use it for a cooling center? So there are other solutions that we're working on, as well.

Senator MARKEY. Yes. And again when Pope Francis wrote his encyclical *Laudato Si*, in praise of everything, meaning the planet that we live on, God's creation, obviously synagogues, churches, mosques are the places where people reflect what God's gifts are to us and so they are the proper places for people to find some relief, but we have to be better than that as a nation. We have to respond and thus far we have had great difficulty in doing that on a bipartisan basis.

My hope is that we, looking at the evidence today, what's happening everywhere and what the predictions are for the future, that we can accelerate our coordinated efforts.

NOAA Fisheries coordinates the Marine Mammal and Sea Turtle Stranding Networks, which respond to sick and stranded animals,

collects scientific data, transport animals to rehabilitation facilities, and help educate the public about conservation.

Currently, grant funding is available for partner institutions that rescue, rehabilitate, and research the marine mammals but not sea turtles, even though sea turtle strandings continue to increase.

In 2000, 49 sea turtles were stranded and found on the beaches of Cape Cod and in 2022 that number skyrocketed to 866 stranded sea turtles.

This is why I introduced the Sea Turtle Rescue Assistance Act of 2023 with Senator Cornyn and Senator Wicker to support nationwide sea turtle rescue, rehabilitation, and research.

So, Administrator Spinrad, would additional support for stranding responses bring an immediate return on investment and direct on-the-water benefits for threatened and endangered sea turtles?

Dr. SPINRAD. Thank you for the question, Senator.

Just to sort of set context, our responsibilities associated with marine mammals are obviously tied to our statutory responsibilities in the Marine Mammal Protection Act and so your question about would there be an immediate return for sea turtle standing investment, I'm going to have to get back to you on that because I don't have the facts to know what that impact would be of such an investment but be glad to get back to you.

Senator MARKEY. I think it's important. Please do it as soon as possible. We can see the evidence——

Dr. SPINRAD. Understood.

Senator MARKEY.—real time in terms of the impact on that species.

Surging ocean temperatures driven by climate change are causing marine heat waves that jeopardize fish and other marine life. Again, as I said, the waters off of Florida's coasts are approaching 100 degrees. Fishery managers have struggled to adapt to account for the impacts of warming waters.

Administrator Spinrad, do you think NOAA has sufficient resources to fully understand these ecosystem changes that hurt fish stock and marine mammals as well as the coastal communities that rely upon the blue economy?

Dr. SPINRAD. Thank you, Senator.

At the heart of your question is our ability to monitor, detect the changes in temperature. We do a lot of that through our Integrated Ocean Observing System and in our Fiscal Year 2024 Budget Request, especially when you incorporate the additional resources from the Bipartisan Infrastructure Law, we are well positioned to be able to provide those observations, to provide decisionmakers the information they need about what temperatures the water is and what the forecasts might be, as well.

Senator MARKEY. Well, you can't forecast if you don't have the information.

Dr. SPINRAD. That's right.

Senator MARKEY. So we have to get you the resources so that scientifically you can be warning, so that the mosques can be ready, the churches can be ready, the synagogues can be ready for the inevitable consequences of what is happening.



The ocean exploration work done by NOAA and other partner organizational, like the Woods Hole Oceanographic Institution, is critically important for understanding ocean health and beyond.

You can't manage what you don't measure. NOAA's research and data collection informs weather forecasts, including severe weather, like tsunamis, severe storms, and flooding, and atmospheric rivers, as well as climate predictions and fisheries management.

So, Administrator Spinrad, would additional support help the Ocean and Coastal Observation Programs better address the rapidly increasing demand for more and better data to support ocean and earth system modeling efforts?

Dr. SPINRAD. The request we've got right now is what we deem to be appropriate for the requirements that you've alluded to with respect to providing exactly those forecasts.

Senator MARKEY. And how much are you asking for?

Dr. SPINRAD. We're going to get back to you on that because that covers a range of observational capabilities. So it's the Integrated Ocean Observing System. It's many of the resources and things like the Water Level Observing Network as well as our Cooperative Ocean Operations, Products and Services component, as well.

So we can get you the full aggregate of those requests as a followup.

Senator MARKEY. Yes. I think it's very important. We really are already in the middle of this crisis. OK? You cannot have any better evidence than what is occurring right now on land and at sea and in the air coming down from Canada.

Dr. SPINRAD. Agreed.

Senator MARKEY. It's all there right now and whatever you need, please tell us.

Dr. SPINRAD. Thank you.

Senator MARKEY. Don't hesitate.

Dr. SPINRAD. Thank you.

Senator MARKEY. Be bold because the times call for boldness. We have to be able to respond.

NOAA's timeliness in executing its permitting responsibilities is critically important to the continued growth and development of the U.S. offshore wind industry.

Administrator Spinrad, how does NOAA plan to better include all stakeholders and allocate resources to create a more transparent and consistent permitting process?

Dr. SPINRAD. Thank you, Senator.

We work closely with our colleagues at Bureau of Ocean Energy Management who has the primary responsibility. We are advisory in that capacity on things like Endangered Species Act, the fundamental information that that industry needs to make their decisions, and there has been a great push by the Biden-Harris Administration to increase through the 30 by 30 Initiative, 30 gigawatts of offshore wind by 2030.

So we have strengthened our relationship with our colleagues at the Bureau of Ocean Energy Management through a Memorandum of Understanding. We have actually exchanged personnel and the other thing that we've done is we've hired additional staff through the direction of Secretary Raimondo for our offshore wind permitting activity, much of which is done in fact in Gloucester at the

Greater Atlantic Regional Fisheries Office and so between staffing, more collaboration with our colleagues at BOEM, and also holding a number of public sessions and discussions and getting information out to the public is how we're ensuring both the public engagement and also more efficient processing of permitting materials.

Senator MARKEY. OK. Thank you.

As I work with my colleagues on fishery compensation fund legislation, we need you to commit to helping us to provide the technical assistance so that we will be able to accomplish that goal.

Dr. SPINRAD. Happy to do that.

Senator MARKEY. You agree to help us with that technical assistance?

Dr. SPINRAD. Yes.

Senator MARKEY. We thank you and we thank you, Rear Admiral, as well.

So this hearing record will remain open for two weeks until August 3, 2023. Any Senators who would like to submit questions for the record should do so by August 3, 2023.

We ask that your responses be returned to the Committee as quickly as possible and in no case later than two weeks after receipt.

So with that, with the thanks of the Committee, this hearing is adjourned. Thank you.

[Whereupon, at 11:34 a.m., the hearing was adjourned.]

## A P P E N D I X

PREPARED STATEMENT OF HON. TED CRUZ, U.S. SENATOR FROM TEXAS

Chairwoman Baldwin and Ranking Member Sullivan, thank you for holding today's hearing on the NOAA Budget. And, Senator Sullivan, thank you for letting me give my opening statement before you so I that I can attend a markup.

I also want to welcome Dr. Spinrad and Admiral Hann to this hearing.

The National Oceanographic and Atmospheric Administration, or NOAA, has an important role to play in protecting American lives and supporting the U.S. economy. NOAA weather forecasters provide warnings of incoming storms, and work with police, fire, and emergency management to help them save lives.

Texas is a big place, with 30 million people, and a whole lot of challenging weather situations. Just last month, Perryton, Texas was hit by a devastating tornado. When I visited the town I saw up close the utter destruction of homes and lives that tornado caused.

While NOAA weather and warning systems do important work, there are improvements that need to be made to them. This Congress, I've been pleased to work in a bipartisan manner with Senators Cantwell and Wicker on bills that will improve how NOAA communicates to people during weather disasters.

Most tornado deaths, like the ones in Perryton, happen at night when people are fast asleep and can't see the tornado coming. One of these bipartisan bills, the NOAA Weather Radio Act, will help address this issue by fixing NOAA's aging weather radio system, and will save lives by warning people to get to safety.

Although the National Weather Service has an essential function in saving American lives, the Biden Administration has failed to prioritize making sure that they have adequate equipment to predict deadly storms. For example, the Biden Administration's budget includes zero dollars for NOAA's Hurricane Hunter aircraft. These aircraft fly directly through the heart of hurricanes to collect critical data that improves the predicted hurricane track by as much as 25 degrees.

This is the difference between a direct hit on Houston or New Orleans. Evacuating the wrong city can be costly, both in dollars and lives: the average cost to families evacuating Houston during hurricane Harvey was twelve hundred dollars, and needlessly evacuating hospitalized patients can result in deaths. However, NOAA's Hurricane Hunters do not have adequate backup. If these aging planes are grounded, we lose our eye in the sky for hurricanes, and thousands of people could die. Yet, the Biden Administration did not request one cent.

Instead of focusing on NOAA's core mission of saving lives and supporting the American economy, the Biden Administration's budget request for NOAA includes \$9.1 million for woke initiatives such as "workforce development and training pilot projects and grants, focused on environmental justice and equity, to support a more robust and diverse domestic seafood sector."

Ironically, even NOAA Fisheries does not know what this means. NOAA Fisheries' own 2023 Equity and Environmental Justice Strategy states that the number one barrier faced by underserved communities is that NOAA has "not fully identified the underserved communities that are impacted by our work." This means the Biden Administration wants to throw \$9 million at a problem that NOAA Fisheries admits they do not understand, and might not even exist except in the Biden Administration's imagination.

That is all the more striking when NOAA Fisheries has plenty of substantive work to be doing, especially with respect to Illegal, Unreported, and Unregulated (IUU) fishing. NOAA's 2021 report to Congress on Improving International Fisheries Management highlights rampant illegal fishing of red snapper in U.S. waters off of Texas. American tax dollars go to NOAA Fisheries to stop illegal fishing and to safeguard American resources, not to underwrite a woke agenda.

We have also heard complaints that NOAA is deliberately ignoring safety concerns in their haste to do the bidding of environmental groups. In particular, NOAA has rushed to implement speed limits that will make it harder for pilots and mariners to safely maneuver at sea and hurt coastal economies—all without any evi-

dence that there will be environmental benefits. Radical activists despise sport fishermen and much commercial ocean activity, which is why I fear that this is just an effort to empower activists and trial lawyer allies to “sue and settle” with law-abiding fishermen.

Finally, I want to mention obstacles Texas companies have faced when it comes to NOAA and energy development. Last summer our country hit record high energy prices and President Biden went on television blaming these prices on alleged collusion by oil companies. What President Biden didn’t mention is that because of mathematical error in one of NOAA’s regulations, offshore oil and gas companies couldn’t get permits to explore and drill. I was receiving phone calls from CEOs of the world’s largest energy companies saying we’re at a standstill on future activity until NOAA gives us a permit. I along with nineteen of my Senate colleagues wrote to the Biden Administration about the urgent need to fix this. But it shouldn’t take two years to fix a math error after you’ve identified it.

Let’s hope that something like that doesn’t happen again at NOAA.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. DAN SULLIVAN TO  
RADM NANCY HANN

*Question 1.* In December 2018, the Hydrographic Services Improvement Act (HSIA) was included in the Coast Guard Reauthorization bill and signed into law, thereby authorizing the program from 2019 through 2023. The bill calls for the Secretary of Commerce to develop a strategy for how NOAA will increase contracting with the private sector for hydrographic data collection, with the strategy due to Congress within six (6) months of enactment of the bill.

a. Has this strategy authorized in 2018 been completed? Has it been turned over to Congress? If not, when will NOAA turn this 2018 requirement over to Congress?

Answer. The Strategy for Increasing Contracting with Non-Governmental Entities Report to Congress from the HSIA reauthorization was transmitted to Congress on April 19, 2023.

*Question 2.* As we discussed during the hearing, can you confirm what your timeframe and plan are to recapitalize the Fairweather?

Answer. NOAA awarded the contract for two charting and mapping vessels in June 2023 to Thoma-Sea Marine Constructors, L.L.C. With this award, NOAA will be starting the Detail Design and Construction of these two vessels. NOAA anticipates the ship replacing the capabilities of the Fairweather to be completed by 2027.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. TED CRUZ TO  
RADM NANCY HANN

*Question 1.* Houston was hit extremely hard by Hurricane Harvey in 2017. Fortunately, the accurate hurricane path predictions provided by the National Weather Service, which included the data from the Hurricane Hunters flown by the NOAA Corps, helped Emergency Management prepare so that fewer lives were lost than if we didn’t see the hurricane coming. In 2017, Hurricanes Katia, Jose, and Irma were all threatening the U.S. simultaneously. NOAA only has three Hurricane Hunter aircraft, and a limited number of pilots who fly very long hours.

a. What are some of the potential consequences if NOAA’s Hurricane Hunters could not all operate—for instance, due to equipment failures or a lack of pilots—when multiple storms simultaneously threaten the U.S.?

Answer. NOAA’s National Hurricane Center estimates that through its deployment of the world’s most sophisticated weather instruments, the WP-3D provides data that improve the hurricane track forecast by 15–20 percent, and the hurricane intensity forecast by 10–15 percent.

b. Does NOAA have adequate backup aircraft and pilots so that neither equipment nor people get worn down when the storms are threatening the U.S.?

Answer. The FY24 President’s Budget would begin to address this problem through a \$4.2M request to grow the NOAA Corps and sustained funding for Aircraft Recapitalization and Construction.

NOAA pilots and crew are dedicated to collecting critical data to inform hurricane forecasts in order to protect life and property. The President’s Budget would grow the Corps to 353 officers, the most NOAA could reasonably grow in FY24 due to onboarding time and other constraints. NOAA is working aggressively to recruit and hire pilots. Given the rigorous conditions that NOAA Hurricane Hunters fly into, it takes six years to train a pilot to fly the Hurricane mission. By increasing the

Corps' strength, NOAA will be able to provide more sustainable and reliable hurricane operations to protect our coasts.

At present, NOAA has six G-IV pilots. For atmospheric rivers and hurricanes, NOAA creates watch-bills that are 12 hours long. A crew is assigned to a watch-bill and flies when tasked. This allows NOAA to meet current taskings; however, if a pilot becomes sick, taskings could be canceled until a qualified pilot is pulled from another assignment. In 2022, given the rapid succession of Hurricanes Earl, Fiona, and Ian, each of these pilots agreed to sign waivers to exceed the recommended safety limit of 120 hours per 30 days.

The funding provided through the 2023 Disaster Supplemental and the Inflation Reduction Act will help begin the acquisition process to replace these aging assets. The FY 2024 President's Budget request would allow NOAA to continue the acquisition of a second G-550 high-altitude jet, which also received funding provided through the Inflation Reduction Act. The second G-550 will satisfy the 2017 Weather Act requirement to have redundant capability and allow NOAA to meet current and expanding demands for hurricane forecasting. The \$327M funding provided through the 2023 Disaster Supplemental will help start the acquisition process for replacing the WP-3D aircraft. NOAA continues to pursue enhanced capability to meet growing national priorities.

In addition, as outlined in the NOAA Aircraft Recap plan, the United States Air Force Reserve also has a fleet of hurricane hunter aircraft (10 WC-130Js) and crews whose mission is to provide operational weather reconnaissance support to NOAA. NOAA aircraft have additional instrument capabilities, including the Tail-Doppler Radar, that DoD assets are not required to have. These assets are tasked through a request for assistance from the National Hurricane Center through CARCAH (Chief Aerial Reconnaissance Coordination All Hurricanes) to United States Air Forces Northern Command to provide weather reconnaissance support in the form of flying low-level investigative, storm fix, buoy deployment and synoptic surveillance missions. Details on their tasking, reliability, and recapitalization efforts and needs can better be addressed by the United States Air Force Reserve.

