

Critical Infrastructure and Supply Chain Constraints

The U.S. economy has been deeply impacted by supply chain constraints. These constraints are due to shortages of labor and multiple classes of materials, causing disruptions on a global level. For public power utilities, the ability to provide reliable and affordable power to homes, businesses, and critical facilities (such as defense and medical) is foundational to their business model and the post-COVID-19 recovery and expansion of their local communities. Prioritization of critical electric infrastructure and the electric industry's critical functions during this period of material shortages and delays is necessary to prevent further economic slowdown and ensure electric reliability.

Supply of critical equipment and materials is decreasing while demand continues to grow, widening the gap between what is available and what is needed.

Electric utilities are experiencing shortages of distribution transformers, smart meters, conductor materials, skilled labor, and bucket trucks due to the ongoing economic impacts from the COVID-19 pandemic. Delayed investments and expanding lead times for new equipment caused by a lack of materials and labor will continue to compound the problem—possibly for years to come.

As the economy rebounds from the impacts of the pandemic, additional electric capacity is needed to power new residential and commercial development, new manufacturing facilities, and to support a rapidly expanding electric vehicle fleet. Public power utilities are investing heavily in clean energy technologies to meet environmental goals. Simultaneously, the industry is facing extreme weather events, which have become more frequent and severe, requiring more resource-intensive response and restoration.

Distribution transformers and other materials are in critically short supply.

Distribution transformers are essential for electric utilities to expand capacity, provide electricity to new communities, and restore service when existing infrastructure is damaged during a hurricane, winter storm, or other natural disaster. In a recent survey of public power utilities, 80 percent reported having either pad-mounted or pole-mounted distribution transformer inventories that are lower today than they were in 2018. The median percent of distribution transformers companies have this year compared to 2018 is down by 25 percent.

Lead times to purchase new distribution transformers have risen from three months in 2018 to an extraordinary 12 months or more today. Utilities have relied on their existing inventory of transformers and other measures to bridge the gap between equipment purchase and arrival but have begun to report that their buffer inventories are decreasing to unacceptable levels.

Prolonged supply chain constraints on critical electric infrastructure could be detrimental to the U.S.

As hurricane and wildfire season approaches, maintaining a sufficient inventory of critical equipment for emergency response and restoration is especially important. The historically severe grid impacts of Hurricane Laura in 2020 and Hurricane Ida in 2021 combined with increasingly urgent supply chain constraints have left electric utilities with depleted and decreasing transformer inventories, raising concerns about the feasibility of responding to and recovering from another severe storm season, even with a robust mutual aid program in place.

Supply chain constraints, particularly shortages of distribution transformers, have caused electric utilities to delay or

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cancel infrastructure projects that would require more resources than are available. Many of the industry's planned projects are designed intentionally to transition to cleaner energy resources, and significant construction delays have the potential to put the nation's clean energy objectives at risk. The transformer shortage is impacting the housing market, with construction companies being required to use generators long-term to keep their job sites powered while utilities look for transformers to feed new electrical load.

To ensure that supply chain constraints do not impact reliability, utilities are taking extraordinary measures to meet current demand with the limited supply of equipment that is available, including refurbishing older equipment and identifying swapping equipment in the field to generate spares from underutilized equipment. These are last-ditch efforts to protect the safety of electric customers and sustain other sectors that depend on electricity, but these efforts move the industry further away from clean energy, efficiency, and affordability goals.

Utilities are discussing the issue with the federal government, working with manufacturers, and with the entire sector to encourage additional production and sharing of transformers.

Administrative & Industry Action

On June 6, 2022, President Biden authorized the use of the Defense Production Act (DPA) to accelerate the domestic production of clean energy technologies. Specifically, the President authorized DOE to use the DPA to “rapidly expand American manufacturing of five critical clean energy technologies: photovoltaic modules and module components for solar panels; building insulation; heat pumps; equipment for making and using clean electricity generated fuels, including electrolyzers, fuel cells, and related platinum group metals; and critical power grid infrastructure, such as transformers.” President Biden also authorized a “24-month bridge” freezing tariffs on solar panel imports from southeast Asian countries to temporarily ensure the U.S. has access to enough solar modules to meet electricity generation needs while domestic manufacturing ramps up. DOE is undertaking a host of activities to begin the process of using the DPA to help alleviate the distribution transformer supply chain issue and spur the domestic production of this much needed equipment.

APPA is pursuing every avenue to help increase the supply of distribution transformers. On May 26, APPA and the National Rural Electric Cooperative Association (NRECA) asked DOE Secretary Jennifer Granholm in a letter to temporarily waive the energy conservation standard for distribution transformers. APPA and NRECA believe that this could help manufacturers increase production. APPA is also participating in a Supply Chain Tiger Team established by the Electric Subsector Coordinating Council to address resiliency and security concerns arising from supply chain constraints. Finally, APPA has set up a web service to facilitate a voluntary transformer exchange where APPA members are able to contact other members to address urgent equipment needs.

APPA Position

APPA appreciates the Biden administration's focus and attention on the current supply chain crisis, which threatens electric utilities' ability to provide reliable and affordable power to U.S. homes, businesses, and critical facilities. APPA urges DOE to temporarily waive the energy conservation standard for distribution transformers as part of an all-options approach to helping manufacturers increase output as much as possible. APPA also urges the federal government to work directly with manufacturers to identify and fix the root causes of the distribution transformer shortage.

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The American Public Power Association is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. We represent public power before the federal government to protect the interests of the more than 49 million people that public power utilities serve, and the 96,000 people they employ. Our association advocates and advises on electricity policy, technology, trends, training, and operations. Our members strengthen their communities by providing superior service, engaging citizens, and instilling pride in community-owned power.