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U.S. DEPARTMENT OF COMMERCE

ON THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION'S
FY 2016 BUDGET REQUEST

BEFORE THE
HOUSE NATURAL RESOURCES COMMITTEE
SUBCOMMITTEE ON FEDERAL LANDS
AND
SUBCOMMITTEE ON WATER, POWER, AND OCEANS

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Chairman McClintock, Chairman Fleming, Ranking Member Tsongas, Ranking Member Huffman, and members of the Subcommittees, thank you for your leadership and the continued support you have shown for the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). As the Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, I am honored to be here to discuss the FY 2016 President's Budget. The FY 2016 budget proposal represents a focused and balanced commitment to our core mission of science, service, and stewardship. The proposal better positions NOAA to help communities across the country safeguard lives and property, prepare for extreme weather events, adapt to a changing world, ensure environmental sustainability, and enhance economic prosperity.

I believe NOAA is one of the most valuable service agencies in the U.S. government. Through our network of observations, forecasts, and assessments, we strive to provide the foresight and information people need to live well and safely on this dynamic planet. At NOAA, we call this information "environmental intelligence," and producing it is at the core of our mission. NOAA was very effective last year providing such information to help American citizens, businesses, and governments make smart decisions on a range of issues on local to global scales.

The environmental intelligence and the services NOAA provides are in higher demand today than ever before. The increased frequency and severity of extreme weather events means that NOAA must forecast and respond to these events with improved skill and accuracy. But the greater demand for our services goes beyond just extreme weather. Our marine transportation system must be more efficient to accommodate growing volume of commerce at our ports. NOAA provides the positioning data, tide and currents information, and nautical charts that ensure safe navigation and keeps commerce flowing. Furthermore, changes in marine ecosystems due to climate and other stressors are increasing the need for a greater number of advanced scientific assessments to sustain and promote economically viable commercial and recreational fisheries, and to ensure that threatened and endangered species are protected.

NOAA's integrated response to extreme events such as droughts, hurricanes, tornadoes, and heat waves demonstrates how our agency leverages its diverse capabilities to support the nation from preparedness to response to recovery: data collected from a spectrum of platforms enables the development of environmental intelligence from science-based models to support a suite of products to provide decision support to individuals, communities, and governments. I thank you for recognizing NOAA as a key agency supporting the preparedness, response, and recovery efforts surrounding extreme events.

The NOAA FY 2016 budget request aims not only to enhance public safety and community resilience, but also to make smart investments via innovative science and research to better position this country, its services, and its citizens for the future. This budget request continues efforts to strike the right balance between our oceanic and atmospheric missions, our internal and extramural programs, and our long-range and short-term research investments, all while maintaining strong fiscal discipline.

We appreciate Congress' support in FY 2015. Below we highlight some of our top accomplishments from 2014, many of which we could not have achieved without our partners in the research, corporate, and conservation communities.

2014 ACCOMPLISHMENTS

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

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

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

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

Revealed Alaska Fisheries at Risk from Ocean Acidification: NOAA, in collaboration with the University of Alaska, The Department of the Interior's Bureau of Ocean Energy Management, and other partners, have determined that Alaska fisheries in certain regions are at high risk from the effects of ocean acidification (OA), including the economically valuable red king crab and tanner crab fisheries.. In a study, "Ocean acidification risk assessment for Alaska's fishery sector," published on July 29, 2014 in Progress in Oceanography, NOAA and its partners not only discussed the dangers of OA to regional fisheries, it showed that the economy and

livelihood of communities in southeast and southwest Alaska are expected to be particularly vulnerable to these impacts due to their reliance on fisheries. The study recommends stakeholders develop response strategies to address this increasingly widespread environmental challenge.

Listed Threatened Coral Species under the Endangered Species Act: In August 2014, NOAA extended Endangered Species Act (ESA) protection to 20 species of coral throughout the Pacific and Caribbean regions that are vital to the health of commercial and recreational fisheries around them. To make these listing determinations, NOAA collected and analyzed an unprecedented amount of scientific data, including information on threats to coral ecosystems, such as rising ocean temperatures, ocean acidification and disease, effects from fishing, and land-based sources of pollution (e.g., sedimentation and nutrient enrichment). NOAA is working with states, territories, and other partners on effective conservation measures and recovery strategies.

Provided Advanced Warnings for Record Cold during Winter "Polar Vortex" Incursion: NOAA accurately predicted the "Polar Vortex" of January 2014 more than eight days in advance. This unusual jet stream pattern produced the coldest and most persistent frigid temperatures across the central and eastern U.S. in 20 years. Nearly 180 million people across 20 states experienced dangerous wind chill levels. Heavy snow and ice plagued much of the Midwest, with up to a foot of wind-driven snow falling from Missouri to Michigan. NOAA's effective advanced warnings enabled federal, state, local and commercial decision makers to take action. NOAA's weather warnings highlighted dangers from exposure, frozen pipes and indoor fire/ carbon monoxide hazards in an attempt to educate the public and mitigate health and property risks from the cold.

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

Launched the First Unmanned Aircraft Directly into the Eye of a Hurricane: In September 2014, a NOAA WP-3D aircraft launched the first-ever successful release of the Coyote, an unmanned aircraft system (UAS), directly into the eye of Hurricane Edouard. Once deployed, the UAS proceeded into the highest wind region of the storm, known as the "eyewall." At an approximate altitude of 2,900 feet, the UAS penetrated Edouard's western eyewall and documented record-breaking winds of 100 kt. as it orbited this high wind region during its

historic 28 minute mission. Such deployments of UAS provide unique and groundbreaking insights into a critical region of the storm environment that is typically difficult to observe in sufficient detail since they are too dangerous for manned aircraft. Because the Coyote can fly near the surface of the ocean where warm ocean water fuels a hurricane, it will help provide vital information needed to better understand and predict hurricane intensity.

FY 2016 BUDGET REQUEST

NOAA's FY 2016 budget request of nearly $6 billion further strengthens our efforts to put critical information into the hands of the public. This budget, which is an increase of $533.7 million, or 9.8 percent above the FY 2015 enacted level, invests across NOAA's diverse portfolio in a number of initiatives that promote the Administration's and the Department's highest priorities, including: 1) investing in mission-critical infrastructure; 2) enhancing community and economic resilience; 3) evolving the National Weather Service (NWS); and 4) achieving organizational excellence.

Investing in Observational Infrastructure to Underpin Environmental Intelligence

NOAA is the only federal agency with the operational responsibility to provide critical and accurate weather, water, ocean, climate, and ecosystem forecasts. Our global observing systems are the foundation of the information and data we provide – without them forecast reliability would decay and fail to meet the Nation's growing needs for more precision. We must ensure NOAA's fleet of research vessels and observational platforms can continue to provide the environmental intelligence needed to meet our mission.

NOAA's fleet, which includes an array of specialized aircraft and ships, operates throughout the world and provides key observations in support of the full range of NOAA's scientific and environmental missions. To ensure continuity of our at-sea data collection capability, one of our most important requests is $147 million for the construction of an Ocean Survey Vessel (OSV), a multi-use platform designed to conduct surveys throughout the U.S. Exclusive Economic Zone. This OSV will be the first vessel of its class in NOAA capable of integrated, interdisciplinary, and general purpose oceanographic research in coastal and deep ocean areas that can support needs across all of NOAA's line offices. Without continued investment, NOAA's current fleet will be reduced from 16 to 8 vessels by 2028, hindering NOAA's ability to provide the critical observations and services that the nation depends on.

Another great challenge facing the nation which NOAA must meet is ensuring continuity of satellite operations to provide uninterrupted coverage of weather forecasts and environmental measurements into the future. The FY 2016 budget initiates development of a Polar Follow-On satellite system to reduce the potential for a gap in these critical observing systems and enhance our ability to provide timely and accurate weather forecasts into the future. At $380 million, this is a large and central initiative in NOAA's FY 2016 budget request and will increase the

robustness of our polar orbiting weather satellite enterprise and mitigate the potential impacts to weather forecasts, services, and products in the event of a lapse in these observing systems.

Supporting Resilient Communities and Economies

Communities around the country are becoming more vulnerable to natural disaster and long-term adverse environmental changes. 2014 was the warmest year on record and saw eight weather and climate disaster events with losses exceeding $1 billion each across the U.S. Each of these events caused widespread damage and devastated families, businesses, and communities. We are also dealing with one of the most prolonged and severe droughts on record in the West — which impacts agriculture, fishing, manufacturing, and many other businesses that rely on access to water. This budget invests in the services and information in three domains—coastal, water, and ocean resources— to support communities' efforts to assess their risks and minimize losses in advance and in the aftermath of these challenges.

Coastal Resources: It is projected that by 2020, the population of coastal counties will increase by 8 percent. Decision makers need information to help protect coastal ecosystems and their communities from the threats of coastal hazards. To support them, we are requesting a $45 million expansion of the Regional Coastal Resilience Grants program to empower more states, territories, tribes, local government, and private partners to improve resilience planning efforts, identify and address their shared risks and vulnerabilities, evaluate their adaptive capacity, and use innovative tools to mitigate and minimize the risks associated with climate impacts. NOAA is also requesting an increase of $4.8 million to enhance coastal environmental intelligence products and services. This funding will help leverage existing observations and models, both from NOAA and external partners, to generate actionable coastal intelligence tools, such as water level data for improved storm surge predictions and nautical charts. In addition, we are requesting $5 million to provide products and services that assist coastal communities with incorporating green infrastructure (e.g., natural systems, such as dunes and marsh grasses) into hazard mitigation, resilient coastal development, and post-event rebuilding.

Water Resources: Globally, we are all dependent upon adequate and reliable water supplies. Over the last three years, droughts in the U.S. caused more than $42 billion in economic losses. At the same time, flooding can cause billions of dollars in damage and loss of life. Water resource managers, farmers, ranchers, public health officials and other decision makers are clamoring for new and more fully integrated information on water, including science, observations, and predictions. To meet this need, our request includes an increase of $3.4 million for research that will directly translate into strategies to deal with coastal flooding along the Mid-Atlantic and help farmers in the Mississippi valley prepare for and mitigate drought and flooding. We are also requesting an increase of $4 million to increase our ability to provide easy-to-use use tools, such as interactive sea level rise maps, and generate information about the likely future of these essential resources.

Ocean Resources: Americans across the country depend on our oceans for food, transportation, trade, jobs, and recreation. Preserving our oceans for future generations is critical. We must continue to build on the successes we've made to end overfishing and manage our natural resources sustainably. To this end and in support of the Administration's infrastructure permitting initiative, the Budget proposes an increase of almost $19 million to strengthen its consultation and permitting capacity required to meet mandates of the Endangered Species Act, Marine Mammal Protection Act, and Magnuson-Stevens Act. Increased species listings, natural hazards such as wide-scale drought, and response to human-caused disasters, such as the Deepwater Horizon oil spill, all necessitate increased capacity to ensure that permits and consultations are completed in a manner that is timely and that enables the Nation's economic engine to move forward without unnecessary delays. The Budget also requests $30 million to expand ocean acidification research and improve understanding of its impacts on marine resources and coastal communities and economies.

In addition, this budget promotes economic resilience through initiatives to strengthen the U.S. seafood industry and enable sustainable commercial development. Specifically, a $3 million increase is requested to help level the playing field between U.S. and foreign fishing industries by increasing enforcement against Illegal, Unreported, and Unregulated fishing, which can give bad players an unfair advantage in the global seafood market and undermine the economic opportunity of the U.S. fishing industry. NOAA's FY 2016 budget request also seeks an increase of $4.5 million to develop a robust and sustainable U.S. marine aquaculture industry. Of the total amount of seafood consumed in the U.S., more than 91 percent (by value) is imported from foreign countries – and about half of that is produced by aquaculture. In fact, global aquaculture production is valued at $100 billion annually, but the United States has only a 1 percent share. This, coupled with the fact that the range of fish stocks is changing due in part to ocean temperature increases, is having a detrimental impact on those US communities that depend on fishing as their primary source of industry and income.

Offshore aquaculture is a promising new frontier for U.S. seafood production and NOAA is committed to expanding the aquaculture industry to create jobs, foster increased trade opportunities, and support research and technology transfer to enable both shellfish and offshore finfish aquaculture. It also will improve U.S. support for innovative aquaculture practices that do not harm the surrounding environment.

Evolving the National Weather Service

Weather and climate impact approximately one third of the Nation's economy, can cost billions of dollars, and claim thousands of lives per year. Important decisions in sectors ranging from food security and public health, to emergency management and national security depend on timely, accurate, and well-communicated forecast information. For this reason, NOAA

continues its commitment to build a Weather-Ready Nation and provide the technical underpinning to evolve the NWS to become a more agile organization.

To ensure that America has a NWS that is second to none[1], we need to invest in several targeted areas to sustain NWS capability and improve and make consistent service delivery to meet key user needs. Specifically, NOAA is requesting an increase of $7.4 million to continue implementation of a Service Life Extension Program (SLEP) to sustain the aging Next Generation Weather Radar (NEXRAD) infrastructure that underpins severe weather forecast and warning services for high-impact events, such as tornadoes. The SLEP will extend the useful life of the NEXRAD array by approximately 15 years.

The FY 2016 budget also includes an $9 million initiative across NWS and OAR to improve skill in providing precipitation and temperature outlooks for the three-to-four week range—a timeframe that can be essential for government agencies, farmers, transportation planners, construction managers, and others looking to prepare for and mitigate extreme events. Addressing the challenge will require sustained scientific research and research-to-operations efforts. As such, NOAA's FY 2016 budget includes an increase of $1.7 million to accelerate forecasting improvements aimed at increasing warning lead times for severe weather. This includes the use of a 'Warn-on-Forecast' prototype modeling system to increase the lead time and accuracy for hazardous weather and water warnings and forecasts.

NOAA is also committed to enhancing our national water prediction capability. An increase of $4 million is requested to help build on the FY 2015 initiative to design, develop and test nationally consistent, street–level, flash flood and flood inundation modeling and mapping at the National Water Center. Emergency managers and communities will be able to link prediction information to mapped infrastructure data to assess risks and impacts of predicted flooding at the neighborhood scale. This national capability will serve as the tip of the spear for an NWS evolution focused on nationally consistent and fully integrated products and services.

Achieving Organizational Excellence

Each and every day, NOAA's employees strive to promote organizational excellence and execute our mission with discipline and consistency. To sustain our critical human capital we must recruit, retain, reward, and develop the best talent possible and ensure that our customers receive the best service possible.

To do that, we need infrastructure in place to enable a workforce of the 21st century with Human Resource employees and services that enable the level of customer support that Congress and our partners demand.

[1] "Weather Services for the Nation – Becoming Second to None" National Academies Press, 2012.

NOAA is already taking steps to improve corporate services and is in the midst of a major transformation initiative across all Workforce Management Office service areas. The process has involved significant analysis of best practices across the federal government to identify ways we can improve our service delivery, while allowing for customization to meet NOAA's unique needs. But in parallel with these efforts, we also need the financial support to reduce our gaps in capacity.

The FY 2016 request will focus on improving corporate services functions (HR and acquisition and grants) and implementing an integrated suite of financial management and business applications that supports core financial, acquisitions, and property management in the Department.

Specifically, NOAA is seeking an increase of $4.7 million to revamp aging and unsafe facilities that house our operational infrastructure and our most important asset—our workforce. It also seeks a $4.3 million increase to strengthen agency support functions. Although NOAA funding has increased by approximately 35 percent over the last eight years, NOAA's Corporate Services has decreased by three percent. This request will improve the performance of services in HR acquisition, finance and administrative systems which are vital to NOAA's ability to effectively execute its mission of science, service, and stewardship.

CONCLUSION

NOAA's FY 2016 Budget request reflects the commitment Secretary of Commerce Pritzker and I have made to the President to growing a strong economy that is built to last, while being fiscally responsible and focusing on priority initiatives. NOAA is a vital component of the U.S. Government, helping to maximize U.S. competitiveness, enable economic growth, foster science and technological leadership, and promote environmental stewardship. Americans – civilians, the military, and businesses – rely upon the services NOAA provides every single day.

NOAA is fortunate to have a highly skilled and passionate workforce. Our people come to work each day committed to serving the public and advancing our mission. Every one of our investments in the FY 2016 budget – from improving products and services to positioning ourselves for the future – will help the organization as a whole strive for excellence and deliver the environmental intelligence this country needs to better prepare for and respond to the growing environmental challenges we face.

I look forward to working with the members of this Committee and our partners and constituents to achieve the goals I articulated through the implementation of the FY 2016 budget. Thank you for the opportunity to present NOAA's FY 2016 budget request. I am happy to respond to any questions from the Subcommittees.