U.S. Department of Transportation
Office of the Secretary of Transportation

Climate Action Plan

Revitalizing Efforts to Bolster Adaptation & Increase Resilience

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Office of the Secretary of Transportation
Office of the Deputy Assistant Secretary for Climate Policy
1200 New Jersey Ave., SE
Washington, DC 20590

DOT Policy Statement

The world is facing an existential climate crisis. Climate change presents a significant and growing risk to the safety, effectiveness, equity and sustainability of our transportation infrastructure and the communities it serves. We have a 'once-in-a-generation' opportunity to address this risk. The United States Department of Transportation (DOT or Department) is going to lead the way.

Over the last decade, DOT has integrated climate change impacts, adaptation, and resilience into domestic and international planning, operations, policies, and programs. However, more must be done. The Department has the opportunity and obligation to accelerate reductions in greenhouse gas emissions from the transportation sector and make our transportation infrastructure more climate change resilient now and in the future. To do this, we will ensure that Federally supported transportation infrastructure, and DOT programs, policies, and operations, both consider climate change impacts ***and*** incorporate adaptation and resilience solutions whenever possible, by following these guiding principles:

- **Use Best-available Science.** Adaptation and resilience strategies will be grounded in the best-available scientific understanding of climate change risks, impacts, and vulnerabilities. Our adaptive actions will not be delayed—all plans and actions will be continuously reevaluated as our understanding of climate impacts evolves.
- **Prioritize the Most Vulnerable.** Adaptation and resilience plans will prioritize helping people, communities, and infrastructure that are most vulnerable to climate impacts—this includes underrepresented groups, low-income communities, communities of color, limited English proficient communities, and individuals with disabilities. These plans will be designed and implemented through a transparent process with meaningful involvement in decision making from all parts of society. Issues of inequality and environmental justice associated with climate change impacts and adaptation will be addressed.
- **Preserve Ecosystems.** Protecting biodiversity and ecosystem services through adaptation strategies will increase resilience of human and natural systems to climate change and other risks, providing benefits to society and the environment (e.g. in a coastal setting, wetlands serve as buffers to transportation assets and can minimize the impacts of storm surge).
- **Build Community Relationships.** Adaptation and resilience require coordination across multiple sectors, geographical scales, and units of government. Our actions will build on existing efforts, knowledge, and meaningful engagement of communities that are impacted. Because impacts, vulnerabilities, priorities and needs vary by region and locale, adaptation will be most effective when driven by local and regional risks and needs.
- **Engage Globally.** The transformation of the global transport sector offers some of the most significant opportunities for deep greenhouse gas emissions cuts, healthier cities, and a 'once-in-a-generation' opportunity to build resilient infrastructure. DOT is committed to working with other nations, multilateral organizations, industry, and non-governmental organizations to lead a global transformation that addresses climate change mitigation, adaptation, and resilience.

We cannot do this alone. State, regional, local, territorial, and Tribal transportation agencies are encouraged to build resilience and adaptation into their planning and decision-making processes. Private sector innovation and investment in climate change resiliency and adaptation is needed. By working together, we can ensure that our transportation systems can adapt to future changes, minimize negative impacts, take advantage of innovative opportunities, and better serve people and communities, especially those traditionally vulnerable and underserved.

Secretary Pete Buttigieg

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I. Introduction

Pursuant to Section 211 of Executive Order (E.O.) 14008, *Tackling the Climate Crisis at Home and Abroad* and Council on Environmental Quality's (CEQ) Implementing Instructions,[1] the U.S. Department of Transportation (DOT or Department) has developed and submitted this Climate Action Plan (Plan). This Plan builds from the previous Climate Action Plans prepared in 2012 and 2014, respectfully. The 2012 Action Plan focused on the climate change's impacts to DOT's critical mission activities—safety, state of good repair and federally owned building's environmental sustainability. The 2014 Climate Adaptation Plan provided updates on DOT's accomplishments to date and Fiscal Year (FY) 2013 and FY2014 commitments.

This Plan follows the CEQ Instructions for Preparing Draft Climate Action Plans under E.O. 14008 and focuses on climate adaptation and resilience[2] across agency programs and the management of Federal procurement, real property, public lands and waters, and financial programs. While the Department is engaged in a wide variety of activities related to reducing transportation sector greenhouse gas emissions, this Plan focuses on actions to bolster adaptation and increase resilience.

II. Leadership

The Office of the Secretary (OST) is responsible for the development, management, and execution of this Plan, through the leadership of the Deputy Assistant Secretary for Climate Policy and Chief Sustainability Officer (CSO), in coordination with the Department's modal Operating Administrations (OA), the Office of the General Counsel, and the Office of the Chief Financial Officer. Additionally, the Office of Policy, within OST, coordinates climate adaptation actions with support from DOT's Climate Change Center.

In 2021, President Biden appointed a Deputy Assistant Secretary for Climate Policy at DOT. The Deputy Assistant Secretary is responsible for the oversight and guidance of Departmental climate change adaptation and mitigation actions with internal and external stakeholders. In partnership with the Chief Sustainability Officer and OAs, the Deputy Assistant Secretary for Climate Policy promotes climate change preparedness and resiliency initiatives.

The OAs below have committed to fulfilling specific adaptation actions to increase climate change preparedness. In turn, they report progress on priority adaptation actions along with other regulatory and sustainability actions to the Deputy Secretary at regularly scheduled meetings.

- Federal Aviation Administration (FAA)
- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- Maritime Administration (MARAD)
- National Highway Traffic Safety Administration (NHTSA)

[1] Council on Environmental Quality, *Interim Instructions for Preparing Draft Climate Action Plans under Executive Order 14008,* March 2021.

[2] Resilience, as defined in the U.S. Global Change Research Program's Fourth National Climate Assessment and CEQ Instructions for Preparing Draft Climate Action Plans under Executive Order 14008, "means the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions." "Adaptation" means adjustment in natural or human systems in anticipation of or response to a changing environment in a way that effectively uses beneficial opportunities or reduces negative effects. As such, Departmental actions to reduce greenhouse gas emissions are not included.

- Pipeline and Hazardous Materials Safety Administration (PHMSA)
- Great Lakes St. Lawrence Seaway Development Corporation (GLS)

III. Climate Change Impacts on Transportation

DOT and its OAs oversee the safe operation of the United States (U.S.) transportation system including more than 4.2 million miles of public roads, 617,000 bridges, 136,851 railroad route miles, 2.8 million miles of pipelines, 25,000 miles of commercially navigable waterways, 3,321 public-use airports, 950 urban transit agencies, and more than 300 coastal, Great Lakes, and inland waterways ports.[3]

The effects of climate change are increasing over time. The U.S. Global Change Research Program's Fourth National Climate Assessment stated that 'thousands of studies' have documented changes in surface, atmospheric, and oceanic temperatures; melting glaciers, diminishing snow cover; shrinking sea ice; rising sea levels; ocean acidification; and increasing atmospheric water vapor around the world. These changes are expected to increase exponentially as the annual average temperatures are anticipated to rise by about 2.5 degrees Fahrenheit for the United States over the next few decades. It is extremely likely that the dominant cause of the observed warming since the mid-20th century is due to anthropogenic activities, especially from greenhouse gas (GHG) emissions.[4]

DOT recognizes that climate variability and change pose threats to U.S. transportation systems (See Figure 1: Notable Potential Impacts). The range of impacts from these threats may include flooding and damage to highways and subway tunnels, limited waterway access, buckled runways, and weakened structures such as bridges. Severe conditions may reduce the life of capital assets, increase operational disruptions, and create the need for new infrastructure such as evacuation routes. Some consequences may require changes in the design, construction, siting and maintenance of infrastructure. Interruptions to emergency routes or infrastructure failure can make travel conditions unsafe. They jeopardize national investment in transportation infrastructure, weaken mobility and economy, and compromise the safety of the travelling public.

Climate change has been shown to disproportionately impact vulnerable populations—older adults, children, low-income communities, and communities of color. These communities have less capacity to prepare for and cope with extreme weather and other climate change-related events. It is important when analyzing impacts of DOT actions, that these communities are identified and there is meaningful public involvement to educate them on the potential impacts and create solutions that will mitigate impacts from the transportation actions and from climate change.[5]

[3] Transportation Statistics Annual Report 2020 available at https://rosap.ntl.bts.gov/view/dot/53936
[4] USGCRP, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*, Chp. 2, Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.) available at https://nca2018.globalchange.gov.
[5] Id.

Figure 1. Notable Potential Impacts

Notable Potential Impacts

- More frequent/severe flooding of underground tunnels and low-lying infrastructure, requiring drainage and pumping, due to more intense precipitation, sea level rise, and storm surge.
- Increased numbers and magnitude of storm surges and/or relative sea level rise potentially shorten infrastructure life.
- Increased thermal expansion of paved surfaces, potentially causing degradation and reduced service life, due to higher temperatures and increased duration of heat waves.
- Higher maintenance/construction costs for roads and bridges, due to increased temperatures, or exposure to storm surge.
- Asphalt degradation and shorter replacement cycles; leading to limited access, congestion, and higher costs, due to higher temperatures.
- Culvert and drainage infrastructure damage, due to changes in precipitation intensity, or snow melt timing.
- Decreased driver/operator performance and decision-making skills, due to driver fatigue as a result of adverse weather.
- Increased risk of vehicle crashes in severe weather.
- System downtime, derailments, and slower travel times, due to rail buckling during extremely hot days.
- Increased temperatures limits aircraft performance leading to reduced payload or range capabilities.
- Air traffic disruption due to severe weather and precipitation events that impact arrival and departure rates or require flight cancellations, sometimes for extended periods of time.
- Reduced shipping access to docks and shore equipment and navigational aid damage.
- Restricted access to local economies and public transportation.

IV. Priority Adaptation Actions

DOT has long understood the need to make transportation infrastructure and operational systems resilient to the impacts of climate change. In 2006, DOT released a seminal study on the "Impacts of Climate Change and Vulnerability on Transportation Systems and Operations in the Gulf Coast," projecting the effects of sea level rise and storm surge on transportation in this Gulf Coast region. Since then, DOT has conducted vulnerability and adaptation assessments for different modes, locations, and systems, reaching from the planning level to project development and design. Some OAs have produced guidance on how to conduct a vulnerability assessment for climate change impacts on transportation, and several have conducted case studies of vulnerability and adaptation for climate impacts on facilities. Technical assistance and tools have been developed to better address climate change impacts on transportation assets. The Department is also conducting a priority research project to develop a tool to assess the costs and benefits of building resilient transportation infrastructure.

However, more can be done to incorporate resilience uniformly across transportation programs. Below are the five priority adaptation actions DOT will implement to increase climate preparedness of its agency programs and the management of Federal procurement, real property, public lands and waters, and financial programs.

Priority Action: Incorporate Resilience into DOT Grant and Loan Programs

Action Description:	Under this action, DOT will incorporate resilience criteria into DOT discretionary grant and loan programs, wherever appropriate. Under this action, DOT may change Notices of Funding Opportunity to include project resiliency as part of the selection criteria, if appropriate.
Action Goal:	Ensure that projects supported by DOT discretionary grant and loan programs incorporate effective climate change resiliency protective features, where possible.
Agency Lead:	The Office of the Secretary in coordination with other Secretarial Offices and OAs.
Risk or Opportunity:	This is an opportunity to ensure that projects funded by DOT have incorporated resiliency measures, where applicable.
Scale:	The Department will implement this priority adaptation action nationwide, as appropriate.
Timeframe:	DOT will commence this action in FY 2021. However, it is anticipated to take about two to four years to fully integrate. Identification of additional funding opportunities for resilience projects will be ongoing.
Implementation Methods:	To successfully achieve this priority action, DOT will: • Utilize the DOT Climate Change Center and internal working groups across OAs to identify where resiliency measures can be integrated into DOT's grant and loan programs and identify and address hurdles and limitations. • Create an integration plan based on an assessment of grant and loan programs to identify which documents need to be updated and when to ensure that resiliency principles are integrated into the Notices of

	Funding Opportunities, guidance to potential project sponsors, and selection criteria that were identified in the assessment. • Coordinate with the Secretarial Offices and Department's OAs that manage the identified grant and loan programs to incorporate resilience measures and principles, and address the identified hurdles and limitations with guidance and training. • Implement new authorities and grants related to resilience that are authorized by any infrastructure legislation that is enacted.
Performance:	The Department will monitor progress through: • Evaluation of grant and loan programs to ensure that, where DOT has authority, resiliency-integrated projects receive priority. • Evaluation and identification of projects where additional resiliency measures would be appropriate for project sponsors to consider in moving their projects forward. Measures are likely to be identified in the DOT Annual Performance Plan and status will be reported through the DOT Annual Performance Report.
Intergovernmental Coordination:	DOT will work with State DOTs, and local, territorial, and Tribal agencies to stress the importance of resiliency in federally-funded transportation projects.
Resource Implications:	No additional resources are needed at this time to incorporate resilience and adaptation to existing grant and loan programs. Guidance and training may be needed to implement this action. Additional grant and loan programs may be requested to make additional infrastructure resilient to climate change.
Challenges/Further Considerations:	Not all DOT funds and grant programs can integrate resiliency as a selection criterion based on current laws and regulations. The authority limitations may hinder incorporation of resiliency for federally-funded projects. Educating project sponsors on the importance of incorporating resilience can help to ensure that even if resilience cannot be a selection criterion that sponsors are aware that it is an important factor to consider.
Highlights of Accomplishments to Date:	Completed DOT initiatives: • Integration of resiliency into some of the legislative proposals for Congress to consider in the next surface transportation authorization. • Several DOT Notices of Funding Opportunities have included resilience as selection criteria since January 2021.

Priority Action: Enhance Resilience Throughout the Project Planning and Development Process

Action Description:	This action will evaluate and update current regulations and guidance to incorporate resilience throughout, where appropriate. If gaps are identified, new guidance may be issued. This action will also include updating guidance to stakeholders on how resilience can be incorporated throughout the planning and environmental processes for proposed actions, including transportation planning conducted by States and Metropolitan Planning

	Organizations (MPOs), and more holistically throughout the community. This could also include external training provided to stakeholders.
Action Goal:	Ensure Federally-funded transportation projects are planned, designed, and constructed to be resilient to climate change impacts.
Agency Lead:	Office of the Secretary in coordination with other Secretarial Offices and OAs.
Risk or Opportunity:	Many Federally-financed projects are not built to withstand the impacts of climate change, especially those associated with super storms. This could result in greater costs to taxpayers and system users due to more frequent repairs or replacement of assets, as well as more disruptions to the use of such assets.
Scale:	The Department will implement this priority adaptation actions across the nation.
Timeframe:	DOT will commence many of these actions in FY 2021. It is projected to take about two to four years to fully implement. Updated guidance may be needed on an ongoing basis as new information, technologies and processes are available.
Implementation Methods:	To successfully achieve this priority action, DOT will: • Inventory current planning and environmental guidance and regulations for transportation infrastructure to assess how resilience has been incorporated and to what extent additional information and updates are needed. • Prepare a work plan prioritizing the regulations and guidance that will have the most impact. • Identify new guidance or synthesis documents that will be helpful to internal and external stakeholders, including education to communities that could be impacted by climate change and create a work plan to implement. • Ensure external stakeholder awareness of climate resources and provide training, where appropriate.
Performance:	The Department will monitor progress through a workplan to ensure that specific actions are identified and are completed within a reasonable amount of time. Those measures are likely to be identified in the Annual Performance Plan and status will be reported through the DOT Annual Performance Report.
Intergovernmental Coordination:	Work with State DOT, local, territorial, and Tribal agencies to stress the importance of resilience in federally-funded transportation projects through our headquarters and field offices.
Resource Implications:	No additional funding or resources are needed at this time. Guidance and training may be needed to implement this action.

Challenges/Further Considerations:	OAs may be required to develop their own action plans to identify specific regulations and guidance documents that need to be updated to incorporate resilience. To the extent that research helps to inform new innovative ideas for resilience in transportation infrastructure, these regulations and guidance documents may need to be updated more frequently.
Highlights of Accomplishments to Date:	Completed DOT initiatives: • OAs have already begun identifying and updating resilience guidance documents to reflect current science.

Priority Action: Ensure Resiliency of DOT Facilities and Operational Assets

Action Description:	Lead by example by ensuring DOT facilities and operational assets are climate-change ready. This action is a renewed emphasis of an existing effort.
Action Goal:	Ensure that DOT facilities and operational assets are resilient to the effects of climate change.
Agency Lead:	The Chief Sustainability Officer and the Office of the Assistant Secretary for Administration will lead this action in coordination with other Secretarial Offices and the Department's OAs.
Risk or Opportunity:	The Department owns or operates more than 10,000 assets across ten climatic regions identified in the 2018 National Climate Assessment. Many air traffic control assets, offices, research laboratories, and other mission critical buildings in widely dispersed locations will experience a range of climate impacts, from extreme storms made worse by sea level rise, to longer-lasting and more extreme heat waves, to increased numbers and severity of hurricanes, wildfires, tornados, and floods. DOT will enhance the resilience of these assets by identifying and implementing priority adaptation actions.
Scale:	The Department will implement priority adaptation actions at mission critical assets across the nation.
Timeframe:	DOT will commence many of these actions in FY 2021. As adaptation is an iterative process, these actions will be ongoing.
Implementation Methods:	To successfully achieve this priority action, DOT will: • Guide sustained and coordinated action among OAs to further climate resilience efforts. • Use a risk-based management framework to assign a climate sensitivity and adaptive capacity score to each mission critical asset. • Prioritize implementation of adaptation projects at mission critical assets by combining climate sensitivity scores and cost-benefit measures to rank projects. • Explore opportunities to implement innovative technology and practices (e.g., clean energy technologies and net zero buildings) that significantly reduce climate susceptibility.

	• Track and report implementation progress to leadership and external stakeholders.
Performance:	The Department will monitor progress through OMB's scorecard along with: • Issuance of vulnerability assessment guidance for buildings and operations. • Development of an adaptation strategy business case template to standardize evaluation and prioritization criteria. • Annual reporting of implementation progress using metrics such as percent of mission critical assets assessed to identify climate risks.
Intergovernmental Coordination:	To be successful, the Department will leverage the climate adaptation knowledge and experience of its employees along with other Federal Agencies. For example, the General Services Administration's Office of Federal High-Performance Buildings has many experts available to assist agencies in the development and implementation of building climate adaptation actions. Additionally, the Department of Commerce's National Oceanic and Atmospheric Administration, National Institute of Standards and Technology, the National Institute of Building Sciences, and the Department of Energy have expertise that DOT can leverage to help implement this priority action.
Resource Implications:	The Department will likely need to reallocate personnel and funding resources to successfully implement this priority action.
Challenges/Further Considerations:	To achieve the objectives of this priority action, the Department will need: • Clear guidance and training to ensure sustained and coordinated climate action. • Implementation flexibility to match each OA's unique mission and building footprint. • Management of limited resources (personnel and funding) to support the breadth of climate activities occurring across the Department.

Highlights of Accomplishments to Date:	Completed DOT initiatives:
	• Identified mission critical assets and completed key vulnerability assessments for some OAs with a small building footprint.
	• Incorporated climate change considerations into building design and renovation processes:
	  o Recent renovations at the U.S. Merchant Marine Academy (USMMA) will mitigate potential building damage from flooding.
	  o The new U.S. DOT Volpe Center building (in construction) will move its data center above ground and will enhance its landscaping to address climate change vulnerabilities.
	• Incorporated climate change considerations into Emergency Response Plans and/or Continuity of Operations Plans:
	  o The Maritime Administration issued guidance to protect infrastructure and personnel from higher than normal water levels due to climate change.

Priority Action: Ensure Climate-ready Services and Supplies

Action Description:	Lead by example to ensure climate-ready services and supplies. This action is a renewed emphasis of an existing effort.
Action Goal:	DOT will provide education and facilitation to support and encourage program management acquisition of innovative, novel services and supplies to advance the Department's ability to adapt to climate change.
Agency Lead:	The Office of the Senior Procurement Executive (OSPE) and the Office of the Assistant Secretary for Administration will lead this action in coordination with other Secretarial Offices and the Department's OAs.
Risk or Opportunity:	Annually, the Department spends over $6 billion on services and supplies to ensure its buildings and operational assets can successfully perform essential mission activities. Every day, at numerous locations across the nation, these essential mission activities occur. As such, the services and supplies used for essential mission activities are considered vulnerable to climate change impacts such as temperature increase, precipitation change, extreme storms, and sea level rise. Without specific action, climate change may potentially jeopardize availability of essential services and supplies, thereby preventing the fulfillment of the Department's mission.
Scale:	The Department will implement these actions at mission critical assets across the nation.
Timeframe:	DOT will commence many of these actions in FY 2021. As acquisition can be a lengthy process, these actions will be ongoing.
Implementation Methods:	To successfully achieve this priority action, DOT will: • Guide sustained and coordinated procurement action among OAs to further climate resilience efforts. • Integrate adaptation criteria and requirements into all aspects of the procurement process and applicable contracts. • Engage stakeholders to examine options for innovative, novel products and processes. • Designate DOT Supply Chain Managers and include sustainability reviews during the requirements definition. • Add climate adaptation requirements to Strategic Acquisition Council and Acquisition Strategy Review Board meetings and the internal Acquisition/Financial Assistance Conference. • Require climate change training for all program managers and acquisition practitioners. • Track and report implementation progress to leadership and external stakeholders.
Performance:	The Department will monitor progress through: • Oversight of DOT acquisition offices to ensure compliance with Federal and Departmental requirements.

	• Incorporation of adaptation requirements into Strategic Acquisition Council and Acquisition Strategy Review Board meetings and the internal Acquisition/Financial Assistance Conference. • Development of annual reporting metrics to measure acquisition performance.
Intergovernmental Coordination:	To be successful, the Department will leverage the climate change adaptation knowledge and experience of its procurement employees along with other Federal Agencies. For example, the General Services Administration and the Office of Management and Budget's Office of Federal Procurement Policy have many experts available to assist agencies in the development and implementation of procurement actions related to climate adaptation.
Resource Implications:	The Department will likely need to reallocate personnel and funding resources to successfully implement this priority action.
Challenges/Further Considerations:	To achieve the performance targets of this priority action, the Department will need: • Clear guidance and training to ensure sustained and coordinated climate action. • Implementation flexibility to match each OA's unique mission and procurement requirements. • Management of limited resources (personnel and funding) to support the breadth of climate activities occurring across the Department.
Highlights of Accomplishments to Date:	Completed DOT initiatives: • Developed project plans for the integration of adaptation actions into procurement processes. • Identified contract actions with climate implications. • Established senior leadership support and facilitation.

Priority Action: Improve Climate Education and Research on Resilience

Action Description:	This action will develop a strategy for ensuring high-quality, climate change and resilience educational opportunities for DOT staff. In addition, it would ensure continued research in transportation resilience to fill gaps in climate knowledge and use of new technologies. It would be implemented using the multi-modal Climate Change Center to ensure new information is shared across the Department. An education program would focus across all staff, field, regional, and senior management levels. It will also include partnering with professional engineering and science organizations, such as the Transportation Research Board, the FHWA's National Highway Institute and OST-R's Transportation Safety Institute. Resilience would also be incorporated into standard departmental training and in aspects of staff performance plans.

Action Goal:	Increase climate change education among internal DOT employees and ensure continued research in development to help fill gaps in climate change knowledge and use of new technologies.
Agency Lead:	Office of the Secretary in coordination with other Secretarial Offices and OAs.
Risk or Opportunity:	The risk of not continuing research and development in areas where there is a gap of knowledge and/or use of new technologies for resilience would hinder DOT from ensuring the best resources are utilized for a resilient transportation infrastructure. The risk of not educating employees and stakeholders on climate change and new technologies can lead to resilience not being integrated into transportation infrastructure, management decisions, and project designs. By considering resilience throughout agency decision making and management decisions, DOT will be better resilient to climate change.
Scale:	The Department will implement this priority adaptation actions across the nation.
Timeframe:	DOT will commence many of these actions in FY 2021. Climate change education will be iterative. The impacts and technologies for responding to climate change are evolving and DOT needs to ensure the research is conducted. DOT needs to keep staff and stakeholders informed as new information and innovative technologies are developed to improve resilience.
Implementation Methods:	To successfully achieve this priority action, DOT will: • Task the Climate Change Center to develop a strategy to promote Department-wide resilience education and share information across the Department. Individual OAs will develop more specific education components as needed to inform their program responsibilities. • Create a Department-wide education program to ensure staff is aware of climate change and how it can impact the department. This will include staff level as well as management training. • Task the OAs to continue research and development to fill in gaps of climate change knowledge and new technologies. • Create a resilience website on which current guidance documents are available to stakeholders and through which up-to-date information can be shared.
Performance:	The Department will monitor progress through use of a workplan to ensure that specific actions are identified and are completed within a reasonable amount of time. Those measures are likely to be identified in the Annual Performance Plan and status will be reported through the DOT Annual Performance Report.
Intergovernmental Coordination:	DOT will coordinate with federal agencies, State DOTs, local, territorial and Tribal entities, as appropriate.

Resource Implications:	No additional resources are needed at this time to develop and administer a climate education program. Increased resources may be needed for research and development opportunities and would be identified in the future, where it is needed.
Challenges/Further Considerations:	None identified.
Highlights of Accomplishments to Date:	Completed DOT initiatives: • The Climate Change Center was reestablished in March 2021 and meets on a biweekly basis. • Guidance documents are already being updated with new information.

V. Vulnerabilities

Section 211 of E.O. 14008 and the CEQ Instructions request that agencies identify those management functions and/or decision points for managing procurement, real property, public lands and waters, and financial programs that are most susceptible to climate change. DOT has identified the following vulnerabilities:

Vulnerability: Projects Do Not Incorporate Resilience

Anticipated Climate Threat:	Transportation projects that do not incorporate resilience into their design, construction and siting are at risk for damage, deterioration and destruction from impacts of climate change. This risk could mean relocating or even abandoning current infrastructure in certain circumstances. Without adequate protections, federal investments are placed at risk, the safety of transportation systems can be compromised, and an efficient transportation system will be disrupted, impeding the efficient movement of freight and the travelling public. DOT does not always have direct control over how the funds are used. In many projects, the State DOTs allocate the funds. However, DOT oversees the allocation of funds, including oversight from district and regional offices.
Recommended Adaptation Action:	Evaluate existing and new projects to ensure that climate change impacts are considered and resilience measures adopted where appropriate and cost-effective across the life-cycle of the project.
Implementation Timeline and Performance Metrics:	This is an ongoing action that involves preparing guidance and educating workforce and sponsors about resilience measures.
Resources:	No additional resources are needed at this time.
Disclosure in Financial Reporting and Integration into Enterprise Risk Management Process:	The Department is evaluating the financial impact of this vulnerability; if appropriate, it will be included in disclosure reports and enterprise risk management procedures.

Vulnerability: Location of Real Property and Operational Assets

Anticipated Climate Threat:	The Department's infrastructure comprises of research facilities and laboratories, ship fleets, academic buildings, heavy machinery, vehicle fleets, electrical substations, safety test tracks, data centers, office buildings, and facilities associated with critical safety communication assets. These mission-critical assets are located across the United States and are the most vulnerable to climate change. The anticipated climate impacts on these assets include temperature increase, precipitation change, extreme storms, sea level rise, change in snowmelt, ecosystem degradation, and land change. As such, climate change, without specific action, may damage DOT buildings and equipment, potentially jeopardizing the safety and health of DOT employees, the travelling public, and interstate commerce.
Recommended Adaptation Action:	Strengthen buildings and equipment by using a risk-management framework to identify and incorporate critical adaptation actions into real property capital improvement projects and design standards. Known barriers to implementation include reallocation of personnel and funding resources and prioritization among competing requirements, such as maintenance backlogs.
Implementation Timeline and Performance Metrics:	DOT will commence these actions in FY 2021. As adaptation is an iterative process, these actions will be ongoing. The Department will measure performance based on: • Issuance of vulnerability assessment guidance for buildings and operations. • Development of an adaptation strategy business case template to standardize evaluation and prioritization criteria.
Resources:	The Department may need to reallocate personnel and funding resources to thoroughly address this vulnerability.
Disclosure in Financial Reporting and Integration into Enterprise Risk Management Process:	The Department is evaluating the financial impact of this vulnerability; if appropriate, it will be included in disclosure reports and enterprise risk management procedures.

Vulnerability: Disruption of Services and Supplies for Mission Critical Activities

Anticipated Climate Threat:	Annually, the Department spends over $6 billion on services and supplies to ensure its buildings and operational assets can successfully perform essential mission activities. Every day, at numerous locations across the nation, these essential mission activities occur. As such, the services and supplies used for essential mission activities are considered vulnerable to climate change impacts such as temperature increase, precipitation change, extreme storms, and sea level rise. Without specific action, climate change may potentially jeopardize availability of essential services and supplies, thereby preventing the fulfillment of the Department's mission.

Recommended Adaptation Action:	Provide encouragement, education and facilitation for program managers to support acquisition of innovative, novel services and supplies to advance the Department's ability to implement climate change adaptation strategies.
Implementation Timeline and Performance Metrics:	DOT will commence these actions in FY 2021. As adaptation is an iterative process, these actions will be ongoing. The Department will monitor progress through: • Oversight of DOT acquisition offices to ensure compliance with Federal and Departmental requirements. • Incorporation of adaptation requirements into Strategic Acquisition Council and Acquisition Strategy Review Board meetings along with internal Acquisition/Financial Assistance Conference. • Measurement and analysis of acquisition performance, including annual reporting of total dollars and number of contracts addressing adaptation actions.
Resources:	The Department may need to reallocate personnel and funding resources to thoroughly address this vulnerability.
Disclosure in Financial Reporting and Integration into Enterprise Risk Management Process:	The Department is evaluating the financial impact of this vulnerability; if appropriate, it will be included in disclosure reports and enterprise risk management procedures.

Vulnerability: Lack of Sufficient Climate Change Educational Resources at the Department

Anticipated Climate Threat:	Personnel who are not sufficiently educated in climate change and resilience may not take these factors into account in project design and build leading to inadequate resilience to future climate impacts that could have been avoided. DOT personnel need to not only be educated on climate change, but also on how to communicate this to impacted communities. This can lead to costly repairs of existing structures and potential for rebuilding or relocating infrastructure.
Recommended Adaptation Action:	To be successful, DOT will ensure personnel have a basic understanding of climate change, its causes, and its impacts. Currently, levels of climate knowledge are varied across the Department. Climate change is not sufficiently factored into staff performance and decisions.
Implementation Timeline and Performance Metrics:	DOT will commence many of these actions in FY 2021. Actions to increase climate knowledge will be iterative. The impacts of climate change and technologies being used to adapt to climate change are evolving and DOT will keep stakeholders informed as new information and innovative technologies are developed to improve resilience.
Resources:	No additional resources are needed at this time.

Disclosure in Financial Reporting and Integration into Enterprise Risk Management Process:	The Department is evaluating the financial impact of this vulnerability; if appropriate, it will be included in disclosure reports and enterprise risk management procedures.

Vulnerability: Insufficient Skilled Staff Trained with Knowledge of Resilience

Anticipated Climate Threat:	Without resilience-trained staff engineers, especially in field offices, DOT will not be able to ensure that climate change vulnerabilities and resilience solutions are incorporated into federally funded projects to protect transportation investments and the travelling public.
Recommended Adaptation Action:	Ensuring that new and current staff have the training and qualifications to incorporate resilience into project design and build.
Implementation Timeline and Performance Metrics:	This is an ongoing action to ensure that DOT has resilience experts who can incorporate existing and new technologies into transportation infrastructure. This includes identifying and utilizing new positions for climate change experts, where appropriate, and training for existing staff.
Resources:	No additional resources beyond those requested in the 2022 President's Budget. This action may require additional staff training in transportation resilience, as well as targeting new employees with specific knowledge in transportation resilience.
Disclosure in Financial Reporting and Integration into Enterprise Risk Management Process:	The Department is evaluating the financial impact of this vulnerability; if appropriate, it will be included in disclosure reports and enterprise risk management procedures.

By addressing the vulnerabilities above, DOT will ensure federally funded projects and infrastructure will be able to adapt to the changing climate. This will reduce future damage to infrastructure and protect Federal and local investment. It will also reduce risks to transportation operations and maintain the safety of the travelling public. Without advancing resilience, transportation infrastructure and operations are vulnerable to many climate change impacts such as higher temperatures, increasingly severe storms and extreme weather, and sea level rise.

VI. Agency Efforts to Enhance Workforce Climate Literacy

Throughout the Department, climate education is essential to ensure resilience is integrated into transportation decision making. From DOT employees having awareness of climate change and opportunities for resilience and adaptation in their day-to-day work to our DOT stakeholders considering resilience and adaptation into their decision-making and planning.

DOT climate change education efforts will be customized based on the type of job an employee has and how their job aspects relate to resilience. The Department is committed to ensuring that all of DOT's workforce has the basic understanding of climate change and resilience. In addition, DOT wants to ensure that those who have jobs that touch upon resilience have more than just a basic understanding and have

access to higher levels of training to effectively do their job. Furthermore, DOT is committed to evaluating its workforce to ensure that departments that need experts in resilience and climate change are funded appropriately and highly qualified candidates are sought to fill those positions.

External climate education efforts will focus on our guidance and policies to educate DOT stakeholders on the importance of resilience and adaptation. There will be emphasis that planning efforts should incorporate resilience and adaptation. Education will include training as well as information sharing to ensure our stakeholders are aware of new technologies and information that can be used to make transportation infrastructure more resilient to climate change impacts.

VII. Agency Actions to Enhance Climate Resilience for DOT Sites

The Department of Transportation ensures a fast, safe, efficient, accessible, and convenient transportation system. The Department of Transportation is committed to reducing vulnerabilities and improving resilience for its own assets, which include personnel, buildings, data systems, ships, and vehicles. As such, DOT has taken numerous steps to integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of its buildings and operational assets.

The Department's existing infrastructure comprises a wide range of buildings and operational assets dispersed across the United States. DOT expects different assets will experience region-specific vulnerability to greater precipitation, flooding or inundation of facilities, increasing temperatures, coastal erosion, hurricanes, tornados and severe wildfires based on anticipated climate changes as provided in the latest National Climate Assessment. Each of these changes may increasingly affect the operation of DOT buildings and expose vulnerabilities of DOT operational assets. For example, without adaptation planning and implementation, sea level rise and storm surges could compromise buildings and damage important communication and safety infrastructure. Wildfires, hurricanes and tornados could damage or destroy real property and operational assets. Adaptation actions will reduce the vulnerability of DOT infrastructure to climate change impacts.

This section offers the internal adaptation actions the Department is taking to improve the resilience of its buildings and operational assets.

Governance

The Office of the Secretary recently updated all internal energy, environment, and sustainability Policy Orders regarding the operation, maintenance, design, construction, and renovation of DOT buildings along will the procurement of green supplies and services. These newly issued Policy Orders establish the foundation for sustained and coordinated action among OAs to further climate resilience efforts.

In addition, the Office of the Secretary is developing internal energy, environmental, and sustainability performance metrics. Aligned with the Administration's climate and environmental priorities, these metrics will include ambitious adaptation targets along with other important energy, environmental, and procurement actions. The internal report will also establish accountability and governance across the agency, ensuring DOT leads by example through continued progress. The Department's Chief Sustainability Officer and the DOT Climate Change Center, with representatives from across all DOT offices, will oversee and coordinate these efforts.

Finally, the Office of the Secretary is working to issue guidance for evaluating and improving the climate resilience of mission critical buildings and operational assets. DOT has a responsibility to ensure the resilience of its mission critical assets in the face of climate change, while continuing to meet mission requirements nationally. The guidance will provide a flexible, but consistent, framework for evaluating

and managing risks from climate change. The guidance will also include suggested resources for conducting vulnerability assessments and will outline recommended processes and considerations for identifying and implementing resilience strategies in mission critical assets.

Asset Management

The Department owns or manages more than 10,000 air traffic control assets, offices, research laboratories, and other buildings with a total floor space of over 40 million square feet. Within DOT, half of the OAs own or directly lease real property and maintain full operational control. The day-to-day management of these real property assets is decentralized across DOT and is the responsibility of the individual OAs. The remaining OAs are located in fully leased buildings, generally from GSA, and do not have any operational control. Nonetheless, every OA has adaptation responsibilities—either for mission critical buildings or for operational assets.

To proactively integrate climate resilience into management processes, the Department identified its major mission critical buildings and operational assets. Mission critical buildings are DOT-leased or -owned facilities that support activities that cannot be disrupted. Mission critical assets include non-building infrastructure (e.g., ships or equipment), operations, and activities that support statutory goals, provide vital services, and maintain the safety and health of the public. In addition, mission critical operations include activities completed in support of DOT's own business processes.

Table 1 provides a summary of DOT's mission critical assets that are the most vulnerable to climate change. Column 1 of the table lists the type of asset held, and column 2 describes how the asset is critical to DOT's mission.

Table 1: Summary of DOT Mission Critical Assets

Type of Asset	Why it is Mission Critical
Control/Communication Centers and Continuity/Alternative Facilities	Maintain radio, internet, telephone, and computer network connections
Data Centers, Records Storage, and Continuity/Alternative Facilities	Storage of essential data and record keeping
Dining Facilities	Maintain operations at facilities in addition to providing meals and shelter during on-site emergency situations
Dormitories and Academic Facilities	Dormitory and academic facilities for students
Facility Access Ways, Borders, Parking Lots, and Continuity/Alternative Facilities	Provide facility access/egress, security, and equipment storage
Locks and Related Equipment	Maintain clear passage for ships travelling from the Atlantic Ocean to the Great Lakes
Locomotive	R&D: Conduct testing of trains for functionality, safety research, and maintenance
Offices	Provide space and resources for personnel to conduct mission-critical activities
Personnel	Personnel must be able to work in order for DOT to fulfill its mission. Personnel ensure continuity of operations at offices, locks, TRACONs, Reserve Fleet berths, and laboratories
Power Stations/Assets (Supply and Transmission)	Maintain power for DOT offices, transportation facilities, and research centers
Research Centers	Laboratories and support services provide critical research
Ship Fleets and Related Equipment/Craft	Maintain readiness of The National Defense Reserve Fleet ships, which are a critical part of National security
Training Centers	Hazmat and other training
Warehouses/Storage Facilities	Secure location to house shipping, maintenance, rail, and other equipment/vehicles
Water Treatment System	Treatment and distribution of clean water for facilities

Given the great diversity of asset types held by OAs, the Department will need to develop multiple strategies to ensure climate resilience at its facilities. The Department will continue performing climate change vulnerability assessments for mission critical buildings and operational assets. The assessments use a numeric system for scoring the sensitivity and adaptive capacity of each asset, along with the expected likelihood of losing the asset function during weather and climate threats. Upon completion of the assessment, each mission critical building and operational asset has a climate risk score which the Department can rank in priority order and address through adaptation strategies as resources are available.

DOT continues to leverage information gathered from audits, operation and maintenance processes and vulnerability assessments to inform and enhance building capital improvement projects and adaptation

efforts. Specifically, the Department integrates information obtained through existing building audit processes, such as energy and water evaluations (42 U.S.C. § 8253(f)(3)), commissioning activities (42 U.S.C. § 8253(f)(3)(B)) and high performance sustainable buildings evaluations (40 U.S.C. § 524), with vulnerability assessments to create a holistic characterization of a building. For example, comprehensive building evaluations (42 U.S.C. § 8253(f)(3)) may identify opportunities to reduce building energy and water loads, which are mitigation actions that support strategies for both adaptation and resilience. This approach maximizes existing resources and processes while leading to climate-ready DOT buildings and operational assets.

Design and Construction

Existing Buildings: DOT is currently identifying and prioritizing adaptation strategies that increase the climate change resilience of mission critical buildings and operations based on identified vulnerabilities. For example, data and technology security is a major vulnerability. For some buildings, DOT is transferring technology located in areas most vulnerable to sea level rise, such as computers located in basement levels, to different locations. Other DOT buildings may save their data to the Cloud to ensure security. Some sites plan on standardizing the use of 30-year roof systems to withstand more severe wind and rain loads. Buildings in areas that are likely to experience extreme heat and drought due to climate change will drill new wells on-site. Buildings that have not incorporated extensive adaptation measures will complete analyses of their operations to determine the viability of continuing operations.

New Buildings and Major Renovations: DOT is taking several measures to ensure the resilience of new buildings or existing buildings undergoing major renovations assets.

- Incorporation of materials, designs, and processes demonstrated to improve resilience: The Department is incorporating strategies that have been shown to improve resilience into new building design. An example is the adjustment of building foundation heights and materials to reduce flooding in locations vulnerable to sea level rise. Data centers that were previously located in rooms below sea level are being relocated to higher floors. Roofing systems and building envelopes are being upgraded where warranted.
- Contractual language changes: New buildings include language in design and construction contracts specifying that architects and civil engineers evaluate strategies and materials to reduce climate change risk. In addition, contracts specify that DOT-identified resilience strategies be incorporated into new building designs. For example, cables that previously would not be specified as salt water resistant may be specified as such in new building designs to prevent damage resulting from salt water intrusion.
- Development of new design processes: DOT is analyzing ways to determine projected climate vulnerabilities by first identifying the best available science, including downscaled projections, for localities with major mission critical facilities. Following this research, DOT is determining whether building designs may be vulnerable to climate impacts and need to be revamped to include new information, strategies, and materials that enhance the climate resilience of operational infrastructure.

VIII. Agency Actions to Ensure a Climate-Ready Supply of Products and Services

Annually, the Department spends over $6 billion on services and supplies to ensure its buildings and operational assets can successfully perform essential mission activities. The Office of the Senior Procurement Executive (OSPE) manages procurement policy, guidance, and processes as well as procurement data analysis for all of DOT. OSPE also ensures adherence to Federal Acquisition Regulation (FAR) Part 23 which sets acquisition requirements for environment, energy and water efficiency, renewable energy products and services.

In addition, OSPE is responsible for integrating adaptation criteria and requirements into procurement processes. In day-to-day operations, DOT has the opportunity and obligation to advance adaptation actions through its selection and use of services and supplies. As such, all acquisitions and contracting mechanisms used by DOT – including service contracts, leases, purchases made with government purchase and fleet cards, and purchases below the micro-purchase threshold – will be updated to advance climate-ready services and supplies. This reform will enhance and sustain the DOT mission through cost effective acquisition that achieves compliance and reduces resource consumption while increasing climate change preparedness.

DOT recognizes that every person has a role when acquiring climate-robust services and supplies. Therefore, the Department's adaptation procurement strategies focus not only on the acquisition process but also on the roles and responsibilities of each Department member. Beginning in FY 2021, OSPE will facilitate the purchase of climate-ready services and supplies by working with DOT offices to identify areas where they might integrate adaptation requirements and objectives into operations by:

- Specifying climate-ready attributes in applicable service and supply contracts.
- Making adaptation acquisition an integral part of DOT operations.
- Focusing on supplies with the most climate-ready attributes available on the market.

Additionally, OSPE will implement the following, beginning in FY 2021, to ensure sustained and coordinated procurement action:

- Designate DOT Supply Chain Managers and include climate preparedness reviews during the requirements definition.
- Add climate adaptation requirements to Strategic Acquisition Council and Acquisition Strategy Review Board meetings along with the internal Acquisition/Financial Assistance Conference.
- Require climate change training for all program managers and acquisition practitioners.
- Track implementation of adaptation acquisition strategy and report progress to leadership and external stakeholders.

Services and Supplies Most Vulnerable to Climate Change

Every day, the Department relies on essential services and supplies to complete mission critical actions thereby ensuring the safety of the travelling public. However, climate effects could delay the delivery of essential services (e.g., engineering) and commodities or supplies (e.g., utilities) making it difficult for personnel to accomplish critical work, which could have broad consequences for DOT's mission and programs. Below is a summary of the types of services and supplies that may be vulnerable to climate change:

- Utilities: The Department is dependent on the continuous supply of utilities (e.g., electricity, water, and natural gas) to ensure its buildings and equipment operate completely to fulfill mission requirements.
- Fleet Vehicles: The Department owns or operates nearly 6,000 automobiles to perform essential equipment maintenance, safety inspections, and enforcement actions. Additionally, the Department maintains a fleet of ships (approximately 50 in the Ready Reserve Fleet) to respond to natural and man-made disasters along with a fleet of airplanes (approximately 10) to provide essential safety training and flight instruction.
- Engineering/Construction Services: The Department uses engineering and construction service companies to reliably operate and maintain many of its buildings and equipment. Additionally, these companies provide essential operation and maintenance for transportation safety equipment and design services for external infrastructure.

- Information Technology Equipment and Services: The Department relies on many vendors and specialists to operate and maintain its network of computers, information databases, data centers, and other transportation safety equipment operating systems.
- Technical/Consulting/Administrative services: Essential procurement, accounting, human resources, strategic planning, data analysis, and training services are provided by many vendors to ensure the Department continues to perform mission critical actions.

The procurement of climate-ready services and supplies contributes to sound management of the Department's financial resources along with building and non-building (e.g., ships, vehicles, and radar equipment) infrastructure. To ensure essential services and supplies are delivered to DOT sites across the nation, OSPE will work with program managers to tailor source selection criteria to include life cycle cost-effective adaptation actions. Additionally, OSPE will work to align contractor profitability more tightly with Department goals and employ appropriate contract types (such as investigating use of incentive type contracts).

IX. Climate Change Impacts and Equity

Climate change has been shown to disproportionately impact vulnerable populations—older adults, children, low-income communities, and communities of color. These communities have less capacity to prepare for and cope with extreme weather and other climate change-related events, such as having fewer options for evacuating or for accessing emergency relief services. At DOT, we are analyzing our programs through an equity lens to determine how our projects have and will impact these vulnerable communities. This analysis extends to our efforts to incorporate climate change resilience into our projects, policies, and actions. It is important when analyzing impacts of DOT actions, that these communities are identified and there is meaningful public involvement to educate them on the potential impacts and create solutions that will mitigate impacts from the transportation actions and from climate change.[6]

By considering climate equity, DOT is working to ensure that all people can benefit equally from climate solutions and to diminish the disproportionate burden of climate impacts that some communities endure. For example, when making new building investments, DOT considers the potential impacts of siting decisions on disadvantaged communities and the environment. Where applicable, DOT prioritizes sites that offer robust transportation options, including walking, biking, and transit, while minimizing greenhouse gas emissions and impacts on disadvantaged communities. In addition, by considering procurement actions and climate change equity, the Department is working to ensure that all people have the opportunity to benefit equally from procurement solutions and to diminish the disproportionate burden of climate impacts that some communities endure.

[6] USGCRP, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II*, Chp. 2, Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.). available at https://nca2018.globalchange.gov/

Figure 2. DOT Efforts to Advance Climate Equity

DOT Strives to Advance Climate Equity by:

- Providing full and equal access to opportunities for a resilient future, such as safe and affordable transportation choices to support access to healthy food and stable jobs.
- Diminishing deep-seated exclusion and barriers to participation by supporting community-driven efforts, meaningful public involvement, and outcome-driven success that reflects local priorities.
- Valuing sense of place, cultural practices, and traditional community knowledge of the local land and resources in Department planning, especially for future land use decisions and hazard mitigation.
- Alleviating the impacts of heat, poor air quality, vector-borne disease, and other climate change impacts when siting and designing projects.
- Meaningful and language accessible communications with limited English proficiency and disability populations.
- Reducing environmental harm (e.g., pollution or flood hazards) and poor neighborhood conditions to support healthy, safe, and resilient communities with healthy ecosystems and green space
- Ensuring that the benefits of more than 40 percent of agency investments in the areas of clean energy and energy efficiency, clean transit, and the remediation and reduction of legacy pollution flow to disadvantaged communities.
- Providing full and equal access to service and supply contracts by reducing DOT's reliance on sole-source contracts.
- Diminishing exclusion and barriers to participation by supporting small business participation, including the program office's more effective use of market research.
- Increasing competition in Indefinite Delivery, Indefinite Quantity (IDIQ) Multiple Award Contracts (MAC) at Delivery Order/Task Order (secondary competition).

X. Agency Actions to Incorporate Climate Change Resilience into Strategic Plans

Every OA has the responsibility to advance adaptation and resilience measures in current systems, future investment, and throughout their operations. It is DOT's policy to incorporate climate resilience and adaptation strategies into its mission, programs, and operations. To that end, DOT will incorporate adaptation and resilience actions, technology and best practices into key Departmental documents as required in E.O. 14008, such as:

- Implementation plans for integrating climate considerations into international work (Section 103);
- Implementation plans for energy, environmental and sustainability activities in buildings and operations; and
- Implementation plans for federal environmental and climate preparedness investments in underserved or disadvantaged communities (Section 223).