BUILDSTRONG COALITION

August 23, 2019

U.S. Department of Energy
Attn: Office of Electricity
1000 Independence Ave., SW
Mailstop OE-20
Washington, D.C. 20585

Re: Guidance for Enhancing Grid Resilience

To Whom It May Concern:

The BuildStrong Coalition applauds the Department of Energy's (DOE) efforts to help state and local governments and regulatory entities seek cost-effective ways to make critical lifeline electric infrastructure systems more resilient against all hazards, including severe weather events. DOE has correctly identified one of the most transformational pieces of disaster legislation in recent memory, the Disaster Recovery Reform Act of 2018 (DRRA), the opportunity to drive states and localities to "relevant consensus-based codes, specifications, and standards," and the charge to the entire federal family to increase national resilience and reduce disaster costs and losses. In response to the DOE's Request for Information: Codes, Standards, Specifications, and Other Guidance for Enhancing the Resilience of Electric Infrastructure Systems Against Severe Weather Events, posted July 9, 2019, (Federal Register Number: 2019-14547), the BuildStrong Coalition offers the following comments, best practices, and lessons learned.

I. About the BuildStrong Coalition

The BuildStong Coalition, formed in 2011 to respond to an increasing number of severe disasters, is made up of a diverse group of members representing firefighters, emergency responders, emergency managers, insurers, engineers, architects, contractors, and manufacturers, as well as consumer organizations, code specialists, and many others committed to building a more disaster resilient nation. We are proud to be at the forefront of the resilience conversation and serve as a rational, trusted expert in the areas of disaster resiliency, mitigation, and preparedness. Our efforts are focused on raising awareness and increasing capacity to help minimize risk and reduce losses to communities, businesses, and families. The BuildStrong Coalition is working with its members to ensure our nation is investing in infrastructure projects that will strengthen our built environment before the next disaster strikes. The Coalition remains committed to serving as a resource and partner to the federal government, Congress, state and local officials, and other stakeholders on ensuring the effective implementation of DRRA and resilient public policy.

II. Principles for the Federal Government to Incentivize Resilience

DOE and the entire federal family must work together to promote smart actions that reduce risk and remove the many perverse moral incentives that discourage people from driving down disaster costs and losses. This will involve adjusting programs and policies and leveraging federal investment to influence behavior to foster a stronger, safer America. To be effective, DOE must:

- Leverage all authorities, programs, and policies to drive better behavior and a smarter approach to all phases of the disaster cycle — from preparedness, to response, to recovery, to mitigation.
- Evolve through the phased-in implementation of new programs and authorities, taking lessons learned to continuously improve program design and delivery to best meet the needs of states, communities, and individuals across the country.

Federal policymakers and officials must incentivize states to implement risk-reducing measures to draw down disaster costs and losses. Specifically, the provisions of DRRA allow the federal government to incentivize and reward states for being proactive and provide an opportunity to establish a minimum baseline standard of readiness, preparedness, and mitigation activity toward which states can aim.

III. The Importance of Codes and Standards

Codes contribute to the resiliency of a community and its ability to more quickly bounce back from a hazard event. As communities begin the recovery process, the faster businesses can return to full operation and citizens to their daily lives, the greater chance local economies have to recover and lessen the burden on assistance providers.

The National Institute for Building Sciences recently found significant cost savings in mitigation projects and the adoption of consensus-based building codes and standards:

- There is a national benefit of as much as $11 for every $1 spent by designing buildings to meet the 2018 International Residential Code (IRC) and 2018 International Building Code (IBC) — the model building codes developed by the International Code Council (ICC) — versus the prior generation of codes represented by 1990-era design and National Flood Insurance Program (NFIP) requirements.
- Hazard mitigation projects funded with federal grants provided by the Federal Emergency Management Agency (FEMA), U.S. Economic Development Administration (EDA) and U.S. Department of Housing and Urban Development (HUD) can save the country $6 in future disaster response and recovery costs for every $1 spent, according to more than two decades worth of data on these grants.
- Investing in hazard mitigation measures above and beyond select requirements of the 2015 International Codes (I-Codes) — the model building codes developed by the ICC — can save the nation $4 for every $1 spent.

Policies and programs must also promote resilient materials and life safety methods. DOE and the federal government must continue to encourage the adoption and enforcement of appropriate standards for the use of resilient materials and life safety methods in the construction of lifeline infrastructure. The enforcement of these standards dramatically increases the resiliency of infrastructure and does not exclude any particular materials so long as those materials and construction techniques meet the aforementioned resilient standards. This approach would not create any preference among available materials — all can bid so long as their products meet the performance standard — but such a measure would greatly reduce the risk and costs to U.S. taxpayers. Thus, federal funding and programs should be used to encourage the replacement of vulnerable lifeline infrastructure with infrastructure that meets higher standards, using resilient materials and life safety measures so that critical services avoid or reduce damage, service interruptions, and reconstruction.

IV. Investing in Lifeline Infrastructure

The nation's infrastructure is lagging in many areas, so it would be prudent to leverage both public and private investment in infrastructure, with a focus on increasing the resilience across lifelines like power, water, communications, and shelter. When decision-makers identify key risks to lifeline facilities and more readily target projects that can help protect or restore critical functions during a disaster, communities are better able to drive investments to increase resilience.

The damage to infrastructure during the major hurricanes of 2017 highlight the importance of building a resilient power grid. Most hospitals, water treatment plants, food services, communications, search and rescue operations, reconstruction, and other critical lifeline services depend on access to electric power. However, power is almost always interrupted by such storm events; indeed, there are parts of Puerto Rico that remain without electricity almost two years after hurricanes Irma and Maria.

BUILDSTRONG COALITION

To a large extent, power interruptions in high wind areas result from failures of distribution poles. More than 50,000 poles failed in Puerto Rico, the vast majority of which were under 60 feet in height. Section 250C of the National Electric Safety Code (NESC) sets strength standards for poles in high wind areas but exempts poles under 60 feet in height. A simple elimination of that exemption would vastly increase the resilience of our power grids in these areas, significantly reducing the costs of post-disaster reconstruction and avoiding life-threatening power interruptions.

V. Increasing the Resilience of Our Electric Power Distribution Systems

The NESC establishes standards for the construction of transmission and distribution utility poles. Section 25 defines the strength standards required for different areas of the country, based on loading maps from the American Society of Civil Engineers (ASCE 74 – 2010). ASCE wind maps have been widely adopted by the IBC, IRC, and International Existing Building Code (IEBC).

The ASCE 74 maps show values for wind speed and ice thickness that are expected to be exceeded every 50 years, identify the weather risks associated with those areas, and specify the wind speeds that poles in those areas must withstand. Puerto Rico, the Virgin Islands, Florida, and certain other island and mainland coastal areas are designated as extreme wind areas, and other areas in the United States are considered “high risk” for wind and ice accumulation. Section 250C sets the strength standards for extreme wind areas, and Section 250D for wind and ice-prone areas. However, both standards exempt poles of under 60 feet in height from compliance with the extreme wind performance criteria, even though the wind measurements used to designate an area as an “extreme wind area” are taken at 33 feet.[1]

This exemption results in a significant reduction in the size and strength of poles for many vulnerable coastal and other areas. Indeed, even though these areas fall in the “extreme wind areas” under ASCE 74 (that nominally would require a wind tolerance of 145 mph), under this exemption the southern U.S. and Caribbean territories need only design their systems to withstand a Category 2 hurricane (114 MPH), and the Mid-Atlantic and Northeast to withstand a tropical storm (75 MPH). Nine hurricanes above Category 2 have hit the U.S. since 2000, including hurricanes Irma and Maria, with winds measured at over 200 MPH and 145 MPH, respectively.

Thus, although Puerto Rico and other southeastern coastal areas are designated as “extreme wind areas,” 90 percent of the utility poles in those areas are exempt from compliance with the extreme wind standard in Section 25. The consequences of this exemption were demonstrated by the impacts of Hurricanes Irma and Maria. According to news reports, more than 50,000 utility poles were destroyed in Puerto Rico during those storms, and another 20,000 were lost in Florida. There was widespread loss of power, which cost an estimated $5 billion to restore. Had those poles been installed in accordance with NESC 250C, there is a high probability those losses would have been much lower.

Similar issues arise in wildfire situations. News reports indicate that one of the recent wildfires in California was caused when a transformer exploded on a flammable, wooden pole. As the fires spread other flammable poles caught fire with resulting damage to the distribution systems. Adding an additional requirement that electrical distribution poles be made of non-flammable materials in wildfire-prone areas could likewise reduce damage, interruptions, and reconstruction costs.

There are many options available to utilities to meet the requirements of Sections 250C and D. Wood poles of a larger size can comply, as can engineered poles made of steel, ductile iron, and concrete. Enforcement of these standards without the exemption will not exclude poles made from any particular material.

[1] For additional context, 90% of all poles in use in the U.S. are under 60 feet in height.

Florida serves as a good example of the benefits of storm hardening. After the storm seasons of 2004 and 2005, the Florida Public Service Commission mandated that investor-owned utilities — and recommended that municipalities and cooperative utilities — inspect all poles every eight years and replace all obsolete poles (including those below 60 feet) with poles that meet the high wind loads in ASCE 74.

In 2018, the Florida Public Service Commission declared that the storm hardening programs in Florida are working. Outages from 2017's Hurricane Irma were much less significant than those in 2004–2005 storm season, and the adoption of more resilient poles reduced the construction man-hours required to restore hardened feeders by 50 percent. At Florida Power and Light, Florida's largest utility, non-hardened poles were 10 times more likely to fail than hardened poles. As a more specific example, 700 Section 250C-compliant poles were in service in the Florida Keys when Irma and Maria made landfall. Not a single such pole was lost, while 1,000 nearby wooden poles that had been installed under the less resilient standard failed.[2]

Applicable federal, state, and local standards should be revised to require that all newly installed or repaired electric distribution poles conform to the requirements of NESC Section 250C and D, even at heights less than 60 feet. This language does not create any preference among available materials — all can continue to bid so long as their products meet the performance standard — but such a measure would greatly reduce the risk and costs to the U.S. taxpayers.

We hope that DOE and the entirety of the federal family will use this information to aid in the implementation of the Disaster Recovery Reform Act of 2018, as well as other federal efforts to enhance resilience.

Thank you for your ongoing engagement.

Sincerely,

Pamela Williams
Executive Director
BuildStrong Coalition

Phil Anderson
President
BuildStrong Coalition

cc:

The U.S. House Committee on Transportation and Infrastructure
The U.S. House Committee on Energy and Commerce
The U.S. Senate Committee on Homeland Security and Governmental Affairs
The U.S. Senate Committee on Energy and Natural Resources

[2] A video describing that experience can be found at: https://t.co/YRHdrkVpuD