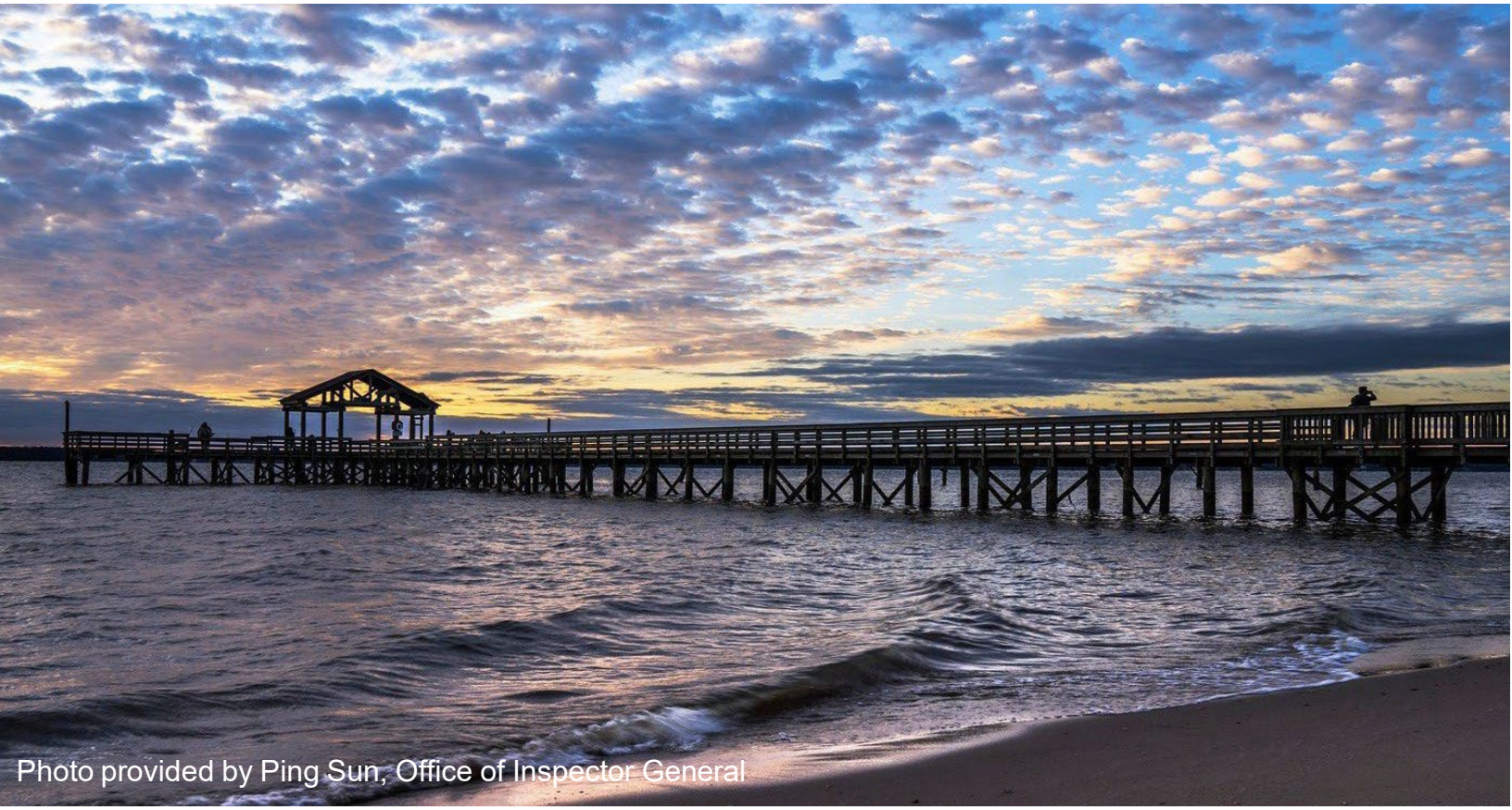
U.S. Department of Commerce

2024-2027 Climate Adaptation Plan

May 31, 2024



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Secretary of Commerce

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2024-2027 Climate Adaptation Plan

Section 1: Agency Profile

Addressing the climate crisis is an essential and existential component of the Department of Commerce (the Department) mission to create the conditions for economic growth and opportunity. In support of the government-wide approach to tackle the climate crisis as outlined in Executive Order (E.O.) 14008, *Tackling the Climate Crisis at Home and Abroad*, the Department drives mitigation, adaptation, and resilience efforts that leverage Operating Units/Bureaus' expertise and capabilities to make the Department's missions, facilities, lands, waters, and employees more resilient to climate change[1]. These efforts include accelerating clean technology development and deployment, providing actionable climate information and tools to decisionmakers, implementing climate adaptation efforts to sustain the nation's valuable living marine resources, and providing support for vulnerable communities to address climate-related risks in every sector of the economy.

The Department's 2022-2026 Strategic Plan sets specific goals and targets to address the climate crisis by using cutting edge technologies to monitor and forecast climate change and building partnerships both internally and externally. Specific goals set forth in the Strategic Plan include:

- Increasing the impact of climate data and services for decisionmakers through enhanced service delivery and improved weather, water, and climate forecasts.
- Strengthening coastal resilience and advancing conservation and restoration of lands and waters for current and future generations.
- Accelerating development and deployment of clean technologies.
- Embedding climate considerations across Department programs.

The Department provides vast amounts of data to inform better decisions for business, government, and the public. For example, the National Oceanic and Atmospheric Administration (NOAA) provides actionable weather, water, and climate data, forecasts, warnings, and other environmental information that help decision makers prepare for and respond to extreme weather and other events and increase resilience to the impacts of climate change; The Bureau of Economic Analysis (BEA) produces the national economic accounts, including gross domestic product (GDP); and The U.S. Census Bureau delivers essential data on the U.S. population and economy, including the decennial census of people and households. The U.S. Census Bureau's collaboration across the Department also supports evaluation and evidence-building activities. For example, the Census Bureau Center for Economic Studies supports evidence/evaluation efforts of other Operating Units/Bureaus and collaborates with the Economic Development Administration (EDA) on new economic indicators and data tools that are useful in both project selection and monitoring and has provided technical assistance in support of the International Trade Administration (ITA) survey research. Furthermore, NOAA is collaborating with the General Services Administration's (GSA) Office of Evaluation Sciences on research supporting

[1] For definitions of these and other key terms in this Climate Adaptation Plan, please see the Fifth National Climate Assessment (globalchange.gov).

improved communication of weather and climate information to communities with environmental justice concerns, and EDA now requires all grant applicants that propose infrastructure projects to consider impacts from climate change in project design.

NOAA is also addressing the increasing demand for science and services needed to enhance ocean and coastal resilience to climate change. The natural and economic resilience of oceans and coasts will be advanced using state-of-the-art risk-based tools and actionable information, strengthening on-the-ground partnerships, and improving place-based conservation efforts. To understand and prepare for the future, NOAA will identify what additional modeling capabilities and tools will be needed for communities to prepare for various scenarios of coastal inundation, shifting fish stock distributions, and other climate-related stressors.

Through its Climate Adaptation Plan, the Department is also able to advance environmental justice as part of its mission, consistent with E.O. 14008 and E.O. 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All. As the Department implements its Climate Adaptation Plan to increase the resilience of its facilities and operations, it also addresses disproportionate and adverse environmental and health effects and risks and hazards. It evaluates climate change and cumulative impacts of environmental burdens on communities with environmental justice concerns and provides opportunities for the meaningful engagement of persons and communities with environmental justice concerns. The Department is a member of the White House Environmental Justice Interagency Council (WHEJIC), and received recommendations on Climate Planning, Preparedness, Response, Recovery and Impacts from the White House Environmental Justice Advisory Council (WHEJAC). The Department is reviewing the recommendations and, as appropriate and to the maximum extent permitted by law, is taking steps to address the WHEJAC's recommendations.

Recognizing the inextricable links between mission, internal expertise, employee engagement, and physical footprint, the Department is incorporating climate considerations, including mitigation, adaptation, and resilience measures, into all relevant aspects of its policies and programs. The Department is building a network of climate adaptation and resilience expertise that will help identify climate risks, build a climate literate workforce, and integrate equitable climate considerations into policies, operations, facility management, real property, acquisitions, and the use of resources. Please see standard Department profile information in Appendix A.

Section 2: Risk Assessment

The Department used the Federal Climate Mapping for Resilience and Adaptation Application (Federal Mapping App), which was developed for federal agencies by the White House Council on Environmental Quality (CEQ) and NOAA, to conduct a high-level screening of climate hazard exposure for federal facilities and personnel.

The Department assessed the exposure of its buildings, employees, and lands, waters, and cultural and natural resources to five climate hazards: extreme heat, extreme precipitation, sea level rise, flooding, and wildfire risk. Exposure to extreme heat, extreme precipitation, and sea level rise were evaluated at mid- (2050) and late century (2080) under two emissions scenarios, Representative Concentration Pathway (RCP) 4.5 and RCP 8.5. Exposure to flooding and

wildfire risk were only evaluated for the present day due to data constraints. For a description of the climate data used and climate scenarios considered in the assessment, please see Table 2E.

2A. CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL BUILDINGS

In coordination with the Operating Units/Bureaus, the Department conducted a climate vulnerability assessment in 2011 and updated the assessment in 2014, as part of the *Department of Commerce Climate Change Adaptation Strategy* development. The 2014 assessment found that the Department's buildings could be vulnerable to extreme weather events, including increased precipitation and extreme heat, which would increase the risk of flooding and increase cooling loads on building heating, ventilation, and air conditioning (HVAC) systems. Since these initial assessments in 2011 and 2014, the Department's Operating Units/Bureaus have continued to re-assess vulnerabilities to their owned building inventories, using data from the *National Climate Assessments*.

The Federal Mapping App demonstrates that hazard forecasts for extreme heat and precipitation pose the greatest threats to the Department's owned buildings. Heat is projected to impact all the Department's owned buildings for all RCP scenarios modeled, while extreme precipitation is expected to impact 98% of the Department's assets in each scenario, increasing to 99% of assets impacted by RCP 8.5 (high greenhouse gas emissions scenario) by 2080. Sea level rise follows extreme heat and precipitation in impacts to the Department's owned buildings. Flooding, including inland flooding, is the fourth most impactful hazard to the Department's owned buildings and associated assets. The results of the Federal Mapping App screenings are found in Appendix C.

The Department has a longstanding role in the protection of life and property from environmental hazards and climate change, in alignment with the missions of NOAA. For over two decades, NOAA has been focused on climate data-driven decision making on their real property portfolio. As the owner of most buildings in the Department, NOAA has evaluated climate change risks and incorporated adaptation measures and resiliency into the analysis of alternatives as part of the business case for facility capital planning. NOAA follows the National Environmental Policy Act (NEPA) procedures and considers opportunities to improve facility energy performance and environmental impacts on planned facility investments. NOAA's most recent facility capital investment planning activities are focused on keeping only mission essential properties located in vulnerable areas. The goal is to limit facility footprints located on waterfront sites in floodplains by either moving properties or improving facility performance by consolidating multiple site locations into federally owned locations shared with mission partners.

NOAA's future facilities planning efforts will realign space requirements across the entire real property portfolio and evaluate opportunities to reduce the real property footprint in floodplains (current 2024 data shows 20% of Department owned buildings are in the 100-year or 500-year floodplain), review space efficiencies, and relocate properties located in floodplains or other locations vulnerable to climate change.

To further evaluate climate change impacts on NOAA's real property portfolio, NOAA

completed a multi-phased Climate Change Assessment and Impact analysis in 2014. This analysis identified the most vulnerable campuses/buildings and recommended appropriate measures to increase climate resilience and adapt to the projected changes, including rough order of magnitude cost estimates associated with these measures. In phase 1, the buildings were grouped into geographic location, climate type factors, facility condition rating and mission criticality. The analysis provided NOAA with a ranking and categorization of owned and leased buildings that are most vulnerable to future climate change. In Phase 2, the potential threats identified in Phase 1 were transitioned to two site-specific case studies of owned and leased facilities (one Southeast Coastal area and one Great Plains area, as these two areas have disparate climate change risks). Phase 2 analyses recommended appropriate mitigation measures and strategies per climate impact, provided cost estimates associated with each measure, and included collateral impacts, which could occur during or after certain climate change threat-events such as salt-water inundation, utility disruption, transportation disruption, or facility destruction.

NOAA has and will continue to evaluate climate vulnerabilities and adaptation strategies in its capital project planning processes through Business Case Analyses (BCAs) and Analyses of Alternatives (AOAs). Planning efforts consider multifactorial risk data, when available, that take into consideration hurricanes, tornadoes, earthquakes, hail, wind, drought, floods, high daily precipitation, snowfall, wildfires, and extreme temperatures. Projects in areas with particularly high vulnerability also include an evaluation of specific/discreet natural hazard risks, such as Hurricane Impact Probability. A recent example of incorporating climate-resistant adaptations into design and construction is the newly built Aircraft Operation Center (AOC) in Lakeland, Florida. This Center was built not only to withstand hurricanes but also to maintain critical operations during these severe weather events.

2B. CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL EMPLOYEES

The Department has over 50,000 employees. The Department's workforce ranges from 341 uniformed service officers in the NOAA Commissioned Officer Corps, 263 diplomats who are Foreign Commercial Service Officers, 166 badged law enforcement officers in the Bureau of Industry and Security (BIS), 8,961 patent examiners at U.S. Patent and Trademark Office (USPTO), and more than 37,000 other civil service employees who deliver critical services directly to U.S. businesses and the public.[2]

Department employees are at risk of exposure to many different combinations of the 18 hazards identified in Section 3a.1, due to their geographic disbursement across the U.S. and internationally. To categorize these hazards further, the Department has identified the following potential climate hazards to its federal workforce:

- **Health and Safety:**
  Extreme weather events, rising temperatures, and other climate-related hazards pose direct threats to the health and safety of Department employees. Heat waves, storms, and air quality issues may impact working conditions and employee well-being.

[2] DOC Contingency Plan 092793 (commerce.gov) and U.S. Department of Commerce 2022 – 2026 Strategic Plan

- **Infrastructure and Commute:**
  Department owned and occupied facilities face increased vulnerability to climate-related damage, affecting the daily operations of the Department's workforce. Disruptions to transportation infrastructure, such as roads and public transit, can impact the commute and accessibility of workplaces.

- **Productivity and Work Disruptions:**
  Climate hazards may lead to work disruptions due to office closures, evacuation orders, or remote work challenges. This can affect the productivity and efficiency of the Department's workforce, particularly if critical operations are impacted.

- **Emergency Response and Preparedness:**
  Federal agencies involved in emergency response and management (e.g., NOAA) may experience increased demand during climate-related events. This can place additional stress on the workforce, requiring effective coordination and preparedness measures.

The Federal Mapping App results in Appendix C, Table 2B demonstrate that hazard forecasts for extreme heat and precipitation pose the greatest threats to the Department's employees overall. Increases in heat exposure are projected to be experienced by 98% of the Department's employees and 97-98% of employees are projected to experience increased precipitation exposure. Exposure to sea level rise is expected to increase for between a third and almost half of the Department's employees between the near and long-term modeled scenarios.

While exposures classified as high to extreme risks of wildfire are lower than other hazards in the screening tool, with 8% at high risk, 2% at very high risk and another 2% at extreme risk, for the three Bureaus with employees working in facilities in Boulder, Colorado, wildfires present an acute concern and are a serious hazard to employees. Beyond the direct fire hazard, wildfires produce large quantities of harmful gases and particulate matter that have negative impacts on human health, particularly individuals that have existing respiratory or cardiac disease, elderly, and children. Furthermore, wildfires have direct impacts on those employees working outdoors and can cause the cancelation of outdoor activities if pollution levels go above healthy standards. The Department's Boulder facilities are the home of scientific laboratories for NOAA, National Institute of Standards and Technology (NIST), and the National Telecommunications and Information Administration (NTIA), where almost 1,000 employees are located. The city of Boulder and the surrounding area are projected to have high, very high, and extreme exposure to wildfire risk. Therefore, the risk to employees and their families extends into the communities where they live and recreate.

The Department also has a concentration of approximately 1,000 employees located in the Northwestern United States. The screening tool forecasts an almost 300% increase in extreme heat days, compared to the current day, a trend that has been underway for the past decade. Extreme heat is an acute climate hazard across much of this region, which has not historically invested in cooling technologies. This puts employees and their families at risk during heat waves, forcing them to leave their residences, schools, or workplace to seek cooling centers. Elderly, children, individuals with preexisting health conditions, and those that work outside are particularly vulnerable. The type of work done by many Department employees, outdoors on

docks and boats or in uncooled laboratories and facilities, makes them more vulnerable.

The screening tool shows an increase in extreme precipitation, forecasting that some of the Department's workplace buildings could experience up to a 30% increase. Extreme precipitation is a hazard to employees because it presents a flooding risk, especially in areas with poor storm water management. Flooding can occur where employees live and work, in streets and neighborhoods and has the potential to cause landslides and transportation challenges.

The Department has several thousand employees located in Florida. The screening tool forecasts that Florida's exposure to extreme precipitation could increase by as much as 19% in the near-term and up to 29% in the long-term in some locations. About 300 Department employees are in southern Florida, where the screening tool suggests current exposure to wildfire risk is extreme. And based on location and NOAA's heat.gov (HEAT.gov - National Integrated Heat Health Information System), the Department's employees in Florida will experience increases in extreme heat days, up to 150% more days, which would be about half of the year. Extreme heat impacts humans more in humid areas like Florida, where the wet bulb globe temperatures can increase dramatically during heat waves, not allowing humans to evaporate their sweat, the primary method of cooling the body.

2C. CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL LANDS, WATERS, AND CULTUREAL RESOURCES

The Department has approximately 5,387,032 acres of land across the U.S. and abroad. Most of these lands are held by NOAA and NIST in Alaska, Washington, Colorado, and Maryland, and are used for research and development. In addition, the Department manages 397 million acres of ocean and Great Lakes waters and bottomlands as National Marine Sanctuaries and marine national monuments. The Department also holds stewardship and management responsibilities for living marine resources (e.g., fisheries, protected species) within the U.S. Exclusive Economic Zone, which covers approximately 3 billion acres of ocean and 95,000 miles of coastline. Across these lands and waters, the impacts of climate change vary with location and geography. Overall, extreme heat and extreme precipitation have the widest reaching impact, but other climate hazards, such as flooding, wildfires, and sea level rise also have impacts.

To address these climate hazards the Department's facility planning efforts, which include decision making around lands, consider multifactorial risk data available from Operating Units/Bureaus, other federal agencies, institutions, and private sectors that take into consideration hurricanes, tornadoes, earthquakes, hail, wind, drought, floods, high daily precipitation, snowfall, and extreme temperatures. Projects in areas with particularly high vulnerability include evaluation of specific/discreet natural hazard risks. In addition, cascading and compounding impacts, where one climate impact causes others to follow and multiple impacts occur at the same time, are especially noteworthy.

Interesting examples of cascading and compounding risks are found in Florida, Colorado, and the Pacific Northwest. These locations face a variety of climate hazards that can be expected to occur simultaneously including extreme heat, extreme precipitation, flooding, and sea level rise. Florida has approximately 43 acres of Department lands, plus the Florida Keys National Marine Sanctuary, Tortugas Ecological Reserve, and Western Sambo Ecological Reserve covering over

2.5 million acres of ocean surface off the southern coast of the state. Sea level rise impacts occur along Florida's coastlines and projected exposure is noted South of Naples into Key West, impacting NOAA's Marine Sanctuaries. Increasing ocean temperatures and extreme heat events have affected the distribution and abundance of marine species in many regions, with impacts on businesses and communities that depend on them. This coincides with projected increased exposures to extreme precipitation and freshwater flooding, making climate resilience and adaptation efforts in this region extremely important.

In much of the western U.S., wildfires are increasing due to drought conditions coinciding with increased heat and severe weather. While this region may also experience increased precipitation intensity, these climate hazards can be exclusive and do not necessarily occur during the same season or help alleviate the other's impact. Wildfires pose a significant threat to ecosystems, facilities, and human health and change land management plans significantly. The Department has a campus in Boulder, Colorado which houses three scientific laboratories belonging to NIST, NOAA, and NTIA. In 2021, the Marshall Fire caused $2 billion in damage and reached within 5 miles of the Boulder campus. Projections for this region are for an increased number of days at temperatures above the 99th percentile combined with drought, creating increased wildfire risk. The threat of wildfires extends across the region outside of Boulder to areas like Fort Collins and Erie, CO, where Department employees live. Wildfires have catastrophic impacts on the communities where they occur, destroying land and infrastructure, and the impact on air quality creates further health risks to surrounding communities and those downwind of the smoke. Climate change is significantly impacting valuable marine ecosystems and living marine resources within U.S. Ocean areas including those existing on Department lands and in waters designated as marine sanctuaries and marine monuments. Warming oceans, rising seas, melting sea ice, increasing acidification, decreasing oxygen levels, and altered weather patterns and storms are some of the climate impacts rapidly affecting the structure of marine ecosystems, including the distribution and abundance of species in many regions. Climate projections for the next 50 years suggest these changes will likely accelerate, generating economic issues around these resources.

2D. CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING MISSION, OPERATIONS, AND SERVICES

The mission of the Department is to create the conditions for economic growth and opportunity for all communities. Working across thirteen Operating Units/Bureaus, the Department offers U.S. based companies and entrepreneurs invaluable tools through a variety of programs such as the decennial census, the Foreign Commercial Service, the National Weather Service (NWS), and NOAA's multitude of public facing climate data. The Department's mission is being impacted by climate hazards in a variety of ways, but the primary impact is seen on climate's direct effect on the economy, including climate change created risks to assets and publicly traded securities, investments, companies, communities, and workers (E.O. 14030).

To build resilience to the economy and ensure the mission, the Department provides a wide range of data, tools, and information to help people understand and prepare for climate variability and risk. Since the production and dissemination of climate data, resilience information, and risk analysis is part of the Department's mission, the operation and services provided by the

Operating Units/Bureaus is directly linked to the climate hazard exposure of the mission.

Department buildings, infrastructure, and surrounding communities are mission critical and have the potential to suffer catastrophic loss due to extreme events such as hurricanes, tornadoes, wildfires, earthquakes, droughts, and flooding. At present, the availability of metrics, tools, and standards needed to ensure structural and community resilience are limited at these facilities (and to the public), making it difficult for Department facilities (and public communities) to recover rapidly. This can lead to loss of life, damage to buildings and infrastructure, and disruption to commerce. It is the Department's mission to increase the available climate information for Department facilities and business communities, particularly to those with increased risk or in areas that have historically been underrepresented.

The Department plays an essential role in advancing the nation's weather, water, and climate science to improve understanding of the changing risk from climate change, including coastal inundation, heat waves, droughts, and extreme events and storms. Understanding future risk will enable better vulnerability assessments and target where economic and adaptation strategies are needed. NOAA, NIST, Census Bureau, and BEA support and enhance scientific information and services needed to make informed decisions and manage risk. One example of the Department's work in this area is the Mauna Loa Observatory (MLO), located in Waimea, Hawaii. This observatory is considered the definitive source for documenting the increased atmospheric burden of fossil fuel emissions through the carbon dioxide gas measurements that show the Keeling Curve. On Nov. 28, 2022, all measurements and radio transmissions from MLO ceased as lava from the Mauna Loa volcano cut the power line and buried over a mile of the access road to the observatory. While this event does not point to a climate hazard, it exposes the vulnerability and lack of resilience present at this critical facility as the event halted all but the most essential atmospheric measurements supported by weekly helicopter visits. Because this facility faces climate hazards such as typhoons, it suggests more attention must be paid to increasing its climate resilience in support of the mission. In FY2024, NOAA received $5.09M from the Department of Energy's Assisting Federal Facilities with Energy Conservation Technologies (AFFECT) grant program to install solar panels and batteries at the observatory to make the facility net zero emissions. This project will bring the critical atmospheric science instrumentation back online and significantly improve the site's operational climate resiliency. Since MLO already captures its water needs from roof systems, the observatory will be the first Department facility to be net zero for both electricity and water, increasing its climate resilience and readiness to support the mission of measuring critical climate greenhouse gases.

The Department has other facilities that gather, analyze, and disseminate important climate information to the public. These facilities house researchers, experts, and critical infrastructure that support the Department's mission and are facing climate exposure hazards. NIST, NOAA, and NTIA share a campus in Boulder, CO, that is the home of scientific research and engineering in the fields of electromagnetics, materials reliability, optoelectronics, quantum electronics and physics, time and frequency, earth systems, weather, and telecommunications. This campus is facing increasing threats of wildfires, drought, extreme weather, and increased precipitation intensity. As discussed previously, they recently faced a wildfire just 5 miles from campus in 2021. This forced the surrounding communities, where many Department employees live, to evacuate, leaving their homes at risk. When events like these occur, employees miss work and

suffer from increased stress causing a reduction in progress and loss of potential mission critical information. In the aftermath of this event, NIST issued new guidance for emergency response during wildfires by writing the WUI Fire Evacuation and Sheltering Considerations: Assessment, Planning, and Execution (ESCAPE) report to implement wildfire mitigation strategies and creating a Hazard Mitigation Methodology (HMM) website. These resources will continue to be used to implement wildfire mitigation strategies.

The Department's mission is also supported by the operation and services of facilities located in coastal areas. Along the Pacific, Atlantic, and the Gulf of Mexico coastlines, facilities are vulnerable to rising sea levels and stronger and more frequent storms (e.g., hurricanes) making the operation and services of these facilities vulnerable. In Washington state, the Northwest Fisheries Science Center sits on 23 acres of land in Seattle, at sea level. While currently protected behind a dam on Lake Union, climate projections suggest there will likely be large shifts in coastal flood regimes with hightide flooding potentially disrupting this facility.

On the Atlantic coast sits NOAA's Office of Marine and Aviation Operations and National Geodetic Survey in Norfolk, VA. Norfolk and the Elizabeth River area are currently facing hightide flooding from sea level rise, which is expected to become worse over time. During high tide days, occurring at least 15 times a year, traffic intersections become flooded cutting some neighborhoods off from the rest of the city, adding stress and commute issues to employees' lives. In addition, sea level rise exacerbates the impacts of extreme weather, such as hurricanes, as storm surges reach further inland, putting these facilities, their operations, services, and mission support at risk. The Norfolk facility is being moved to Rhode Island where it will benefit from being on a secure military base, Naval Station Newport, and a better geographic location for the operation and assurance of the mission. The Department's ports, piers, warehouses, and critical infrastructure support the fleet of 15 research and survey ships operated by the Office of Marine and Aviation Operations. These ships provide updated nautical charts ensuring safe shipping routes exist following storms. This fleet could become inaccessible or unusable due to sea level rise, inundation, increased storms, and shoreline erosion. Additionally, the Office of Marine and Aviation Operations has 10 specialized environmental data-collecting aircraft supporting many of the Department's missions, including providing stewardship of environmental data and research and development. The home of these aircraft is along the coasts making the tarmacs, towers, and buildings that support them and their mission vulnerable. Moving forward NOAA is continuing to invest in purpose-built ships and increasing investments in uncrewed systems, reducing risk, and revolutionizing how NOAA collects data to ensure the Department's mission is met.

2E. IMPACTS FROM AND EXPOSURE TO ADDITIONAL HAZARDS

It should be noted that the tables in Appendix C display only the five climate hazards identified in the Federal Mapping App: extreme heat, extreme precipitation, sea level rise, flooding, and wildfires. Important physical natural hazards missing from the assessments are extreme weather and drought, and for ocean areas such as the Exclusive Economic Zones and Marine Sanctuaries, sea surface temperature, extreme ocean heat, and the associated impacts of ocean acidification. Each of these hazards presents an exposure that could reduce the ability of the Department facilities to meet operations, service, and mission requirements.

Extreme weather presents a ubiquitous hazard across Department facilities, although the exact type of extreme weather present at any given location varies. For instance, tornado season is becoming more variable in its duration and location. The outbreaks themselves are getting larger and more frequent. Department facilities located in historically high-risk tornado areas, like tornado alley, continue to be impacted by this hazard, but additionally, facilities located in new high-risk areas across the central U.S. from Louisiana to Michigan and along the Gulf and Atlantic coasts are now vulnerable. In addition, hurricanes are hitting the coasts with stronger winds, more rain, and higher storm surge making destruction of Department facilities more likely and more costly.

In Department waters that are designated to protect ocean ecosystems to support the economy and biodiversity, increasing temperatures and ocean acidification are making the habitat unfit for survival. This makes the mission of exploring, conserving, and managing these natural resources extremely challenging because the available resources in these areas are declining. The Florida Keys National Marine Sanctuary, home to over 6000 species of marine life and contributing to over $4 billion annually in tourism, is under stress from climate change. NOAA's Iconic Reefs mission is striving to restore 7 ecologically and culturally significant coral reefs in this area to make them self-sustaining, all while ocean temperatures increase and stay warm over longer than normal durations.

Section 3: Implementation Plan

3A. ADDRESSING CLIMATE HAZARD IMPACTS AND EXPOSURES

1) Addressing Climate Hazard Exposures and Impacts Affecting Federal Buildings:

PRIORITIZED ACTIONS TO ADDRESS CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL BUILDINGS		
Climate Hazard Impact on and/or Exposure to Buildings	Priority Action	Timeline for implementation (2024-2027)
• Coastal Flooding	• Support federal agencies and their non-federal partners in determining if a proposed federal action will be in a Federal Flood Risk Management Standard (FFRMS) Floodplain	Began in FY23 and will be ongoing.

• Coastal Flooding • Hurricane • Riverine Flooding • Wildfire • Precipitation • Extreme Temperatures	• Continue to integrate NOAA facilities portfolio with the FEMA National Risk Index, FEMA 100-Year Flood Zone, USFS Wildfire Risk and NWS Mean Higher High-Water Coastal Flood Index.	FY 2024-2026 – The Department will develop a Resilience Framework, with technical assistance from National Renewable Energy Laboratory (NREL), to establish a roadmap for incorporating continuity into normal operations and building resilience into critical infrastructure and personnel assets, including owned buildings and vessels, and Department employees.
• Coastal Flooding • Hurricane • Riverine Flooding • Wildfire • Precipitation	• Continue to identify vulnerabilities and assess the potential impact of climate hazards on the NOAA facilities portfolio.	FY2024/2025 – Prioritize investments in facilities that are most vulnerable to climate hazards and identify procurement mechanisms needed to implement.
• Coastal Flooding • Hurricane • Riverine Flooding • Wildfire • Extreme Temperatures	• Analyze NOAA facilities portfolio and risk index to develop priorities for investment to improve resilience and mitigate impacts based on climate risk.	Annually – Update NOAA Facilities Investment Plan and produce a categorized risk- based list of facility capital investment projects, including probability score of resiliency and climate adaptation risk.
• Coastal Flooding • Hurricane	• Develop adaptive strategies for NOAA's coastal facilities to minimize erosion and flooding risks.	FY2024/2025 – Seek funding opportunities (e.g., Department of Energy AFFECT Grant, performance contracting) to retrofit existing NOAA facilities to enhance resilience against climate hazards, including measures to withstand flooding, extreme heat, and sea level rise.
• Coastal Flooding • Riverine Flooding	• Implement nature-based solutions, such as wetland restoration and shoreline vegetation to enhance the NOAA facilities natural resilience against flooding and erosion.	FY 2024-2025 – Incorporate sustainable and climate-resilient design principles into the construction of new and renovated facilities (e.g. Western Regional Center renovations, new Fisheries building – Seattle, WA).
• Precipitation/Storm Water • Riverine Flooding	• Explore green infrastructure options to manage stormwater and reduce flooding risks at NOAA facilities.	Annually – NOAA's capital investment planning Business Case Analyses (BCA) will consider multifactorial risk data and perform analyses designed to identify the most effective solutions to address mission needs.

• Coastal Flooding • Typhoons	• NIST Kauai – Analyze available mitigation measures for coastal flooding and investigate possibilities moving the radio station to an alternate Hawaiian location not susceptible to sea level rise.	By the end of FY2024 and annually thereafter, compare annual low and peak temperatures against spare central plant capacity. By the end of FY2025, award engineering analysis for coastland mitigation measures, including award alternate Hawaiian locations. By end of FY 26, engineering analysis (alternate sites & coastland mitigation measures) will be completed. By end of FY2027, complete costs for existing Hawaii site and alternate site options.
• Extreme Temperatures	• NIST Boulder, CO and Gaithersburg, MD campuses – continue to annually monitor cooling and heating systems (Central Plants) to determine spare capacity. Currently and in near future, NIST anticipates spare capacity for forecasted extreme temperature increases.	FY 2024-2026 Energy efficiency audits will be conducted to best determine investments in this facility to reduce energy consumption and prepare for increasing cooling needs.
• Wildfires	• NIST Boulder, CO campus to utilize the new Hazard Mitigation Methodology (HMM) website and the WUI Fire Evacuation and Sheltering Considerations: Assessment, Planning, and Execution (ESCAPE) report to implement wildfire mitigation strategies.	FY 2024 Continue to use HMM and ESCAPE to guide wildfire implementation progress.

The Department owns approximately 400 buildings across every U.S. state, with diverse missions and operations ranging from large, complex research laboratories at NIST campuses to small NOAA weather stations[3]. As a result of this geographical diversity, the Department's facilities and infrastructure are vulnerable to the full range of climate change impacts.

The table of Priority Actions responds to the analysis results from Section 2 and focuses most closely on the five hazards assessed with the Federal Mapping App – extreme heat, extreme precipitation, sea level rise, flooding, and wildfire risk. These are priority actions that are underway or recurring annually and include asset management and investment decisions resulting from incorporating natural hazard and climate risk information into management

[3] NOAA, NIST, and NTIA have facilities owned by the federal government and are under these Bureaus' custody and control. Other Operating Units/Bureaus occupy facilities leased by the Operating Units/Bureaus, and the Operating Units/Bureaus retain authority over facility operations; or the Operating Units/Bureaus occupy a facility under an occupancy agreement with the GSA that may include delegated facility responsibilities.

decisions.

Ninety percent of the Department's approximately 400 owned buildings are owned by NOAA. In addition to the priority actions above, NOAA has a long history of considering assets' hazard vulnerability. Over the past few years, NOAA has significantly improved its asset management program by integrating condition data and real property. For example, one-third of owned facilities are 65 years old. Aged facilities are more susceptible to climate change and severe weather can exacerbate impacts on their condition. This integration has provided NOAA with a more in-depth understanding of the overall condition and composition of its facilities. Additionally, the program has integrated the Federal Emergency Management Agency (FEMA) National Risk Index, which provides visibility from an overall risk score to specific information that scores every county or Census Tract, based on 18 hazard types.

Even though not owned by the Department, facility management personnel at the USPTO Headquarters campus collaborate with the building lessor to identify energy efficiency enhancements to curb possible rising cooling loads on the buildings; conduct assessments of building heating, cooling, and ventilation systems to identify upgrades and enhancements to reduce energy consumption; and operate a demand response program year-round to decrease energy consumption during peak hours. Reducing energy loads is directly correlated to building resilience because lower energy requirements increase energy security. The lower the energy needs, the easier it is for a facility to return to normal operations.

The USPTO conducts assessments to determine the best solutions for reducing climate hazard impacts to the building (elevation of essential systems, floor protection system, etc.). The USPTO is migrating data center infrastructure products to a more resilient offsite location, as well as transferring systems and data to the cloud, to reduce the risk of disruption from climate change events. The offsite location is in FEMA FIRM Zone X, signifying that it is outside of the 500-year FEMA floodplain. The location is also built in an area with the lowest risk category for high winds, based on data provided by NOAA Storm Prediction Center. Additionally, the facility is powered by 100% renewable energy and is a certified "Green Power Pass (GPP) Product." To further mitigate risk, there will be no direct link between the main campus and the data center; the two sites will operate independently, providing a backup if either location is rendered inoperable because of a climate hazard.

2) Addressing Climate Hazard Exposures and Impacts Affecting Federal Employees:

PRIORITIZED ACTIONS TO ADDRESS CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL EMPLOYEES		
Climate Hazard Impact on and/or Exposure to Employees	Priority Actions	Timeline for implementation (2024-2027)
• Health and Safety • Infrastructure and Commute • Productivity and Work Disruptions • Emergency Response and Preparedness	• Adaptation and Resilience Planning • Employee Training and Education • Flexible Work Policies • Emergency Preparedness Planning and Response • Safe and Resilient Facilities • Health and Wellness • Communication and Alerts • Transportation and Commute Planning • Community Engagement • Research and Data Integration	FY2024-2026 – The Department will develop a Resilience Framework, with technical assistance from NREL, to establish a roadmap for incorporating Continuity into normal operations and building resilience into critical infrastructure and personnel assets, including owned buildings and vessels, and Department employees.

The Department has over 50,000 employees working across every U.S. state and territory and in more than 86 countries worldwide, providing U.S. based companies and entrepreneurs with invaluable tools through programs such as the decennial census, the NWS, the NMFS, and the Foreign Commercial Service.

To address the potential impacts noted in Section 2B outlining the impacts to Department employees, such as health and safety, infrastructure and commute, productivity and work disruption, and emergency response and preparedness, the Department has identified the following priority actions (as shown in the above table):

- **<u>Adaptation and Resilience Planning:</u>**
  Build a resilience framework that will provide guidance on resilience assessments and leverage Department capabilities. This guidance will help Operating Units/Bureaus further invest in adaptation and resilience planning to address the long-term impacts of climate change. This could involve changes in infrastructure, policies, and procedures to ensure the workforce is better prepared for evolving climate hazards. The Resilience Framework will also provide guidance to leverage the Department's expertise, while prioritizing collaboration, literacy, equity, and funding for resilience building.

- **<u>Employee Training and Education:</u>**
  Expand the Department's current training program to include comprehensive training to educate federal employees on resilience assessments and opportunities to build resilience to known hazards. Raise awareness about the potential impacts of wildfires, flooding, extreme heat, extreme precipitation, and sea level rise on employee work environments.

- **Flexible Work Policies:**
  Implement/continue flexible work policies, including telecommuting options, to allow federal employees to work remotely during extreme weather events or hazardous conditions. Establish guidelines for remote work to ensure continuity and efficiency in government operations.

- **Emergency Preparedness Planning:**
  Develop and communicate clear emergency preparedness plans to Department employees, including evacuation procedures, emergency shelters, and communication protocols during climate-related events and conduct regular drills and simulations to ensure that employees are familiar with emergency response procedures.

- **Safe and Resilient Facilities:**
  Retrofit and upgrade Department owned buildings to withstand climate hazards, such as improved infrastructure for flood protection, heat-resistant materials, and wildfire-resistant landscaping and ensure that owned buildings are equipped with emergency backup systems for power, water, and communication, including renewable energy and carbon pollution free energy (CFE) systems and battery storage.

- **Health and Wellness Support:**
  Provide access to healthcare services and mental health resources to help Department employees cope with the physical and psychological impacts of climate-related events and establish support systems for Department employees affected by climate hazards, including counseling services and wellness programs.

- **Communication and Alerts:**
  Implement robust communication systems to disseminate timely and accurate information to Department employees about impending climate hazards. Utilize mobile apps, text alerts, and other communication channels to keep employees informed of emergency situations and safety measures.

- **Transportation and Commute Planning:**
  Develop alternative transportation plans for Department employees in areas prone to flooding or other climate-related disruptions. Encourage the use of public transportation, carpooling, or flexible commuting options to minimize risks during extreme weather events.

- **Community Engagement:**
  Foster community engagement and collaboration to address climate hazards at the local level, including partnerships with local governments, businesses, and non-profit organizations. Encourage Department employees to participate in community resilience initiatives.

- **Research and Data Integration:**
  Integrate climate data and research into workplace policies and decision-making processes to better anticipate and respond to climate hazards.

3) Addressing Climate Hazard Exposures and Impacts Affecting Federal Lands, Waters and Culture Resources:

PRIORITIZED ACTIONS TO ADDRESS CLIMATE HAZARD EXPOSURES AND IMPACTS AFFECTING FEDERAL LANDS, WATERS AND ASSOCIATED CULTURAL RESOURCES		
Type of Land or Water Asset	Climate Hazard Impact on and/or Exposure to the Asset	Priority Action
• NOAA's National Marine Sanctuary System, 620,000+ square miles of ocean and Great Lakes waters and bottomlands. • NOAA NMFS has stewardship responsibilities for living marine resources (fish, invertebrates, marine mammals, sea turtles and the habitats they depend on) in the U.S. Exclusive Economic Zone (which includes more than 4 million square miles of ocean) and the associated coastal shoreline covering over 95,000 miles. • NIST Boulder Campus includes 103.5 acres of protected open space set aside through a Memorandum of Agreement with Tribes and the City of Boulder.	• Sea level rise • Rising sea surface temperatures • Ocean acidification • Oxygen depletion in ocean waters • Shifting species distribution • Altered weather patterns and storms • Wildfire	• Implement the Office of National Marine Sanctuaries Climate Resilience Plan 2024-2026. • Implement the NIST Wildfire Mitigation Assessment for properties in Colorado – Wildfire mitigation costs estimated at over $82 million in FY2023 in Colorado. • Update NOAA NMFS Ecosystem-Based Fisheries Management (EBFM) Policy and Road Map. • Implement the NOAA • Climate Ecosystems and Fisheries Initiative (CEFI) to provide climate-informed advice for marine resource management and community adaptation.
• The Department's 5 million acres of land across the United States	• Drought • Heat • Wildfires • Precipitation	• Build a Resilience Framework that will include guidance on Nature Based Solutions, in coordination with carbon sequestration efforts. • Continue to implement NIST wildfire mitigation guidance.

Climate impacts such as warming oceans, rising sea levels, melting sea ice, and increasing acidification are affecting the structure of marine ecosystems including the abundance of species in many regions. These changes significantly affect the people, businesses, and economies that rely on them. These changes also affect many parts of NOAA's mission, from fisheries management and aquaculture to conservation of protected resources and habitats.

To prepare and respond to these changes, the Office of National Marine Sanctuaries Climate Resilience Plan 2024-2026 outlines NOAA's commitment to foundational climate change impact monitoring, assessment, education, and outreach, with an increased emphasis on climate change mitigation and adaptation activities within the sanctuary system. Adaptation actions include reducing non-climate stressors to bolster adaptive capacity of ecosystems and species. In certain places within the system, NOAA is also undertaking or supporting restoration of resources that are sustaining climate-related degradation.

One example of the work taking shape is the Department and NOAA commitment of $40 million from the Inflation Reduction Act (IRA) to begin implementing the Climate, Ecosystems and Fisheries Initiative (CEFI) and address the urgent need for actionable information to support climate resilient marine resources and the many people, businesses, and communities that depend on them. This effort will build an operational CEFI Decision Support System to provide national, regional, and local decision-makers with robust information on expected future ocean ecosystem conditions, risks, and best options to reduce impacts and increase resilience to climate change. The funding will build-out the System's major components including state-of-the-art forecasts and projections of future ocean ecosystem conditions and regional decision support teams in all six marine regions to provide the early warnings and advice needed for climate-informed fisheries management, protected species conservation, habitat protection, and fishing community adaptation.

In addition, NOAA NMFS is updating its Ecosystem-Based Fisheries Management (EBFM) Policy and Road Map in FY2024 to guide EBFM efforts that help maintain resilient and productive trust resources and the ecosystems they depend on, in a changing climate. These activities include ecosystem-level planning; advancing understanding of ecosystem processes; prioritizing vulnerabilities and risks; exploring and addressing trade-offs; implementing ecosystem considerations in management; and supporting ecosystem resilience via monitoring and adjusting management actions.

Leveraging the significant investment in IRA funding, NOAA Fisheries is also working with regional fishery management councils to support climate-ready fisheries management. The focus is on the implementation of fishery management measures or processes necessary to improve climate resiliency and responsiveness to climate impacts, and development and advancement of climate-related fisheries management planning and implementation efforts, including those in support of communities with environmental justice concerns.

Example Actions Addressing Climate Exposures and Impacts from the America the Beautiful Program	
Priority Action	Description
Expand the National Marine Sanctuary System	Landscape scale conservation and management of nationally significant marine and Great Lakes resources aids in addressing climate impacts through adaptive management, habitat restoration and protection, and includes monitoring of climate change effects on resources. These efforts build climate resilience by creating stronger ecosystems that are more likely to recover after catastrophic events. They also encourage climate adaptation by allowing the ecosystem to remain healthy and providing it time to adapt to changing environmental conditions.
Expand the National Estuarine Research Reserve System	Through the National Estuarine Research Reserve System, a current network of 30 sites, nearly 1.4 million acres of estuaries are protected and studied. The results benefit natural ecosystems and man-made communities and provide critical information and data on how best to build resilience. Active restoration and protection initiatives are ongoing, as well as monitoring programs and community-based research projects. Results from these projects help inform best-practices for the conservation of coastal ecosystems that reduce the impact of climate hazards like sea level rise and hurricanes.

American Climate Corps	NOAA is part of an interagency partnership to launch the American Climate Corps, a workforce training and service initiative that will ensure more young people have access to the skills-based training necessary for good- paying careers in the clean energy and climate resilience economy. Participating NOAA programs include Gulf Corps and Vet Corps.
Bipartisan Infrastructure Law (BIL)/IRA	The BIL is a transformational opportunity to make an impact against the climate crisis across the country through multiple funding opportunities. It provides nearly $3 billion for NOAA to act over 5 years in the areas of habitat restoration, coastal resilience, climate data and services, and weather forecasting infrastructure. The IRA is a historic, federal government-wide investment that furthers NOAA's efforts to build a Climate-Ready Nation. It provides $3.3 billion for NOAA to build on its commitment to help Americans, including Indian tribes and vulnerable populations, prepare, adapt, and build resilience to weather and climate events; improve supercomputing capacity and research on weather, oceans, and climate; strengthen NOAA's hurricane hunter aircraft and fleet; and replace aging NOAA facilities.
Complete an Atlantic Highly Migratory Species Climate Vulnerability Assessment (HMS CVA)	The HMS CVA is a rapid assessment tool used to identify which species may be most vulnerable based on their exposure to projected changes in the environment (e.g., warming oceans) and their sensitivity or adaptability to handle those changes based on their life history characteristics. Results from the HMS CVA can be used to help prioritize research, resources, and funding. Results can also inform management decision-making, rulemaking, Biological Opinions, Endangered Species listings, and NEPA analyses.
Mission: Iconic Reefs	The Mission: Iconic Reefs initiative aims to help reverse long-term coral reef decline, NOAA and partners have developed an approach to restore seven iconic coral reef sites in the Florida Keys National Marine Sanctuary. It is a phased approach over the next two decades to rebuild coral reef structure, restore a diversity of reef- building stony corals, reintroduce species that support coral health, promote resiliency, and build community stewardship. For coastal communities, healthy coral reef ecosystems provide protection against soil erosion, sea level rise impacts, storm surges, and provide economic resources that help communities grow and sustain resilience efforts.
Marine and Coastal Area-based Management Advisory Committee	NOAA established the Marine and Coastal Area-Based Management Advisory Committee to advise the Under Secretary on science-based approaches to area-based protection, conservation, restoration, and management in marine and coastal areas. The committee provides a forum for discussion and advice on area-based management, including opportunities to enhance conservation of biodiversity, climate resilience, and access to nature for underserved communities with environmental justice concerns.

3B. CLIMATE-RESILENT OPERATIONS

1) Accounting for Climate Risk in Planning and Decision Making

The 2024 Department Risk Profile Report is developed by the Department's Enterprise Risk Management Program (ERM) to identify, evaluate, mitigate, and manage risks across the DOC enterprise, including risks related to development and implementation of policies to address climate risks and key impact areas. Risk and exposure assessments are currently being used to identify projects and prioritize funding for resilience. The Department is currently developing a Resilience Framework which will put these risk assessments into the resilience workflow

providing data, decision-making, and assessment capabilities to the Department's resilience programming.

2) Incorporating Climate Risk Assessment into Budget Planning

Applying the International Organization for Standardization (ISO) 31000's definition for risk, the Department defines risk as the effect of uncertainty on objectives. Since 2011, the Department's Enterprise Risk Management (ERM) Program has advanced an integrated approach to risk management, providing an enterprise process for proactively identifying, managing, and treating risk in achieving the Department's strategic objectives, program execution and Department operations utilizing an ERM program framework. The Department's Strategic Plan objectives and learning agenda are focused on embedding climate considerations into all Department operations, risks and potential impacts from climate hazards. Overall risk management and climate-related financial risks are being assessed through this enterprise process. For example, the 2024 Department Risk Profile Report, an agency-wide process and/or tool, incorporates climate risk into planning and budget decisions.

In addition, as a member of the National Climate Task Force (NCTF), designated in E.O. 14008, the Secretary of Commerce and heads of Operating Units/Bureaus have committed to further integrate climate change adaptation and resilience into all aspects of the Department's planning and operations through transparent decision-making and management of human and capital resources. The Secretary has set a standard for climate literacy within the Department through Department-level town halls, meetings with leadership, and enhanced training on climate change adaptation and resilience. ,. Operating Units/Bureaus also have additional programs to increase staff literacy and capacity for services delivery, as identified in Section 4.

3) Incorporating Climate Risk into Policy and Programs

Agency Policies Reviewed		
Nature-Based Solutions	The Department is actively working to include more nature-based solutions into policies and guidance documents.	In FY2024/2025, the Department will develop a Resilience Framework, with technical assistance from NREL, to establish a roadmap for incorporating continuity into normal operations and building resilience into critical infrastructure and personnel assets, including owned buildings and vessels, and Department employees. One objective of the Resilience Framework is to protect and sustainably manage lands and waters to enhance resilience. This can include nature-based solutions where appropriate, to store carbon and shield neighboring communities from climate impacts and natural hazard risks. The Department will also seek opportunities to implement the recommendations in the White House

		Nature-Based Solutions Roadmap where appropriate.
Environmental Justice	Environmental justice considerations have been included in climate adaptation policies throughout the Department, including the 2022- 2026 Strategic Plan. The Department's Office of Sustainable Energy and Environmental Programs has a Resilience, Climate Adaptation, and Environmental Justice Program Manager who coordinates policies, guidance, programs, and training with the Department's Environmental Justice Officer.	• U.S. Department of Commerce 2022 – 2026 Strategic Plan • U.S. Department of Commerce Equity Action Plan • Department of Commerce Environmental Justice Strategy (Fall of 2024) • Department of Commerce Administrative Order (DAO) Addressing the Climate Crisis • Department of Commerce 2024 Sustainability Strategic Plan Update (Fall-winter 2024)
Tribal Nations	Tribal governments, their business enterprises, their members, and firms that want to do business in Indian Country can tap into the vast resources of the Operating Units/Bureaus of the Department of Commerce to create jobs on and off-reservation. From grants from NTIA to develop broadband infrastructure, to data resources available from the Census Bureau to inform tribal policymakers, to overseas market development assistance through ITA, and funding opportunities available through EDA and the Minority Business Development Agency (MBDA), the Department's resources help tribes, and their citizens create conditions conducive to business development and to seize opportunities in the U.S. and abroad. The Department's partnerships with tribes and firms that want to do business in Indian Country is led by the Secretary's Senior Advisor on Native American Affairs. The Office of the Secretary's Senior Advisor on Native American Affairs is responsible for: (1) coordinating and communicating all Native American issues directly with tribes and across all the Operating Units/Bureaus within the Department and externally with all other federal agencies; (2) coordinating and implementing the Department's Tribal Consultation Policy Plan and consultation sessions; (3) serving as the primary contact for all Tribal Consultation actions and issues; and (4) serving as the facilitator of the Office of Native American Business Development by assisting and consulting with Indian Country in leveraging the combined efforts of the federal programs, tribal governments, private sector businesses and financing to promote economic growth for Tribes and Native Americans.	Tribal Priorities NOAA will provide funding for tribal priorities that incorporates comments received during the IRA tribal consultation. This funding includes a tribal set- aside for fish hatcheries that produce Pacific Salmon and Steelhead to be administered through the Bureau of Indian Affairs; funds for Mitchell Act Hatcheries; funds in additional funding for the Bipartisan Infrastructure Law Restoring Tribal Priority Fish Passage through Barrier Removal Notice of Funding Opportunity; and a tribal set-aside for capacity building, science, and related needs through an updated Bipartisan Infrastructure Law Coastal Habitat Restoration and Resilience Grants for Tribes and Underserved Communities Notice of Funding Opportunity.

Co-Benefits of Adaptation	The Department's 2022-2026 Strategic Plan outlines the Department's commitment and specific priorities on incorporating both mitigation and adaptation measures into all Department policies and programs. Mitigation, the reduction of carbon emissions, is often associated with energy security and land management resilience. Reducing energy needs creates less reliance on fossil fuels and managing lands in ways that sequester carbon help develop sustainable ecosystems. Both actions increase resilience. The Department is currently reviewing policies to better incorporate climate adaptive capacity and resilience in programs, and ensure investments strategically consider future conditions and are climate smart.	• Department of Commerce 2024 Sustainability Strategic Plan • In FY2024/2025 the Department will publish a companion manual to the DAO 217-16, Sustainability and Environmental Management, to include guidance on integrating adaptation and mitigation principles. • The Department's Climate Administrative Order (DAO) ADDRESSING THE CLIMATE CRISIS | U.S. Department of Commerce

Resilience Framework: The Department is developing a Resilience Framework to act as the scaffolding for the Department's cross-cutting resilience efforts. The framework aims to leverage the wide array of resilience expertise found across the Operating Units/Bureaus, while staying focused on important resilience priorities like literacy, equity, and collaboration. In addition, the framework will be designed to best utilize available financial resources and third-party financing to support the Department's goals. It is anticipated that the framework will make a space for every Operating Unit/Bureau and every portfolio to contribute to the resilience efforts of the Department. In conjunction with the Framework development, the Department will create a Resilience Framework Working Group, made up of Operating Unit/Bureau representatives that will create and implement the Framework's guidance.

Environmental Justice: Environmental justice is a key component of resilience and adaptation. Communities that have long stood at the forefront of environmental damage are the same communities that will be hit hardest by climate change. Resilience solutions must be equitable and prioritize the wellness of these communities to be successful. For the first time, the federal government is outlining how it will integrate principles of equity and environmental justice in federal ocean activities, including conservation, management of marine resources, and infrastructure projects. Along with several other federal agencies, NOAA developed the first-ever U.S. Ocean Justice Strategy to advance environmental justice for communities that rely on the ocean and Great Lakes for economic, cultural, spiritual, recreational, and food security purposes. The Strategy outlines overarching goals, principles, and practices that the federal government can adopt to provide long-term, sustainable benefits for people, communities, and the environment.

In May 2023, NOAA NMFS released the Equity and Environmental Strategy, which will guide NMFS on serving all communities more equitably and effectively. This national strategy describes the path NOAA NMFS will take to incorporate equity and environmental justice into the vital services provided to all communities.

Tribal Nations: Climate change negatively impacts the livelihoods, health, and cultural practices of Indigenous Peoples, impacting their ecological resilience, while Indigenous

Knowledge (IK) is recognized as a key component of resilience strategies. In June 2023, NOAA updated its existing policies and guidance documents for tribal consultation and incorporated IK in decision-making, including: (1) *NOAA Procedures for Government-to- Government Consultation with Federally Recognized Indian Tribal Governments (*Consultation Handbook*);* (2) NOAA Administrative Order 218-8, *Policy on Government-to-Government Consultation with Federally Recognized Indian Tribal Governments*; and (3) *NOAA Guidance and Best Practices for Engaging and Incorporating Indigenous Knowledge in Decision-Making*.

As a continuation of our commitment to engage meaningfully with federally recognized Indian tribes, non-recognized Indian tribes and other Indigenous Peoples, NOAA is building upon the *Consultation Handbook* to provide guidance on including IK in federal decisions. This document goes beyond the *Consultation Handbook* to recognize and be inclusive of all Indigenous Peoples within the U.S. and the importance of equitable engagement and involvement of their knowledge (e.g., American Indian, Alaska Natives, Native Hawaiians, Chamorro, American Samoans, and Taíno). NOAA encourages the inclusion of IK, as appropriate and to the extent practicable and permitted by law, in the line offices' environmental science, policy and decision-making processes. This inclusion is intended to better facilitate consultations as required by E.O. 13175, fulfill federal trust responsibilities, respect treaty rights, understand environmental justice concerns as directed by E.O. 14096, inform agency decision making, and to build partnerships with Indigenous Peoples.

Additionally, NOAA has worked to engage federally recognized Indian tribes, non-recognized Indian tribes and other Indigenous Peoples and provide significant IRA and BIL investments on issues pertaining to Offshore Wind and Marine Energy, recovery efforts of Pacific Salmon, developing climate-ready aquaculture, strengthening coastal resilience, and habitat restoration. Members of tribal and indigenous communities were chosen to serve on the Marine and Coastal Area-based Management Advisory Committee as well as the Ocean Research Advisory Panel, which provides advice to the federal government on ocean policy.

NOAA recently re-established the Ocean Research Advisory Panel (ORAP), which advises the White House's Ocean Policy Committee (OPC) and provides independent recommendations to the Federal Government on matters of ocean policy. Membership consists of IK practitioners, scientists, policy experts, entrepreneurs, and engineers, all of whom bring a unique and important perspective to help inform Federal Ocean Policy.

4) Climate-Smart Supply Chains and Procurement

The Department is assessing the climate hazard risks and potential disruptions to critical supplies chains, services, and procurement and has begun identifying priorities, establishing goals, and developing strategies and implementation plans to address these risks and disruptions. Examples include:

- A key strategy objective outlined in the 2022- 2026 Strategic Plan is to make Department facilities and operations more sustainable and efficient. This emphasizes the Department's commitment to invest in and maintain more climate-resilient infrastructure and operations, pursue efficient and pollution-free upgrades, prioritize zero-emission vehicle acquisitions, implement sustainable acquisition processes, and create equitable economic opportunities for

businesses with climate-friendly products.

- As part of the Department Administrative Order (DAO) 216-22, which formalizes the Department's priority focus on addressing the climate crisis, NIST is charged with implementing a dedicated process to review and coordinate ongoing and planned climate-related activities. This will ensure that NIST continues to deliver the most accurate measurements, data, and standards.
- The Department's Resilience Framework, currently being developed, includes a focus on how resilience will be created for critical supplies and services, as part of the expertise and finance collaborations. This will include a roadmap for incorporating continuity into normal operations and building resilience into critical infrastructure and personnel assets and supply chains.
- The Department is currently revising The Commerce Acquisition Manual. Climate resilience and adaptation measures will be integrated into this document as part of the revisions expected in 2024.
- USPTO has established a "Climate Working Group" which includes representatives from the Office of Procurement. These representatives will ensure that USPTO climate risk initiatives are reflected in procurement policies and procedures. For example USPTO is exploring ways to improve climate resiliency of its Alexandria, VA headquarters during the reduction in space effort coordinated by GSA.
- NIST has engaged in crosscutting efforts in life-cycle assessments led by its Applied Economics Office. This work addresses the carbon impact of a range of industry sectors, including buildings, utilities, and material-manufacturing. These types of assessments include insights into areas of the cycle that may be more susceptible to risk and allow acquisition specialists to ensure high-risk initiatives are developed alongside resilience measures. Examples of the tools that have been developed include the Building Industry Reporting and Design for Sustainability (BIRDS) and Building for Environmental and Economic Sustainability (BEES). These tools assess the carbon footprint of buildings and their component materials.

5) Climate Informed Funding to External Parties

Several Operating Units/Bureaus are delivering climate informed funding to external parties including EDA, NOAA, CHIPS Program Office, NTIA and USPTO. The range of activities performed spans Economic Recovery Missions for communities who have already experienced impacts from the changing climate to requirements that include considerations of climate vulnerability in grant applications and grant-making. USPTO is piloting an acceleration of patent application review for innovations in addressing the changing climate and NTIA is expanding access to broadband allowing more communities to access tools to assess their climate vulnerabilities.

Part of the Department's Resilience Framework, currently under development, is an assessment of programs like those listed above. These assessments, and any data provided by the projects themselves, will be used to inform decision making around resilience strategies, programs, and policies.

For more details on these and other Operating Unit/Bureau efforts, please see Appendix D.

3C. CLIMATE TRAINING AND CAPACITY BUILDING FOR A CLIMATE INFORMED WORKFORCE

The Department, primarily through NOAA's efforts, is leading the federal government in climate training. NOAA's Climate Education Program focuses on advancing public climate literacy in partnership with formal and informal educators by incorporating climate data, tools, and information products into classrooms and free-choice learning institutions; equipping educators with well-vetted, standards-based climate and energy lessons, multimedia resources, and visualizations and professional development opportunities; and defining "climate literacy" and helping to establish benchmarks of excellence to help guide educators.

NOAA has also taken on climate literacy efforts through the U.S. Global Change Research Program (USGCRP) and runs several USGCRP working groups including the development of the Climate Literacy Guide and the Climate Workforce Development group. Through these efforts, NOAA has developed a database of all climate training across the federal workspace, brought climate literacy stakeholders together, and leveraged the climate training capacity to the advantage of the entire federal government.

The Department is also developing a cross-cutting climate training plan that will increase climate literacy through collaborative education and awareness programs and address the often-overlooked area of climate decision making for senior executive service (SES) level employees. This work is being conducted with the Federal Executive Institute and the U.S. Geological Survey. Additionally, the Department will provide online training to all employees through programs offered by the Office of Sustainable Energy and Environmental Programs. These combined efforts will increase awareness and knowledge of climate adaptation and resilience.

Training and Capacity Building	
Agency Climate Training Efforts	***Identify the percentage of the agency's Federal staff that have taken a 60+ minute introductory climate training course (e.g. Climate 101):*** Climate 101 courses have been offered by the Department through the Commerce Learning Center and NOAA's climate.gov and education offices. The Department is in the process of gathering data on the number of Federal employees that have completed the course offerings. In FY2021, the Department offered Climate 101 training with climate.gov NOAA colleague that have over 600 Department employees in attendance.
	Detail the percent of the agency's senior leadership (e.g., Sec, Dep Sec, SES, Directors, Branch Chiefs, etc.) that have completed climate adaptation training: In FY2024/2025, the Department will be developing climate adaptation training for different position types, including leadership positions (e.g. acquisitions, budget, real property, facility, and IT).
	Detail the percent acquisition officials that have received climate adaptation related training: The Department currently has an online training series open to all Department employees with four topic areas including Climate Literacy, Sustainability 101, Environmental Compliance, and Technical Development. The number of acquisition officials trained is unknown at this time.
	Detail additional efforts the agency is taking to develop a climate informed workforce: NOAA continues to lead efforts to educate both federal employees and external stakeholders on science-based information on climate. Examples of NOAA's far-reaching climate literacy programs include: Climate.gov; Climate Smart Communities Initiative; Sea Grant; Digital Coast; NOAA's Environmental Literacy Program Grants; Climate Literacy and Energy Awareness Network (CLEAN); the Federal Adaptation and Resilience Group; and the Federal Climate Engagement and Capacity Building Interagency Working Group.

Agency Capacity	***Detail the number of full time Federal staff (FTE) across the agency that have tasks relevant to climate adaptation in their job description. Detail if the agency has contracting staff with tasks relevant to climate adaptation in their job description. Additionally, the agency may include information on climate adaptation staffing approaches in the narrative:*** Department leadership have climate adaptation and mitigation targets identified in their annual performance plans. Further assessment of position descriptions are needed to identify where additional language is required to fully incorporate climate considerations across all position types.

3D. SUMMARY OF MAJOR MILESTONES

Various milestones are included in this Plan and the following are major milestones.

Section of the Implementation Plan	Description of Milestone	Climate Risk Addressed	Indicators for success
3A.1	Develop a Resilience Framework to establish a roadmap for incorporating continuity into normal operations and building resilience into critical infrastructure and personnel assets, including owned buildings and vessels, and Department employees.	All climate hazards	Published Resilience Framework
3A.1	Prioritize investments in facilities that are most vulnerable to climate hazards and identify procurement mechanisms needed to implement.	All climate hazards	System in place to collect data on investments in climate-resilient, sustainable facility improvements
3B	Risk Assessment	All climate hazards	Climate risk assessments around energy and water completed in collaboration with Department of Energy Federal Energy Management Program (FEMP).
3C	Develop and employ a climate literacy plan specific to the Department. This will include trainings, collaborative education, and a focus on SES level climate-informed decision making.	All climate hazards	Publish Climate Literacy Plan and curriculum. Offer trainings.

Section 4: Demonstrating Progress

4A. MEASURING PROGRESS

Key Performance Indicator: Climate adaptation and resilience objectives and performance measures are incorporated in agency program planning and budgeting by 2027.		
Section of the CAP	**Process Metric**	**Agency Response**

3A –Addressing Climate Hazard Impacts and Exposure	Step 1: Agency has an implementation plan for 2024 that connects climate hazard impacts and exposures to discrete actions that must be taken. (Y/N/Partially) Step 2: Agency has a list of discrete actions that will be taken through 2027 as part of their implementation plan. (Y/N/Partially)	Step 1: Y Step 2: Y
3B.1 – Accounting for Climate Risk in Decision-making	Agency has an established method of including results of climate hazard risk exposure assessments into planning and decision-making processes. (Y/N/Partially)	Y
3B.2 – Incorporating Climate Risk Assessment into Budget Planning	Agency has an agency-wide process and/or tools that incorporate climate risk into planning and budget decisions. (Y/N/Partially)	Y
3B.5 – Climate Informed Funding to External Parties	Step 1: By July 2025, the agency will identify grants that can include consideration and/or evaluation of climate risk. Step 2: Agency modernizes all applicable funding announcements/grants to include a requirement for the grantee to consider climate hazard exposures. (Y/N/Partially)	Step 1: Y Step 2: Y
Key Performance Indicator: Data management systems and analytical tools are updated to incorporate relevant climate change information by 2027.		
Section of the CAP	**Process Metric**	**Agency Response**
3A –Addressing Climate Hazard Impacts and Exposure	Agency has identified the information systems that need to incorporate climate change data and information and will incorporate climate change information into those systems by 2027. (Y/N/Partially)	Partially
Key Performance Indicator: Agency CAPs address multiple climate hazard impacts and other stressors, and demonstrate nature-based solutions, equitable approaches, and mitigation co- benefits to adaptation and resilience objectives.		
Section of the CAP	**Process Metric**	**Agency Response**
3B.3 – Incorporating Climate Risk into Policy and Programs	By July 2025, 100% of climate adaptation and resilience policies have been reviewed and revised to (as relevant) incorporate nature-based solutions, mitigation co-benefits, and equity principles. (Y/N/Partially)	Partially
Key Performance Indicator: Federal assets and supply chains are evaluated for risk to climate hazards and other stressors through existing protocols and/or the development of new protocols; response protocols for extreme events are updated by 2027.		
Section of the CAP	**Process Metric**	**Agency Response**
3B.4 – Climate- Smart Supply Chains and Procurement	Step 1: Agency has assessed climate exposure to its top 5 most mission-critical supply chains. (Y/N/Partially) Step 2: By July 2026, the agency has assessed services and established a plan for addressing/overcoming disruption from climate hazards. (Y/N/Partially)	Step 1: Partially Step 2: Partially
	Agency has identified priorities, developed strategies, and established goals based on the assessment of climate hazard risks to critical supplies and services. (Y/N/Partially)	Partially

Key Performance Indicator: By 2027, agency staff are trained in climate adaptation and resilience and related agency protocols and procedures.		
Section of the CAP	**Process Metric**	**Agency Response**
3C – Climate Training and Capacity Building for a Climate Informed Workforce	Step 1: By December 2024 100% of agency leadership have been briefed on current agency climate adaptation efforts and actions outlined in their 2024 CAP. (Y/N/Partially) Step 2: Does the agency have Climate 101 training for your workforce? (Y/N/Partially) If yes, what percent of staff have completed the training? Step 3: By July 2025, 100 % of employees will have completed Climate 101 trainings. (Y/N/Partially)	Step 1: Y Step 2: Y – Approximately 50% Step 3: Partially

4B. ADAPTATION IN ACTION

U.S. Census Bureau:

- Census Bureau is building a microdata infrastructure linking businesses and households with environmental and climate risk information, which is necessary for measuring the distributional effects of climate change. A prototype version of this infrastructure has been built and is being used as the basis for a variety of research projects which will vet additional hazards data. Public facing data products on the distribution of exposure to air pollution and wildfires are in progress. Census Bureau staff continue to present research using this infrastructure at numerous conferences and seminars.
- They are expanding the suite of Community Resilience Estimates (CRE) to include climate-related challenges faced by communities, including extreme heat, flooding, hurricanes, wildfires, and winter weather. The Census Bureau is partnering with other agencies such as NOAA and FEMA to create and release new statistical products that are useful in understanding the impacts of natural hazards on communities.
- Census Bureau is including questions on environment-related innovations by businesses as well as impacts and actions related to climate risk in the 2023 Annual Business Survey. Businesses were asked about innovations in products, services, and processes that reduce energy use, pollution, solid waste, and material and water usage. In addition, businesses were asked about recent losses due to extreme weather events, investments taken to reduce the risk of damage from such events, and their perception of the likelihood of experiencing negative impacts from such events in the future. Early findings from this data collection are expected in late 2024.
- Census Bureau is proposing three new questions be added to the American Community Survey and the Puerto Rico Community Survey for 2025 on solar panels, electric vehicles, and sewage disposal. The final proposal will be submitted to OMB in spring 2024 and accompanied by a Federal Register notice with the final recommendations and seeking public comment.

EDA:

- EDA has incorporated climate into its investment priorities under the Environmentally Sustainable Development investment priority. Since the adoption of the investment priority in FY21, EDA has invested close to $573 million in 138 projects to help communities and

regions build the capacity for environmentally sustainable development. These included over $386.3 million in 89 projects that are, according to recipient estimates, expected to create or retain 25,990 jobs and attract close to $6.4 billion in private investment. EDA also invested over $186.6 million in 49 projects to support planning, research, technical assistance, access to capital, or other activities that are essential for successful economic development and job creation in the future.

- EDA successfully added language on resilience (including climate resilience) beginning with its American Rescue Plan Act Notice of Funding Opportunities (NOFOs) in FY21. Since then, EDA has continued to add climate resilience language to its applicable NOFOs, including its FY23 Public Works and Economic Adjustment Assistance NOFO. Throughout FY24, new, applicable funding opportunities will also include climate resilience language.
- New climate-related language has been added to EDA's Environmental Narrative Template, and this revised document has been in use since late-June 2021, with a general expectation that all applicants for infrastructure projects will use this new narrative. In addition, relevant EDA application reviewers (i.e., REOs), Engineers and Construction Managers) have been briefed on the changes to the Environmental Narrative Template. This template asks infrastructure project applicants to consider climate resilience in their project design.
- EDA is including information in the Comprehensive Economic Development Strategy (CEDS) Content Guidelines that encourages climate resilience be incorporated in the resilience components of each CEDS. As the economic development plans for a region, the CEDS are a key component in establishing and maintaining a robust economic ecosystem by helping to build regional economic development capacities. They provide a vehicle for individuals, organizations, local governments, institutes of learning, underserved communities, and private industry to engage in a meaningful conversation about what efforts and initiatives would best serve economic development in the region. In early 2023, the CEDS Content Guidelines were updated to include climate resilience language, encouraging consideration of both mitigation as well as adaptation strategies, as well as providing resources and discussion on: assessing risks and vulnerabilities; prioritizing identified actions; and investigating options to implement. The new climate resilience language encourages entities to incorporate climate resilience when creating/revising individual CEDS, with the goal of more climate-conscious regional economic development. This language provides reference to relevant links, tools, and sources of knowledge around climate-resilient economic development. This resource provides useful guidance to Economic Development Districts and other regional entities on how to either develop or redevelop their local infrastructure in congruence with considerations and assessments of natural hazard and climate risk. Beginning in FY24, machine learning algorithms will be applied to submitted CEDS documents, with analysis being performed to identify trends that include if and how certain priorities (such as climate resilience) are being included in CEDS documents. This analysis will help to quantify/qualify how climate resilience is being addressed in the CEDS and assist in informing future revisions to the CEDS Content Guidelines.
- In addition, 37% of EDA grant awards in FY2024 will support entrepreneurship in underserved communities and regions.

NIST:

- NIST has issued a NOFO, seeking eligible applicants for the creation of an interdisciplinary Center of Excellence in Climate Measurements. The center will coordinate activities to

advance efforts to establish national standardization of methods and metrics for forecasting consequences of climate trends at scales important to communities across multiple geographies and over time. The center will carry out research and will act as a convener and leader in this field of research by collaborating with NIST and other stakeholders to develop standard practices, methodologies, and tools that will assist communities in making quantitative predictions of climate- related effects on their communities. In FY2024, NIST anticipates funding one award for up to $2,667,900 in federal funding and with a project performance period of up to three (3) years.

- NIST made strategic investments ($11.7 million) in climate, energy, and resilience research and development (R&D) to ensure NIST continues to deliver the most accurate measurements, data, and standards to industry, academia, Federal and local Government. The investments include the Innovation in Measurement Science program, Strategic and Emerging Research Initiative program, and programs outlined in the FY 2023 appropriations.
- NIST made significant progress to advance climate science and metrology. Examples include new Standard Reference Materials and Traceable Reference Materials, a Standard Reference Instrument and accompanying Calibration Service for photovoltaic cells, new datasets, software, and models that cover greenhouse gas (GHG) measurements, energy efficiency, and carbon capture; NIST informed best practices for combating the increasing number of wildfires, and contributed to the latest International Building Code and state building codes that mandate construction techniques to mitigate the impact of tornadoes.
- NIST engaged in a variety of domestic and international fora to advance standards, research, and measurements. Some notable examples include drafting sections of National Climate Assessment 5; participating in the Interagency Working Groups Initiative; establishing Low Carbon Cement and Concrete Consortium; co- sponsoring and organizing workshops, conferences, and roundtables; serving on delegations to negotiate a global treaty on plastic pollution; and partnering with Manufacturing Extension Partnership Centers to explore sustainable business practices.

NOAA:

- NOAA has significantly advanced the provision of climate services to the U.S. through expanded partnerships and increased investment in six mission areas (coasts, marine ecosystems, drought, extreme heat, flooding, and wildfires). NOAA is also helping coastal communities build the future they want to see by investing in high-impact natural infrastructure projects that build coastal resilience, create jobs, store carbon, and restore habitat.
- NOAA launched its Ocean-Based Climate Resilience Accelerators program in July 2023. This program will support approximately $60 in million IRA investments in the development and implementation of novel business accelerators to help American small businesses develop sustainable technologies geared toward climate resilience, attract capital, and mature their technologies and scale their business models to find solutions for climate- driven challenges.
- In January 2024, NOAA launched its Industry Proving Ground initiative, which will leverage $85 million in IRA funding to foster partnerships with key industry sectors (insurance, retail, architecture, and engineering) and accelerate the provision of essential climate services to U.S. industries by expanding their use of NOAA's trusted and authoritative data and information through products that are tailored to their needs.

- In April, 2023, NOAA, with Vice President Harris, announced $562 million in BIL and IRA awards supporting nearly 150 projects across 30 coastal and Great Lakes states and territories that will support important coastal resilience and restoration work in communities that will restore important coastal habitats, address pollution and marine debris, reduce community risks to coastal hazards, create jobs, and build the capacity of tribal and communities with environmental justice concerns to prepare for the impacts of climate change. As part of this portfolio of awards, NOAA Fisheries Services made more than $53 million in grants to support 25 tribal projects (including both federally recognized and non-federally recognized Indian tribes) in BIL funds including a dedicated tribal fish passage funding opportunity.
- In June 2023, NOAA launched the first-ever Climate Resilience Regional Challenge, which will provide up to $575 million in IRA funding to help coastal and Great Lakes communities, including Tribal communities in those regions, become more resilient to extreme weather and other impacts of the climate crisis. The Climate Resilience Regional Challenge is unique in its focus on enhancing equity and inclusion, building enduring capacity within and across regional networks, and in support of holistic approaches to building climate resilience. NOAA saw enormous demand for this funding, receiving nearly 870 letters of requests seeking more than $16 billion in funding, demonstrating the necessity and urgency for funding programs like the Regional Challenge.
- NOAA also launched the Climate Ready Workforce program in June 2023, which will support up to $50 million in IRA funding to assist communities in coastal and Great Lakes states, territories and Indian tribes so they may form partnerships that train workers and place them into jobs that enhance climate resilience. Part of the Justice40 Initiative, this program helps to advance environmental justice.
- NOAA and the state of Alaska announced a collaborative effort to identify Aquaculture Opportunity Areas (AOAs) in Alaska's waters. With a coastline longer than the lower 48 states combined, Alaska holds tremendous potential for climate- ready and sustainable aquaculture development through the farming of shellfish, other invertebrates, and seaweed. NOAA works with Federal, State, and Local agencies, appropriate Regional Fishery Management Councils, and in coordination with appropriate tribal governments to identify AOAs. In October 2023, NOAA announced a request for information to aid in the identification of AOAs in Alaska state waters that balance environmental, economic, and cultural considerations. NOAA is using this input to identify AOA through a deliberative process, including public outreach, spatial analysis, and environmental review.
- NOAA supported the growth of climate-ready sustainable aquaculture with tribal partners in the Pacific Northwest. NOAA collaborated with the Swinomish Indian Tribal Community and key partners, including Washington Sea Grant, to help build the first modern clam garden in the United States. Clam gardens are an ancient Indigenous practice, passed down through generations, that increase biodiversity and resilience, provide food, and preserve cultural heritage. A video released in December 2023 illustrates what this garden means for the Swinomish community and how they will use the harvest.
- NOAA selected 20 members to serve on the inaugural Marine and Coastal Area- based Management Advisory Committee. Members reflect a wide spectrum of perspectives, including tribal and Indigenous communities, conservation, philanthropic and non-governmental organizations, and organizations focusing on youth engagement, education, outreach and environmental justice. The committee will provide a forum for discussion and advice on NOAA’s area-based management, including opportunities to enhance conservation

of biodiversity, climate resilience, and expanding access to nature for communities with environmental justice concerns.

- NOAA worked closely with Federal Agencies to help develop a historic agreement to work in partnership with Tribal Nations and States from the Pacific Northwest to restore wild salmon populations, expand tribally sponsored clean energy production, and provide stability for communities that depend on the Columbia River System for agriculture, energy, recreation, and transportation.
- NOAA was a key partner in the quadrennial National Climate Assessment 5.0 released in mid-November 2023. From chapter authors to technical and production support, approximately 100 NOAA staff members– the largest of any federal agency– contributed to the report which is a roadmap to a better future through science-based information, data, and real-world examples of ways to reduce greenhouse gas pollution and develop resilience strategies.
- NOAA released its first ever Request for Information to get public input on how best to enhance delivery of climate data, information, science, and tools and ensure that this delivery is equitable, accessible, and effective.
- NOAA is working to update and enhance its Climate Mapping for Resilience and Adaptation (CMRA) portal. CMRA combines critical climate data and climate- hazard information with the resources America needs to help fund resilience and adaptation projects. CMRA provides real-time maps showing where extreme heat, fires, inland and coastal flooding, and drought are affecting U.S. communities and provided new links to BIL and other federal funding opportunities. NOAA completed work to expand the scope and utility of the CMRA, organizing focus groups to solicit stakeholder feedback on the CMRA, and building new capabilities into the portal. The portal will be updated continuously with new climate information and links to new funding opportunities, as they become available.
- NOAA also worked with partners and launched important tools for helping communities build resilience to climate impacts, like Heat.gov and Drought.gov. Heat.gov is a website to provide the public and decision-makers with clear, timely and science-based information to understand and reduce the health risks of extreme heat. Heat.gov provides critical resources to the Nation that include guidance from the White House and FEMA on ways State, Local, Tribal and Territorial leaders can protect workers from extreme heat, and a new surveillance dashboard to track heat- related, emergency medical services (EMS) response for every county in the country. Similarly, Drought.gov provides a "one-stop-shop" portal for finding authoritative drought information, including data, decision- support products, resources, to inform planning and preparedness activities.
- Currently, NOAA's forthcoming oceanographic vessels and charting and mapping vessels will adopt high efficiency engines. NOAA's new vessel facilities, such as the newly opened Ketchikan, AK pier and the forthcoming facilities and piers in Charleston, SC and Newport, RI, will have the latest technology to support NOAA ships and are designed to be more resilient to the changing climate.
- The NOAA Climate, Ecosystems, and Fisheries Initiative (CEFI) will build the end-to-end, operational modeling and decision support system needed to provide information and capacity resource managers and stakeholders need to reduce impacts and increase resilience in a changing climate. This cross-NOAA effort to build nationwide ocean modeling will help adapt to changing ocean conditions. The system will provide decision makers with the actionable information and capacity they need to prepare for and respond to changing

conditions today, next year, and for decades to come. The system addresses four core requirements for climate-ready decision-making for marine resources:

1. Robust forecasts and projections of ocean and Great Lakes conditions for use in developing climate-informed advice.
2. Operational capability to assess risks, evaluate options, and provide robust advice on adapting to changing conditions.
3. Decision-maker capability to use climate-informed advice to reduce risks and increase the resilience of resources and the people that depend on them.
4. Continuous validation and innovation through observations and research.

The Initiative is a timely, efficient, and effective way to address NOAA's requirements for climate-informed management of marine and Great Lakes resources. Working with many partners, the Initiative will provide decision makers with the information and capacity they need to help safeguard resources and resource-dependent communities in a rapidly changing world. The CEFI is an essential part of the U.S. Ocean Climate Action Plan and NOAA's Climate Ready Nation Strategic Plan.

MBDA:

- In September 2023, MBDA made 43 awards under the Capital Readiness Program. Of notable mention, one of the awardees is "Exponential Impact" d.b.a. "Climate Capital Bio." The project titled Climate Capital Bio Incubator ("CCBI") is an incubator for early-stage biotechnology companies creating products that directly benefit the environment and address climate change. MBDA awarded $3 million to support the CCBI project over the course of 4 years (2023–2027).

USPTO:

- In June 2023, the USPTO expanded the eligibility requirements to include more technologies which will progress toward the goal of net-zero greenhouse gas emissions. Under the expanded Climate Change Mitigation Pilot Program, qualifying applications involving technologies that reduce, remove, prevent, and/or monitor greenhouse gas emissions, will be advanced to expedite a first Office action. An Office action is a patent examiner's written notice of findings for the patent application.

APPENDIX A: AGENCY PROFILE TABLE

Agency Profile	
Mission	To create the conditions for economic growth and opportunity for all communities. Through its 13 bureaus, the Department works to drive U.S. economic competitiveness, strengthen domestic industry, and spur the growth of quality jobs in all communities across the country.
Adaptation Plan Scope	1. Bureau of Economic Analysis (BEA) 2. Bureau of Industry and Security (BIS) **3.** U.S. Census Bureau 4. Economic Development Administration (EDA) 5. Office of the Under Secretary for Economic Affairs (OUS/EA) 6. International Trade Administration (ITA) 7. Minority Business Development Agency (MBDA) 8. National Institute of Standards and Technology (NIST) 9. National Oceanic and Atmospheric Administration (NOAA) 10. National Technical Information Service (NTIS) 11. National Telecommunications and Information Administration (NTIA) 12. U.S. Patent and Trademark Office (USPTO) 13. Office of the Secretary (OS)
Agency Climate Adaptation Official	**Don Graves**, Deputy Secretary of Commerce
Agency Risk Officer	**Mark Daley**, Deputy for Acquisition Program Risk and Grants
Point of Public Contact for Environmental Justice	**Sarah Watling**, Senior Resilience, Climate Adaptation, and Environmental Justice Program Manager
Owned Buildings	466 owned buildings of 8,007,862 gross square feet (Department of Commerce Federal Real Property Profile (FRPP) – December 2023)
Leased Buildings	54 leased buildings of 865,469 usable square feet (Department of Commerce Federal Real Property Profile (FRPP) – December 2023)
Employees	Approximately 37,672 civil service employees[4]
Federal Lands and Waters	157 owned lands, 5,387,032 managed acres (Department of Commerce FRPP – December 2023)

[4] The Department's workforce ranges from uniformed service officers, diplomats who are Foreign Commercial Officers, badged law enforcement officers, patent examiners and civil service employees (U.S. Department of Commerce 2022 – 2026 Strategic Plan). Total Department employees in FY 2023 was approximately 52,500 (DOC Contingency Plan 092723 (commerce.gov).

Budget	$9.9 billion FY22 Enacted (P.L. 117-103) $11.1 billion FY23 Enacted (P.L.117-328) $10.8 billion FY24 Enacted (P.L.118-42) $15.4 billion FY25 President's Budget [FY 2025 Budget in Brief (commerce.gov)]
Key Areas of Climate Adaptation Effort	• Procurement – utilizing the Department's power of procurement to create equitable economic opportunities. • Facilities Management – investing in and maintaining climate-ready and resilient facilities, products, and services. • Climate Science Services – providing climate science and services to the Federal Government and other stakeholders to support climate adaptation and resilience, including advanced measurements, tools and standards for climate consideration and decision support. • Climate Information for Strategic Planning and Implementation – assisting federal agencies, local governments, regional entities, states, and Indigenous communities in understanding climate variability and integrating climate information and resiliency into their near- term and long-term strategies and actions, including economic development and natural resources stewardship. • Market Opportunities – promoting the advancements of a climate-resilient economy and sustainable growth to create market opportunities (both domestic and abroad), new businesses, advanced technologies, and quality jobs.

APPENDIX B: RISK ASSESSMENT DATA

The Federal Mapping App uses the following data:

Buildings
Buildings data comes from the publicly available Federal Real Property Profile (FRPP). Federal Real Property Profile (FRPP). The General Services Administration (GSA) maintains FRPP data and federal agencies are responsible for submitting detailed asset-level data to GSA on an annual basis. Although FRPP data is limited—for example, not all agencies submit complete asset-level data to GSA, building locations are denoted by a single point and do not represent the entirety of a structure or could represent multiple structures, and properties may be excluded on the basis of national security determinations— it is the best available public dataset for federal real property. Despite these limitations, this data is sufficient for screening-level exposure assessments to provide a sense of potential exposure of federal buildings to climate hazards.

Personnel
Personnel data comes from the Office of Personnel Management's (OPM) non-public dataset of all personnel employed by the federal government that was provided in 2023. The data contains a number of adjustments, including exclusion of military or intelligence agency personnel, aggregation of personnel data to the county level, and suppression of personnel data for duty stations of less than 5 personnel.

Despite these adjustments, this data is still useful for screening-level exposure assessments to provide a sense of key areas of climate hazard exposure for agency personnel.

Climate Hazards
The climate data used in the risk assessment comes from the data in Climate Mapping for Resilience and Adaptation (CMRA) Assessment Tool. When agency climate adaptation plans were initiated in 2023, CMRA data included climate data prepared for NCA4. Additional details on this data can be found on the CMRA Assessment Tool Data Sources page. Due to limited data availability, exposure analyses using the Federal Mapping App are largely limited to the contiguous United States (CONUS). Additional information regarding Alaska, Hawaii, U.S. Territories, and marine environments has been included as available.

APPENDIX C: RISK ASSESSMENT TABLES

Table 2A: Climate Hazard Exposure and Impacts Affecting Federal Buildings

Indicators of Exposure of Buildings to Climate Hazards	RCP 4.5 2050	RCP 4.5 2080	RCP 8.5 2050	RCP 8.5 2080
Extreme Heat: Percent of buildings projected to be exposed to more days with temperatures exceeding the 99th percentile of daily maximum temperatures (calculated annually) from 1976- 2005	100%	100%	100%	100%
Extreme Precipitation: Percent of buildings projected to be exposed to more days with precipitation amounts exceeding the 99th percentile of daily maximum precipitation amount (calculated annually) from 1976-2005	99%	100%	100%	100%
Sea Level Rise: Percent of buildings projected to be inundated by sea level rise	15%	15%	15%	15%
	High Risk	**Very High Risk**		**Extreme Risk**
Wildfire: Percent of buildings at highest risk to wildfire	6%	1%		1%
	100- or 500- year floodplain			
Flooding: Percent of buildings located within floodplains	20%			

Table 2B. Climate Hazard Exposure and Impacts Affecting Federal Employees

Indicators of Exposure of Employees to Climate Hazards	RCP 4.5 2050	RCP 4.5 2080	RCP 8.5 2050	RCP 8.5 2080
Extreme Heat: Percent of employees duty-stationed in counties projected to be exposed to more days with temperatures exceeding the 99th percentile of daily maximum temperatures (calculated annually), from 1976-2005	98%	98%	98%	98%
Extreme Precipitation: Percent of employees duty-stationed in counties projected to be exposed to more days with precipitation amounts exceeding the 99th percentile of daily maximum precipitation amount (calculated annually), from 1976-2005	97%	98%	98%	97%
Sea Level Rise: Percent of employees duty-stationed in counties projected to be inundated by sea level rise	32%	41%	32%	44%
	High Risk	**Very High Risk**		**Extreme Risk**
Wildfire: Percent of employees duty-stationed in counties at highest risk to wildfire	8%	2%		2%

Table 2C. Climate Hazard Exposure and Impacts Affecting Federal Lands, Waters and Cultural Resources

Federal Asset	Current Climate Hazard Impact or Exposure	Future Climate Hazard Impact or Exposure
• 43 acres in Florida Several NOAA sites for research and development	• Flooding	• Extreme Heat These lands could be exposed to temperatures above the 99th percentile under all climate scenarios. Using the RCP 4.5 mid scenario, these lands could see between 30 and 40 days a year above the 99th percentile temperature, but using the RCP 8.5 late scenario, they could see between 125 and 140 days a year above this threshold.
• 149 acres in Galveston, TX NOAA NMFS Southeast Fisheries Science Center research and development	• Flooding This parcel is exposed to freshwater/riverine flooding as it sits within the 100-year flood plain.	• Extreme Heat This land parcel could be exposed to 16 days above 99th percentile temperatures (RCP 4.5 Mid) and 62 days under the RCP 8.5 Late scenario.
• 759 acres in Colorado NIST, NOAA, and NTIA sites for research and development	• Flooding • Wildfire	• Extreme Heat These lands could be exposed to temperatures above the 99th percentile for over 60 days a year by late periods under the 8.5 RCP scenarios.
• 103.5 acres in Colorado • NIST Boulder Campus Protected open space set aside through a Memorandum of Agreement (MOA) with Tribes and the City of Boulder	• Wildfire This land parcel is vulnerable to wildfires. The Marshall Fire of 2021 ($2B in damage) reached within less than 5 miles of the Boulder, CO campus 100% of NIST facilities/land in Boulder and Fort Collins are vulnerable to wildfires.	• Extreme Heat This land could be exposed to temperatures above the 99th percentile for over 19 days a year under the RCP 4.5 Mid scenario and over 60 days a year under the RCP 8.5 Late scenario.
• 2358 acres in Alaska NOAA research and development, ports, and housing	• Flooding	• Extreme Precipitation • Sea level rise These lands could be exposed to extreme precipitation above the 99th percentile under the RCP 8.5 Mid and late scenarios.
• 23 acres in Juneau, Alaska NOAA NMFS Alaska Fisheries Science Center research and development	• Flooding This parcel could be exposed to freshwater/riverine flooding as it sits within the 100-year flood plain.	• Extreme precipitation • Sea level rise
• 59 acres in Michigan Several NOAA sites for research and development	• Flooding	• Extreme precipitation These lands could be exposed to extreme precipitation above the 99th percentile under all climate scenarios.

• 263 acres in Washington Several NOAA sites for research and development	• Flooding	• Extreme heat • Extreme precipitation • Sea level rise These lands could be exposed to extreme precipitation above the 99th percentile under all climate scenarios.
• 28 acres in Spokane, Washington NOAA NWS Weather Forecasting Office research and development	• Flooding • Wildfire This land parcel has a very high probability of being exposed to freshwater flooding and wildfires.	• Extreme heat • Extreme precipitation • Sea level rise
• 46 acres in Manchester (Port Orchard), Washington NOAA NWFS Manchester Research Station, Northwest Fisheries Science Center	• Flooding	• Extreme heat • Extreme precipitation • Sea level rise This land parcel could be exposed to sea level rise under all the climate scenarios.
• 42 acres in Tucson, Arizona NOAA NWS research and development	• Flooding • Wildfire This land has a high probability of being exposed to freshwater flooding and wildfires.	• Severe weather • Extreme heat • Extreme precipitation This land parcel could be exposed to 15 and 57 days above 99th percentile temperatures under the different climate scenarios.
• 7 acres in Norfolk, Virginia NOAA Office of Marine and Aviation Operations (OMAO) Marine Operations Center and Geodetic Survey Field Office NOAA Ship Thomas Jefferson (homeport)	• Flooding	• Extreme heat • Extreme precipitation • Sea level rise These lands/waters could be exposed to sea level rise under all the climate scenarios.
• 397 million acres (or 620,000+ square miles) ocean/lake waters or bottomlands NOAA National Marine Sanctuaries	• Flooding	• Extreme Heat • Sea level rise Climate change and the associated increases in sea surface temperatures, ocean acidification, and sea level rise will expose ocean ecosystems and species to extreme vulnerabilities. U.S. Exclusive Economic Zone (which includes more than 4 million square miles of ocean) and the associated coastal shoreline covering over 95,000 miles.
Federally managed fisheries throughout the U.S. Exclusive Economic Zone (4,383,000 sq mi)	• Flooding	• Extreme Heat • Sea level rise Climate change is challenging the Department's ability to maintain resilient

		and productive trust resources and the ecosystems they depend on. These activities include ecosystem-level planning; advancing understanding of ecosystem processes; prioritizing vulnerabilities and risks; exploring and addressing trade-offs; implementing ecosystem considerations in management; and supporting ecosystem resilience via monitoring and adjusting management actions.
• 30 acres in Kauai, Hawaii • NIST Kehaka, Kauai Campus Listed in National Register of Historic Places	• Flooding	• Extreme heat • Sea level rise This land parcel could be exposed to sea level rise under all climate scenarios.

Table 2D. Climate Hazard Impacts on and Exposures to Mission, Operations and Services

SUMMARY OF KEY CURRENT AND PROJECTED CLIMATE HAZARD IMPACTS AND EXPOSURES		
Area of Impact or Exposure	Identified Climate Hazard	Description
Create the conditions for economic growth and opportunity	All climate hazards	Climate change impacts on the Department's primary customer base – U.S. businesses, workers, and communities – affect the Department's ability to foster business and economic development.
Create jobs that will sustain economic growth	All climate hazards	Climate change impacts on U.S. businesses and communities increase the interest in sustainable technologies and capitalize on new, entrepreneurial opportunities. The increased demand for climate change adaptation-related technologies impacts U.S. competitiveness and economic growth.
Information and Communications Technology (ICT) Supply Chain	All climate hazards	Destruction of critical infrastructure needed to move goods into and across the United States impacts the supply chain.
Economic Supply Chains or Services	All climate hazards	Disruptions in ports, other transportation infrastructure, and supply chains greatly impacts the Department's ability to promote U.S. exports and drive economic growth.
Research and Development	All climate hazards	Impacts to research laboratories slows the advancement of knowledge and growth of the U.S. economy.
Conserve and manage coastal and marine ecosystems and resources	All climate hazards	Extreme weather, heat, and precipitation are negatively impacting existing conserved lands and waters, destroying ecosystems and resources held within their boundaries.
Stewardship and provision of environmental data, products and services	All climate hazards	Employing the correct workforce to address the rapidly changing science and technology needed to collect, analyze, and manage climate data is a challenge.

Facilities and operations	All climate hazards	See Section 2A
Protect life and property from environmental hazards and predict changes in climate, weather, oceans, and coasts	All climate hazards	If current trends continue, $66 to $106 billion dollars of existing U.S. coastal property could be below sea level by 2050. Furthermore, the United States could see at least 1 percent reduction in its GDP by 2100 due to coastal flooding.

Table 2E. Assessment Data and Scenarios

Climate Data Used in Agency Risk Assessment

Hazard	Description	Scenario	Geographic Coverage
Extreme Heat	Measured as whether an asset is projected to be exposed to an increased number of days with temperatures exceeding the 99th percentile of daily maximum temperatures (calculated annually), calculated with reference to 1976-2005. Data are from high-resolution, downscaled climate model projections based on the Localized Constructed Analogs (LOCA) dataset prepared for the 4th National Climate Assessment.	RCP 4.5	CONUS
		RCP 8.5	CONUS
Extreme Precipitation	Measured as whether an asset is projected to be exposed to an increased number of days with precipitation amounts exceeding the 99th percentile of daily maximum precipitation amounts (calculated annually), with reference to 1976-2005. Data are from high-resolution, downscaled climate model projections based on the LOCA dataset prepared for the 4th National Climate Assessment.	RCP 4.5	CONUS
		RCP 8.5	CONUS and AK
Sea Level Rise	Measured as whether an asset is within the inundation extents from NOAA Coastal Digital Elevation Models and the 2022 Interagency Sea Level Rise Technical Report.2022 Interagency Sea Level Rise Technical Report. Intermediate and Intermediate-High Sea level rise scenarios used as proxies for RCP 4.5 and 8.5, respectively.	RCP 4.5	CONUS and PR
		RCP 8.5	CONUS and PR
Wildfire Risk	Measured as whether an asset is in a location is rated as high, very high, or extreme risk based on the U.S. Forest Service Wildfire Risk to Potential Structures (a data product of Wildfire Risk to Communities), which estimates the likelihood of structures being lost to wildfire based on the probability of a fire occurring in a location and likely fire intensity. Data reflects wildfires and other major disturbances as of 2014.	Historical	All 50 States
Flooding	Measured as whether an asset is located within a 100-year floodplain (1% annual chance of flooding) or 500-year floodplain (0.2% annual chance of flooding), as mapped by the Federal Emergency Management Agency National Flood Hazard Layer.	Historical	All 50 States and PR

Hazard	Description	Scenario	Geographic Coverage
Extreme Heat	Measured as whether an asset is projected to be exposed to an increased number of days with temperatures exceeding the 99th percentile of daily maximum temperatures (calculated annually), calculated with reference to 1976-2005. Data are from high-resolution, downscaled climate model projections based on the Localized Constructed Analogs (LOCA) dataset prepared for the 4th National Climate Assessment.	RCP 4.5	CONUS
		RCP 8.5	CONUS
Extreme Precipitation	Measured as whether an asset is projected to be exposed to an increased number of days with precipitation amounts exceeding the 99th percentile of daily maximum precipitation amounts (calculated annually), with reference to 1976-2005. Data are from high-resolution, downscaled climate model projections based on the LOCA dataset prepared for the 4th National Climate Assessment.	RCP 4.5	CONUS
		RCP 8.5	CONUS and AK
Sea Level Rise	Measured as whether an asset is within the inundation extents from NOAA Coastal Digital Elevation Models and the 2022 Interagency Sea Level Rise Technical Report.2022 Interagency Sea Level Rise Technical Report. Intermediate and Intermediate-High Sea level rise scenarios used as proxies for RCP 4.5 and 8.5, respectively.	RCP 4.5	CONUS and PR
		RCP 8.5	CONUS and PR
Wildfire Risk	Measured as whether an asset is in a location is rated as high, very high, or extreme risk based on the U.S. Forest Service Wildfire Risk to Potential Structures (a data product of Wildfire Risk to Communities), which estimates the likelihood of structures being lost to wildfire based on the probability of a fire occurring in a location and likely fire intensity. Data reflects wildfires and other major disturbances as of 2014.	Historical	All 50 States
Flooding	Measured as whether an asset is located within a 100-year floodplain (1% annual chance of flooding) or 500-year floodplain (0.2% annual chance of flooding), as mapped by the Federal Emergency Management Agency National Flood Hazard Layer.	Historical	All 50 States and PR

Climate Scenarios Considered in Agency Risk Assessment

Scenario Descriptor		Summary Description from 5th National Climate Assessment5th National Climate Assessment
RCP 8.5	Very High Scenario	Among the scenarios described in NCA5, RCP 8.5 reflects the highest range of carbon dioxide (CO_2) emissions and no mitigation. Total annual global CO_2 emissions in 2100 are quadruple emissions in 2000. Population growth in 2100 doubles from 2000. This scenario includes fossil fuel development.
RCP 4.5	Intermediate Scenario	This scenario reflects reductions in CO_2 emissions from current levels. Total annual CO_2 emissions in 2100 are 46% less than the year 2000. Mitigation efforts include expanded renewable energy compared to 2000.

APPENDIX D: Examples of Climate Informed Funding to External Parties

EDA

- EDA supports a variety of economic development investment priorities which provide an overarching framework to ensure its grant investment portfolio contributes to local efforts to build, improve, or better leverage economic assets that allow businesses to succeed and regional economies to prosper and become more resilient. Through its Environmentally-Sustainable Development investment priority, EDA funds economic development planning or implementation projects that help address the climate crisis through the development and implementation of green products, green processes, (including green infrastructure), green places, and green buildings. This type of development and implementation reduces greenhouse gas emissions, helping reduce warming to the lowest levels possible. Every degree of warming decreases the likelihood that resilience and adaptation will be successful. EDA's Recovery & Resilience investment priority supports economic development planning or implementation projects that build economic resilience to and long-term recovery from economic shocks, including resilience from climate-driven disasters. Under this effort, EDA brings the expertise and resources of EDA and other DOC bureaus (NOAA, NIST, BEA, Census, ITA, MBDA) and Economic Recovery Support Function (ERSF) support agencies (e.g., USDA, DOL, HUD, SBA, EPA, FEMA, AmeriCorps, Treasury) to assist states and communities affected by catastrophic natural disasters. As part of these efforts, FEMA assigns EDA to lead various Economic Recovery Missions in areas grappling with long-term recovery from natural disasters, many of which have been caused or exacerbated by climate change.
- EDA revised language in Notice of Funding Opportunities (NOFO) to include climate resilience considerations. The included language encouraged applicants to minimize the potential for adverse impacts on the environment and the local community, including communities with environmental justice concerns. Additionally, the added language encouraged applicants to account for, or have a plan to account for, current and future weather and climate-related risks, such as wildfires, droughts, extreme heat and cold, inland, Inclusion of similar climate considerations in future NOFOs is planned.
- EDA is helping infrastructure project applicants to consider climate resilience in their project design by providing climate-related information in EDA's Environmental Narrative Template (which is used in EDA's environmental review of projects). A new climate-related language has been added to the Environmental Narrative Template, and this revised document has been in use since late-June 2021, with a general expectation that all applicants for infrastructure projects will use this new narrative. This document is publicly available on EDA's website (here). In addition, relevant EDA application reviewers (i.e., Regional Environmental Officers, Engineers and Construction Managers) have been briefed on the changes to the Environmental Narrative Template to aid in targeting consideration of climate resilience principles in applications.

NOAA

- NOAA is using its allocated funding from the IRA and BIL to prepare, adapt, and build U.S. resilience to weather and climate hazards. With BIL and IRA funds, NOAA was able to amplify investment in each of its six Climate Ready Nation (CRN) mission areas (coasts, marine ecosystems, drought, extreme heat, flooding, and wildfires), with Climate-Ready Coasts and Oceans receiving a total of $4.1B from the two supplements. Through Climate-Ready Coasts and Communities initiatives, NOAA is working with state, local, and tribal governments and organizations, non-government organizations, and the private sector in coastal and Great Lakes communities to develop and support durable, local capacity to adapt to climate change impacts, while growing economies, protecting fisheries, addressing environmental justice, and developing a climate-ready workforce.

Additional funding supported Integrated Ocean Observing Systems, habitat restoration and fish passage, marine sanctuary designations, NOAA facility improvements, and Technical Assistance to states, localities, Indian tribes, and other partners will also improve delivery of climate data and services to American industries and build partnerships with the private sector. This initiative will advance research, observations, modeling, prediction, information dissemination, and service delivery for disasters such as wildfires, drought, floods, and heat. Funds will improve NOAA's ability to provide critical climate and weather data, services, and information by improving storm tracking, models, and data assimilation, bolstering successful existing place-based and regional programs, and expanding weather, climate, and other support services in the Arctic region – a place that is changing more rapidly than the lower 48 states because of climate change. These Climate-Ready Nation initiatives include:

  - Phased Array Radar
  - Regional Climate Data and Information
  - Enhanced Modeling Capacity
  - Industry Proving Grounds
  - BIL-funded Climate Data and Services programs that will help to get critical climate information in the hands of decision makers.

- NOAA has already released a climate service, like that described above, for the public. The Climate Mapping for Resilience and Adaptation tool, which integrates information from across the federal government to help people consider their location exposure to climate-related hazards.

CHIPS Program Office

- CHIPS and Science Act implementation. On February 28, 2023, the CHIPS Program Office released its first notice of funding opportunity, which requires each applicant to submit a climate and environmental responsibility plan that includes detailed metrics and processes the applicant will use to measure, track, and publicly report its climate and environmental responsibility goals and commitments. On June 23, 2023, the Department announced a funding opportunity and application process for large semiconductor supply chain projects and will release a separate process for smaller projects in the fall. Large semiconductor supply chain projects include materials and manufacturing equipment facility projects with capital investments equal to or exceeding $300 million, and smaller projects are below that threshold. On September 29, 2023, CHIPS for America released its second funding opportunity to strengthen the resilience of the semiconductor supply chain, advance U.S. technology leadership, and support vibrant domestic semiconductor clusters. This funding opportunity seeks applications for projects for the construction, expansion, or modernization of commercial facilities for semiconductor materials and manufacturing equipment with capital investments less than $300 million.

NTIA

- NTIA provided Broadband Equity Access and Deployment Program (BEAD) eligible entities/applicants guidance on climate resiliency requirements for the Initial Proposal submissions in winter 2023/2024. They also provided multiple technical assistance products for meeting Environmental and Historic Preservation requirements, including climate resiliency. The Tribal Broadband Connectivity Program is a $3 billion program, from President Biden's Bipartisan Infrastructure Law and the Consolidated Appropriations Act. The program supports Tribal governments by bringing high-speed Internet to Tribal lands, allowing for telehealth, distance learning, affordability, and digital inclusion initiatives. The program seeks to improve quality of life, spur economic development, and create opportunities for remote employment, online

entrepreneurship, remote learning, and telehealth by expanding broadband access and by providing digital training and inclusion programs to Native American communities. The second round of funding from the Tribal Broadband Connectivity Program will make approximately $980 million available on Native American, Alaska Native and Native Hawaiian lands for deployment of Internet infrastructure, affordability programs, telehealth and distance learning initiatives.

USPTO:

- On June 6, 2023, the USPTO extended and expanded the Climate Change Mitigation Pilot Program, which accelerates the review of patent applications for innovations designed to mitigate climate change. The program was extended to run until either June 7, 2027, or the date that the USPTO accepts 4,000 grantable petitions, whichever occurs first. Eligibility criteria for the program was expanded to include technologies designed to reduce, remove, prevent, and/or monitor greenhouse gas emissions. As of February 13, 2024, the USPTO had received a petition to make special status under the program in 787 applications, with 569 of those being granted special status.