Washington Office
25 Massachusetts Avenue, NW
Suite 500
Washington, D.C. 20001
(202) 789-7850
Fax: (202) 789-7859
Web: http://www.asce.org

November 5, 2021

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

ATTN: Docket ID: CEQ-2021-0003

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

The American Society of Civil Engineers (ASCE) is pleased to offer the following comments on the U.S. Department of Energy's (DOE) proposed Climate Adaptation and Resilience Plan, drafted in accordance with Executive Order 14008, *Tackling the Climate Crisis At Home and Abroad*. The proposed rule was published in the Federal Register for comment on October 7, 2021, with the comment period closing on November 6, 2021.

Founded in 1852, ASCE is the country's oldest civil engineering organization. Representing more than 150,000 civil engineers from private practice, government, industry, and academia, ASCE is dedicated to the advancement of the science and practice of engineering. ASCE members represent the profession that plans, designs, and manages much of the nation's infrastructure. As a result, civil engineers are keenly aware of the effects of climate change and its impact on safe, resilient infrastructure development to support our modern society and have been actively involved in creating standards and best practices to adapt to and mitigate the consequences ranging from increased flood waters, higher intensity storms, and sea water rise.

Modern infrastructure must be designed and built to withstand modern risks, and development must account for future risks. Increasingly strong weather events pose significant risk to the built environment, as well as the natural environment.

ASCE has a strong history of working with DOE and supporting information requests related to grid reliability, most recently identifying ASCE standards that could help Puerto Rico's devastated electric grid following severe storms and other events. In 2021 we saw multiple examples of extreme weather significantly impacting energy infrastructure and affecting the provision of necessary services. In February, Texas was hit with a significant winter storm which brought record low temperatures that overwhelmed the state's unique energy grid and left millions without power. Failing to have made the

grid more resilient to such an event, as well as necessary investment resulted in catastrophe.[1] In September Hurricane Ida, a category 4 storm, took out Louisiana's power grid, leaving nearly a million residents without power after the state's energy provider failed to implement grid modernizations that could have reduced the impact on customers.[2]

Therefore, ASCE believes that ensuring federal agencies are prepared to adapt, and able to assist states, communities, tribes, and other various stakeholders in climate adaptation is essential. ASCE's *2021 Infrastructure Report Card,* which gave the nation's overall infrastructure a grade of "C-", specifically recommends "utiliz[ing] new approaches, materials, and technologies to ensure our infrastructure can withstand or quickly recover from natural or man-made hazards."[3] The 2021 report card also specifically recommends focusing on robust risk mitigation to improve grid reliability, and implementing hardening measures that allow for rapid restoration of energy systems following manmade and natural disasters.[4]

Most infrastructure is designed and built to provide adequate service to communities for decades, and must remain safe and durable in order to do so. With more frequent, and more intense weather patterns becoming the norm, prioritizing climate resilience in design and implementation, remaining engaged with the civil engineering community, and enforcing strict building codes and standards are fundamental actions to ensure the nation's infrastructure is able to withstand 21st century challenges and beyond.

ASCE Position

ASCE recognizes the threat climate change poses to the nation's infrastructure. Rapidly changing conditions threaten to limit access to water resources, severely limit the reliability of energy sources and systems, and reduce the effectiveness of traditional hazard mitigation tools.

ASCE fully supports the implementation of actions which strengthen DOE's mission, and account for climate change in its policies and management. This is of particular importance as pertains to the resilience of energy infrastructure which is significantly threatened by the effects of climate change.

ASCE Policy Statement 360- Climate Change[5]*,* recommends the following approaches to addressing the impact of climate change on infrastructure:

- Government policies that anticipate and prepare for impacts of climate change on the built environment.
- Revisions to engineering design standards, codes, regulations and associated laws that strengthen the sustainability and resiliency of infrastructure at high risk of being affected by climate change.

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1 https://www.texastribune.org/2021/02/18/texas-winter-storm-power-outage-ercot/#ee94f953-c387-4dde-b1b1-10dd783fe27d

2 https://www.npr.org/2021/09/22/1039110522/entergy-resisted-upgrading-new-orleans-power-grid-residents-paid-the-price

3 https://infrastructurereportcard.org/wp-content/uploads/2020/12/National_IRC_2021-report.pdf

4 https://infrastructurereportcard.org/wp-content/uploads/2020/12/Energy-2021.pdf

5 https://www.asce.org/advocacy/policy-statements/ps360---climate-change

- Cooperative research among engineers and climate, weather, and life scientists to gain a better understanding of the magnitudes and consequences of future climate extremes and improve projection certainty.
- Identifying critical infrastructure that is most threatened by changing climate in a given region, informing decision makers and the public, and enhancing infrastructure resiliency.
- Informing policy makers that impacts of climate change for historically disadvantaged communities should consider social and economic equity and not be based solely on economic benefit to cost ratio.

In keeping with these approaches, ASCE asks that the following points be given careful consideration:

Grid Resilience

As previously mentioned, the reliability of the nation's electric grid remains significantly vulnerable to climate change. As demonstrated by major seasonal storms in Texas and Louisiana, extreme temperature fluctuations, increasingly strong winds and severe flooding can easily overwhelm electricity and pipeline systems and can leave customers without service for extended periods of time. Additionally, these interruptions of service may be more severely felt by those in the most vulnerable and marginalized communities.

DOE's priority actions, as laid out in its Climate Adaptation and Resilience Plan, incorporate grid hardening and modernization as a key tool for implementing climate adaptation and mitigation solutions. At a high level, ASCE supports these actions, and encourages DOE to engage with state and local governments, energy providers, the civil engineering community, and other stakeholders to ensure grid resilience and modernization remains a priority actively and thoughtfully. However, more proactive steps must be undertaken.

ASCE recommends, among other actions:

- Promoting electric power generation, transmission, and distribution reliability and resilience;
- Developing a national "storm hardening" plan that strengthens systems to withstand reasonable storms and enable rapid restoration of energy supply after storm events;
- Identification and prioritization of risks to energy security in the electric power grid, and continuing development of standards and guidelines for managing those risks;
- Encouraging the use of existing ASCE Standards, Manuals of Practice, and other accepted engineering standards in the design and construction of transmission and distribution infrastructure.

The resilience of the nation's electrical infrastructure from severe weather events is the system's ability to cost effectively prepare for, absorb, quickly recover from, and successfully mitigate the on-going consequences of such disruptive events. Executing a resilience policy requires strong and properly administered Standards and Manuals of Practice developed by power delivery infrastructure engineers, professionals, and experts to achieve the expected performance.

Building Codes and Standards

Priority actions that DOE puts forward that focus on incorporation of climate adaptation and resilience into DOE polices and decision making, and providing climate adaptation tools and technical support for

DOE sites employ adoption of building codes and standards as implementation methods. ASCE strongly supports these methods, as widespread adoption and enforcement of modern, up to date building codes is the most reliable way to ensure the resilience of the nation's infrastructure.

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 jurisdiction. 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 furthered its standard development efforts by creating the ASCE-7 Hazard Tool[6]. 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, including energy systems. An updated version of the ASCE-7 Hazard Toll is expected to be released in December 2021.

Specific to energy systems, ASCE has produced the following standards and guidelines, many of which address resiliency in the form of special loads, load combinations, and minimum performance requirements:

- ASCE 74, Guidelines for Electrical Transmission Line Structural Loading;
- ASCE 10, Design of Latticed Steel Transmission Structures;
- ASCE 48, Design of Steel Transmission Pole Structures;
- ASCE 113, Substation Structure Design Guide;
- ASCE 141, Wood Pole Structures for Electrical Transmission Lines

In addition to these standards, ASCE has also produced several significant design guides for petrochemical, pipeline, and offshore structures.

Conclusion

ASCE supports the goals and intentions of the Department of Energy's Climate Adaptation and Resilience Plan, and Executive Order 14008 more broadly. The effects of climate change pose significant risks to the natural and built environment, but it is important to remember that there are actions that can and must be taken to ensure the reliability and resilience of the nation's infrastructure. A whole of government approach to address these generational challenges is needed.

ASCE's members, a number of whom are senior energy industry executives, consultants, and researchers, look forward to continuing to work with DOE moving forward. Our standards are time-tested and ready to be deployed.

[6] https://asce7hazardtool.online/