U.S. Environmental Protection Agency

2024-2027 Climate Adaptation Plan

June 2024

THE ADMINISTRATOR
WASHINGTON, D.C. 20460

U.S. Environmental Protection Agency Policy Statement on Climate Change Adaptation

The devastating impacts of climate change increasingly cost lives, disrupt livelihoods and cause billions of dollars in damages across the nation. Climate change also exacerbates existing pollution problems and environmental stressors, challenging the U.S. Environmental Protection Agency's ability to accomplish its mission of protecting human health and the environment. All these impacts disproportionately affect low-income communities and communities of color, children, the elderly, Tribes and indigenous people.

The Biden-Harris Administration has taken historic steps to provide the federal support, resources and investments needed to help the nation's communities meet the climate challenges of today and prepare for the climate stressors of tomorrow. The EPA plays a central role in the Administration's efforts to tackle the climate crisis and build a climate-resilient nation.

I directed my leadership team, including assistant administrators, associate administrators, regional administrators and the general counsel, in May 2021 to proactively incorporate climate adaptation planning into the agency's programs, policies, rules and operations, while we also continue work to reduce greenhouse-gas emissions. Since that time, the EPA has made significant strides toward meeting that directive by partnering with states, Tribes, territories, local governments, community groups, businesses and other federal agencies to strengthen their adaptive capacity and increase their resilience, placing a particular focus on advancing environmental justice.

Of the many actions we have taken and will continue to pursue, several are especially noteworthy. The agency is modernizing its financial assistance programs to encourage climate-resilient investments across the nation. The immediate focus of this effort is on investments made through the Bipartisan Infrastructure Law and Inflation Reduction Act to ensure that their outcomes will be resilient to the impacts of climate change. We are equipping communities and the recipients of our financial resources with the tools, data, information and technical support they need to assess their climate risks and develop the climate-resilience solutions most appropriate for them. We are integrating climate adaptation into our rulemaking processes, including regulations, permits and National Environmental Policy Act reviews, and our agency enforcement and compliance programs are including climate adaptation and resilience in case conclusions, whenever appropriate. We also recently launched an initiative to increase the climate literacy of our staff and agency partners,

increasing people's awareness of the risks posed by climate change to human health and the environment, and the opportunities to increase the nation's resilience to climate impacts.

The EPA is implementing measures to protect our own workforce, facilities, critical infrastructure, supply chains and procurement processes from the risks posed by climate change. The agency will complete site-specific resilience assessments at all owned facilities within the next two years and continue to upgrade and increase the climate resilience of our facilities and protect our workforce.

Working with our partners, we are making strides to build a climate-resilient nation, but we are far from finished. Tackling the climate crisis requires perseverance and collaboration at all levels, and this updated Climate Adaptation Plan highlights the EPA's planned actions from 2024 to 2027. We will continue to work with our state, local, Tribal and indigenous partners to seize on opportunities to deal with the climate crisis in their communities. Together, our combined actions will make progress toward building a climate-resilient nation, mitigating pollution, improving public health, stimulating economic growth and advancing environmental justice for all.

Michael S. Regan

Contents

Section 1: Agency Profile 5

Section 2: Risk Assessment 8

2A. Climate Hazard Exposures and Impacts Affecting Federal Buildings 10

2B. Climate Hazard Exposures and Impacts Affecting Federal Employees 12

2C. Climate Hazard Exposures and Impacts Affecting Mission, Operations and Services 14

2D. Impacts from and Exposure to Additional Hazards 18

Section 3: Implementation Plan 19

3A. Addressing Climate Hazard Impacts and Exposure 19

3A.1 Addressing Climate Hazard Exposures and Impacts Affecting Federal Buildings 19

3A.2 Addressing Climate Hazard Exposures and Impacts Affecting Federal Employees 27

3A.3 Advancing the America the Beautiful Initiative 30

3B. Climate Resilient Operations 34

3B.1 Accounting for Climate Risk in Planning and Decision Making 34

3B.2 Incorporating Climate Risk Assessment into Budget Planning 35

3B.3. Incorporating Climate Risk into Policy and Programs 36

3B.4. Climate-Smart Supply Chains and Procurement 48

3B.5. Climate Informed Funding to External Parties 53

3C. Climate Training and Capacity Building for a Climate Informed Workforce 55

3C.1 Agency-Wide Initiatives for Developing a Climate-Informed Workforce at EPA 56

3C.2 Agency Climate Adaptation Capacity 58

3D. Summary of Major Milestones 59

Section 4: Demonstrating Progress 61

4A. Measuring progress 61

4B. Adaptation in Action 67

Conclusion 70

Appendix A: Risk Assessment Data 71

Appendix B: EPA Climate Impact Map 72

Section 1: Agency Profile

Agency Profile	
Mission	Protection of human health and the environment
Adaptation Plan Scope	Entire Agency, including HQ, Regions, labs, and field offices
Agency Climate Adaptation Official	Vicki Arroyo, Associate Administrator for EPA's Office of Policy, Office of the Administrator
Agency Risk Officer	Adil Gulamali, EPA's Deputy Controller, is serving as acting Agency Risk Officer
Point of Public Contact for Environmental Justice	Theresa Segovia, Principal Deputy Assistant Administrator for EPA's Office of Environmental Justice and External Civil Rights
Owned Buildings	158 owned buildings of 3,317,444 square feet *(2023 Federal Real Property Portfolio Report submitted to the General Services Administration and the Real Estate database Sunflower)*
Leased Buildings	131 leased buildings of 6,690,757 square feet *(2023 Federal Real Property Portfolio Report submitted to the General Services Administration and the Real Estate database Sunflower)*
Employees	15,932 Federal Employees 5,078 Contractors *(People Plus 2023 Employment Summary and Personnel Security System)*
Budget	FY 2022 Enacted - $9,559,485,000 (P.L. 117-103) FY 2023 Enacted - $10,135,433,000 (P.L.117-328) FY 2024 Enacted - $9,159,000,000 (P.L.118-42) FY 2025 President Budget - $10,994,000,000
Key Areas of Climate Adaptation Effort	1. Environmental Justice 2. Financial Assistance Agreements 3. Superfund Program 4. Enforcement and Compliance Assurance 5. Equitable Resilience Technical Assistance Program

Summary Statement

EPA is building resilience and adaptive capacity to climate hazards, leveraging skills and expertise across the organization.

Climate change poses significant risks to EPA's mission of protecting human health and the environment, as well as its own workforce and facilities. For over a decade, EPA has focused on ensuring it continues to fulfill its mission of protecting human health and the environment even as the climate changes. Following the release of its 2021 Climate Adaptation Action Plan, EPA significantly increased its efforts to incorporate climate adaptation planning into the agency's programs, policies, rulemaking processes, enforcement activities, and operations. Since that time, EPA has made significant advances and established innovative actions and processes described in this document. It has also partnered with states, Tribes, territories, local governments, community groups, and businesses to strengthen their adaptive capacity and increase their resilience to climate change impacts, placing a particular focus on communities with environmental justice concerns. EPA is committed to building on the many innovative actions and processes it has already established.

All the climate adaptation work conducted by the Agency is driven by the goals established in EPA's FY 2022-2026 Strategic Plan. The Plan includes an Agency-wide goal (Goal 1) focused on tackling the climate crisis. One of the three Goal 1 objectives (Objective 1.2) is to accelerate resilience and adaptation to climate change impacts. The Agency has three long-term performance goals (LTPGs) associated with this objective. The first LTPG is focused on integrating climate adaptation planning into EPA programs, policies, rulemaking processes, enforcement activities, and operations. The second and third LTPGs are focused on building the adaptive capacity and resilience of the Agency's partners across the nation.

With respect to Agency assets, EPA has conducted an Agency-wide vulnerability assessment. Each EPA program and regional office has also conducted an office-specific vulnerability assessment. Taken together, the vulnerability assessments, along with various directives and Executives Orders (e.g., related to indigenous knowledge, nature- based solutions, integrating climate adaptation into infrastructure investments), informed the development of annual priority actions each office will take to address the LTPGs in the FY 2022-2026 Strategic Plan. For example, the Office of Mission Support has annual priority actions focused on addressing the risks posed by climate change to EPA's facilities, workforce, operations, and supply chains.

EPA is using a number of strategies to engage staff and leverage skills and expertise across the Agency to build resilience and adaptive capacity. These activities are overseen by the Office of Policy and coordinated by the Cross-EPA Work Group on Climate Adaptation and its Subgroups. The Work Group is chaired by the Office of Policy and has representatives from all the program offices and all 10 regional offices. The Work Group has identified opportunities to work together on issues relevant to all EPA offices and established subgroups to address the issues. Examples of work groups and cross-EPA activities related to climate adaptation and resilience are:

- EPA's Office of Policy recently launched a new Office of Climate Adaptation and Sustainability. The new office, to be led by a member of the Senior Executive Service, will foster integration of

climate adaptation both within the Agency and with other governmental entities in a whole of government approach to addressing climate change impacts. The new office will also work with external non-governmental partners (e.g., industrial sectors) to become more resilient to climate change impacts and look for opportunities to reduce GHG emissions through climate-sustainable practices.

- As part of EPA's Climate Literacy Initiative, the Office of Policy and Office of Research and Development have launched a "Climate Conversations" webinar series to foster peer-to-peer sharing of experiences with climate adaptation and build a cross-EPA community of practice.
- The Resilient Infrastructure Subgroup on Climate (RISC) is focused on modernizing EPA financial assistance programs to encourage climate-resilient investments across the nation. The immediate focus is on the Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) to help ensure the outcomes of investments made with those funds are resilient to climate change.
- The Resilient Rules Subgroup is focused on integrating climate adaptation into rulemaking processes.
- The Tribal Subgroup is focused on helping Tribes build their adaptive capacity and implement their respective climate adaptation plans.
- The Climate Adaptation Measures Subgroup is helping EPA assess its progress in meeting the Long-Term Performance Goals for climate adaptation that appear in the Agency's FY 2022-2026 Strategic Plan.
- The Office of Policy has developed an innovative database for tracking the progress being made by every program and regional office with their priority actions as well as the progress being made by the entire Agency meeting the annual targets set for the three LTPGs in the EPA FY 2022-2026 Strategic Plan. The database, known as the Climate Adaptation Measurement Program (CAMP) is undergoing updates and Version 2.0 is expected to be ready in Summer 2024.

Through its Climate Adaptation Plan, EPA is also advancing environmental justice as part of its mission, consistent with Executive Order 14008 and with Executive Order 14096 on *Revitalizing Our Nation's Commitment to Environmental Justice for All*. As the Agency implements its Climate Adaptation Plan to increase the resilience of its programs, policies, rulemaking processes, enforcement activities, facilities and operations, the agency will strive, as appropriate and consistent with applicable law to (1) address disproportionate and adverse environmental and health effects (including risks) and hazards, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns; and (2) provide opportunities for the meaningful engagement of persons and communities with environmental justice concerns.

In addition, as a member of the White House Environmental Justice Interagency Council, EPA received recommendations on Climate Planning, Preparedness, Response, Recovery and Impacts from the White House Environmental Justice Advisory Council (WHEJAC). The report includes many recommendations that are relevant to EPA's work. The agency is reviewing the recommendations and, as appropriate and to the maximum extent permitted by law, is taking steps to address the WHEJAC's recommendations.

Section 2: Risk Assessment

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

EPA 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. In addition to these five hazards, EPA used a mix of national and local data sets to obtain more specific historic and projected hazard information at each of the Agency's facility locations. This additional data allowed EPA to explore the vulnerability and likelihood of nine additional hazards.

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. 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

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.

Climate Scenarios Considered in Agency Risk Assessment

Scenario Descriptor		**Summary Description from 5th 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.

Additional details about the data used in this assessment are provided in Appendix A.

2A. Climate Hazard Exposures 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	100%	100%	100%	100%
Sea Level Rise: Percent of buildings projected to be inundated by sea level rise	7%	7%	7%	9%
	High Risk	**Very High Risk**	**Extreme Risk**	
Wildfire: Percent of buildings at highest risk to wildfire	6%	0%	0%	
	100- year and 500-year floodplain			
Flooding: Percent of buildings located within floodplains	22%			

EPA buildings are expected to have varying degrees of exposure to the five climate hazards (i.e., extreme heat, precipitation, sea level rise, flooding, and wildfire) through the projected mid- and late-century scenarios and based on historical data. One hundred percent of EPA buildings are expected to be exposed to increased intensity of heat and precipitation. Increased heat and precipitation are expected to have a major impact on the Agency's physical structures, especially those with critical components reaching the end of useful life such as mechanical and electrical systems, building envelopes and roofs. The majority of EPA's owned facility inventory consists of laboratory buildings with smaller buildings for storage and office space. EPA inherited a number of existing federal laboratory campuses from other agencies when it was founded in 1970. While some of these campuses have undergone major renovations, in several EPA locations, the buildings were constructed at least 70 years ago and are already facing challenges managing high heat and water intrusion from precipitation.

EPA also leases space from or through the General Services Administration (GSA) for its 10 regional offices and other support and field offices throughout the United States, which accounts for 38% of the Agency's total building portfolio and includes six mission-critical laboratory facilities. EPA plans to prioritize funding for climate change adaptation measures within its owned laboratory facility portfolio. The Agency intends to partner with GSA to identify vulnerabilities in the laboratories that EPA leases from or through GSA. However, EPA does not intend to spend any funds appropriated to EPA on GSA

leased facilities**.** The Agency will work with GSA and the building owners to identify and quantify the risks to the leased buildings, but any funding required for hazard mitigation should be provided by GSA or the building owner.

All of EPA's facilities are expected to experience an increase in the annual number of days with the maximum temperature greater than the 99th percentile in all future scenarios. Mission-critical functions within EPA's laboratories often require the use of multiple, robust analytic machines and immensely sensitive mesocosms that have high operational heat loads in a temperature-controlled environment. Maintaining climate control is imperative to the efficiency and accuracy of EPA's research and applied science operations. Extreme heat is expected to increase the cooling load, leading to more intensive energy usage and higher risk to equipment failure from overheating, which can cause damage to mechanical and research equipment and delay operation. More intensive energy usage might also result in an increase in greenhouse gas emissions. Given the facilities' conditions and the remaining useful life of their components, facilities may not be able to keep up with the projected heat which magnifies the stress on Heating Ventilation and Air Conditioning (HVAC) and Air Handling Units (AHUs) components.

Increased precipitation events are also projected to affect 100% of EPA's facilities across all hazard projection scenarios. Precipitation already poses a threat to EPA's older facilities, and increases in intensity, frequency and duration of these events will further expose EPA's buildings and internal equipment to damage from water intrusion. This can be costly in both time and cost to mission and research operations. Additionally, most of the EPA's drainage and stormwater management systems were sized to meet historic precipitation patterns and will face challenges meeting the projected increased volume of water without modernization. Some EPA facilities support emergency response operations, which often require large staging areas and generally consist of impervious surfaces. This mission function can exacerbate vulnerability to extreme heat and flooding.

Based on the outputs of the NOAA screening tool, EPA has 35 buildings (22%) within its portfolio that are located within the 100-year floodplain. One EPA campus is located within an inland floodplain and has high exposure to floods; however, the Agency plans to formally remove this property from its portfolio within the next two years. While there would be little consequence to the Agency's operations if this location experienced a 100-year flood event, the Agency would be financially responsible for cleanup and hazard mitigation efforts. The screening tool also included EPA's facilities in Ada, Oklahoma, and Fort Meade, Maryland, as facilities within the 100-year floodplain; however, EPA has conducted onsite climate resilience assessments at both locations using physical observations and supplemental state and local climate data sets, confirmed that at both of the facilities there is a very low risk of impact from flooding.

Of the Agency's 24 buildings in coastal locations, Port Orchard, Washington; Gulf Breeze, Florida; and Newport, Oregon, are at the greatest risk of mission disruption from flooding. Each of these facilities' missions requires regular access to marine and coastal habitats. In some cases, laboratories even pump water directly from adjacent bodies of water (direct water intake) into the facility to support aquatic animal and ecosystem research, which increases exposure and risk from 100-year flooding events along the coasts. EPA's facilities in Newport were not originally captured by the mapping tool and are

at a significant risk from flooding. Damage to these facilities would not only significantly impact coastal research operations of EPA, but also the broader operations of other federal, state and university partners on the campus who rely on shared facilities.

The greatest risk to EPA's coastal facilities is posed by sea level rise (SLR), resulting in physical damage, and affecting building access and mission operations. Across the RCP 4.5 mid- and late-century and the RCP 8.5 mid-century scenarios, 6.9% of EPA's buildings are projected to be inundated by sea level rise. The percentage of EPA's buildings inundated increases to 9.5% in the RCP 8.5 late-century scenario. Four EPA locations have projected exposure to sea level rise, including Port Orchard, Washington; Narragansett, Rhode Island; Newport, Oregon; and Gulf Breeze, Florida. These facilities collectively support all the Agency's coastal research. To support that mission, the facilities have critical buildings located on or near the shoreline, putting this portion of EPA's research operations at risk. Newport and Port Orchard have the highest exposure to sea level rise, with all of Newport's buildings projected to be inundated in each RCP scenario and the whole Port Orchard campus projected to be inundated within the RCP 8.5 late-century scenario. The current location for Gulf Breeze on the map is inaccurate, and at the actual location there are buildings that are projected to be inundated by SLR. The main causeway structure providing access to the island facility is at highest risk for sea level rise in each of the RCP scenarios.

While only 5% of EPA buildings are at a high risk for wildfires, the widespread damage caused by wildfires can have significant impacts to both EPA's facilities themselves and vital utility infrastructure such as powerlines and transformers that the facilities rely on to operate and can completely disrupt mission functions. EPA to date has not experienced direct wildfire damage at its owned facilities; however, wildfire smoke plumes have impacted laboratories, especially those that require precise indoor air quality (IAQ) conditions for research operations. Additional filtration is needed to remove smoke and particulate matter from the air, including from wildfires, to protect worker health and safety and support science IAQ needs. This results in an increased HVAC load, similar to that of high heat days, putting an additional stressor on already stressed infrastructure.

2B. Climate Hazard Exposures 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	100%	100%	100%	100%
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	100%	100%	100%	100%

Sea Level Rise: Percent of employees duty-stationed in counties projected to be inundated by sea level rise	7%	43%	7%	51%
	High Risk	**Very High Risk**	**Extreme Risk**	
Wildfire: Percent of employees duty-stationed in counties at highest risk to wildfire	2%	<1%	<1%	

EPA employees are expected to have varying degrees of exposure to the five climate hazard exposures through the different mid- and late-century scenarios and based on historical data. In all Representative Concentration Pathways (RCP) scenarios, all EPA employees are expected to be located exposed to extreme heat and precipitation in all Representative Concentration Pathways (RCP) scenarios and are in areas with a projected to be exposed to an increase in the annual number of days where with both precipitation and heat exceeding the 99th percentile. In general, the impact of extreme heat on most EPA employees reporting to their duty stations (whether teleworking or working in an office building) can be ameliorated by maintaining comfortable temperatures in offices and buildings. Increased heat and precipitation can cause increases in building moisture and create conditions that affect indoor air quality for EPA employees at their workplaces. Employees and contractors at the greatest risk to impacts from extreme heat are those who are older or have pre-existing health conditions or those who spend prolonged periods of time outdoors for their job duties (e.g., field researchers and technicians to support the Agency's research and applied science endeavors; inspectors conducting compliance inspections of the regulated community; workers conducting building and grounds maintenance, upkeep, and repairs; and those who perform security rounds on EPA property).

There is a noticeable change in the difference of EPA employees' exposure to sea level rise when comparing the mid- and late-century scenarios. Both mid-century scenarios project that 7% of EPA's employees work within counties that are expected to be exposed to sea level rise. In the late-century scenarios, however, the percentage of EPA employees in counties projected to be exposed to sea level rise increases to 43% (under RCP 4.5) and 51% (under RCP 8.5). In addition to direct impacts from sea level rise on coastal communities, higher sea levels mean that storm surges push further inland than they have historically, contributing to an increase in inland flooding that can affect EPA employees' ability to safely commute to work. Storm surges may also damage infrastructure, disrupting the broader transportation network and affecting the ability of EPA employees to access work required onsite. Commuting to and from work sites may be impacted by sea level rise depending on employee locations. Also, employees may have to deal with impacts to their personal lives (*e.g.,* homes flooding, roads impassable), which would affect their ability to carry out their work mission.

Based on historical data, a very small portion of EPA's employees are projected to have high, very high or extreme risk to wildfire; however, areas that do not burn in wildfires can still be affected by poor air quality from wildfire smoke, as well as power outages and other utility disruptions in the area that result in limited services to EPA employees. Air quality impacts can be far-reaching and long-lasting in areas that have not typically experienced direct wildfire damage or indirect damage from wildfire

smoke and worsened air quality. Degraded air quality could impact all EPA employees, with the greatest risk posed to employees whose work duties require them to be outdoors, such as those conducting fieldwork, grounds and building maintenance, and security functions; and to employees with pre-existing conditions and/or respiratory illnesses. Workers may also be affected during their commutes to EPA laboratories and office, particularly if their commutes involve time outdoors walking to and waiting at public transit stations where they could be exposed to degraded air quality.

2C. Climate Hazard Exposures and Impacts Affecting Mission, Operations and Services

SUMMARY OF KEY CURRENT AND PROJECTED CLIMATE HAZARD IMPACTS AND EXPOSURES		
Area of Impact or Exposure (mission factors)	**Identified Climate Hazard**	**Description (consequence)**
EPA's mission ranges from conducting research and applied science in laboratories to emergency response functions across the nation, which increases the Agency's exposure to impacts from climate hazards.	Extreme heat, wildfire, flooding and sea level rise. Increased precipitation exacerbates impacts from flooding and sea level rise.	Marine, estuarine, and hydrologic research operations and facilities along the coast and other bodies of water are at greater risk to be impacted by flooding and sea level rise, and extreme precipitation can compound these impacts. Some facilities require large laydown areas able to accommodate the deployment, staging and storing of a range of emergency response vehicles and equipment, which can create site vulnerabilities to flooding from lack of drainage and increased ambient temperatures from extreme heat.
EPA's building inventory is aging, and the facility condition index of its buildings varies widely, which increases the Agency's vulnerability to impacts from climate hazards.	Extreme heat, wildfire, flooding, sea level rise, and increased precipitation.	Climate change impacts create additional stressors for aging infrastructure and can accelerate deterioration of physical assets and the systems they rely on. Improving the envelopes of the Agency's buildings reduces vulnerability of EPA's specialized research equipment to heat and water damage and helps minimize disruptions to mission and costly equipment repairs.
HVAC and air handling units that condition air in EPA's buildings must meet the demands of an increase in the total and consecutive number of high heat days	Extreme heat, wildfire.	EPA's facilities house critical site reliability engineering, which often produce a high heat output and require intensive cooling to keep operational. Smoke and particulate matter from wildfire events will increase the need for

SUMMARY OF KEY CURRENT AND PROJECTED CLIMATE HAZARD IMPACTS AND EXPOSURES		
Area of Impact or Exposure (mission factors)	**Identified Climate Hazard**	**Description (consequence)**
and increased wildfire events into the future.		filtration in the Agency's laboratories. An increase in extreme heat days and wildfire events will create additional burdens for EPA's HVACs and air handling units to meet laboratory cooling requirements that the Agency's existing infrastructure is already struggling to maintain. If cooling requirements are not met, equipment could be damaged and may require costly and time intensive repairs, disrupting EPA's operations.
EPA's workforce, particularly field researchers and contractors who spend time outside, have additional safety concerns from primary and secondary climate hazards.	Extreme heat, wildfire (including smoke).	Workers may need to limit the number of hours spent outside. Staff conducting field work may need to shift the time/duration of the fieldwork or reschedule all together.
EPA has many laboratories in more remote locations that have a limited number of routes to access the facilities, which makes the Agency more vulnerable to disruptions to the broader area's transportation network.	100- and 500-year floodplains, sea level rise (compounded with storm and precipitation events), wildfire (severity of events can be compounded by extreme heat).	Disruptions to the transportation networks surrounding EPA's facilities can impact delivery of vital equipment, building maintenance, and emergency repairs and services. Interferences to employee access to sites and facilities can result in loss of work and information, which can cause major delays. EPA's research functions require samples to be collected across the country, each with specific holding times and sometimes requiring quick turnaround shipping to ensure research quality and integrity.
About half of EPA's laboratories are isolated and outside of metropolitan areas, and due to this, the utility service provided to these laboratories is often unreliable, its infrastructure	Wildfire, extreme heat, 100- and 500-year floodplains/precipitation, sea level rise.	The Agency experiences frequent power outages and disruptions to power and water service. Much of EPA's research equipment needs continuity in power and water supply to function. EPA's laboratories have high energy use intensities because of the equipment

SUMMARY OF KEY CURRENT AND PROJECTED CLIMATE HAZARD IMPACTS AND EXPOSURES		
Area of Impact or Exposure (mission factors)	**Identified Climate Hazard**	**Description (consequence)**
is older, and utility outages take longer to resolve because there are not as many customers in the areas where EPA's laboratories are located.		plug loads and single pass air requirements to maintain safe laboratories. This results in future demand for larger interruptible and emergency power systems.

EPA assesses the vulnerability and consequence from climate hazards to four asset categories in its onsite climate resilience assessments, described in Section 3, Implementation, subsection A1 of this plan. The four asset categories are mission, workforce, physical assets, and infrastructure services and utilities. Vulnerability of these four asset categories to a specific hazard varies, depending on a range of factors that are broadly described below.

- **Mission:** Redundancy of operations, flexibility in fieldwork timing, sample holding times, responsibility for living creatures, access to a direct water intake system, and reliance on expensive or sensitive equipment.
- **Workforce:** Number and types of ways to access the site, requirement for onsite work, availability of personal protective equipment, established hazard response policy, existence of exercises in response to likely hazard events, number of workspaces located in temporary spaces and in areas that are difficult to condition.
- **Physical Assets:** Construction type, date, methods, recent renovations, and materials used; current condition; maintenance regiment; specific location on the site (e.g., near the shoreline or below ground); cost and lead time of repair or replacement; ability to access replacement parts and contractors to complete repairs; function of the asset (e.g., office space, laboratory, cold storage, server room); and building occupancy.
- **Infrastructure, Services and Utilities:** Availability of transportation routes and modes to the facility; risks to transportation and utilities systems; reliance on sensitive assets such as bridges, causeways, or tunnels to access the facility; quality of current utility service; location at the end of the utility line; above or below ground power lines; sensitivity of the site to disruption from lack of transportation and delivery access; sensitivity of the site to power outages.

By considering the full scope of consequences posed by climate risk, EPA can more deeply examine how climate hazards could affect its operations and the extent of combined potential impacts from other site-specific weather patterns and conditions.

As sea level continues to rise, high tide flooding is becoming more frequent, and higher volumes of water are spreading impacts beyond coastal areas and changing flood patterns for areas not typically affected. High water from sea level rise also increases the volume and frequency of storm surge, tropical storms, and hurricanes. Changing precipitation patterns and extreme heat from climate change are creating more viable conditions for tropical storms to migrate to areas that would not

normally experience that frequency and intensity of water volume and flooding, such as in the Midwest and Northeast. Severe storms and flood events can damage critical water and power infrastructure that keep EPA facilities operational and can create major disruption to the transportation networks surrounding the facilities, impacting supply chain capabilities, and employee access to the facility and to field research sites.

Extreme heat events are also occurring more frequently and increasing in severity and duration because of climate change. These impacts are being felt nationwide, but some of the most significant impacts on public health are projected for EPA facilities and employees in the Southeast, Southwest and Northeast and areas that are heavily urbanized with limited vegetation. Employees in these areas are projected to experience extreme heat more intensely through the urban heat island effect. Extreme heat puts employees with pre-existing health conditions, field researchers, facilities maintenance teams, and other outdoor workers at risk for heat-related illnesses and injury and can be life threatening if they are exposed for too long, and this can delay mission-critical work.

Heat will create additional stressors for building envelopes and HVAC systems; however, climate control failures can have much wider mission continuity implications beyond the physical facility. Information technology (IT) infrastructure and servers within EPA facilities are critical components to the Agency's ability to process and report research, communicate internally and externally, protect privacy and security, as well as support teleworking capabilities. IT infrastructure is highly sensitive to disruptions from heat and moisture, especially in the Southeast where there is also high humidity and can have detrimental consequences to each dimension of EPA's mission.

In addition to the projected localized impacts to EPA's mission from sea level rise and extreme precipitation, a small percentage of the Agency's facilities and employees may have high exposure to wildfires. In the United States generally, climate change is causing warmer, drier conditions that result in a higher risk for wildfires. High heat and drought combine to limit water in soils and vegetation and increase the risk of ignition from both natural- (lightning) and human-caused fires. The 5.7% of EPA facilities located in areas with high exposure to wildfires are at risk from direct damage because of fire. Impacts from fires can also severely damage critical infrastructure surrounding EPA facilities and can lead to secondary hazards such as soil erosion that creates conditions for landslides, increased flooding, and severe air quality impacts.

Poor air quality created by wildfires can directly impact EPA facilities and employees and extend far beyond the affected area. Smoke and particulate matter from wildfire events will increase the need for filtration in the Agency's laboratories. Like an increase in extreme heat days, more wildfire events will create additional burdens for EPA's HVACs and air handling units to meet laboratory cooling needs required for worker safety and research integrity that the Agency's existing infrastructure is already struggling to maintain. Reduced air quality also poses serious health risks for field researchers, emergency response teams and other outdoor workers, which can cause delays and disruptions in operations to protect EPA employees.

Lastly, EPA's isolated laboratory facilities are more sensitive to disruptions in the transportation and utility systems they rely on. Unlike the EPA laboratories in more urban areas, the more remote laboratories generally only have a single route to and from the sites, which poses a greater risk for

disruption from sea level rise, flooding, and wildfire events. Road blockages in these areas make it harder to receive emergency services, repairs or other vital supplies and potentially prolong the disaster recovery time. Utility networks surrounding the remote EPA facilities already face challenges with power and signal reliability, and climate change impacts can exacerbate the sensitivities to disruption in service lines. Many of the laboratories are fed power from aboveground powerlines and can be severely affected by all the climate hazards. Utility companies in these areas often lack financial payback incentives to fund the capital expenditures to improve their power infrastructure and assets, which creates additional mitigation and operational resiliency challenges that are largely beyond the Agency's control.

2D. Impacts from and Exposure to Additional Hazards

EPA's climate resilience assessments of its owned laboratory facilities assess the likelihood of exposure, vulnerability to, and potential consequences of a wide variety of climate and other natural hazards that may be influenced by climate change. Where projections are unavailable, historical data and the best available scientific literature are used as proxies to provide an estimate of likely changes within the hazard within the next 30 years. The table below displays the full list of natural and climate hazards considered in EPA's climate resilience assessments of its owned facilities. Figure 1 in Appendix B displays an example an EPA facility hazard exposure map, showing the location of EPA facilities in relation to FEMA flood hazard areas.

EPA-Owned Facility Resilience Assessment Complete Hazard List

- Coastal flooding
  - Sea-level rise
  - High-tide flooding
  - FEMA coastal flood zones
  - Tsunamis
  - Storm surge
- Inland flooding
  - Extreme precipitation
  - FEMA inland flood zones
- Hurricanes or hurricane-influenced events
- Tornados
- Straight-line high winds
- Hail
- Landslides
- Erosion
- Lightning
- Drought
- Wildfire
- Earthquake/seismicity
- Extreme heat and cold
- Nor'easters
- Volcanoes
- Winter storms
- Warming surface waters
  - Fresh
  - Sea water

For its owned facilities, EPA considers other locally and regionally occurring natural and climate hazards and expands the scope of hazards as appropriate. Landslides, erosion, volcanoes, and nor'easters were added as additional hazards to include in future assessments after assessments were

completed where they were found relevant and consequential. This enables EPA to understand the full scope of the Agency's potential exposure to natural and climate hazards and enables the Agency to mitigate against the projected impacts more holistically. While earthquakes and volcanoes are not influenced by climate change and are a naturally occurring hazard, the downstream impacts can lead to additional facility risks from erosion, landslides, tsunamis, and degraded air quality. Nor'easters and winter storms can cause road blockages from snow and ice, reduce electrical and mechanical performance of equipment, as well as shut down wider electrical and water infrastructure, leading to complete loss of mission capabilities in some cases.

Hazards such as flooding are divided into two main categories and further analyzed in subcategories (coastal flooding as a result of sea level rise or tsunamis; inland flooding based on extreme precipitation or location in a flood zone) based on different RCP emission scenarios. Additionally, the warming surface waters hazard category is also divided into sea and freshwater surface temperatures as they can present and influence the development of other hazards. Warming temperatures of both fresh and sea water can greatly affect the quality, quantity, and availability of data within the aquatic ecosystems being researched. EPA facilities in locations projected to experience increased high heat days, also have increased likelihood of exposure to heat-related or exacerbated hazards such as increased lightning strikes, soil erosion, and drought conditions or water stress which can be consequential to the health and safety of EPA's workforce, mission capabilities and physical assets. Similarly, to warming surface temperatures, drought conditions can also affect the availability and quality of field data that the Agency is able to collect in order to continue conducting research within watershed and groundwater ecosystems.

Section 3: Implementation Plan

3A. Addressing Climate Hazard Impacts and Exposure

3A.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)**
Increased intensity and frequency of high heat days impacts 100% of EPA buildings, increases energy usage intensity, and creates additional strain on existing HVAC and AHU systems and components. EPA's laboratories require single-	EPA's Office of Mission Support will continue working with energy services companies and utilities to upgrade the efficiency, availability, and reliability of EPA mechanical and electrical equipment within EPA facilities, through Energy	FY 2024: EPA will release the Notice of Opportunities for energy savings performance contracts at the Manchester Environmental Laboratory in Port Orchard, Washington for a solar field and upgrades at EPA's Andrew W. Breidenbach

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)**
pass air flow for worker safety and have specific temperature requirements for critical research operations. (In laboratories that use gaseous or noxious chemicals to maintain air quality standards, air within laboratories cannot be recirculated and follows a single path into and room and is then exhausted out of the building, rather than being recirculated. Additionally other lab specifications may require single pass air flow to maintain pressure differentials during research.)	Savings Performance Contracts (ESPCs) with deep energy retrofit projects, where feasible. Increasing the efficiency and reliability of major building systems and components will better position the Agency to continue operations during extreme heat events. EPA will be completing a consolidation and infrastructure upgrade at its Athens, Georgia, and Ada, Oklahoma, facilities that will provide updated HVAC, electrical, and building envelope systems. Additional projects associated with EOs 14057 and 14008, could be reviewed, and added in the future depending on funding availability.	Environmental Research Center R&D facility in Cincinnati, Ohio. FY 2025: EPA will complete the preliminary assessments, and if feasible, the Investment Grade Audits determining if the Agency will finalize energy savings performance contracts at its laboratories in Fort Meade, Maryland, and Edison, New Jersey. FY 2026/2027: EPA will complete the preliminary assessments, and if feasible, the Investment Grade Audits determining if the Agency will finalize energy savings performance contracts at its laboratories in Manchester, Washington, and the Andrew W. Breidenbach Environmental Research Center. EPA will also work to complete the infrastructure upgrades at Athens, Georgia, and Ada, Oklahoma.

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)**
On a national scale, increased heat and precipitation are expected to impact 100% of EPA's facilities across all mid- and late- century projections. Approximately 25% (41) of EPA's buildings are located along the coast and are vulnerable to sea level rise and flooding. Only nine of EPA's buildings are at a high risk for wildfires, and none have very high or extreme risk; however, 78% of buildings are still at some degree of risk to wildfire and its impacts. In addition to the above five hazards, there are several, more regionally specific hazards that are intensified by compounding effects and conditions.	EPA's Office of Mission Support will assess the 18 laboratory facilities owned by EPA. EPA will continue conducting climate resiliency assessments at EPA-owned facilities and initiate project recommendations that are determined to be "very-high priority" within 24 months of the final project grading process; however, the Resiliency Assessment Program and project initiation capability are fully dependent on the budget availability and adequate funding year to year. EPA's Office of Mission Support will continue to support EPA offices and programs in efforts to implement project recommendations from the climate resilience assessments that were not identified as a "very-high priority."	<u>FY 2024</u>: - Complete five climate resiliency assessment reports. - Initiate the very-high priority projects identified in the FY 2022 assessment. - Identify the very-high priority projects from each of the FY 2023 assessments' recommendations. <u>FY 2025</u>: - Complete three climate resiliency assessment reports. - Initiate the very-high priority projects identified in the FY 2023 assessments. - Identify any very-high priority projects from each of the FY 2024 assessment recommendations. <u>FY 2026:</u> - Complete final three climate resiliency assessments of EPA owned facilities (with projections up to ~2050). - Initiate the very-high priority projects identified in the FY 2024 assessments. - Identify any very-high priority projects from each of the FY 2025 assessment recommendations.

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)**
		<u>FY 2027</u>: - Begin five-year reassessment cycle at owned facilities using late century projections (~2100). - Initiate the very-high priority projects identified in the FY 2025 assessments. - Identify any very-high priority projects from each of the FY 2026 assessment recommendations.
Heat and precipitation will affect all EPA buildings, causing additional stress and deterioration on the Agency's older facilities and increasing the risk of damage to research equipment and samples. Flood risk also increases with higher levels of precipitation and sea level rise, which will create additional vulnerabilities to water intrusion.	EPA will continue to address aging infrastructure through implementation of its facility master plans and will consider projected future climate hazard exposure in equipment replacement cycles.	<u>FY 2024-FY 2027:</u> - EPA will proceed with roof repairs, electrical and HVAC equipment replacements, and building envelope improvement projects identified in the facility master plans. - EPA will revise operations and maintenance contracts as they expire to include additional task orders allowing for mitigation activities and emergency repairs.
All hazards are projected to have an impact on EPA's physical assets, workforce, systems, and mission through the mid- to late-century. EPA's capacity to support specialized research functions has been a valuable	EPA will work with other federal, state, and local entities on Memoranda of Agreements and Understanding for emergency management mitigation activities and critical asset sharing.	<u>FY 2024-2027:</u> - EPA will examine its high-risk properties and begin to coordinate new agreements with co-located federal, state, and local entities that share the same campuses and risk to mission.

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)**
collaboration opportunity to other entities with overlapping research missions, such as the National Oceanic and Atmospheric Administration, U.S. Department of Agriculture, U.S. Geological Survey, National Institutes of Health and multiple state agencies and universities across the country. Damage to EPA facilities can not only disrupt internal operations, but also disrupt the missions of other federal, state, and local entities that share research functions and spaces.		- EPA will work with its neighboring agencies to improve and develop collaborative emergency response, mitigation and maintenance plans for shared critical assets and systems.
Four of EPA's research campuses are in coastal locations, which accounts for 26% of all EPA-owned buildings. Mission dependency for proximity to these bodies of water inherently put these facilities at greater exposure to impacts from flooding and sea level rise. Through the mid- to late-century, each coastal facility is projected to have at least 50% of their campuses inundated by water, with some projected as soon as 2050.	EPA will continue to investigate the Agency's vulnerabilities and risks within its own facilities and initiate discussions among leadership about the long-term vision for certain EPA laboratories.	<u>FY 2024-2027:</u> - Agency leadership will review EPA -owned facilities in the most vulnerable locations to determine the long-term plan for those facilities. FY 2024: The agency is currently determining the appropriate stakeholders and leaders across EPA to engage in the decision process in order to make science informed and consensus-based investments.

In response to both EO 14008 and the Agency's 2021 Climate Adaptation Plan, EPA conducted a high-level Agency-wide vulnerability assessment as a baseline for each owned laboratory and leased regional office building's exposure to 17 different future hazards. The 17 initial hazards were identified through reviews of climate science, projections, historical data, and input provided by EPA staff in different climate zones, as an initial evaluation of potential risks from climate change. In 2022, the Agency expanded upon that initial high-level, Agency-wide effort to understand the likelihood of exposure and overall risk to climate hazards and began conducting detailed assessments of all owned laboratories.

EPA's climate resiliency assessments of the Agency's owned laboratories use historic and projected hazard exposure data through the mid-century; existing site-specific documentation, such as facility master plans and past safety, health and environmental management audits; and an onsite evaluation of the facilities to understand the full likelihood of exposure, vulnerability and consequences of risk to EPA's mission, physical assets, workforce, and infrastructure/utilities/services the Agency relies on. During the onsite assessments, EPA interviews the facilities' teams and key staff from all research and applied science divisions, operational and administrative functions, and other federal and state Agency partners at the site to understand their past experiences with hazards, existing mitigation strategies and actions, and potential ideas to improve resilience of their operations. Each owned-laboratory climate resilience assessment results in a report with project recommendations that range from updating planning procedures to capital improvement projects that help ensure the facility's resilience against the most likely and consequential risks associated with future climate hazards.

Once each climate resilience assessment report is finalized, a workgroup comprised of leadership and representatives from the site and associated programs or regions meets to vote and prioritize the project recommendations using a schema that EPA's OMS developed to weigh a variety of factors. The schema allows each member of the workgroup to examine the recommended projects from the assessments against the likelihood of exposure, vulnerability, and magnitude of consequences to the asset's physical structure, workforce, operations, and other internal and external connections. Each project is weighed against additional criteria such as technical and economic feasibility and availability to determine if any projects are a very-high priority to OMS. Projects that the workgroup scores as very-high priority are then shared with EPA's Office of Resources and Business Operations to determine the funding pathway and timeline. As a result of the assessments, over 108 asset specific improvements and 74 campus-wide project recommendations have been identified and prioritized by the workgroups across 10 facilities with completed assessments.

The resilience of EPA's operations to damage and disruption from climate hazards also depends on reducing the Agency's energy consumption and increasing onsite generation of power. In support of this goal and in response to EO 14057, EPA conducted additional net-zero emissions (NZE) assessments of all owned laboratory facilities to examine potential pathways for using and procuring carbon pollution-free electricity (CFE) and the feasibility of fleet and facility electrification to meet federal building performance and sustainability goals. The NZE assessments include recommendations for phased approaches to upgrading infrastructure, baseline analyses of onsite electricity generation potential, and projected scenarios of energy savings and outputs. Many of the sustainability recommendations from the NZE assessments have overlapping goals with resiliency aimed at

improving the efficiency and reliability of EPA's building systems and components through electrification. Project recommendations from both the resiliency and NZE assessments inform future considerations for the current and projected conditions of EPA's facilities, allowing for more holistic master planning efforts and driving more targeted and climate data-informed decision-making in capital improvement projects. Understanding both the current and projected building conditions, performance and vulnerabilities allows the Agency to consider the long-term plan for existing facilities and enables more prudent investments and financial risk management.

As a result of the completed resiliency assessments conducted at the Agency's coastal facilities, EPA is critically examining the long-term feasibility of continued operations in locations that are especially vulnerable to climate hazards such as sea level rise and flooding. Nearly 25% of EPA facilities are along the coast. Across both the mid- and late-century 4.5 RCP and the mid-century 8.5 RCP scenarios, each coastal campus is projected to experience inundation of at least one critical asset that either supports major operational functions, stores emergency response equipment, or allows access to and from the facility. By the late-century 8.5 RCP scenario, over 50 % of EPA's coastal research campuses will be inundated by water from sea level rise and will have significant loss of essential functions that support mission capabilities.

Project recommendations from climate resiliency assessments of coastal sites have included: small relocations of laboratory functions to less vulnerable parts of the campus, retrofitting building floors and elevations to better protect from flooding, improving site drainage, and relocating the functions to a less vulnerable site altogether. EPA is also considering additional external factors for future investments in resiliency projects, such as overall vulnerabilities in the broader transportation network and utility infrastructure that EPA sites rely on and leveraging relationships with other federal, state, and local partners who rely on EPA facilities to support critical operations within their own missions. Given the age and condition of most EPA facilities, and additional hazards that are exacerbated by precipitation and sea level rise such as landslides, high-tide flooding, high winds, hurricanes, and storm surge, the Agency is critically examining disaster recovery costs versus the financial feasibility and viability of continued operations in high-risk areas.

EPA facilities are already experiencing impacts from extreme heat, and these impacts are expected to intensify through the mid- to late-century. To address heat impacts, EPA's climate resilience assessment recommendations range from nature-based solutions, such improving canopy cover and permeable area to reduce the ambient temperatures onsite, to full-scale replacements of major building components and envelope repairs. In addition to the resiliency assessment recommendations, EPA's facility master plan also identifies many projects focused on envelope improvements and resealing to decrease water intrusion and heat loss and improve the efficiency of mechanical and electrical systems within buildings, but major construction and retrofit projects are extremely costly and can be difficult to fund.

The Agency uses Energy Savings Performance Contracts (ESPCs) to finance major infrastructure upgrade projects by entering into an agreement with local utility providers to cover the initial project costs, and the Agency incrementally pays back the loan with the energy cost savings. ESPCs have

helped fund major infrastructure upgrades for HVAC, Air Handling Units and Building Automation Systems (BAS) to improve efficiency, help conserve energy and maintain climate control for laboratory functions at EPA's facilities in Ann Arbor, Michigan; Ada, Oklahoma; and Research Triangle Park, North Carolina. EPA also has Notice of Funding Opportunities published for additional ESPCs at its Edison, New Jersey; Fort Meade, Maryland; and Manchester, Washington; laboratories. EPA uses information from facility master plans and NZE and resiliency assessments to inform scope of work requirements for the contracts to ensure that EPA can be both sustainable and resilient in the face of climate change impacts. While ESPCs have been a helpful resource to the Agency, the procurement process is often lengthy, with the full project life lasting five to seven years or longer.

Climate change impacts will continue to be a challenge for EPA's facilities as hazards intensify and the Agency's building portfolio continues to age. Continuing to assess hazard exposures and risk will better inform the Agency's ability to continue its mission in the face of climate impacts and understanding and tracking the scope of damages to facilities and structures from hazard events and the associated costs to repair or resume operations to make climate-informed investments. In 2023, the Agency analyzed the location of EPA-owned facilities and cross-referenced them against the historically underutilized business zones (HUB Zones) in the Climate & Economic Justice Screening Tool (CEJST), to identify overlap. This analysis determined that nine of the EPA facilities are in HUB Zones (Ada, Ann Arbor, Athens-ORD, Cincinnati-AWBERC, Cincinnati-Center Hill, Cincinnati-T&E, Corvallis-Main, Gaar Corner and Newport) and four are in disadvantaged communities (Ada, Cincinnati-Center Hill, Cincinnati-T&E, and Gaar Corner).

While Agency facility planning documents such as master plans, studies and evaluations are typically held as categorically exempt under the National Environmental Policy Act (NEPA) and CEQ's implementing regulations, the specific facility actions (including construction, renovation, and property excess) that are planned and developed are formally considered and evaluated for potential impacts across a wide range of environmental and social resources and areas of interest and concern. Among these are historic, cultural, and tribal resources, which have adopted considerations of ancestorial lands. If a proposed action is determined to have the potential to impact any of these resources, formal consultations with the appropriate organization(s) such as state historic preservation offices, tribal historic preservation offices or the Advisory Council on Historic Preservation, are initiated. In practice, depending on the scope of the project and its physical location, these consultations can range from simple and brief, to very extensive, requiring the development of management plans and formal memoranda of understanding between relevant parties. Likewise, consistent with NEPA and CEQ's regulations, if any project has the potential for significant effects, an Environmental Assessment will be prepared to evaluate the potential impacts more thoroughly for significance.

3A.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)**
Employees who work at or rely on the work conducted at EPA's owned laboratory facilities have either 100% exposure (to extreme heat and precipitation) or varied exposure (to flooding, sea level rise and wildfires).	EPA will continue using the onsite climate resilience assessments at EPA's owned laboratories to collect information on EPA employees' past experiences with hazard events and existing emergency response and hazard mitigation resources, to better inform future hazard response and identify gaps.	By FY 2026: Complete initial climate resilience assessment of all EPA-owned laboratories.
100% of EPA employees are projected to be exposed to extreme heat and precipitation in all RCP and time scenarios.	EPA will continue developing and updating educational materials for EPA employees as part of its Occupant Emergency Plans and program.	FY 2024-2026: EPA will conduct Occupational Safety and Health Administration Heat Illness Safety and Integrated Vegetation Management trainings as part of the Agency's environmental management systems program. Annually: Send email reminders to EPA employees about the program, region, or location's Occupant Emergency Plan. By FY 2027: Add new sections to the Agency-wide Occupant Emergency Plan to address hazards such as wildfires (including smoke).
Climate change is expected to increase the severity, duration, and frequency of extreme coastal	EPA will regularly test Mass Alert and Notification System and smaller-scale	Annually: Send test alerts through the Mass Alert and Notification System and take

and inland storms across the country, including those that happen suddenly. This impacts all EPA employees.	notification systems.	corrective action as needed if the test does not perform as intended. FY 2024-FY 2027: EPA leadership will begin reviewing EPA's facilities in the most vulnerable locations to determine the long-term plan for those facilities and begin developing processes and procedures to address the facilities with a high likelihood of risk impact. FY 2024: The agency is currently determining the appropriate stakeholders and leaders to engage in the decision process to make science informed and consensus-based investments.

All EPA employees work in locations that are projected to experience an increase in the annual number of days with the maximum temperature and precipitation exceeding the 99th percentile in all RCP scenarios. Many EPA employees either work directly at an EPA-owned laboratory facility or are connected to the work conducted in EPA's laboratories that are also all located in areas expected to experience an increase in the annual number of days with the maximum temperature and precipitation amount exceeding the 99th percentile in all RCP scenarios.

EPA's onsite climate resilience assessments consider each EPA-owned laboratory location's vulnerabilities that could be exacerbated by extreme heat and precipitation. To better understand the consequences to locations that have high exposure and vulnerability to extreme heat and precipitation, among other hazards, the climate resilience assessments include interviews with key staff working in research, applied science, field work, environmental management systems (EMS), facilities and safety management, and O&M. The interviews aim to gain a better understanding of the breakdown between indoor and outdoor work; hours of operation; requirement to work onsite; past experiences with hazard events; external coordination with utilities on emergency preparedness and response planning; and the existence of internal and external emergency response exercises and drills.

This information helps identify gaps in plans, exercises and hazards considered at each EPA-owned laboratory in existing emergency response policies and procedures, as well as ways to maintain a safe working environment for EPA employees and contractors in the face of increasing extreme heat and precipitation. These gaps are addressed in each climate resilience assessment's project recommendations. One example of a project recommendation from the onsite climate resilience assessment is to update O&M contracts to include contingency plans and emergency provisions. Examples of contingency plans in future contracts could include detailing contract workforce protections and procedures during high likelihood or high consequence future hazard events. Contracts could also require that appropriate personal protective equipment is provided to those working in extreme heat or other hazardous conditions. Additionally, these assessments help incorporate potential climate impacts in employee safety plans and training for nationwide facility EMS and Safety, Health and Environmental Management Programs (SHEMP), such as Integrated Vegetation Management and Pollinator Programs that promote planting native and drought-resistant vegetation at sites and OSHA Heat Illness Safety training courses.

Beyond EPA's owned laboratories, EPA regions and locations have developed Occupant Emergency Plans (OEP) to provide information to EPA employees on a how to respond in emergency events, such as fires or earthquakes. Only 5.7% of the Agency's buildings have high risk to wildfires and less than 3% of the Agency's employees have high, very high or extreme risk to wildfires, but a wildfire can have devastating consequences to employee health and safety if one does occur in an area where the Agency is located. EPA will continue developing and updating educational materials for EPA employees as part of the OEP program to address climate hazards with a high likelihood of occurring and those with severe potential consequences. EPA already distributes "Informational Notifications" to its employees on topical hazards. Recent Informational Notification emails from 2023 included emails on wildfire smoke and extreme heat. Each email defines the hazard, shares ways that employees can prepare for the hazard at work and at home, describes the signs of related illness (if relevant) and links to other resources for more information. These notifications help raise awareness of climate hazards and mitigation actions that EPA employees can take.

The vast majority of EPA employees work in counties that are in a 100-year floodplain (99% of employees), and 88% are also located in a county that a 500-year floodplain. Additionally, 7% of EPA employees work in counties that are exposed to sea level rise in both mid-century scenarios, which increases to 43% and 51% in the RCP 4.5 and 8.5 late-century scenarios, respectively. As the severity, duration, and frequency of extreme coastal and inland storms across the country increase as a result of climate change impacts, EPA has a greater need to be able to distribute information quickly and effectively to employees in emergencies. EPA employs a nationwide Mass Alert and Notification System (MANS) to provide critical notifications to employees during events and emergencies that can also be used in response to climate hazards, such as flooding events.

To ensure that the MANS system is functioning as expected and reaching all employees, EPA will continue conducting annual tests of the MANS system and take corrective action as needed. In addition to the nationwide MANS notifications, EPA regions and programs also use their own local alert systems onsite at EPA locations and via text and email messaging to alert employees of any

emergencies, hazards, and threats. At an Agency-wide level, EPA is also considering the long-term plan for operations at its most at-risk facilities that are in coastal locations and are likely to experience severe impacts from sea level rise and extreme storms through the late century. If the Agency determines that the risk posed by climate change is too costly in the long-term for a specific facility, the EPA employees who work at that facility will be impacted. This policy decision is discussed in further detail in Section 3B Incorporating Climate Risk into Policy and Programs.

3A.3 Advancing the America the Beautiful Initiative

Under the Biden-Harris Administration's America the Beautiful (AtB) Initiative, EPA is an active participant in government-wide efforts to connect and restore 30% of the nation's lands and waters by 2030 for the benefit of our economy, our health, and our well-being. To achieve this ambitious goal, EPA and other federal agencies are committed to following key principles to guide conservation and restoration efforts, as framed by the AtB Initiative (see sidebar).

The EPA is taking a wide range of actions to achieve the goals of the AtB Initiative across several of the program's focus areas, including creating more parks and safe outdoor opportunities in nature-deprived communities; supporting Tribally-led conservation and restoration priorities; expanding collaborative conservation of fish and wildlife habitats and corridors; increasing access for outdoor recreation; incentivizing and rewarding the voluntary conservation efforts of fishers, ranchers, farmers, and forest owners; and creating jobs by investing in restoration and resilience.

Many of the efforts that the EPA is supporting as part of the America the Beautiful Initiative generate direct or indirect benefits to ecosystems and communities working to adapt to the impacts of climate change. EPA accomplishments under the first three years of the America the Beautiful Initiative, and priorities for AtB implementation in the coming years, are described below.

America the Beautiful Initiative
Key Areas of Focus

1. Pursuing a collaborative and inclusive approach to conservation
2. Conserving America's lands and waters for the benefit of all people.
3. Supporting locally led and locally designed conservation efforts.
4. Honoring Tribal sovereignty and supporting the priorities of Tribal Nations.
5. Pursuing conservation and restoration approaches that create jobs and support healthy communities.
6. Honoring private property rights and supporting the voluntary stewardship efforts of private landowners.
7. Using science as a guide.
8. Building on existing tools and strategies with an emphasis on flexibility and adaptive approaches.

National Estuary Program. Conservation, protection, and restoration of hundreds of thousands of acres across 28 nationally designated watershed-based estuarine systems. Receiving more than $130 million under the Bipartisan Infrastructure Law, and coupled with annual appropriations, the National Estuary Program's core mission is to improve water quality, protect habitats for fish and other wildlife and the people and communities who rely on them. The National Estuary Program does this through

locally led Management Conferences, implementing long-term Comprehensive Conservation Management Plans that address a range of ecosystems stressors, support environmental and outdoor education programs, monitoring, and engage a diverse range of place-based partners in long-term conservation planning and implementation.

EPA's 28 National Estuary Programs have a legacy of significantly leveraging EPA resources to invest in projects that directly conserve coastal and riparian ecosystems, which play a fundamental role in absorbing the impacts of storms and sea-level rise, and provide economic, cultural, and recreational value to surrounding communities. In its 2022 Bipartisan Infrastructure Law Implementation Memorandum for the National Estuary Program, EPA directed each program to support community efforts to adapt to climate change within their geographies, and to outline those plans in each program's Equity Strategy, connecting climate change response to environmental justice. These efforts advance America the Beautiful focus areas 1, 2, 3, 4, and 6.

Geographic Programs. Across 12 EPA-administered, watershed-based geographic partnership programs authorized under the Clean Water Act, EPA and other federal partners are working with states, other conservation partners, Tribes, and private landowners to conserve more than 400,000 acres since 2019 alone. During this period, the programs, spanning from the Chesapeake Bay to the Great Lakes to the Gulf of Mexico to Puget Sound, have restored aquatic connectivity for fish and other species, and restored water quality over more than 1,000 stream miles. Highlights include:

- Gulf of Mexico Program: Understanding the role that private lands management plays within our watersheds, the Gulf of Mexico program made $21 million available in FY22 for Farmer-to-Farmer grants to assist historically underserved farmers in the Gulf basin in supporting conservation and nutrient reduction efforts. These efforts will be augmented through nearly $50 million in Bipartisan Infrastructure Law funding.
- Great Lakes Restoration Initiative: In partnership with the Bureau of Indian Affairs, the Great Lakes Restoration Initiative provided nearly $19 million in funds to Tribal Nations and intertribal organizations to build resource management capacity, protect and restore treaty-reserved resources and culturally significant habitats and species that support Tribal self-determined priorities. The Great Lakes Restoration Initiative is investing another $1 billion in Bipartisan Infrastructure Law funding to clean up legacy pollution in remaining Areas of Concern across the region, improving the vitality and resilience of ecosystems and the aquatic life that depend on them.
- Chesapeake Bay Program: Under the America the Beautiful initiative, EPA and partner agencies in the Chesapeake Bay Program have increased protected lands by hundreds of thousands of acres, bringing the program to 75% of its protection goal of 2.5 million additional acres protected by 2025, on top of 9.3 million currently protected acres (about 23% of the watershed). The Chesapeake Bay Program is leveraging nearly $240 million in Bipartisan Infrastructure Law to invest in a broad range of conservation and resilience efforts, from urban reforestation to farmer-led nutrient reduction projects.

The EPA's 12 Geographic Programs vary in geography and structure, but all serve to increase protected lands and waters and enhance the health and vitality of land and water ecosystems in their watersheds. Many of the programs directly invest in climate resilience – from research into the effects of ocean-warming on coral and other marine life in South Florida to mitigating the impacts of sea level rise and storm surge on communities and ecosystems in the Chesapeake Bay, San Francisco Bay, and Massachusetts Bay. EPA's 2022 Bipartisan Infrastructure guidance to Geographic Programs included a direction for programs to develop detailed Equity Strategies to leverage investments to achieve equity and environmental justice goals and included incentives for programs to focus on supporting disadvantaged communities. These efforts advance all America the Beautiful focus areas.

Nonpoint Source Pollution Management Grants for State and Tribal Governments. The EPA awards Clean Water Act Section 319 grants to states and federally recognized Tribes to support state and tribally led efforts to protect and restore waters from nonpoint source pollution. The program is developing new guidelines to integrate climate change and equity considerations more broadly and directly into Section 319 grant implementation.

Climate change is causing more frequent and longer droughts, water supply shortages, wildfires, frequent and more intense storms, flooding, and sea-level rise. These events have broader effects on the Nonpoint Source program. For example, higher temperatures can affect water chemistry, which can increase eutrophic conditions. More frequent and intense storms can result in more pollutant runoff, including sewer overflows and eroded shorelines. Longer growing seasons may also increase nonpoint source pollution loadings over time. The resulting water quality impairments can threaten natural systems, affect community and economic health, and diminish or eliminate people's recreational opportunities.

The CWA Section 319 program plays an important role by supporting state, Tribal, and local government efforts to develop WBPs and implement NPS controls that provide significant climate resilience and adaptation co-benefits. The NPS program guidelines prioritize nature-based solutions to help mitigate the impacts of those natural hazards. They also include expectations that nonpoint source management practices are designed to be climate resilient and encourages states to try to quantify the climate resilience co-benefits of these practices (such as flood water retention, reduced water temperatures).

Healthy Watershed Consortium. The EPA's Healthy Watersheds Consortium Grant Program supports local watershed protection demonstration and capacity-building projects across the United States. These projects help maintain healthy, intact aquatic ecosystems that are critical to maintaining climate resiliency across the landscape. Healthy watersheds preserve base flows during periods of drought, mitigate flooding impacts, support species migration through intact riparian corridors, and enable carbon sequestration in protected natural land cover. The program helped grantees and their partners protect an estimated 1.1 million acres and 5,200 perennial stream miles between 2016-2022. In 2023, EPA also published a new resource guide, Advancing Watershed Protection through Land Conservation: A Guide for Land Trusts, aimed at reorienting the land conservation community to EPA water

programs, resources, and foundational concepts around watershed protection. This effort advances America the Beautiful focus areas 3 and 5.

Urban Waters Federal Partnership. The Urban Waters Federal Partnership works in more than 20 urban watersheds across the country with 15 federal agencies and hundreds of local partners and community-based organizations. From Puerto Rico to Denver to Atlanta to New York City, the Partnership's twin goals are to restore and protect water quality while delivering on environmental justice disadvantaged communities. The program's Framework for the Future, celebrating the first 10 years of progress, hopes to expand this partnership model to more urban locations, pending available resources, and to advance many of the goals of the America the Beautiful initiative. Urban Waters Ambassadors provide local, community-based capacity to develop priorities, coordinate with local governments and organizations, and conduct outreach with citizens and communities.

The Urban Waters Federal Partnership is helping to advance restoration efforts and to develop green and blue spaces in many communities long deprived of access to safe and clean outdoor activities. Nature-based Solutions (discussed in Section 3B.3 of this CAP) can include both green spaces (e.g., city parks, avenue and roadside trees and green roofs) and blue spaces (e.g. water channels, urban lakes, ponds, and rivers). Establishing and maintaining green and blue spaces can help manage local flooding, build resilience to drought, protect coastal areas, and reduce urban heat islands.

The UWFP supports locally led restoration, education and engagement, and access to nature, as well as supporting efforts to enhance the connectivity of river ecosystems impacted by development. This program support America the Beautiful focus areas 1, 3, and 4. On April 21, EPA, the U.S. Department of Agriculture (USDA), and DOI announced the Walnut Creek watershed as the 21st location in the Urban Waters Federal Partnership in Raleigh, North Carolina – officially serving as the inaugural event of the White House Campaign for Environmental Justice.

EPA Brownfields Program. Brownfields recovery plays an important role in revitalizing communities by cleaning up and repurposing contaminated sites. The program offers Revolving Loan Fund (RLF) Grants, providing funding for a grant recipient to capitalize a revolving loan fund and to provide loans and subgrants to carry out cleanup activities at brownfield sites. Through these grants, EPA strengthens the marketplace and encourages stakeholders to leverage resources to clean up and redevelop brownfields. When loans are repaid, the loan amount is returned to the fund and re-lent to other borrowers, providing an ongoing source of capital within a community. In FY23, the EPA Brownfields Program assessed nearly 1,900 sites and cleaned up 170 properties. This work supported more than 17,000 jobs and opened brownfield site near the Mississippi River, an area extremely vulnerable to flooding.

While the Brownfields program is an important EPA pollution cleanup program, it also makes the land safe for reuse for a range of purposes, including providing habitat for native species, offering space for outdoor recreation, and providing opportunities to build resilience to the impacts of climate change. One example of using brownfield redevelopment for building resilience to climate change impacts was

at a brownfield site near the Mississippi River, an area extremely vulnerable to flooding. The site was transformed into a stormwater park and a piece of riverbank was restored to a natural and sustainable state. The park can now absorb and clean up to seven inches of stormwater runoff in a single day, ultimately preventing stormwater from entering the river. EPA's Climate Smart Brownfields Manual offers guidance on best practices for climate change adaptation and resilience at all stages of brownfields work. EPA's Climate Smart Brownfields Manual offers guidance on best practices for climate change adaptation and resilience at all stages of brownfields work. This program supports America the Beautiful focus areas 1, 4, 6.

3B. Climate Resilient Operations

3B.1 Accounting for Climate Risk in Planning and Decision Making

As much as possible and consistent with its authorities and available resources, EPA is accounting for the risks posed by climate change and related environmental justice concerns as it designs, implements, and assesses its programs, policies, rules, enforcement and compliance assurance activities, and operations (i.e., facility operations, workforce protection, managing and protecting supply chains).

The Agency is building the climate literacy of its management and staff to integrate adaptation into decision-making processes. It is doing this through formal training processes (e.g., all new EPA employees are required to take introductory training on climate adaptation), and by building a community of practice to foster peer-to-peer sharing of experiences. EPA is also developing decision-support tools and providing technical assistance to enable staff to integrate climate adaptation into programs and to identify strategies that will also yield co-benefits, such as reducing greenhouse gases and other pollution, and advancing environmental justice. Major approaches taken by EPA to include the results of climate risk assessment in planning and decision-making processes include:

- Protecting EPA facilities: As described in Section 2, climate adaptation is now an integral component of EPA's site planning, facility support and operations.
- Protecting EPA's supply chains: Implementing the Agency's Supply Chain Risk Management Plan "Implementation Plan" that includes actions to protect against the risks posed by climate change.
- Embedding climate adaptation into rulemaking processes: EPA is integrating information about the impacts of climate change in agency rulemaking processes consistent with its authorities. EPA is considering a variety of "entry points," including the development of the rule itself; related policy and guidance development; outreach to stakeholders, especially communities with environmental justice concerns that are more vulnerable to climate impacts; post-rule permitting; and monitoring and enforcement and compliance assurance activities.
- Modernizing EPA financial assistance programs**:** EPA is modernizing its financial assistance programs to encourage climate-resilient investments across the nation.
- Provision of technical support: EPA has established an Integrated Climate Sciences Division within its Office of Research and Development that (1) supports the implementation of the 20

EPA program and regional office Climate Adaptation Implementation Plans, and (2) provides place-based technical support to all 10 regional offices and the communities they serve.

3B.2 Incorporating Climate Risk Assessment into Budget Planning

EPA's FY 2022-2026 Strategic Plan has an Agency-wide goal (Goal 1) focused on tackling the climate crisis. One of the objectives (Objective 1.2) of the goal is to accelerate resilience and adaptation to climate change impacts. The Agency has three Long-Term Performance Goals (LTPGs) associated with this objective (see side bar). Annual targets have been set for each LTPG.

The work the entire Agency does to attain the annual targets for the LTPGs informs the Agency's annual budget submission to OMB for work related to climate adaptation. The work is driven by (1) an Agency-wide climate vulnerability assessment EPA conducted, (2) more detailed office-specific vulnerability assessments every program office and all 10 regional offices developed, (3) Executive Orders and major memoranda focused on Administration priorities (e.g., focused on Indigenous Knowledge; environmental justice; nature based solutions; ensuring the outcomes of infrastructure investments are resilient to climate impacts), and (4) available staff and financial resources.

Every EPA program office and all 10 regional offices have developed Climate Adaptation Implementation Plans that contain their office-specific vulnerability assessments and the actions they will take to address the vulnerabilities and help attain the LTPGs in the EPA FY 2022-2026 Strategic Plan. Every year, the programs and regions identify the specific priority actions they will take given available resources and any "above target" resources they receive. Taken together, the annual priority actions inform the development of EPA's annual budget submission to OMB for its work on climate adaptation.

EPA's Climate Adaptation Long- Term Performance Goals (FY22-26)

1. By September 30, 2026, **implement all priority actions in EPA's Climate Adaptation Action Plan and 20 national program and regional Climate Adaptation Implementation Plans** to account for the impacts of the changing climate on human health and the environment.
2. By September 30, 2026, **assist at least 400 federally recognized Tribes to take action** to anticipate, prepare for, adapt to/recover from impacts of climate change.
3. By September 30, 2026, **assist at least 450 states, territories, local governments, and disadvantaged communities, at risk from climate change, to take action** to anticipate, prepare for, adapt to/recover from impacts of climate change.

Another important mechanism for informing budget planning is the innovative Climate Adaptation Measurement Program (CAMP) database developed by the Office of Policy (OP). The system is used for tracking the progress being made by every program and regional office with their priority actions and the outcomes each priority action is leading to. When the annual priority actions are entered into the CAMP database by the program and regional offices, they indicate for each action whether funds are already available to implement the action or whether "above target" funds are needed. This information also informs the budget request for the Agency's work on climate adaptation.

3B.3. Incorporating Climate Risk into Policy and Programs

Agency Policies Reviewed - Climate Adaptation and Resilience	
Changes already made to programs/tools	
1. **EPA's Climate Enforcement and Compliance Strategy Memo**	This memorandum, signed in September 2023 by the Assistant Administrator for the Office of Enforcement and Compliance Assurance, requires EPA's enforcement and compliance program to: (1) prioritize enforcement and compliance actions to mitigate climate change; (2) include climate adaptation and resilience in case conclusions whenever appropriate; and (3) provide technical assistance to achieve climate-related solutions and build climate change capacity among EPA staff and our state and local partners. These requirements apply across all EPA enforcement and compliance activities, including criminal, civil, federal facilities, and cleanup enforcement. Examples of climate change adaptation and resiliency efforts in EPA's enforcement and compliance programs include: • A settlement with Jersey City Municipal Utilities Authority (JCMUA) will incorporate climate change adaptation and resilience best practices for upgrades to its sewer system to be better prepared to withstand severe storms and hurricanes. • Settlements with the cities of Greenville and Hattiesburg, Mississippi require that the work to eliminate sanitary sewer overflows and maintain compliance with the Clean Water Act be performed using sound engineering practices, including practices to improve the resilience of the sewer systems. • A settlement with the U.S. Army for violations of the Safe Drinking Water Act's (SDWA) Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP) requirements at U.S Army Garrison Fort Buchanan in Puerto Rico requires the Army to assess the risks to, and resilience of, its community water system, including risk from natural hazards.

2. Incorporating Climate Change Adaptation Criteria into Applicable Financial Assistance Agreements	EPA is modernizing its financial assistance programs to encourage climate-resilient investments across the nation. On February 28, 2023, the EPA Deputy Administrator and EPA's Senior Climate Change Adaptation Official issued a memorandum entitled "Incorporating Climate Change Adaptation Criteria into Applicable Financial Assistance Agreements." It was sent to all EPA Assistance Administrators, Associate Administrators, and Regional Administrators. The memorandum called on all the Programs and Regions to integrate climate adaptation into all relevant financial assistance agreements, over time. The immediate focus is on BIL and IRA to help ensure that the outcomes of investments made with those funds are resilient to the impacts of climate change. The memorandum also established a new subgroup to the Cross-EPA Work Group on Climate Change Adaptation. The Resilient Infrastructure Subgroup on Climate is an Agency-wide team of individuals from the program and regional offices who are collectively supporting the efforts of EPA program managers to incorporate climate adaptation into financial assistance agreements, and helping recipients of funds make climate-smart investments.
3. Response to Facility Vulnerabilities	As described in Section 2 (Risk Assessment), in 2022, EPA's Office of Mission Support began conducting climate resiliency assessments at its owned laboratory facilities to further characterize the relationship between likelihood of exposure to climate hazards; vulnerability; and scope of consequences to the mission, workforce, assets, and the infrastructure and utility systems EPA relies on. To date, the Office of Mission Support has conducted 11 of the 18 owned laboratory site visits and a total of 10 climate resiliency assessment reports have been completed. Once each report is finalized, key EPA Office of Mission Support and site stakeholders meet to review the assessment's recommended projects and vote on the highest priority recommendation(s) to increase the resiliency of EPA's facilities by addressing the most likely and consequential hazards. Funding of the high priority projects and the continuity of the resiliency assessment program are dependent on budget allowances.

	In addition to its resiliency efforts, EPA has committed to incorporating energy efficiency and greenhouse gas mitigation considerations into the Agency's facility master planning process to identify opportunities for carbon-free and net-zero solutions to mitigate greenhouse gas emissions and potential negative downstream impacts to the surrounding communities. Where EPA owned facilities geographically fall within ancestral and tribal lands, facility staff will coordinate and consult as necessary with local tribes and communities. The Office of Mission Support will also appoint a Historic Preservation Officer, who will consult with local communities, tribes, and National Registries to preserve culturally significant and historic assets and sites.
4. **Wildfire Guide: Preparation and Recovery for Underground and Aboveground Storage Tank Systems**	EPA developed this guide as a resource for Underground Storage Tank and Oil Aboveground Storage Tank owners and operators in the event of a wildfire. This guide may help Underground Storage Tank and Oil Aboveground Storage Tank owners and operators prepare for and respond to the catastrophic effects and environmental harm that may occur as a result of partial or fully burned Underground Storage Tank systems or Oil Aboveground Storage Tanks and associated piping and appurtenances.
5. **Consideration of Climate Resilience in the Superfund Cleanup Process for Non-Federal NPL Sites Memorandum**	In June 2021, EPA's Office of Superfund Remediation and Technology Innovation issued a memorandum recommending the following approach for EPA regions to consider when evaluating climate resilience during the remedy selection and implementation process: (1) assess the vulnerability of a remedial action's components and evaluate the impact of climate change on the long-term protectiveness of a selected remedy; (2) identify and evaluate adaptation measures that increase the system's resilience; and (3) implement adaptation measures necessary to help maintain the long-term protectiveness of CERCLA remedial actions.

6. The State Revolving Fund Sustainability Conversation Guide (2014)	This Guide, issued in 2014, generated discussions of climate adaptation as part of the conversations regional offices have with the states about the use of State Revolving Funds. This guide was reinforced when the Office of Water received BIL funds targeted for the State Revolving Fund program.
7. Inclusion of Indigenous Knowledge in EPA Programs Training and Community of Practice	EPA's Office of International and Tribal Affairs (OITA) released to the Agency in January 2024 a new training on how to include Indigenous Knowledge in EPA's programs and will be establishing a new community of practice for EPA staff working with Indigenous Knowledge. Incorporation of Indigenous Knowledge is one of four priority actions in OITA's Climate Adaptation Implementation Plan. OITA is offering live training opportunities on Indigenous Knowledge for EPA employees. This training follows release of the White House's Guidance for Federal Departments and Agencies on Indigenous Knowledge (pdf) in December 2022. The training provides an opportunity to gain a deeper understanding of Indigenous Knowledge, learn about the new government-wide guidance, and gain insight into implementing the guidance across EPA. The training, which focuses on both adaptation and mitigation, will be recorded and will be made available to EPA employees on EPA's Indigenous Knowledge intranet site.
8. Addressing Climate Change and Environmental Justice through Reviews Conducted Pursuant to the National Environmental Policy Act and Section 309 of the Clean Air Act	The Associate Administrator for the Office of Policy issued a memo providing guidance to the EPA's National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act (CAA) review community on how to consider climate change and environmental justice in the scope of these reviews.

In-Progress	
1. Integration into Rulemakings	EPA is considering how climate change may impact its rules so the agency can continue to protect human health and the environment in the face of possible climate change impacts. While EPA accounts for natural hazard risk in its regulatory analyses, the agency is also using the best available information to understand how future conditions might affect the outcomes of regulations. In this way, EPA's four major offices (that address air quality, water quality, contaminated sites, and chemical safety) are, consistent with statutory authorities, helping communities across the country build resilience. This work will help these offices continue to meet EPA's statutory responsibilities despite changing environmental risks from increasing temperatures, wildfires, extreme weather, sea level rise, flooding, and drought.
2. Drinking Water System Infrastructure Resilience and Sustainability Program Grants	With an influx of BIL funding, this new grant program will support eligible entities with projects in underserved (a community that does not have access to household drinking water or wastewater services or is served by a public water system that violates the National Primary Drinking Water Regulations) and small (contains a population of less than 10,000 people) or disadvantaged (the service area of a public water system that meets affordability criteria established by its respective State) to increase drinking water system resilience to natural hazards. Eligible activities for funding include planning, design, construction, implementation, operation, or maintenance.
3. EPA's Office of Land and Emergency Management three memoranda related to consideration of climate change impacts on: **a.** Clean-up of polychlorinated biphenyls (Draft) **b.** Permitting under the Resource Conservation and Recovery Act (Draft) **c.** Corrective Action under the Resource Conservation and Recovery Act (Final)	These three 2023 memoranda from the Director of the Office of Resource Conservation and Recovery to the Land, Chemical and Redevelopment Division Directors in EPA Regions 1-10 convey EPA's recommendations on: a. When and how to consider potential adverse climate change impacts in the **polychlorinated biphenyl clean-up approval process**. The draft memo identifies authorities, provides interpretations of relevant TSCA provisions, and recommends approaches to ensure that controls will provide long-term effectiveness through resilience to potential adverse climate change impacts. b. When and how to consider potential adverse climate change impacts in the **hazardous waste permitting process under the Resource Conservation and Recovery**

	Act. The draft memo includes recommendations for conducting climate change vulnerability screenings and assessments for treatment, storage, and disposal facilities to determine whether there are climate vulnerabilities that hazardous waste permits should address. c. How EPA regions and authorized states should work with RCRA facility owners or operators to integrate climate change adaptation considerations into the **corrective action process under the Resource Conservation and Recovery Act.** The recently finalized memo includes recommendations for conducting climate vulnerability screenings and assessments to determine potential climate risks and impacts in remedy selection, remedy implementation, and long-term stewardship.
Nature-Based Solutions	
Policies encouraging nature-based solutions. The Agency encourages consideration of nature-based solutions (NBS) to advance resilience to the impacts of climate change across all programs, so it is difficult to provide details on the number of policies in which consideration of NBS is included.	**Examples.** EPA supported the development of the Biden-Harris Administration's Nature Based Solutions Roadmap and continues to play a leadership role by coordinating the Green Infrastructure Federal Collaborative, supporting government-wide efforts through technical assistance, training, capacity building, and best practices development.
Environmental Justice	
How EJ Considerations are Included in Climate Adaptation Policies. Environmental Justice is a central part of EPA's climate adaptation work. In his May 2021 Policy Statement on Climate Change Adaptation, the EPA Administrator directed all EPA offices to consult and partner with states, tribes, territories, local governments, environmental justice organizations, community groups, businesses, and other federal agencies to strengthen adaptive capacity and increase the resilience of the nation, with a particular focus on advancing environmental justice. Given this directive, the 2021 EPA Climate Adaptation Plan identified ways the Agency will work with	**Examples.** • Using $2 billion in IRA funds, EPA has launched the Environmental and Climate Justice Community Change Grants program to provide funds for environmental and climate justice activities to benefit disadvantaged communities through projects that reduce pollution, increase community climate resilience, and build community capacity to address environmental and climate justice challenges. • EPA used American Rescue Plan (ARP) funds to help four state and tribal governments plan projects that build resilience to impacts from climate change and natural disasters. The projects emphasized place-based, community-driven resilience strategies such as green infrastructure

overburdened and vulnerable populations to increase their resilience to climate change. Such populations include communities of color, low-income communities, children, persons with disabilities, the elderly, tribes, and indigenous people. More detailed priority actions were then identified in the Climate Adaptation Implementation Plans produced by each of EPA's program offices and all 10 regional offices. EPA's climate adaptation staff work closely with EPA's Office of Environmental Justice and External Civil Rights to consider tribal interests in developing climate adaptation policies and programs.	that offer multiple benefits for climate adaptation and for addressing environmental justice concerns, preserving livelihoods and cultures, and enhancing quality of life. • The Office of Air and Radiation's Indoor Environments Division, Office of Children's Health Protection, Office of Policy, Office of Research and Development, and EPA Regions 9 and 10 developed a new program called Schools as Community Cleaner Air and Cooling Centers. This program provided action plans for school districts and public health agencies on how to retrofit schools to create more safe spaces in vulnerable communities during wildfire smoke and extreme heat events.
Tribal Nations	
How EPA has Consulted/Coordinated with Tribal Nations. • In 2022, because of Tribal input at the National Tribal Operations Committee meeting, EPA and the National Tribal Operations Committee created a subgroup focused on Climate Change. To date, this subgroup has commented on EPA climate-related plans, hosted Town Halls to inform and receive input from Tribes and is planning on a series of climate adaptation trainings and engagements with tribal staff in 2024. • EPA regional offices and tribal governments are working together to better understand the impacts of climate change on Tribal communities and to develop targeted adaptation strategies. This includes conducting research, collecting data, and sharing information. Region 3 is conducting a project with local tribes to evaluate cumulative impacts including climate ones. Additionally, the Office of Air and Radiation's Tribal Air Quality Toolkit is co-developed with Tribes	**Examples of Tribal Input Informing Agency Actions.** • The Office of Air and Radiation, in partnership with the regional offices, is developing a Tribal Air Quality Toolkit to provide Tribes with information and resources on air quality issues, such as monitoring, permitting, emissions inventories, and health impacts. Climate change can worsen existing environmental problems and air quality, and it may also introduce new problems as the frequency or severity of adverse conditions change. Households and Tribal communities with fewer resources are less likely to have access to the systems that help keep their environments safe and healthy. The OAR resources will support Tribal resilience in the face of climate change. • The Office of Chemical Safety and Pollution Prevention is working with tribes and states to incorporate climate change considerations into pesticide risk assessments and management decisions, as well as to promote the use of integrated pest management practices that reduce pesticide use and greenhouse gas emissions. OCSPP is working with Tribes to incorporate indigenous knowledge into the assessment to build the resiliency of decisions.

to ensure the relevancy of the Toolkit. • EPA is working with Tribes to develop emergency plans for responding to climate-related disasters such as floods, wildfires, and hurricanes. These plans include strategies for evacuating vulnerable populations, providing emergency supplies, and coordinating with other agencies, especially the Federal Emergency Management Agency. • EPA developed a partnership with the Environmental Protection Network to support Tribes in conducting vulnerability assessments that identify specific climate-related risks and consider factors such as geography, infrastructure, and traditional lifeways and practices, and help Tribes develop targeted adaptation strategies. • EPA is helping tribes to develop climate adaptation plans in preparation for the impacts of climate change. These plans include strategies for protecting infrastructure, preserving traditional lifeways and, and ensuring food security. Support for climate adaptation planning is provided in several ways, including through grants, such as the Indian Environmental General Assistance Program, and partnerships such as the Memorandum of Understanding with the Environmental Protection Network to provide targeted technical assistance. EPA consulted extensively on the General Assistance Guidance which now allows more climate related activities. • Based on numerous consultations with Tribal Nations, EPA is collaborating with other federal agencies, such as Department of the Interior, Department of Energy, and the Federal Emergency Management Agency to support Tribal climate adaptation efforts. This includes sharing information, coordinating efforts,	• The Office of Enforcement and Compliance Assurance is enhancing its compliance assistance and outreach efforts to help Tribes and communities comply with environmental laws and regulations, as well as to identify and address environmental justice concerns related to climate change. This will build resilience and help ensure remedies are protective even as the climate changes. • The Office of International and Tribal Affairs is supporting the development and implementation of tribal climate adaptation plans, as well as facilitating the exchange of information and best practices among Tribes, states, local governments, and international partners. These plans include strategies for protecting infrastructure, preserving traditional lifeways and, and ensuring food security. Support for climate adaptation planning is provided in a number of ways, including through grants, such as the Indian Environmental General Assistance Program, and partnerships such as the MOU with the Environmental Protection Network to provide targeted technical assistance. • The Office of Research and Development is conducting and supporting scientific research and technical assistance to inform and improve the adaptation and resilience of Tribes and communities, such as assessing the vulnerability and exposure of tribal lands and resources, developing tools and models to project future climate scenarios and impacts, and evaluating the effectiveness and co-benefits of adaptation and mitigation strategies. • Waste management, while a RCRA program, is essential to protecting water systems from pollution during extreme weather events and, because waste is sometimes burned after disasters, protecting air quality and human health. To address this, EPA released a waste management tool for disaster debris, so tribal communities have the information they need to respond in a protective and effective way.

and providing joint technical assistance.	Historically, a lot of post-disaster waste has been mismanaged, creating health, environmental, and social impacts on communities who are being impacted by the disaster itself.
Co-Benefits of Adaptation	
How EPA Reviews Climate Mitigation Policies to Integrate Adaptation Principles and Identify Co-benefits. EPA is reviewing and revising opportunities across its capacity building and technical assistance efforts to identify and implement adaptation strategies that deliver co-benefits for mitigation of greenhouse gases and other pollution, public health, economic growth and job creation, national security, and environmental justice. EPA has revised program policies, guidance documents, and capacity building initiatives to provide co-benefits.	**Examples** • In 2022, EPA updated its program policy for the hazardous waste Superfund Program by releasing Green Remediation Best Management Practices. The green remediation practices improve existing Superfund policies by encouraging renewable energy usage through nature-based design principals using vegetation that captures carbon while also building resilience to climate change driven floods, sea level rise, and storm events. • EPA's Office of Community Revitalization has committed under the Office of Policy's Climate Adaptation Implementation Plan to integrate climate adaptation into its technical assistance projects, which help communities to revitalize downtowns and main streets. Supporting the revival of these central areas reduces greenhouse gas emissions from transportation by making it easier for people to walk, bike, take transit, or drive shorter distances. The Office of Community Revitalization also incorporated planning strategies that may help communities build resilience to extreme climatic events, achieve electrification and decarbonization goals, while stabilizing their local economies to continue to thrive as the climate changes. • EPA is incorporating adaptation and greenhouse gas mitigation considerations into its Climate Ready Water Utilities initiative which provides drinking water, wastewater, and stormwater (water sector) utilities with practical tools, training, and technical assistance to increase system resilience to climate change. For example, the Climate Ready Water Utilities initiative collaborated with federal and non-federal partners on the "Leading Practices in Climate

	Adaptation" webinar series. The series explored steps to mainstreaming climate science and adaptation considerations into the work of water utilities, including measures to lower greenhouse gas emissions and energy usage paired with climate resilience and adaptation strategies.
EPA is reviewing and revising its broad portfolio of grant programs that support the reduction of greenhouse gas emissions for opportunities to develop criteria and incentives for funding recipients to integrate adaptation into their climate mitigation projects. EPA is giving priority consideration to programs administering Bipartisan Infrastructure Law and Inflation Reduction Act funds to capture these historic investments in infrastructure, clean energy, and greenhouse gas reduction.	• EPA incorporated co-benefits into the guidance for the $27 Billion Greenhouse Gas Reduction Fund (GGRF), an Inflation Reduction Act program. In the 2023 Notice of Funding Opportunity for the GGRF's National Clean Investment Fund, the Net-Zero Emissions Buildings category included co-benefits as a critical element to be included in applications. Co-benefits include climate resilience, along with occupant health, and environmental stewardship as critical elements of a holistic building design, construction, and operations strategy. • The EPA Clean School Bus Program provides $5 billion over five years with funding from the Bipartisan Infrastructure Law to replace existing school buses with zero-emission all-electric and low-emission models, lowering greenhouse gas emissions. In 2023, EPA incorporated climate change adaptation into the 2023 Clean School Bus Program Grant program. The program now evaluates applicants on the quality and extent to which the proposed project assesses and implements resilient measures, such as ensuring that electric school buses and charging equipment are protected from climate-driven flooding, sea level rise, and storm damage.

Climate Adaptation and Resilience. Every program and regional office within the Agency has been conducting a comprehensive review of policies and regulations to integrate climate-smart approaches and these reviews will continue into the future. Listed in the table above are examples of EPA's push to encourage Agency-wide consideration of climate change impacts on Agency program missions, functions, and activities. As programs and regions continue their reviews, the list of examples will grow.

Nature-Based Solutions. Nature-based solutions (NBS) are a fundamental component of a broad range of Agency programs to advance resilience to the impacts of climate change. In particular,

through its leadership of the Green Infrastructure Federal Collaborative, EPA is helping to lead federal efforts to reduce challenges to permitting green infrastructure and nature-based solutions, and is developing several important tools, including federal permitting and policy recommendations for supporting the adoption of nature-based solutions as well as a guidebook for developing regional permitting networks for NBS implementation.

Infrastructure investment programs are a central component of EPA's strategy to support the use of nature-based solutions to achieve climate, water quality, community resilience, and other goals. EPA recommends and supports the use of nature-based solutions in a wide range of infrastructure programs, and included guidance on prioritizing NBS, where possible, through implementation of the more than $43 billion in Bipartisan Infrastructure Law State Revolving Fund resources, and as an eligible category in the Inflation Reduction Act's $2 billion Environmental and Climate Justice Community Change Grants program, supporting projects advancing environmental justice in disadvantaged communities. Many of EPA's place-based programs, including the National Estuary Programs and Geographic Programs, invest in nature-based solutions to protect water quality, restore aquatic habitats, and enhance resilience to climate change. NBS and green infrastructure priorities were specifically highlighted in BIL implementation memoranda for these programs.

Environmental Justice (EJ). EPA's FY22-26 Strategic Plan emphasizes a cross-Agency approach to facilitate the consideration of EJ in all of the Agency's work. These efforts, championed by the Agency's Office of Environmental Justice and External Civil Rights (OEJECR), include incorporating environmental justice considerations in climate adaptation policies and coordination on funding announcements, technical assistance, and policy and regulatory development. This work is consistent with recommendations from the White House Environmental Justice Advisory Council (WHEJAC) and includes, for example: (1) supporting the efforts of EJ communities to conduct vulnerability assessments to identify their vulnerabilities to environmental hazards and the risks posed by climate change; (2) actively engaging and partnering with EJ communities to develop and implement climate adaptation plans focused on their needs and the outcomes of concern to them; (3) funding resiliency hubs, such as those focused on addressing extreme heat and its impacts; (4) supporting community-led post-disaster recovery efforts, including cleanup of toxic contaminants and protection of workers from exposures to toxic substances.

A significant example from 2023 includes the updating and signing of a Memorandum of Agreement between EPA and FEMA, forging a partnership between the two agencies to encourage and foster engagement and collaboration with disadvantaged communities, with a focused outreach to support adaptation actions that follow the principles of environmental justice and equity, including providing assistance and new tools to address climate and disaster-related public health issues.

In 2023, EPA announced the new Inflation Reduction Act Environmental and Climate Justice Community Change Grants (Community Change Grants) program, providing $2 billion in grant funding for projects to benefit disadvantaged communities as part of the Justice40 Initiative, and $200 million for technical assistance in direct response to feedback from communities and environmental justice leaders who have long called for capacity building support for communities and their partners as they work to access critical federal resources. The grants, and associated technical assistance, support a

range of actions that build adaptive capacity, foster climate justice, and protect health and the environment.

For example, the program provides targeted design assistance for disaster-prone and disadvantaged communities and sets them up to compete for the more comprehensive Community Change Grants. The anticipated positive outcomes of these grants and technical assistance are expected to materialize over the next several years and EPA expects them to be transformational for communities most adversely and disproportionately impacted by climate change, legacy pollution, and historical disinvestments. Finally, EPA is supporting Community Disaster Resilience Zone (CDRZ) communities. These are communities that have been designated by the Federal Emergency Management Agency as the most at-risk and in-need communities. CDRZ designation is considered as a factor in the Community Change Grant selection process, and CDRZ communities qualify to receive free Equitable Resilience Technical Assistance.

Tribal Nations. EPA partners with Tribal governments (Tribes) in a number of ways to support their climate adaptation efforts. With the input of Tribes, EPA has identified several key areas where Tribal communities are particularly vulnerable to the impacts of climate change, including infrastructure, food sources, and traditional lifeways and practices. Particular attention is given to actions that deliver co-benefits, including curbing greenhouse gas emissions and other pollution, while promoting public health, economic growth, and climate justice. Adaptation helps reduce the need for energy-intensive infrastructure and reduces the impact of climate change on communities.

For example, by planning for climate change impacts such as sea level rise, drought, and wildfires, Tribes can take steps to reduce their vulnerability to these impacts and protect their communities and natural resources. Additionally, adaptation strategies such as land use planning can help reduce greenhouse gas emissions by promoting compact development, preserving green space, and reducing the need for automobile travel.

EPA is committed to tracking the impact of its programmatic actions with Tribal governments and communities. In its FY22-FY26 Strategic Plan, EPA pledged to increase the number of Tribes and communities that build climate resilience through EPA investments, grants, or technical assistance. By the end of FY2023, over 275 Tribes and 400 communities have built resilience to climate change, in part, because of the EPA's efforts. The EPA expects this number to increase in the years to come as the investments it is making today pay off in future Tribal and community resilience. EPA's Climate Adaptation Measurement Program (CAMP) Version 2.0 is expected to be ready in Summer 2024 and will track each action EPA took (e.g., grant, loan, technical assistance, or training) and the specific action(s) the tribe or community took.

Co-Benefits of Adaptation. In a 2021 Policy Statement, the EPA Administrator directed the Agency to incorporate climate adaptation into the Agency's programs while lowering greenhouse gas emissions and yielding other co-benefits. This commitment to climate adaptation and mitigation co-benefits is reflected throughout EPA's 2021 Climate Adaptation Plan and in the commitments found in the 20 Climate Adaptation Implementation Plans for EPA's program offices and regions. EPA has taken some important first steps to realize these co-benefits, as demonstrated in Table 3B above.

3B.4. Climate-Smart Supply Chains and Procurement

The Federal Acquisition Supply Chain Security Act of 2018 requires all Executive Branch agencies to establish a formal Supply Chain Risk Management program that includes conducting Supply Chain Risk Assessments. EPA includes an assessment of climate hazard risk as part of its overall Agency Supply Chain Risk Management. EPA plans to conduct Supply Chain Risk Assessments for Excepted, Program Management Improvement Accountability Act and Federal Information Technology Acquisition Reform Act contracts in FY 2024.

At risk supplies/services	Outline Actions to Address Hazard(s)	Identify Progress Towards Addressing Hazard(s)
Describe the acute/long-term climate hazard posed to mission critical supply chains or services.	**Outline actions to address hazards.**	**Identify any current progress to address hazards.**
Increased heat and precipitation, flooding, sea level rise, and wildfires all threaten EPA's supply chain. EPA's laboratories require consistent, reliable, and timely deliveries of samples for research, which often have specific holding time and climate-controlled requirements to preserve the sample's integrity. The laboratories also need a variety of specialized products like inert gases to maintain accurate calibrations for analytic equipment.	1. EPA is incorporating Supply Chain Risk Management considerations into the Agency's Enterprise Risk Management processes by providing guidance for governance and support in emergency and contingency planning activities. 2. EPA's Office of Mission Support will continue to conduct facility resiliency assessments to identify and make recommendations for addressing facility-specific supply chain vulnerabilities. 3. EPA will continue to conduct Supply Chain Risk Assessments for programmatic and regional offices.	EPA has initiated a tiered approach to investigate the Agency's risks in 2024, prioritizing the Supply Chain Risk Assessment of enterprise-level critical supplies and services. Upon completion of the enterprise-level Supply Chain Risk Assessments and through FY 2027, EPA will begin to assess vulnerabilities and risks within regional and programmatic offices.
In addition to disruptions or delays in receiving laboratory supplies and samples, climate change may also disrupt the supply chain production, distribution, and transportation of equipment, parts, and in-person services needed for building operation and maintenance. Some equipment in EPA laboratories is already past its useful life and it is difficult for EPA staff and operations and maintenance contractors to obtain needed replacement parts and specialized repair services.	1. EPA region and program contracting offices will begin requiring offerors to disclose their own risks and submit an internal vulnerability assessment at the time of bidding to be more proactive in addressing potential vulnerabilities. 2. Pending storage constraints, EPA laboratories will keep extra operations and maintenance parts and equipment onsite. 3. EPA will continue implementing infrastructure replacement projects to remove older mechanical and other equipment and replace with energy efficient equipment.	EPA is in the process of multiple Infrastructure Replacement Projects (IRP) at its laboratories in Duluth, Minnesota; Ada, Oklahoma; and Athens, Georgia; and has budgeted for an IRP at its laboratory in Newport, Oregon, pending an Agency-wide decision about whether to continue to invest in that laboratory given its high-risk exposure to climate hazards due to its location.

At risk supplies/services	Outline Actions to Address Hazard(s)	Identify Progress Towards Addressing Hazard(s)
As mandated by Executive Order 14057, EPA has been implementing measures to reduce greenhouse gas emissions, improve building efficiency, and procure more carbon pollution-free electricity, and tracks that progress through installation of additional advanced meters and building automation system programs. Many of these systems require the use of proprietary technology that is not already compatible with EPA security polices and requires the procurement of third-party, cloud-based services to operate the software. Additionally, many of EPA's laboratories also use highly specific research equipment that requires proprietary software to analyze samples and access results.	1. EPA will continue to integrate Supply Chain Risk Management considerations into information and communications technology procurement and the Federal Information Technology Acquisition Reform Act contract processes. 2. EPA will continue to update and integrate information and communications technology and cybersecurity policies as new regulations, legislation, and statutory guidance documents are released. 3. EPA will participate in intragovernmental processes to address cross-sector risks and cybersecurity supply chain risk management incident response to help maintain the confidentiality, integrity, and availability of EPA technical infrastructure and assets.	EPA will adopt the use of the Office of Personnel Management's Software Attestation Form for submission by current and prospective vendors once official guidance is finalized and released. In the interim, the Agency will follow and implement the Public Notification of Software Attestation requirements posted on SAM.gov.

At risk supplies/services	Outline Actions to Address Hazard(s)	Identify Progress Towards Addressing Hazard(s)
Climate change can increase risk for cyber threats, disruptions, and other opportunities for information exploitation. Risks to EPA's physical assets and the surrounding transportation networks that the Agency relies on from climate change are increasing the Agency's reliance on remote access capabilities to continue mission operations. As more mission functions are needing to adopt remote access capabilities to combat climate change impacts, there will be an increased need for information and communications technology procurement and ongoing cybersecurity risk analysis to maintain continuity of operations plans and procedures.	1. EPA will continue to conduct annual security assessments for all Federal Information Security Management Act reportable information, to monitor vulnerabilities and report threats within information technology systems. 2. EPA will include potential climate change impacts to current and future contracts and system controls as cybersecurity supply chain risk management considerations when making risk-based decisions for acquiring information and communications technology products and services. 3. EPA will continue to update and integrate information and communications technology and cybersecurity polices as new regulations, legislation and statutory requirements are released.	In 2023, EPA began updating its Information Security Risk Management Strategic and Information Security Continuous Monitoring Strategic plans to improve information security procedure guides and other templates to incorporate updated guidance and requirements from the National Institute of Standards and Technology into information and communications technology procurement. Through FY 2027, EPA will begin conducting Supply Chain Risk Assessments, starting with Federal Information Security Management Act high-value reportable assets and at-risk Information Technology systems, then transitioning to the moderate and low-risk assets and systems, ensuring that the full scope of cybersecurity supply chain risk management is assessed.
Many EPA laboratories are in remote locations and already struggle to obtain services such as specific building repairs in a timely manner. An acute extreme weather event or longer-term climatic change impacts could exacerbate this issue by creating a greater demand for these services in the broader region. EPA is also a smaller Agency and does not have the same procurement power as some other federal agencies. There may be other critical functions in the region that take priority in an acute weather event, delaying services to EPA.	1. EPA will continue with planned laboratory consolidations to reduce the Agency's number of facilities. 2. EPA will work with other federal agencies to acquire services together. 3. EPA will utilize Emergency Acquisition procedures in accordance with Federal Acquisition Regulations Part 18, in instances when excepted operation and maintenance contracts ceiling must be raised to respond to a hazard event.	EPA is continuing to look for opportunities to consolidate its laboratory footprint and is proceeding with consolidations of its Region 4 Laboratory into the Office of Research and Development Laboratory in Athens, Georgia, and its Region 6 Laboratory in Houston, Texas, to the Office of Research and Development Laboratory in Ada, Oklahoma. EPA's assessments of its owned laboratory facilities also include project recommendations to work with other federal partners and add emergency provisions to accepted operation and maintenance contracts where applicable.

EPA relies on a wide variety of supplies and services to support its mission and has been integrating climate change considerations into its supply chain management processes to improve the Agency's adaptive capacity to plan, withstand, and recover from future climate change impacts. In 2018, EPA established a supply chain risk management Executive Board comprised of high-level leadership that was tasked to prioritize, develop policies and processes, and provide oversight for Agency-wide SCRM decisions and activities. Also, as a part of the Agency's 2021 Climate Adaptation Plan, EPA initiated an enterprise-level risk assessment to begin identifying the contracts, services, and supplies that are most critical for the Agency to maintain operations across a variety of emergency and shutdown scenarios.

EPA's physical supply chain components such as contract-supplied goods and in-person services are most at risk from climate change impacts. Research and applied science in EPA's laboratories depend on reliable shipping and delivery services to transport samples with holding times as short as 12-24 hours. Flooding from SLR and increased precipitation can cause road closures and disrupt delivery of samples within a timely manner. Impacts from wildfires and increases in high heat days can also threaten the ability of climate-controlled delivery services to meet temperature requirements for laboratory samples while in transit, which can threaten the integrity and accuracy of research. Laboratory facilities additionally require frequent shipments of specialized supplies for research, such as inert gases and high-efficiency air filters, to keep equipment accurately calibrated and maintain indoor air quality safety requirements. Climate change can also impact the ability for EPA to receive contracted in-person services such as maintenance, repairs, and onsite security. High heat, wildfires, and secondary effects such as increased lighting strikes and poor air quality can limit both the days and number of hours that contractors can safely work outside. Increases in precipitation and flooding can also create challenges for grounds maintenance and improvements and disrupt overall access to the sites.

EPA's Office of Acquisition Solutions (OAS) will be conducting an in-depth Supply Chain Risk Assessment (SCRA) for all identified "excepted" contracts starting in 2024. OAS began expanding and redefining the criteria for excepted contracts in 2022 to identify mission-critical risks and allow for additional continuity of services and funding in the event of a natural and climate disaster or shutdown scenario, to protect employee safety and owned assets. This expanded definition for excepted contracts was submitted to and approved by the Acquisitions Management Council in 2023, and since then the Agency has identified over 1,400 contracts that are deemed critical to the Agency's mission. The SCRA for excepted contracts seeks to start characterizing the relationship between exposure, vulnerability, and the potential magnitude of consequences to the supply chains from climate change and will assign a risk score of either critical, high, moderate, or low to each of contract. This same process will be replicated and conducted for Program Management Improvement Accountability Act (PMIAA) contracts for major acquisitions and contracts for Information and Communication Technology (ICT) support in FY 2024.

EPA is also incorporating climate considerations into Cybersecurity Supply Chain Risk Management (C-SCRM), which is the process of identifying, assessing, preventing, and mitigating the risks associated with the distributed and interconnected nature of ICT product and service supply chains. C-SCRM covers the entire life cycle of ICT, which includes design, development, distribution, deployment, acquisition, maintenance, and destruction. This type of supply chain procurement is

critical for the Agency as it continues to modernize its operations and the potential for climate change impacts to disrupt physical access to EPA facilities increases. As directed by EO 14057, EPA has been implementing measures to reduce GHG emissions, improve building efficiency and procure more CFE, and tracks that progress through the installation of additional advanced meters and BAS controls. However, many automation systems that allow for remote building control require the use of proprietary technology that is not immediately compatible with EPA security polices and requires the procurement of third-party, cloud-based services to operate the software on EPA servers. Additionally, many of EPA's laboratories also use highly specific research equipment that requires proprietary software and cloud services to analyze samples and access results both within the laboratory and remotely, increasing the criticality of the C-SCRAs within the Federal Information Technology Acquisition Reform Act (FITARA) process.

EPA will need to conduct more ICT procurement and ongoing cybersecurity risk analysis to maintain continuity of operations. EPA is increasingly reliant on remote access capabilities for operational resilience. As more mission functions require adoption of remote capabilities, the Agency will need to conduct more ICT procurement and ongoing cybersecurity risk analysis to maintain continuity of operations plans and procedures. The Agency's 2022 ICT Supply Chain Management Strategic Plan found that EPA was deficient in all seven of the Government Accountability Office's recommended foundational practices in C-SCRM. While the specific relationship between cybersecurity and climate change can be indirect, impacts to EPA's cybersecurity infrastructure in its current state can exacerbate existing or create new vulnerabilities to sophisticated exploitation tactics to steal data and/or damage, disable or destroy the Agency's computers, networks, or systems, which would inhibit EPA's ability to fulfill its mission and safeguard its personnel and environmental data.

As directed by EOs 14008 and 14030 and the Federal Acquisition and Supply Chain Security Act, in 2023 EPA began updating its Information Security Risk Management and Information Security Continuous Monitoring strategic plans to incorporate updated guidance and requirements from the National Institute of Standards and Technology (NIST) into ICT procurement and information security procedural guides. Through FY 2027, EPA will continue conducting Cyber-SCRAs (C-SCRAs), starting with FISMA high-value reportable assets and at-risk IT systems, then transitioning to the moderate and low-risk assets and systems, ensuring that the full scope of C-SCRM is assessed. Maintaining cybersecurity and conducting ongoing C-SCRAs will be pivotal to the Agency's operational resiliency as both science needs and the IT sector continue to rapidly evolve.

3B.5. Climate Informed Funding to External Parties

EPA's 2021 Climate Adaptation Plan and the EPA Administrator's Policy Statement on Climate Change Adaptation directed all national program and regional offices (offices) to proactively incorporate climate adaptation into the Agency's programs, policies, rules, and operations; including modernizing its financial assistance programs where appropriate. The statement also directed the offices to consult and partner with states, tribes, territories, local governments, community groups, businesses, and other federal agencies to increase the adaptive capacity and resilience of the nation, with a focus on environmental justice. EPA has built upon these early directives with a Memorandum (Memo), *Incorporating Climate Change Adaptation Criteria into Applicable Financial Assistance* (February 2023), which reaffirmed EPA's long-term commitment to modernize its financial assistance programs to

encourage climate-resilient investments. It also established the Resilient Infrastructure Subgroup on Climate (or RISC, chaired by EPA's Office of Policy) to advance this commitment in partnership with over 20 offices across the Agency. RISC's initial focus is on BIL and IRA funded programs. The lessons learned from these opportunities will allow EPA to scale its efforts to other financial assistance programs over time.

The Resilient Infrastructure Subgroup on Climate goals and activities align with the priorities of EPA's FY 22-26 Strategic Plan, EPA's 2021 Climate Adaptation Plan, "Policy Statement on Climate Change Adaptation", and the 20 national program and regional office Climate Adaptation Implementation Plans. Per the Memo, RISC is performing activities to support EPA's offices with integrating adaptation and resilience into their financial assistance programs. RISC is also taking steps to help make EPA's tools, training, data, and technical assistance initiatives more accessible to funding applicants and recipients as they make climate-resilient investments. RISC's activities are achieved in collaboration with EPA's offices to leverage the best practices and expertise of the programs. For example, EPA's National Estuary Program, Geographic Programs (such as Puget Sound), Drinking Water and Clean Water State Revolving Loan Fund programs, Brownfields grant programs, and the Community Change Grant Program are models for how to incorporate adaptation and resilience requirements into funding announcements and overall program operations.

Five goals of EPA's Resilient Infrastructure Subgroup on Climate (RISC)

- ✓ Foster internal coordination and communication.
- ✓ Enable climate-resilient infrastructure investments.
- ✓ Deliver technical assistance and decision support.
- ✓ Increase access and usability of climate information.
- ✓ Equitably advance resilient investments.

Many of these programs promote climate adaptation and resilience, while also helping to advance environmental justice as part of the Justice40 Initiative, which sets a goal that 40 percent of the overall benefits of certain Federal climate and other investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution.

The RISC is developing two main projects for the Agency that align with the Agency's goals and directives for climate adaptation. The first is an internal clearinghouse to provide EPA's financial assistance staff with a general approach to address climate adaptation and resilience throughout various steps of their program processes (e.g., writing announcements, assessing climate risks to a proposed project, performing meaningful engagement.). The second is an external facing toolbox intended to supply technical assistance providers with resources to support applicants and recipients with investing in climate-resilient projects. These two projects will provide the internal and external guidance needed to support success on both sides of a federal investment decision. EPA programs will be strongly encouraged to follow the approach laid out by the internal clearinghouse to integrate adaptation and resilience into their funding announcements, as well as climate justice. RISC has also produced interim products to help EPA staff incorporate adaptation and resilience into grant and loan programs, including compiling example language for incorporating adaptation and resilience into funding announcements, innovative practices for financial assistance programs to advance EPA's

climate adaptation goals, and BIL and IRA focused priority actions that EPA's offices can adopt as part of their Climate Adaptation Implementation Plans.

RISC's two main projects prioritize the use of climate tools and information to inform funding decisions, the incorporation of climate justice into EPA's financial and technical assistance opportunities, and the adoption of common metrics that recipients can use to meet EPA's reporting requirements. RISC is packaging federal tools and information to help both financial assistance staff and applicants understand, identify, and perform a high-level evaluation of the climate risks to a proposed project.

The Resilient Infrastructure Subgroup on Climate is also centering accessibility, equity, and climate justice in the design of its projects. RISC's internal dashboard will provide direction on the inclusion of climate justice and meaningful engagement practices when developing funding opportunities, including innovative ways to reduce application burden through program design. RISC's publicly accessible toolbox will also help reduce the barrier to entry for disadvantaged communities by sharing resources to help them easily identify what funding to apply for based on their interests, in addition to the climate risk tools and information that can be used to develop their applications. It will also highlight resources to facilitate inclusive outreach and engagement as important steps for developing climate-resilient and climate-just projects. Additionally, EPA is working to develop standard output and outcome metrics for recipient (grantee) reporting that include climate adaptation, resilience, and climate risk. Once developed, these metrics will be featured as part of RISC's internal dashboard for voluntary adoption by EPA's financial assistance programs.

3C. Climate Training and Capacity Building for a Climate Informed Workforce

Training and Capacity Building		
Agency Climate Training Efforts	**Percent of EPA staff that have taken a 60+ minute introductory climate training course (e.g., Climate 101).**	63% of all employees who joined since 2018 have taken "Climate Adaptation Introductory Training."
	Percent of EPA senior leadership (e.g., Sec, Dep Sec, SES, Directors, Branch Chiefs, etc.) that have completed climate adaptation training.	37% of senior leadership (Senior Executive Service, Supervisors, and Management Officials) and 52% of (non-Senior Executive Service) team leads who joined since 2018 have taken "Climate Adaptation Introductory Training", compared to 65% of General Service employees.
	Percent of budget officials that have received climate adaptation related training.	23% have taken "Climate Adaptation Introductory Training" or similar course.
	Percent of acquisition officials that have received climate adaptation related training.	25% have taken "Climate Adaptation Introductory Training" or similar course.

	Additional efforts the Agency is taking to develop a climate informed workforce.	17 climate adaptation trainings have been facilitated across programs and regions.
Agency Capacity	**Number of full-time federal employees (FTE) across the Agency that have tasks relevant to climate adaptation in their job description.**	There are 43 positions in the Agency where the position description directly mentions climate adaptation and/or climate resilience work. They are a combination of General Schedule, Senior Executive Service, and political employees. The Agency does not have information on contractors.

3C.1 Agency-Wide Initiatives for Developing a Climate-Informed Workforce at EPA

To respond to climate change, EPA needs its personnel and partners to adopt new ways of achieving the Agency's mission. EPA is building capacity through ongoing education and training to mainstream climate adaptation into every part of the Agency. Equipped with an understanding of projected climate impacts, the vulnerability of EPA programs to these impacts, and adaptation approaches, EPA staff will be better able to incorporate climate adaptation into their programs, plans and decisions. The Agency is also supporting efforts by our stakeholders and partners to increase their climate literacy.

Goals of EPA's Climate Adaptation Training Initiatives

(1) **Increase awareness through introductory training** about the importance of climate adaptation and encourage all EPA staff and partners to consider the changing climate in their normal course of business.

(2) **Equip EPA staff with specific methods and tools for integrating climate adaptation into decision-making processes across different types of job functions**, including programmatic staff, financial assistance staff, budget staff, acquisition staff, regulatory staff, scientists and researchers, and developers of tools and technical support.

(3) **Cultivate peer learning networks within the Agency** so that staff can use avenues to share ongoing, emerging, and practice-based adaptation knowledge.

1. **Introductory Training.** As of 2018, all newly hired EPA employees are required to take an *Introduction to Climate Adaptation* training module on the Agency-wide training platform. This module equips new employees with awareness of how climate change impacts the Agency's mission areas. Additionally, since the 2021 Climate Adaptation Plan, 10 of EPA's programs and regions have developed and deployed additional program-specific Climate Adaptation trainings—28 sessions in total, 17 distinct trainings or resources, with 8 distinct training series. These trainings are tailored to specific areas of EPA's mission and/or regional

context. In addition to these more formal trainings, there are numerous smaller regional office presentations that support climate literacy.

Budget and Acquisition Staff: EPA is working to distribute climate training to staff beyond sustainability, climate, and environmental media staff to include budget and acquisition officials. To-date, 23% of budget officials and 25% of acquisition officials have taken introductory climate training. By 2027, EPA will work on expanding its reach of climate adaptation training opportunities so that more budget and acquisition staff will have taken a climate 101 training.

Reaching Senior Leadership: To-date, senior leadership and supervisory staff have taken climate or climate adaptation training at a lower rate than non-supervisory staff (37% vs. 65% GS employees who joined Agency after 2018). However, there is progress since 2018: 37% of senior leadership (SES and above) and 52% of non-SES team leads who joined the Agency after 2018 have completed introductory climate adaptation training. In the future, EPA will continue to engage senior leadership with opportunities for targeted training.

2. Equipping Staff to Integrate Climate Adaptation Across EPA Mission Areas.

Financial Assistance Staff: With the implementation of the Inflation Reduction Act and Bipartisan Infrastructure Law, EPA is taking steps to modernize its financial assistance mechanisms so that these investments are resilient to future climate risk. (See Section 3D, "Climate-Informed Funding to External Parties"). As part of the efforts of the Resilient Infrastructure Subgroup on Climate (RISC), EPA is enhancing the capacity of its financial assistance staff to take climate change considerations into account when developing and implementing financial assistance agreements.

Regulatory Staff: EPA is educating regulatory staff about the implications of a changing climate on the Agency's mission to protect human health and the environment. For example, EPA held a training event that informed Agency rule writer participants about options for considering changing weather and climate risk during rule development. The webinar was produced in 2022 and delivered to EPA's rule writing community in 2023.

Examples Across EPA Mission Areas: Programs are developing mission area-specific training and capacity building resources. For example, the Office of Air and Radiation (OAR) developed a three-part training series that provides a brief overview of climate change basics and adaptation before focusing on how OAR is considering climate adaptation in its work. The Office of Land and Emergency Management (OLEM) developed a four-part training series for OLEM staff and management about integrating climate adaptation, mitigation, and science into its core actions. In a separate training, OLEM also trained its staff on how to conduct climate vulnerability assessments. The Office of Enforcement and Compliance Assurance (OECA) developed a training to introduce and highlight compliance and enforcement efforts to address climate change consistent with administration priorities. The Office of Research and Development (ORD) delivered multiple webinars to EPA staff related to adaptation-relevant climate impacts research or the usage of climate data and information in decision-making.

EPA's Climate Change Adaptation Resource Center (ARC-X) is an interactive resource designed to support local-level adaptation and help local government officials effectively deliver services to their communities even as the climate change. Users are given an opportunity to first self-identify by indicating the region of the country in which they live and the specific issues of concern to them (*e.g.,* air quality, water management, environmental justice, contaminated site management, ecosystem protection). The system then provides them with an integrated package of information tailored specifically to their needs, based on where they live and the specific issues of concern to them. This information includes: (1) the risks posed by climate change to the issues they care about; (2) adaptation strategies they might consider implementing; (3) case studies illustrating how other communities have successfully adapted to those risks; and (4) tools to replicate the successes of the other communities. EPA will continue to improve the ARC-X system by adding new content (*e.g.,* environmental and climate justice resources) and enhancing the user experience by making it easier to access the adaptation information they need to plan for and implement adaptation strategies in their community.

3. **Cultivating Peer Learning Around Climate Adaptation:** In addition to formal training and learning opportunities, building peer learning networks is key to maintaining a climate-informed and adaptive staff, given the evolving nature of climate adaptation. As one example of an EPA-wide peer learning network, the Integrated Climate Sciences Division in ORD and the Office of Policy have partnered to co-host an internal *Climate Conversations Seminar Series* to coordinate staff peer learning and knowledge sharing activities. Launched in fall 2023, this series provides a forum in which EPA employees can exchange knowledge and experiences on climate and apply it to their work. An average of 315 employees from across the Agency attends the sessions. The series (1) informs EPA staff about emerging climate science research relevant to the work of EPA's programs and regions, (2) highlights best practices in applying climate data and information to EPA policies and practice, (3) demonstrates applicable tools and resources to support regional climate resilience, (4) facilitates interactive peer-learning activities related to certain climate topics, and (5) fosters a sense of community and collaboration among staff on EPA climate adaptation issues. Other peer learning networks and communities of practice are being cultivated across the Agency, including Regional-specific speaker series.

3C.2 Agency Climate Adaptation Capacity

Climate adaptation work takes place in every national program office and region in the Agency, and only a portion of staff who work on climate adaptation have "adaptation" or "resilience" directly mentioned in their position description. Agency climate adaptation staff capacity includes staff who have their full time dedicated to climate adaptation and those whose time is split between climate adaptation and other job functions. There are currently 43 positions in the Agency where the position description directly mentions climate adaptation and/or climate resilience work. They are a combination of GS and SES career staff, and political appointees. Many other staff in the program offices and regions who do not identify as "climate adaptation" personnel are already integrating climate adaptation into the work they are doing. Examples include staff in the RCRA program and the Superfund program.

The Cross-EPA Workgroup on Climate Change Adaptation has historically consisted of staff who lead the coordination of climate adaptation in their program or region. In the past decade, the Workgroup membership has grown to over 350 staff, reflecting the extent to which climate adaptation is being mainstreamed across the Agency beyond staff who have adaptation directly mentioned in their position description.

There are also FTEs dedicated to climate issues in general, including adaptation. One example of such staff is the new Integrated Climate Sciences Division, launched in 2023 in the Office of Research and Development. ICSD scientists deliver regionally relevant assessments, technical assistance, and capacity building to support adaptation, in addition to their work that advances climate mitigation.

3D. Summary of Major Milestones

Subsection of Section 3 in the Implementation Plan	Description of Major Milestone for Implementation	Climate Risk Addressed (sea level rise, extreme heat, extreme precipitation, or wildfire risk)	Indicators for success
3A.1 Addressing Climate Hazard Impacts on and Exposures to Federal Buildings	FY2024-2026: EPA will have completed a resiliency assessment report for all 18 owned laboratory facilities.	Increased heat and precipitation, sea level rise, flooding, and wildfire.	Number of completed reports each fiscal year.
3A.2 Addressing Climate Hazard Impacts on and Exposures to Federal Employees	FY 2024-2026: EPA will conduct Occupational Safety and Health Agency Heat Illness Safety and Integrated Vegetation Management trainings as part of the Agency's environmental management systems program.	Extreme Heat safety and Illness	Number of EMS coordinators trained each fiscal year.
3B.3. Incorporating Climate Risk into Policies and Programs	By September 30, 2026, implement all priority actions in EPA's Climate Adaptation Action Plan and the 20 national program and regional Climate Adaptation Implementation Plans.	All of the above.	Total number of actions implemented.

3B.3. Incorporating Climate Risk into Policies and Programs	By September 30, 2026, assist at least 400 federally recognized Tribes to take action to anticipate, prepare for, adapt to, or recover from the impacts of climate change.	All of the above.	Total number of tribes assisted.
3B.3. Incorporating Climate Risk into Policies and Programs	By September 30, 2026, assist at least 450 states, territories, local governments, and disadvantaged communities at risk from climate change, to take action to anticipate, prepare for, adapt to, or recover from the impacts of climate change.	All of the above.	Total number of states, territories, local governments, and communities assisted.

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)	**Yes.** The resulting project recommendations from EPA's owned laboratory facility climate resiliency assessments align with existing documents such as the facility master plans to inform future operation and maintenance contracts and capital improvement plans. EPA has also committed to initiate projects ranked as a "very-high" priority by the Office of Mission Support Resilience Working Group and will work with the to identify funding opportunities for these recommendations. **Yes**. EPA integrates the "very-high" priority project recommendations from the climate resiliency assessments of its owned laboratory facilities into the Agency's five-year Buildings and Facilities plan once a funding source has been identified. OMS also maintains a repository of additional project recommendations and works with facilities to identify funding pathways to implement projects that did not meet the "very-high" priority designation during the project recommendation voting process.
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)	**Yes.** As much as possible and consistent with its authorities and available resources, EPA is accounting for the risks posed by climate change and related environmental justice concerns as it designs, implements, and assesses its programs, policies, rules, enforcement and compliance assurance activities, and operations (i.e., facility

		operations, workforce protection, managing and protecting supply chains) to help ensure they are effective and resilient to climate change.
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)	**Yes.** The work EPA does to incorporate climate risk into planning and budget decisions is driven by EPA's FY 2022-2026 Strategic Plan. See 3B.2 for additional details.
3B.5 – Climate Informed Funding to External Parties	Step 1: By July 2025, 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)	**Partially**. While EPA is committed to modernizing all its financial assistance programs to encourage climate-resilient investments, EPA's Resilient Infrastructure Subgroup on Climate initial focus is to support the BIL and IRA-funding programs that are distributing an unprecedented amount of federal funding. EPA is also mindful that some grant programs must comply with specific or unique statutory obligations that may prevent them from fully 'embracing' certain elements of adaptation and/or resilience (including requirements for evaluating climate risk) as part of their implementation. EPA's Resilient Infrastructure Subgroup on Climate has performed a cursory accounting of the BIL and IRA-funded grant programs that have incorporated language related to climate change as of November 2023. EPA's Resilient Infrastructure Subgroup on Climate will continue to support all financial assistance programs in considering climate risks as part of their investment decisions and recipient reporting requirements, where and when appropriate. EPA's Resilient Infrastructure Subgroup on Climate, the Office of Mission Support, and the Office of the Chief Financial Officer are working together to help financial assistance programs consistently identify climate adaptation/ resilience projects funded by EPA, which may include climate risk

		analyses. See Section 3D for more information. **Partially –** While EPA is committed to encouraging climate-resilient investments and is developing guidance for programs to support climate-resilient investments through both competitive and noncompetitive grant programs, EPA currently does not require funding announcements/grants to include a criterion that applicants/grantees must consider climate hazard exposures. However, the Office of the Chief Financial Officer and the Office of Congressional and Intergovernmental Relations are currently working with EPA's national program and regional offices to identify and consistently define universal output and outcome metrics for recipient reporting purposes. The metrics that pertain to adaptation and resilience specifically (including any consideration or evaluation of related climate risk or exposures) may help to streamline the reporting requirements for grantees expressed as part of all applicable funding announcements (and their terms and conditions for funding). Those metrics are currently under Agency deliberation.
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.** EPA is incorporating information on the impacts of and responses to climate change is effectively into the diverse systems and processes that support and track EPA's financial and regulatory actions. This requires: (1) identification of those systems and processes and development of consistent and guided approaches to incorporating relevant

		climate change information and data; (2) educating appropriate staff on the relevant resources and approaches for incorporating climate change information; and (3) updating, maintaining, and enhancing the tools, guidance, and systems to offer the best available information and data in readily accessible and usable format(s). EPA has identified three categories of processes that require consideration of climate change data and information: (1) funding mechanisms, including grants to states, territories, tribes, and localities; (2) rulemaking and enforcement actions; and (3) internal operations, including facility management and personnel health and safety. EPA is engaging across the Agency to develop and implement robust mechanisms to facilitate incorporation of relevant climate change information and data into these processes. The Resilient Infrastructure for Climate Subgroup, part of the Cross-EPA Work Group on Climate Adaptation, has developed multiple resources for incorporating climate information and data into Agency processes. For more on how the Resilient Infrastructure Subgroup on Climate is incorporating climate data into Agency processes, see Section 3D. Climate Informed Funding to External Parties. See Section 3A.4--Accounting for Climate Risk in Planning and Decision Making for more information on how EPA is integrating climate adaptation into rulemaking processes. One resource designed to provide on-going science support for these efforts is the establishment of the Integrated Climate Sciences Division in EPA's Office of Research and Development. One of the goals of the new

		Division is to develop and deliver scientific information and data on climate change and climate change adaptation to EPA and EPA partner users, focusing on close engagement and interaction with the users of that information and data.
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.** Goal 1 (Tackling the Climate Crisis) of EPA's FY 2022-2026 Strategic Plan contains an Objective (Objective 1.2) to Accelerate Resilience and Adaptation to Climate Change Impacts. The Strategic Plan commits EPA to taking necessary actions to anticipate, prepare for, adapt to, and recover from the impacts of climate change while advancing the climate resilience of Tribes and indigenous peoples, states, territories, and communities across the nation. It commits EPA to ensuring its programs, policies, rulemaking processes, enforcement and compliance assurance activities, and operations consider the current and future impacts of climate change and how those impacts will disproportionately affect communities with environmental justice concerns. The 20 Climate Adaptation Implementation Plans developed by the program and regional offices contain priority actions they will take in each fiscal year to meet this commitment. The Strategic Plan has a Long-Term Performance Goal that states: "By September 30, 2026, implement all priority actions in EPA's Climate Adaptation Action Plan and the 20 national program and regional Climate Adaptation Implementation Plans to account for the

		impacts of the changing climate on human health and the environment.”
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, agency has assessed services and established a plan for addressing/overcoming disruption from climate hazards. (Y/N/Partially)	Step 1: **Partially**, the Agency is in the process of conducting a tiered Supply Chain Risk Assessment of its critical components, supplies and services to fully understand the scope of supply chain risks. Step 2: **Partially**, EPA’s Supply Chain Risk Management plan is set to complete its tiered Supply Chain Risk Assessment in FY 2026, and upon completion the Agency will begin to address the hazards identified.
	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.** EPA is in the process of identifying, differentiating, and defining the mission-essential contracts for services and goods that are vital to the Agency. In 2023, EPA’s Acquisition Management Council approved definitions for Excepted, Program Management Improvement Accountability Act, and Federal Information Technology Acquisition Reform Act contracts, allowing EPA to use a tiered approach to prioritize the Agency’s contracts. Now that the contract definitions have been established, as a next step the Agency’s Office of Acquisition Solutions will work with EPA’s program offices to identify these contracts, which can impact the continuity of the Agency’s mission both remotely and onsite.

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 a 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 % employees have completed climate 101 trainings. (Y/N/Partially)	**Yes.** Each year, EPA prepares an end-of-year report on climate adaptation actions and achievements that is shared widely with Agency leadership. **Yes.** The Agency has had a Climate 101 training in place since 2018. Approximately 20% of Agency employees have taken this training. **Partially.** EPA is developing an updated version of the Climate 101 training Different parts of the training will be tailored to staff working in different programs. The Agency is assessing whether the training is warranted for all EPA staff given their responsibilities.

4B. Adaptation in Action

Following publication of the 2021 Climate Adaptation Plan, every EPA program and regional office developed a Climate Adaptation Implementation Plan that contains annual priority actions that address the five Agency-wide climate adaptation priorities (see sidebar). Taken together, the programs and regions have made significant progress integrating climate adaptation into internal programs, policies, rulemaking processes, enforcement activities, and operations, and delivering external assistance to state and local governments, tribes, and territories. As of the end of FY23, the program and regional offices had taken

Through this 2024 – 2027 Climate Adaptation Plan, EPA will continue to implement its five Agencywide priorities for climate adaptation.

1. Integrate climate adaptation into EPA programs, policies, rulemaking, and enforcement.
2. Consult and partner with wide array of stakeholders to strengthen adaptive capacity and increase resilience.
3. Implement measures to protect Agency workforce, facilities, critical infrastructure, supply chains, and procurement processes from risks posed by climate change.
4. Measure and evaluate performance.
5. Identify and address climate adaptation science needs.

over 350 priority actions to integrate climate adaptation into the work that they do. All of these actions are focused on attaining the three long-term performance goals on climate resilience and adaptation in the Agency's FY 2022-2026 Strategic Plan.

Provided below are examples of actions taken by the Agency's national program offices in partnership with the regional offices and other government entities:

- EPA is equipping communities with information and resources needed to assess their climate risks and develop the climate resilience solutions most appropriate for them, with a particular focus on advancing environmental justice.
    - ✓ Thanks to IRA funding for the new Climate Pollution Reduction Grants (CPRG) program and the Environmental and Climate Justice Community Change Grant Program ($5 billion and $2 billion respectively), EPA is providing even more support for communities adapting to climate change.
    - ✓ As part of the Community Change Grant program, Office of Water's Creating Resilient Water Utilities Initiative provides water sector utilities with the practical tools, training, and technical assistance needed to increase resilience to extreme weather events.
    - ✓ With over $50 billion from Bipartisan Infrastructure Law (BIL), EPA's Clean Water and Drinking Water State Revolving Fund Programs are providing low-cost financing for water quality and infrastructure projects, including those that help address drought, wildfire, water conservation, energy efficiency, and more.
    - ✓ With almost $2 billion in BIL funding, EPA's National Estuary Program and Geographic Program grants is supporting green infrastructure projects that help address extreme heat.
    - ✓ The Office of Environmental Justice and External Civil Rights established 16 Environmental Justice Thriving Communities Technical Assistance Centers (TCTACs), in partnership with the Department of Energy, to help disadvantaged communities across the country. The TCTACs provide training and other assistance to build capacity for navigating federal grant application systems, developing strong grant proposals, and effectively managing grant funding. In addition, these centers provide guidance on community engagement, meeting facilitation, and translation and interpretation services for limited English-speaking participants.
- The Office of Research and Development established an Integrated Climate Sciences Division to (1) support the implementation of the 20 EPA program and regional office Climate Adaptation Implementation Plans, and (2) provide place-based technical support to all 10 regional offices and the communities they serve.
- EPA's American Indian Environmental Office is leading the Agency's efforts to develop approaches for integrating Indigenous Knowledge (IK) into decisions and actions taken by EPA and its partners across the nation. OITA is training EPA in the program and regional offices and building a community of practice focused on advancing the use of IK by EPA and its partners across the nation.
- EPA's Office of International Affairs is working in support of a MOU signed in March 2024 by EPA Administrator Regan and U.S. AID Administrator Samantha Power, formalizing the leaders' joint commitment to cooperate in tackling the challenges of climate change, air and water

pollution, lead poisoning, and recycling of materials from plastics and electronic waste. One area of focus will be on the impacts of climate change on the Pacific Islands.

- Administrator Regan recently conducted a Mission to Africa where he reinforced EPA's commitment to partner with leaders, young people, and advocates to address many of these same challenges.
- The Office of Land and Emergency Management's (OLEM's) RCRA program, in partnership with the regional offices, is ensuring PCB clean-up processes, RCRA permitting, and RCRA corrective action are resilient to climate change.
- OLEM's Superfund program developed an approach that raises awareness of the vulnerability of contaminated sites to the impacts of climate change and extreme weather events and integrates climate adaptation into cleanup projects. The approach involves periodic screening of Superfund remedy vulnerabilities, prioritizing the Superfund program's steps to adapt to a changing climate, and identifying measures to assure climate resilience of Superfund sites.
- EPA is advancing implementation of nature-based solutions with other federal agencies through the Green Infrastructure Federal Collaborative to promote the implementation of green infrastructure. The collaborative is supporting strategies that foster climate resilience and encourage the equitable implementation of green infrastructure in communities across the nation.
- The Office of Enforcement and Compliance Assurance is implementing its Agency-wide guidance for incorporating (where appropriate) climate change into cleanup enforcement cases.
- The Office of Acquisition Solutions within the Office of Mission Support is continuing to implement its Supply Chain Risk Management Plan "Implementation Plan" which includes actions to protect against the risks posed by climate change.
- EPA is measuring and evaluating progress. The Agency has specific metrics to track progress meeting the Long-Term Performance Goals related to climate adaptation in the EPA FY22-FY26 Strategic Plan. The Office of Policy has also developed a Climate Adaptation Measures Program database for collecting performance data from across the entire Agency.

The Agency's climate adaptation activities described in this Plan—from helping communities build climate resilience through technical assistance to integrating climate resilience considerations in EPA's financial investments-- will carry through in the 2024-2027 CAP. EPA intends to continue being a leader in building resilience and helping communities prepare for and adapt to the impacts of climate change. EPA's newly launched Office of Climate Adaptation and Sustainability, located in the Office of the Administrator's Office of Policy, will support climate adaptation and resilience capacity building across the Agency, with an emphasis on serving communities and connecting them with EPA expertise and technical assistance. The new office will also lead and manage work on emerging, cross-cutting issues of significance to the Agency, particularly those relating to development and implementation of climate policies that support progress toward a more equitable, resilient, and sustainable economy. This includes:

- Supporting climate change adaptation and resilience capacity building across the Agency,
- Facilitating development of cross-cutting climate change mitigation strategies,

- Focusing attention on climate-related impacts on vulnerable communities,
- Assuring sustainable materials management,
- Working with industrial sectors on climate-related impacts by and on the sectors,
- Advising on voluntary consensus standards related to climate and sustainability,
- Supporting financial disclosure of climate-related risks, and
- Addressing other climate change mitigation challenges and environmental issues requiring interdisciplinary expertise and cross-sector, cross-media, cross-agency, and whole of government approaches.

Conclusion

EPA remains strongly committed to taking necessary actions to anticipate, prepare for, adapt to, and recover from the impacts of climate change while advancing the climate resilience of Tribes and indigenous peoples, states, territories, and communities across the nation.

EPA program and regional offices will continue to update policies, rulemaking processes, enforcement and compliance assurance activities, and operations to consider the current and future impacts of climate change and how those impacts will disproportionately affect overburdened and underserved communities.

EPA will continue to provide targeted assistance to Tribes and indigenous peoples, states, territories, local governments, communities, and businesses to transform their environmental programs, strengthen their adaptive capacity, and increase the resilience of the nation, with a particular focus on advancing environmental justice. This includes preparing for and responding to climate-related impacts and disasters (e.g., wildfires, extreme heat, droughts, floods, sea level rise, damage to estuaries and ecosystems, health impacts, storm surge, and melting permafrost) and ensuring that infrastructure investments increase resilience to climate change.

This Climate Adaptation Plan captures the many innovative ways the Agency will continue to fulfill its mission of protecting human health and the environment even as the climate changes.

Appendix A: Risk Assessment Data

The Federal Mapping App uses the following data:

Buildings

Buildings data comes from the publicly available 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.

Consideration of Additional Hazards

In addition to these data, EPA used a mix of national and local data sets to obtain more specific historic and projected hazard information at each of the Agency's facility locations. This additional data allowed EPA to explore the vulnerability and likelihood of nine additional hazards.

Appendix B: EPA Climate Impact Map

Figure 1. Section 2D - Example EPA Facilities Hazard Vulnerability Map