

**COMMENTS OF THE EDISON ELECTRIC INSTITUTE,
THE AMERICAN PUBLIC POWER ASSOCIATION, AND THE NATIONAL RURAL
ELECTRIC COOPERATIVE ASSOCIATION
ON THE DEPARTMENT OF COMMERCE
BUREAU OF INDUSTRY AND SECURITY
NOTICE OF REQUEST FOR PUBLIC COMMENTS ON
SECTION 232 NATIONAL SECURITY INVESTIGATION
OF IMPORTS OF LAMINATIONS FOR STACKED CORES
FOR INCORPORATION INTO TRANSFORMERS,
STACKED CORES FOR INCORPORATION INTO TRANSFORMERS,
WOUND CORES FOR INCORPORATION INTO TRANSFORMERS,
ELECTRICAL TRANSFORMERS, AND TRANSFORMER REGULATORS**

DOCKET NO. BIS–2020–0015

JULY 3, 2020

The Edison Electric Institute (EEI), the American Public Power Association (APPA), and the National Rural Electric Cooperative Association (NRECA) appreciate this opportunity to respond to the *Notice of Request for Public Comments on Section 232 National Security Investigation of Imports of Laminations for Stacked Cores for Incorporation into Transformers, Stacked Cores for Incorporation into Transformers, Wound Cores for Incorporation into Transformers, Electrical Transformers, and Transformer Regulators* (Investigation) issued by the Department of Commerce, Bureau of Industry and Security (Bureau). 89 *Fed. Reg.* 29,926 (May 19, 2020) (Notice).¹ Section 232 of the Trade Expansion Act of 1962 investigations assess the effects of certain imports on national security.

The Notice indicates that this Investigation will focus on laminations for stacked cores for incorporation into transformers, wound cores for incorporation into transformers, electrical transformers, and transformer regulators (Products). *See id.* The Notice also indicates that the

¹ On June 9, 2020, the Department of Commerce extended the deadline to July 3, 2020.

Bureau is seeking comment on a range of issues, including relevant factors that are causing or will cause a weakening of the national economy, as well as any other factors, including the use of the Products and their importance to critical infrastructure industries. *See id.* at 29,927.

Moreover, for purposes of Section 232 investigations, the Department of Commerce broadly defines national security to include the “general security and welfare of certain industries, beyond those necessary to satisfy national defense requirements, which are critical to minimum operations of the economy and government.”² Therefore, while the focus of this Investigation is the effect of imports of the Products, which all incorporate grain oriented electrical steel (GOES), on the domestic GOES industry, *see* 89 *Fed. Reg.* at 29,926, this Investigation must also consider the “general security and welfare” of the electric power industry, a designated critical infrastructure sector,³ a primary user of the Products, and a critical enabler of the U.S. economy.

EEI is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for about 220 million Americans and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than seven million jobs in communities across the United States. EEI’s members are committed to providing affordable, reliable, and clean electricity to customers now and in the future. The electric power industry long has been the nation’s most capital-intensive industry. Since 2010, EEI’s member companies

² U.S. Department of Commerce, Bureau of Industry and Security, Office of Technology Evaluation, *The Effects of Imports of Steel on the National Security*, at 1 (Jan. 11, 2018)(Steel Investigation Report).

³ *See* Presidential Policy Directive 21 (PPD-12), Critical Infrastructure Security and Resilience (Feb. 12, 2013), <https://obamawhitehouse.archives.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil>.

have invested nearly \$1 trillion to build smarter energy infrastructure and to integrate new generation.⁴ They include significant investments in new electrical transformers through a diverse supply chain, which is essential to national security and the national interest of ensuring a cleaner, smarter, stronger energy future. Increased investment in transformers and related equipment is needed to maintain electric system reliability while EEI's member electric companies work to replace aging infrastructure and upgrade and expand the energy grid to accommodate new generation interconnections, including renewable generation.

APPA is the national service organization representing the interests of not-for-profit, state, municipal and other locally owned electric utilities in the United States. More than 2,000 public power utilities, doing business in every state but Hawaii, account for over 15 percent of all electric energy (kilowatt-hours) sales to ultimate consumers in the nation and collectively serve 49 million consumers. The primary goal of these public power utilities is providing customers in the communities they serve with reliable electric power and energy at the lowest reasonable cost, consistent with good environmental stewardship. This orientation aligns the interests of public power utilities with the long-term interests of the residents and businesses in their communities. To meet the future energy vision of the communities public power utilities serve while keeping reliability high and costs low, public power utilities are continuously investing in their distribution and transmission systems. To that end, public power utilities spend more than \$335 million a year procuring the Products identified in this Investigation.

⁴ See EEI, America's Energy Future: Cleaner, Smarter, Stronger, Electric Power Industry Outlook, at 7 (Feb. 2020), https://www.eei.org/issuesandpolicy/finance/wsb/Documents/2020_Wall_Street_Briefing_Remarks_Web.pdf.

NRECA is the national trade association representing nearly 900 local electric cooperatives and other rural electric utilities. America's electric cooperatives are owned by the people that they serve and comprise a unique sector of the electric industry. From growing regions to remote farming communities, electric cooperatives power one in eight Americans and serve as engines of economic development for 42 million Americans across 56 percent of the nation's landscape. Electric cooperatives operate at cost and without a profit incentive. NRECA's member cooperatives include 62 generation and transmission (G&T) cooperatives and 831 distribution cooperatives. The G&Ts generate and transmit power to distribution cooperatives that provide it to the end of line co-op consumer-members. Collectively, cooperative G&Ts generate and transmit power to nearly 80 percent of the distribution cooperatives in the nation. The remaining distribution cooperatives receive power directly from other generation sources within the electric sector. Both distribution and G&T cooperatives share an obligation to serve their members by providing safe, reliable, and affordable electric service. Over the last five to 10 years, it is estimated that member G&T cooperatives have spent \$1 billion on new substation transformers.

EEL, APPA, and NRECA generally support efforts to expand domestic manufacturing of the Products. We respectfully urge the Bureau to consider the importance of electric system reliability to national security as it conducts this Investigation and ask that any potential proposed trade remedies be tailored to support reliability by maintaining supplier diversity.

I. Executive Summary

As the primary users of many Products, particularly electrical transformers, EEL, APPA, and NRECA members (collectively referred to as electric utilities) and their customers will be directly affected by any trade remedies ultimately imposed through this Investigation. Consistent

with the Notice, the goal of these comments is to provide the Bureau with information about the electric power sector, which has been recognized as critical infrastructure, so that this Investigation considers the potential adverse effects of any trade remedies on electric utilities' ability to provide reliable electric service to customers. A reliable supply of electricity is key to supporting a strong national economy, as well as maintaining and preserving national security.

Energy, and electricity in particular, is essential to daily life in the U.S. It is fundamental to public health and safety and national security because it is a lifeline function that enables all other lifeline functions, including telecommunications, transportation, health care, and water. Electricity supports all aspects of the U.S. economy and is vital to national security.

Electric utilities do not import GOES directly, nor do they manufacture GOES or key components of the electric grid that incorporate GOES, but they do order, procure, install, operate, and maintain transformers. Transformers, generally, and large power transformers (LPTs), in particular, are essential to the reliable operation of the electric grid. LPTs are expensive, custom equipment that require long lead times for procurement, manufacture, and delivery—typically from 12 to 24 months from procurement to delivery. The costs of transformers and related equipment ultimately are borne by electricity customers, including residential, commercial, and industrial customers.

Transformers allow the voltage of electricity to be adjusted so that it can be transmitted across long distances efficiently and delivered to homes and businesses safely. They are essential to the reliable operation of the electric grid. While the Investigation focuses on transformers broadly,

there is not a single kind of transformer, but instead many different types, depending on voltage, core materials used, and winding arrangements. Further, each transformer is itself a specialized, purpose-built piece of equipment, made to satisfy an electric company's particular specifications for particular uses. GOES is a critical component of many kinds of transformers, including both distribution transformers and LPTs, but different kinds of transformers require different grades of GOES. Demand for new transformers is anticipated to increase as electric utilities continue to make investments in the grid to update aging infrastructure, accommodate new generation, and prepare for increase electricity demand to support increased electrification of the economy.

Based on preliminary research, it does not appear that domestic GOES manufacturers could meet all of the electric power industry's transformer manufacturing needs and, particularly, cannot currently meet any of its needs for higher grade GOES, which often are required to meet particular transformer specifications. For this Investigation, it is critical to comprehend that there are different kinds of transformers and different grades of GOES that go into those transformers. In addition, this Investigation must address whether domestic steel suppliers adequately can produce all of the grades of GOES that electric utilities need for the range of transformers used to maintain the reliable operation of the electric grid. Maintaining diversity, availability, and quality of GOES supply is of critical importance to the electric sector.

Electric companies, public power utilities, and electric cooperatives generally support efforts to increase domestic production of the Products and the transformers and other equipment of which GOES is a core component. Given the importance of electrical transformers in the safe, reliable, and resilient operation of the electric grid, upon which national security and the entire U.S.

economy relies, however, this Investigation should carefully consider and not recommend any trade remedies that could have unintended consequences for the grid or its customers. Trade remedies should not require that the entire electric power industry rely on a single supplier of GOES or a single grade of GOES (which is contrary to most electric utility requirements). Supply and supplier diversity help mitigate supply chain risks for LPTs and other transformers. Overly broad or poorly designed remedies could increase the risk of harm to the electric grid, and indeed national security, by disrupting the supply chain used to support the grid and fail to provide meaningful support to domestic GOES producers—as both outcomes would be contrary to the objectives of investigations under Section 232.

In particular, the Bureau should:

- **Avoid recommendations that effectively would relegate an entire industry to reliance on a single domestic GOES supplier or an unreasonably small number of Products suppliers.** Supplier diversity helps to mitigate supply chain risks that could threaten the reliability of the electric grid, and different grades of GOES are needed for different applications.
- **Avoid recommendations that effectively would require domestic manufacturers to use only lesser grades of GOES, which might not be fit for all Products and purposes.** Different grades of GOES are needed for different applications. LPTs, in particular, need higher grades of GOES to be efficient, both in terms of size and conductivity.
- **Preserve current domestic production of all Products, not just domestic supply of GOES.** A perverse outcome of this Investigation would be harm to existing domestic manufacturers, particularly manufacturers of transformers, even if they use imported Products or GOES in Products. Again, supply chain diversity is essential for electric reliability and resilience.
- **Promote potential remedies that would develop the domestic GOES industry, not just penalize imported Products.** If it is determined that increased domestic manufacturing of the Products is important for national security, the Bureau must recognize that this will not happen overnight. Given the importance of transformers to the grid, as well as long lead times for procurement and manufacturing, the electric power sector cannot wait for increased domestic production.

II. Electrical Transformers Are Essential To Providing Safe, Reliable, Resilient, and Affordable Electricity To Customers.

In February 2013, Presidential Policy Directive (PPD)-12, Critical Infrastructure Security and Resilience, broadened the national effort to strengthen and maintain secure, functioning, and resilient critical infrastructure. PPD-12 applies to all critical infrastructures but pronounces energy infrastructures as “uniquely critical” due to the enabling functions they provide across all other critical infrastructures.⁵ Energy, and electricity, in particular, is essential to daily life in the U.S., from running appliances and enabling communications and the internet, to powering and controlling industrial operations. Beyond its key function as a necessary commodity, however, electricity is fundamental to public health and safety and national security. It is a lifeline function that enables all other lifeline functions, including telecommunications, transportation, and water.⁶ The U.S. electric grid is a highly complex machine that enables the provision of affordable, reliable electricity that supports all aspects of the U.S. economy. While this Investigation is broadly concerned with GOES imports, including transformers and other equipment made from GOES, these comments focus on transformers. All transformers, but particularly LPTs, are vital to the reliable operation of the nation’s power grid. LPTs are expensive, custom equipment that typically require at least 12 to 24 months from procurement, manufacture, to delivery. These constraints limit the ability of any single manufacturer to meet U.S. electric system demand and underlie the critical need for a robust and diverse supply chain for transformers.

⁵ See PPD-12, n.3, *supra*.

⁶ See Department of Homeland Security, Cybersecurity and Infrastructure Security Agency, Energy Sector, Sector Overview (Dec. 4, 2018), <https://www.cisa.gov/energy-sector>.

Investor-owned electric companies and independent transmission companies had installed nearly 41,000 transformers (with ratings of at least 69 kiloVolts (kV)) as of the end of 2018. Public power utilities are estimated to own and operate nearly 14,000 substation size transformers and more than 5.5 million distribution transformers. Electric cooperative utilities are also estimated to own and/or operate at least 10,000 substation-size transformers with a rating of 69 kV or higher. Demand for transformers is generally increasing in the U.S., for a variety of factors, including needed investments to modernize the aging electricity grid to ensure that it remains reliable and resilient. Accordingly, ensuring continued access to timely and adequate supplies of transformers is necessary for the continued reliable operation of the electric grid so that electric utilities can deliver affordable electricity to support the entire U.S. economy. Due to the nature of transformer manufacturing, supplier diversity is critical to ensure timely and adequate supplies of transformers for grid operations.

A. The Electric Grid Is the Complex Machine that Enables the Provision of Reliable Electricity to the U.S. Economy.

The U.S. has one of the world’s most reliable, affordable, and increasingly clean electric systems—a system that powers all aspects of the economy and helps provide for the safety and security of all citizens. As the Department of Energy (DOE) recognized in the 2015 Quadrennial Energy Review (QER), at the “core of the electric system is the grid—a complex, highly engineered network that coordinates the production and delivery of power to customers.”⁷

Together with its electric generation component, the grid is sometimes referred to as the world’s

⁷ DOE, *Quadrennial Energy Review: Energy Transmission, Distribution, and Storage Infrastructure* at 3-4 (Apr. 2015), https://www.energy.gov/sites/prod/files/2015/07/f24/QER%20Full%20Report_TS%26D%20April%202015_0.pdf.

largest machine; in 2000, the National Academy of Engineering named electrification as the greatest engineering achievement of the 20th century.⁸

The U.S. electric grid is comprised of electricity substations, transformers, and power lines that connect electricity producers and consumers. Most local grids are interconnected for reliability and commercial purposes, forming larger, more dependable networks that enhance the coordination and planning of electricity supply. In the United States, the entire electric grid consists of hundreds of thousands of miles of high-voltage transmission lines and millions of miles of low-voltage power distribution lines that connect thousands of power plants to hundreds of millions of electricity customers across the country.⁹

While electricity storage technologies continue to develop and improve, as a general matter, electricity cannot be stored in the quantities needed to meet customer demand. As a result, electricity must be produced as needed by power plants and then transmitted from those plants to customers at the exact same time.¹⁰ And, the laws of physics require that the electric grid be designed so that supply and demand exactly match, at every moment of the day, in every location. Failure to balance supply and demand in this precise way will damage the grid and

⁸ National Academy of Engineering, *Greatest Engineering Achievements of the 20th Century* (2000), <http://www.greatachievements.org/>.

⁹ See generally, DOE, Energy Information Administration (EIA), *Electricity Explained: How Electricity Is Delivered to Customers* (Oct. 11, 2019), <https://www.eia.gov/energyexplained/electricity/delivery-to-consumers.php>.

¹⁰ See Federal Energy Regulatory Commission (FERC), Office of Enforcement, *Energy Primer: A Handbook of Energy Market Basics*, at 36 (Nov. 2015), <https://www.ferc.gov/market-assessments/guide/energy-primer.pdf>.

increase the potential for electricity interruptions and even outages.¹¹ Electricity interruptions and outages threaten the health and safety of customers, as well as have the potential to create economic harm for commercial and industrial customers that rely on a reliable source of electricity to power their businesses.¹²

B. There Are Many Kinds of Transformers, All of Which Are Essential to the Grid but Not Interchangeable.

The electricity grid is made up of both high- and lower-voltage lines. High-voltage transmission lines, such as those that hang between tall metal towers, carry electricity over long distances.

Higher voltage electricity is more efficient and less expensive for long-distance electricity transmission. Lower voltage electricity is safer for use in homes and businesses. Transformers at substations increase (step up) or reduce (step down) voltages as needed throughout the journey of electric current from the power plant to residential, commercial, and industrial customers.¹³

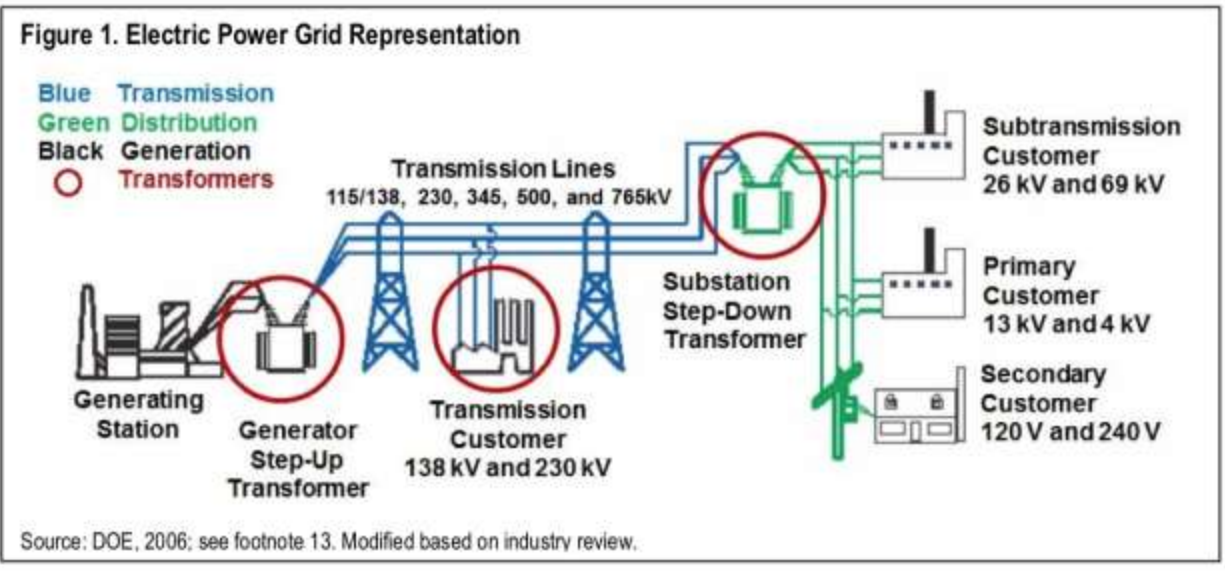
Figure 1, below, shows where transformers are used throughout the electric grid.¹⁴

¹¹ *See, generally, id.*

¹² In 2012, the Congressional Research Service estimated that storm-related outages cost the U.S. economy between \$20 billion and \$55 billion annually. *See* Richard J. Campbell, Congressional Research Service, *Weather-Related Power Outages and Electric System Resiliency* (Aug. 28, 2012), at 9, <https://fas.org/sgp/crs/misc/R42696.pdf>.

¹³ *See, generally, EIA, n.9, supra. See also, DOE, Office of Electricity Delivery and Energy Reliability, Large Power Transformers and the U.S. Electricity Grid, Update* (April 2014) (2014 DOE Transformer Study), at 5, <https://www.energy.gov/sites/prod/files/2014/04/f15/LPTStudyUpdate-040914.pdf>.

¹⁴ 2014 DOE Transformer Study, n.13, *supra*, at 5.



Transformers, therefore, are critical to the reliable and safe operation of the electric grid. While the Investigation focuses on transformers broadly, there is not a single kind of transformer, but instead many different types, depending on voltage, core materials used, and winding arrangements.¹⁵ Further, each transformer is itself a specialized, purpose-built piece of equipment, meaning that it is made to satisfy an electric utility’s particular engineering specifications for particular uses. GOES is a critical component of many kinds of transformers, including some distribution transformers and all LPTs, but different kinds of transformers require different grades of GOES depending on their intended use. Accordingly, it is critical that this Investigation understand that all transformers are not interchangeable components.

All types of transformers are important to the reliable and safe operation of the electric grid. These comments focus on LPTs, but the concerns raised apply equally to generator step-up

¹⁵ See *id.* at 3-4.

transformers and distribution transformers, which are equally necessary to the reliable operation of the electric grid.

DOE generally defines LPTs as those transformers with a capacity rating greater than or equal to 100 megaVolt-amperes (MVA), with medium, high, or extra high transmission voltage. In general, LPTs are transmission transformers.¹⁶ DOE and the electric power industry have well-documented concerns about the potential reliability impacts of the loss of even a single LPT, as this could lead to a temporary disruption in electricity service. Moreover, the loss of several LPTs at once could be catastrophic as it would not be easy or fast to replace multiple LPTs.¹⁷ As discussed below in more detail, the electric power industry has taken many steps to mitigate LPT risks. Accordingly, any remedies that may be proposed as a result of this Investigation should take into consideration the availability of differing grades of GOES and the importance of allowing timely access to procure and install LPTs to preserve electric reliability.

DOE has gathered extensive information about the distribution transformer market as a result of the energy conservation standards that the Energy Efficiency and Renewable Energy (EERE) Office is required to set for those transformers under the Energy Conservation and Policy Act of 1975, as amended. DOE last reviewed and revised efficiency standards for distribution

¹⁶ *See id.* Generation step-up transformers are often, but not exclusively, LPTs.

¹⁷ *See id.* at 1; *see also* DOE, *Strategic Transformer Reserve, Report to Congress* (Mar. 2017) (DOE Strategic Transformer Reserve Study), at 1-2, <https://www.energy.gov/sites/prod/files/2017/04/f34/Strategic%20Transformer%20Reserve%20Report%20-%20FINAL.pdf>. The U.S. has never experienced the loss or failure of multiple LPTs.

transformers in 2013¹⁸ and is in the process of collecting information for the next review of these standards.¹⁹ In connection with the 2013 standards, DOE conducted an extensive analysis of the impacts on these standards on producers of distribution transformers. While this analysis focused on the economic impacts of the revised standards on all small manufacturers, rather than the origin of the steel used, it is important to note that DOE determined that there is significant domestic manufacturing of these products, finding, for example, that 75 percent of the employees who work for manufacturers that provide medium-voltage dry-type transformers are located domestically.²⁰ As a general matter, in the course of this Investigation, the Bureau should avail itself of DOE's expertise with respect to the electric grid, reliability, transformers as critical components of the electric grid, and distribution transformer markets. EEI, APPA, and NRECA also stand ready to assist the Bureau in answering any questions or providing additional information needed to make fully informed decisions on the impact of any potential trade remedies that may be under consideration as part of the Investigation.

C. LPTs Are Manufactured to Customer Specifications and Have Long-Lead Times that Are Sensitive to Raw Material Availability; LPTs also Represent Significant Investments for Electric Utilities.

LPTs can weigh hundreds of tons and are typically custom made with procurement lead times of at least one year or more, with the manufacturing process adding at least another year. Because LPTs are so expensive and tailored to customers' specifications, they are usually neither

¹⁸ See DOE, EERE Office, *Energy Conservation Program: Energy Conservation Standards for Distribution Transformers*, 78 *Fed. Reg.* 23,336 (Apr. 18, 2013) (2013 Conservation Standards).

¹⁹ See DOE, EERE Office, *Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Request for information*, 84 *Fed. Reg.* 28,239 (June 18, 2019).

²⁰ See DOE, EERE, *Technical Support Document (TSD), Ch. 12, Manufacturer Impact Analysis*, filed in Docket No. ERE-2010-BT-STD-0048 (Apr. 2013), at 12-48.

interchangeable with each other nor produced in quantities that allow for extensive spare inventories.²¹ Timelines are further subject to the manufacturing process, which is similarly complex. In particular, the availability of raw materials can significantly affect LPT manufacturing and delivering LPTs once they are ordered by electric utilities.

In 2014, DOE released its updated study reviewing the procurement and supply environment for LPTs. This study outlined the complex and time-consuming procurement cycle for LPTs. There are several distinct steps and procedures, including prequalification of manufacturers and a competitive bidding process, before manufacture can begin. The prequalification process is essential to ensure the quality of the final product, which must adhere to company specifications, as the production environment and the capability of the manufacturer can significantly affect the reliability of the LPT. Given that LPTs usually need the higher grades of GOES to meet specifications so that they are both efficient and appropriately sized, a key specification is the type of GOES that will be used.

In 2017, DOE estimated that the mid-point price of an LPT was \$4.5 million, exclusive of related costs.²² In the 2014 DOE Transformer Study, LPT costs were estimated to range from \$2 million to \$7.5 million in the United States in 2010; however, these estimates were free on board (FOB) factory costs, exclusive of transportation, installation, and other associated expenses, which generally add 25 percent to 30 percent to the total cost.²³ The 2014 DOE Transformer Study also

²¹ See 2014 DOE Transformer Study, n.13, *supra*, at 5.

²² DOE Transformer Reserve Study, n.17, *supra*, at 19.

²³ 2014 DOE Transformer Study, n.13, *supra*, at 7.

found that the cost of raw materials accounted for 57 percent to 67 percent of the total cost of LPTs sold in the United States between 2008 and 2010, 22 percent to 24 percent of which was attributed to the costs of GOES.²⁴ Accordingly, GOES prices can have a significant impact on LPT total costs.

The bidding process includes not just manufacture, but also transportation (which can be costly because of how heavy transformers can be), installation, and warranties.²⁵ A competitive bidding process is essential for controlling costs, which, are reviewed by federal and state regulators²⁶ before they can be included in the rates charged electricity customers. All told, this pre-order process can take more than one year to complete.

The manufacturing process is similarly complex, involving several steps.²⁷ DOE found that, in 2010, the average lead time between a customer's LPT order and delivery was 12 months for domestic producers and six to 16 months for producers outside the U.S. However, in times of higher demand, lead times can increase to up to 24 months. Importantly, if access to key

²⁴ *See id.* at 11. The 2014 DOE Transformer Study noted that the average annual prices of electrical steel ranged from \$1.20 to \$2.20 per pound (lb) between 2006 and 2011. For reference, approximately 170,000 to 220,000 lb of GOES core steel are needed in a power transformer with a capacity rating between 300 and 500 MVA, meaning that at a price of \$2.00/lb, GOES can contribute up to nearly half a million dollars of the total cost of an LPT. *See id.* at 12.

²⁵ *See, generally, id.*, at 7-9.

²⁶ Or, in the case of public power utilities, such expenditures are vetted and approved locally via public records, open meetings, competitive bidding requirements, and through public budget hearings; and for electric cooperatives, such expenditures are reviewed and approved by their boards, which are democratically elected from among the members they serve as well as by other entities if they are subject to state and/or federal jurisdiction.

²⁷ *See id.* at 9.

materials, like GOES, is constrained, DOE found that lead times can be significantly longer and can be as long as five years.²⁸ Accordingly, supply chain issues, particularly for raw materials, also can result in substantial delays in the manufacturing and delivery of LPTs.

Given the complexity and length of the procurement and manufacturing process for LPTs, supplier diversity is an important tool for controlling costs, ensuring quality, and mitigating risks that could impact reliability. Accordingly, any trade remedies that may be considered should consider how limiting supplier diversity could have unintended consequences for electric utilities, their customers, and reliability.

D. Continued Investment in the Grid and New Sources of Generation Means that Demand for All Transformers Is Expected to Follow Recent Trends.

Electric utilities have invested more than \$1 trillion since 2010 to make the electric grid smarter, more reliable, and to integrate new generation. Investments in transformers have been a key element of the efforts and expenditures. At the end of 2018, there were nearly 41,000 LPTs in service in the U.S. that were owned and installed by investor-owned electric companies or independent transmission companies.²⁹ In addition, there are at least 25,000 LPTs owned by municipal and electric cooperative utilities. Transformers are generally long-lived equipment,³⁰ but demand for new LPTs is expected to remain high in the future, for a range of reasons. As DOE has recognized, the main drivers for continued investment in new LPTs are the need to

²⁸ *See, generally, id.*

²⁹ EEI analysis, based on FERC Form 1 data. This covers transformers with a rating greater than 69 kV. By way of comparison, DOE estimated that there were about 42-43 million distribution transformers in service in the U.S. in 2009. *See* 2013 Conservation Standards, n.18, *supra*.

³⁰ According to DOE, in 2010, industry sources estimated that the average age of LPTs installed in the U.S. was 38-40 years, with approximately 70 percent of LPTs at 25 years old. *See* 2014 DOE Transformer Study, n.13, *supra*, at 28. Age can be a factor in transformer failure.

replace aging infrastructure, upgrade and expand the energy grid to accommodate new generation interconnections, particularly for renewable generation, and maintain reliability.³¹ In addition, as demand for electricity increases with increased electrification of the economy, demand for new transformers also will increase. Accordingly, electric utilities will continue to procure new LPTs going forward.

EEI conducted an informal survey of its members. From 2014-2019, 18 of EEI's 62 member companies (measured at the holding company level and not the operating company level), procured more than one million transformers of all kinds and for all uses, with a total cost of nearly \$7 billion.³² While there was significant variation among the companies, the survey respondents represent more than 25 percent of EEI's membership. Extrapolating the data, it is reasonable to estimate that EEI's members procured about four million transformers at a total cost of more than \$20 billion over the last five years. EEI estimates that investments in the grid will continue at similar levels in the coming years.³³ In general, members also reported that transformers were sourced both domestically and internationally, with a majority of the reported distribution transformer purchases sourced domestically.³⁴ NRECA member G&T cooperatives

³¹ See 2014 DOE Transformer Study, n.13, *supra*, at 15-16.

³² They also spent more than \$400 million on almost 30,000 new regulators.

³³ See EEI, EEI Industry Capital Expenditures with Functional Detail (Oct. 2019), https://www.eei.org/issuesandpolicy/Finance%20and%20Tax/EEI_Industry_Capex_Functional_2019.10.16.pdf.

³⁴ DOE also has information about the costs and annual shipments of distribution transformers. While dated, it is instructive. DOE estimated that more than 730,000 distribution transformers were shipped in 2009, at a total cost of more than \$1.5 billion. These are estimates for liquid-immersed, medium-voltage distribution transformers only. See 2013 Conservation Standards, n.18, *supra*, at Table. 3.5.1.

have spent up to \$1 billion on new substation transformers over the last five to 10 years. Any trade remedies considered by the Bureau should consider the potential impacts that these remedies could have on investments in the grid.

E. Electric Utilities Have Instituted Significant Measures to Maintain a Supply of Spare Transformers to Respond to Grid Emergencies.

DOE and the electric power sector have long identified LPTs as one of the electric grid's most vulnerable components.³⁵ Both the federal government and the electric power industry have taken significant steps to ensure a supply of LPTs to respond to and recover from grid emergencies. Collectively, these efforts underscore the importance of maintaining timely access to an adequate supply of LPTs.

For example, individual electric utilities, consistent with FERC reliability standards, are required to have plans to protect critical transformers and substations and their associated control centers, in the event they are rendered inoperable or damaged.³⁶ As part of these compliance plans, electric utilities may stock more interchangeable spare LPTs, order extra inventory, or retire LPTs early to employ them as spares.³⁷

Industry collaborations also have been implemented to share spare LPTs during grid emergencies. In 2006, federal energy regulators approved EEI's Spare Transformer Equipment

³⁵ See QER at 2-2; see also 2014 DOE Transformer Study, n.13, *supra*, at 1.

³⁶ FERC approved the North American Electric Reliability Corporation's Critical Infrastructure Protection Standard, CIP-014-2, in November 2014. The electric power industry is the only industry with mandatory reliability and critical infrastructure protection standards.

³⁷ See DOE Transformer Reserve Study, n.17, *supra*, at 8. This report sets form a range of other industry collaborations aimed at ensuring adequate and timely access to LPTS during grid and weather emergencies. See *id.* at 9-12.

Program (STEP), an electric industry program that strengthens the sector’s ability to restore the nation’s transmission system more quickly in the event of a terrorist attack. STEP represents a coordinated approach to increasing the electric power industry’s inventory of spare transformers and streamlining the process of transferring those transformers to affected companies in the event of a transmission outage caused by a terrorist attack. Any investor-owned, public power, or rural electric cooperative electric company in the United States or Canada may participate in the program. Currently, 56 companies are members.³⁸

Under the program, each participating energy company is required to maintain and, if necessary, acquire a specific number of transformers. STEP requires each participating company to sell its spare transformers to any other participating company that suffers a “triggering event,” defined as an act of terrorism that destroys or disables one or more substations and results in the declared state of emergency by the President of the United States.

In addition to STEP, the SpareConnect program provides an additional mechanism for Bulk Power System (BPS) asset owners and operators to network with other SpareConnect participants concerning the possible sharing of transmission and generation step-up transformers and related equipment, including bushings, fans and auxiliary components. SpareConnect establishes a confidential, unified platform for the entire electric industry to communicate equipment needs in the event of an emergency or other non-routine failure.

³⁸ See EEI, Spare Transformers, <https://www.eei.org/issuesandpolicy/transmission/Pages/sparetransformers.aspx>.

Moreover, Congress has weighed in, noting its concerns about access to critical LPTs to respond to and recovery from grid emergencies. In 2015, Congress passed the Fixing America's Surface Transportation (FAST) Act. Section 61004 directed DOE to establish a strategic reserve of LPTs.³⁹ In addition, DOE regularly studies and reviews LPTs, their availability and the impacts that they have on electric grid reliability and resilience,⁴⁰ as well as runs several programs aimed at improving the resilience of this equipment and the electric grid as a whole.⁴¹

Collectively, these public and private activities underscore the importance of LPTs to the continuous reliable and resilient operation of the electric grid and the national economy. These activities also underscore the value that the federal government places on timely access to LPTs, particularly in times of emergency. Importantly, this supply of spare transformers is not intended to replace investment in new transformers, but to be used in times of emergency. The Bureau should carefully consider whether proposed trade remedies will adversely impact the timing of access to LPTs and, if so, to mitigate that risk in any final recommendation.

³⁹ See Pub. L. No. 114-95, 129 Stat. 1780.

⁴⁰ See, e.g., 2014 DOE Transformer Study, n.13, *supra*; DOE Transformer Reserve Study, n.17, *supra*.

⁴¹ See, e.g., DOE's Transformer and Advanced Components Program, <https://www.energy.gov/oe/services/technology-development/transformer-resilience-and-advanced-components-trac-program>.

III. This Bureau Should Not Recommend Trade Remedies That Would Jeopardize The Provision of Safe, Reliable, Resilient, and Affordable Electricity To Customers And Potentially Harm the U.S. Economy.

In 2019, the Bureau issued a report memorializing the results of its investigation under Section 232 into the effects of steel imports on national security.⁴² In the report, the Bureau found that such imports are weakening the domestic economy and threaten to impair national security.

Based on the findings in the Bureau’s report, the Secretary of Commerce determined that “the only effective means of removing the threat of impairment is to reduce imports to a level that should, in combination with good management, enable U.S. steel mills to operate at 80 percent or more of their rated production capacity.”⁴³ The Secretary went on to recommend that the President take immediate action by adjusting the level of steel imports either through quotas or tariffs.⁴⁴

If the Bureau makes a similar determination after this Investigation—that imports of GOES, as well as transformers, transformer components, and regulators that are made from GOES threaten national security—the Bureau should narrowly tailor any proposed remedy to the specific threats to national security and should avoid recommending trade remedies that may threaten the provisions of affordable, reliable electricity to customers. As demonstrated in these comments, electricity is essential to the functioning of the U.S. economy. Jeopardizing the provision of electricity would similarly undermine the national economy and national security, contrary to the overarching goals of Section 232 investigations. The electric power industry generally supports

⁴² See Steel Investigation Report, n.2, *supra*, at 5.

⁴³ *Id.*

⁴⁴ See *id.*

efforts to increase the domestic capacity to produce GOES and Products that use GOES, like LPTs. The support for domestic production, however, should not undermine the reliable electricity that supports the entire U.S. economy.

A. Trade Remedies Should Not Effectively Relegate the Entire Electric Power Industry to a Single Supplier of GOES or a Single Grade of GOES; Supplier Diversity Helps Mitigate Supply Chain Risks for LPTs and Other Transformers.

At present, there is a single domestic supplier of GOES, and that single source does not make all grades of GOES required by the electric power industry.⁴⁵ While this supplier has argued to the Bureau that it can meet all domestic needs for GOES,⁴⁶ it is not clear that this is the case, given the number of LPTs and domestic transformers delivered to U.S.-based electric companies annually, as noted in section II.D., above, and given the different grades of GOES that are needed to support different transformer types and applications, as discussed in section II.B., above.

As a preliminary matter, such claims regarding production capacity must be verified. But, even if a single supplier could provide all domestic GOES needs for all grades of GOES, no segment of the economy, particularly one as critical as the provision of electricity, should be forced to rely on a single supplier of a critical material. As discussed in these comments, LPTs and other transformers are critical components of the electric grid, necessary for its continuous safe and reliable operation. Reliance on a single supplier or an unreasonably small number of suppliers could leave electric utilities vulnerable to significant supply chain risks and decrease the

⁴⁵ See Members of Congress, Letter to President Trump (Apr. 15, 2020); see also 2014 DOE Transformer Study, n.13, *supra*, at 13.

⁴⁶ See Steel Investigation Report, n.2, *supra*, Appendix, p. 17.

diversity of current suppliers that provide not only options in terms of price and type of product but are essential to mitigating supply chain risks.

For example, in an emergency, one supplier may not be able to ramp up production to meet the electric industries' needs. Further, single events impacting that single supplier, even as seemingly minor as a labor dispute, not to mention a catastrophic weather event or terrorist attack, could jeopardize the operation of critical infrastructure without steady access to—and use of—alternative suppliers. Without such ongoing access to and use of alternative suppliers, the supplier likely would be unable to ramp up production quickly enough to mitigate the impacts on that *de facto* single source. Simply put, having one supplier for GOES is a potential supply chain disaster and does not conform with any utility's risk mitigation practices.

Moreover, as noted in Section II.C., above, insufficient access to necessary raw materials to manufacture GOES can add months, if not years, to the lead time for production of LPTs. Timely access to adequate supplies of LPTs has been identified by both DOE and the industry as essential to the reliability and resiliency of the electric grid, such that they have taken significant measures to maintain a supply of spare LPTs. Given this level of concern about spare LPTs, the importance of access to sufficient manufacturing capacity for new LPTs to support continued investments in making the electric grid smarter, more reliable, and more resilient cannot be doubted. Quotas or other trade remedies could harm that supply if applied overly broadly. Finally, restricting domestic electric utilities to a single GOES or an unreasonably small number

of GOES suppliers would be anticompetitive, forcing electric companies to be price takers for GOES.⁴⁷

B. Any Trade Remedies Must Recognize that Increased Costs Will Be Borne by Electricity Customers, Including Domestic Manufacturing.

As discussed in Sections II.C and D., above, any increases in the price of GOES and the products that use GOES as a result of trade remedies recommended by the Bureau ultimately will be borne by electricity customers. These include not only residential customers, but the commercial and industrial customers that trade remedies generally seek to assist. While it is difficult to predict the impacts that increased GOES prices would have on retail electricity rates, this type of price increase, i.e., raw material, is typically approved by regulators or other appropriate entities as costs that can be recovered from customers. These price increases could decrease the international competitiveness of U.S. manufacturing.⁴⁸

In the nearer term, however, tariffs (or quotas that serve to increase GOES prices) have the potential to harm the financial health of electric utilities themselves. At present, there are 30 states that have imposed some sort of debt collection or disconnection moratoria on electric utilities in response to the pandemic. This means that they cannot collect electricity bills that are overdue or disconnect customers who fail to pay their bills. The House of Representatives passed

⁴⁷ To the extent that electric companies are natural monopolies, they are regulated such that they cannot exercise market power. Electricity prices, terms, and conditions are reviewed and approved by state, federal, and local regulators.

⁴⁸ See, e.g., Darrell West and Christian Lansang, Brookings Institute, *Global Manufacturing Scorecard: How the U.S. Compares to 18 Other Nations* (July 10, 2018) (noting that one of the elements assessed for determine whether a country had a pro-manufacturing environment was electricity costs), <https://www.brookings.edu/research/global-manufacturing-scorecard-how-the-us-compares-to-18-other-nations/>.

the HEROES Act in May, which could extend these moratoria and extend the time in which customers, including many commercial and industrial customers, have to repay unpaid electricity bills for years.⁴⁹ Electric companies currently are observing voluntary disconnection and debt collection moratoria and have expended significant efforts to help customers manage bills during the economic crisis caused by the pandemic. If these provisions become law, however, electric utilities will be far less likely to be able to work with customers on payment plans and any increases in the cost of GOES will be borne by electric utilities, which already are experiencing reduced liquidity as a result of unpaid customer bills. Increased costs, therefore, could have even more significant impacts on electric utilities in the nearer term, potentially forcing them to curtail investments needed to restart the economy or consider changes in their staffing. Moreover, to the extent that electric utilities defer or cancel capital projects in the coming year in recognition of the need to reduce expenses to keep electricity prices low for customers, this will depress orders for LPTs and other products that use GOES, further impacting domestic GOES producers.

C. Any Trade Remedies Should Be as Targeted and Narrow as Possible to Avoid Jeopardizing the Provision of Reliable Electricity.

The Steel Investigation Report proposed trade remedies aimed at addressing concerns related to the imports of steel, not the products that are made from steel. To the extent that this Investigation stems from the uneven application of those tariffs or efforts to subvert those tariffs, the remedies that the Bureau may recommend here should be narrowly tailored to address those concerns. The broader the application of any remedies—particularly their application to electrical transformers and regulators—the more likely that they will jeopardize the ability of the electric industry to provide reliable power. As discussed at length in these comments, electric

⁴⁹ See Health and Economic Recovery Omnibus Emergency Solutions Act (HEROES Act), H.R. 6800, 116th Cong. (2020).

utilities and the federal government are concerned about the supply of and access to all types of transformers, particularly LPTs. Any trade remedies proposed must recognize that electricity is essential to the national security.

To be as narrow as may be needed to avoid unintended harm to the electric power industry, the Bureau should:

- **Avoid recommendations that effectively would relegate an entire industry to reliance on a single domestic GOES supplier or an unreasonably small number of Products suppliers.** Supplier diversity helps to mitigate supply chain risks that could threaten the reliability of the electric grid.
- **Avoid recommendations that effectively would require domestic manufacturers to use only lesser grades of GOES, which might not be fit for all Products and purposes.** Different grades of GOES are needed for different applications. LPTs, in particular, need higher grades of GOES to be efficient, both in terms of size and conductivity.
- **Preserve current domestic production of all Products, not just domestic supply of GOES.** A perverse outcome of this Investigation would be harm to existing domestic manufacturers, particularly manufacturers of transformers, even if they use imported Products or GOES in Products. Again, supply chain diversity is essential for electric reliability and resilience.
- **Promote potential remedies that would develop the domestic GOES industry, not just penalize imported Products.** If it is determined that increased domestic manufacturing of the Products is important for national security, the Bureau must recognize that this will not happen overnight. Given the importance of transformers to the grid, as well as long lead times for procurement and manufacturing, the electric power sector cannot wait years for increased domestic production.