

November 5, 2021

The Honorable Brenda Mallory  
Chair, Council on Environmental Quality  
730 Jackson Place, NW  
Washington, D.C. 20503

ATTN: Docket ID: CEQ-2021-0003

Re: Federal Climate Adaptation and Resilience Plan Submitted by the U.S. Department of Transportation

The American Society of Civil Engineers (ASCE) appreciates the opportunity to offer the following comments on the Department of Transportation's (DOT) 2021 Federal Climate Adaptation Plan. ASCE strongly supports government policies that anticipate and prepare for the impacts of climate change on the built environment. Additionally, ASCE believes that engineers should work with the public sector to incorporate resilience to future climate changes into project design and construction. Climate change poses a potentially serious impact on worldwide water resources, energy production and use, agriculture, forestry, coastal development and resources, flood control and public infrastructure. Therefore, ASCE appreciates the efforts of the Administration to ensure that federal agencies are developing climate adaptation and resilience plans.

Founded in 1852, ASCE is the country's oldest engineering society. Representing more than 150,000 civil engineers from the private sector, government, and academia, ASCE is dedicated to the advancement of the science and practice of engineering. ASCE members represent the professionals who plan, design, construct, and manage much of the nation's infrastructure. As a result, civil engineers are keenly aware of and frequently affected by plans that either facilitate or impede expeditious, cost efficient, and resilient infrastructure development to support our communities.

The Federal Climate Adaptation Plans represent a strong step in the Administration's efforts to address the climate crisis and incorporate resilience planning across agencies. Each agency's plan outlines the steps it will take to ensure its facilities and operations adapt to climate change-related impacts. For the transportation network, these challenges can come in various forms, such as flooded highways and tunnels, restricted access to waterways, highway pavement distresses, damaged runways, and strained bridges.

Building on previous climate action plans DOT prepared in 2012 and 2014, the agency's latest plan focuses on climate adaptation and resilience across agency programs. The Office of the Secretary is responsible for the execution of this plan and numerous Operating Administrations (OA) within DOT have committed to fulfilling adaptation actions to increase climate change preparedness.

ASCE supports government policies that brace for the impacts of climate change on the natural and built environment and views the plan created by DOT and the other 22 federal agencies as positive steps. Effects of climate change such as extreme storms, droughts, and floods have the potential to seriously impact the infrastructure network operated and maintained by DOT. These impacts could require modified design practices, increased maintenance costs, and measures to address the threat of rising sea levels and damage to critical infrastructure facilities.

Additionally, ASCE supports identifying critical infrastructure that is threatened by climate change, informing decision makers and the public, and enhancing infrastructure resiliency. In fact, resilience is listed as a recommendation to raise the grade on ASCE's 2021 Report Card for America's Infrastructure<sup>i</sup>, which was released in March and gave the nation an overall C-. As we consider long-term infrastructure investments, it must be through the lens of ensuring that our nation's infrastructure is resilient -using new approaches, materials, and technologies to ensure infrastructure systems can withstand or quickly recover from natural or man-made hazards.

Advancements in resilience across all infrastructure sectors can be made by:

- Enabling communities to develop and institute their own resilience pathway for all their infrastructure portfolios by streamlining asset management, implementing **life cycle cost analysis** into routine planning processes, and **integrating climate change projections** into long-term goal-setting and capital improvement plans.
- Incentivizing and enforcing the use of **codes and standards**, which can mitigate risks of major climate or manmade events.
- Connect advancements in research with practice by implementing new technologies, materials, and processes to combat the ever-changing environment.
- Understanding that our infrastructure is a complex set of interconnected systems and encourage a dynamic, "big picture" perspective that weighs tradeoffs across infrastructure sectors while keeping resilience as the chief goal.
- Prioritizing projects that improve the safety and security of systems and communities, to ensure continued reliability and enhanced resilience.
- Improving land use planning across all levels of decision-making to strike a balance between the built and natural environments, while meeting community needs, now and into the future.
- Enhancing the resilience of various infrastructure sectors by including or enhancing natural or "green" infrastructure.

For these comments, ASCE has focused on three issues pertaining to DOT's Federal Climate Adaptation Plan and asks that the CEQ and OMB consider these points. ASCE and its members commend the creation of these plans and request special consideration of **building codes and standards, risk management, and climate change research**.

### **Building Codes and Standards**

Ensuring resiliency of DOT facilities and operational assets was one of the priority actions outlined by the agency in the plan. DOT owns or operates more than 10,000 assets, which include air traffic control facilities, offices, research laboratories, and other mission critical buildings. Located across a wide geographic areas, these facilities may experience a range of climate change-related impacts, such as extreme storms, heat waves, hurricanes, wildfires, tornados, and floods.

According to the plan, DOT is currently identifying and prioritizing adaptation strategies that increase the climate change resilience of existing buildings based on identified vulnerabilities. For new DOT buildings and existing buildings undergoing major renovations, design and construction contracts must specify that civil engineers evaluate strategies to reduce climate change risk.

Modern, updated building codes are a reliable way to ensure infrastructure is resilient against disasters and should be considered for DOT's building projects. Experienced volunteer professionals work together under a multi-step, consensus-based process to develop model building codes, which provide for protection from fire, structural collapse, general deterioration, and extreme loads related to man-made and natural hazards.

ASCE engages in the standards setting on a large scale. ASCE Standards provide technical guidelines for promoting safety, reliability, productivity, and efficiency in civil engineering. Many of our standards are referenced by model building codes and adopted by state and local jurisdictions. They also provide guidance for design projects around the world. Accredited by the American National Standards Institute (ANSI), ASCE has a rigorous and formal process overseen by the Codes and Standards Committee (CSC). Standards are created or updated by a balanced, volunteer standards committee, followed by a public review period.

ASCE has several documents that offer a sound basis for designing structures that can reasonably withstand the ever-increasing impacts of climate change and which can guide the DOT when designing new structures. These include:

- ASCE 7, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16)<sup>1</sup>, currently an integral part of U.S. building codes, describes the means for determining soil, flood, tsunami, snow, rain, atmospheric ice, earthquake, and wind loads, and their combinations for resilient structural design;
- ASCE 24, Flood Resistant Design and Construction<sup>2</sup>, prescribes a standard for cost effectively increasing resiliency by reducing and eliminating risks to property from flood hazards and their effects;
- ASCE 41, Seismic Evaluation and Retrofit of Existing Buildings, standardizes methods for the retrofit of existing buildings to increase resiliency in communities after a seismic event; and
- ASCE Manual of Practice 140, Climate-Resilient Infrastructure: Adaptive Design and Risk Management, provides guidance for and contributes to infrastructure analysis/design in

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<sup>1</sup> <https://www.asce.org/asce-7/>

<sup>2</sup> <https://ascelibrary.org/doi/book/10.1061/asce24>

a world in which risk profiles are changing due to climate change per the Fourth National Climate Assessment.

ASCE has furthered its standard development efforts by creating the ASCE-7 Hazard Tool<sup>3</sup>. The tool provides quick, reliable way to look up hazard data for seven environmental hazards including wind, seismic, ice, rain, snow, flood, and tsunami, to determine multiple types of hazard loads for buildings and other structures.

As the DOT works to ensure the resilience of facilities for the upcoming year, we urge the consideration of the most up to date codes and standards as an integral part of that effort.

### **Risk Management**

DOT's assets are diverse, ranging from research laboratories and academic buildings to ship fleets, vehicles, test tracks, and data centers. As a way to strengthen buildings and equipment, DOT's plan recommends using a risk management framework to identify and incorporate critical adaptation actions into capital improvement projects and design standards. Barriers identified by DOT are reallocation of personnel and funding resources as well as prioritization among competing needs.

ASCE supports DOT's recommendation. The Society urges government agencies and private entities at all levels to incorporate risk management into the decision-making processes that affect the public's safety, health, welfare, and investments in infrastructure. Risk management tools offer the ability to determine the severity of hazards and prioritize the allocation of resources to protect the public. Unfortunately, government agencies often do not use these tools or effectively communicate with the public about how risk management is conducted and the level of risks.

Asset management strategies can also serve as useful tools to help government agencies prioritize investment decisions and determine repairs. This practice involves managing infrastructure capital assets to minimize the total cost of operating them while maintaining a desired level of service for customers. If asset owners have an up-to-date inventory of their infrastructure, they can start to better understand repair and replacement needs, as well as plan a long-term capital budget.

In addition to developing updated risk management guidelines, government agencies can facilitate public participation in formulating risk assessment guidelines and develop tools to effectively communicate risks from natural and man-made hazards to the public. When the risks are effectively communicated to decision makers and members of the public, risk management can help communities respond to the challenge of allocating limited resources while maximizing the protection of human safety, health, and welfare and protecting the built and natural environment.

### **Climate Change Research**

ASCE believes education and research efforts regarding resilience at a DOT level would assist in positioning the agency to address climate-related challenges associated with the nation's critical transportation infrastructure.

ASCE supports funding for additional basic and applied research efforts and the development of national standards in support of initiatives that increase the safety and resilience of the nation's vast

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<sup>3</sup> <https://asce7hazardtool.online/>

infrastructure against natural and man-made disasters. Currently, the federal funding of research and standards is insufficient to provide the resources necessary to identify the most effective ways to mitigate natural and man-made hazards. Such funding is vital to the nation's critical infrastructure and to the health and safety of the nation and its citizens.

ASCE supports the Providing Research and Estimates of Changes In Precipitation Act (PRECIP Act), which prioritize investments in improving precipitation data. Specifically, the bill directs the National Oceanic and Atmospheric Administration (NOAA) to update precipitation frequency estimates no less than every five years. The PRECIP Act is key to ensure NOAA is required to update this data on a regular basis.

## **Conclusion**

ASCE supports efforts to address the impacts of climate change and increase infrastructure resiliency at all levels of government, including the federal level. Climate change is a significant challenge confronting the nation, and the federal government has a role to play in contributing to the safety and resilience of infrastructure systems that can be negatively affected by climate change. In particular, transportation systems are at risk from climate change-related impacts such as floods and severe storms. Thank you for the opportunity to comment on the plan DOT has put forth to help address the issue of climate change. We look forward to working with DOT, CEQ, and OMB as these plans progress.

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<sup>i</sup> [www.infrastructurereportcard.org](http://www.infrastructurereportcard.org)