

# THE EFFECT OF IMPORTS OF TRANSFORMERS AND TRANSFORMER COMPONENTS ON THE NATIONAL SECURITY



U.S. Department of Commerce  
Bureau of Industry and Security  
Office of Technology Evaluation

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## **I. Executive Summary**

On May 4, 2020, U.S. Secretary of Commerce Wilbur Ross announced he would initiate an investigation into whether laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators are being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security. Secretary Ross officially initiated this investigation on May 11, 2020, in response to inquiries and requests from multiple Members of Congress, a grain-oriented steel manufacturer, and producers of power and distribution transformers.

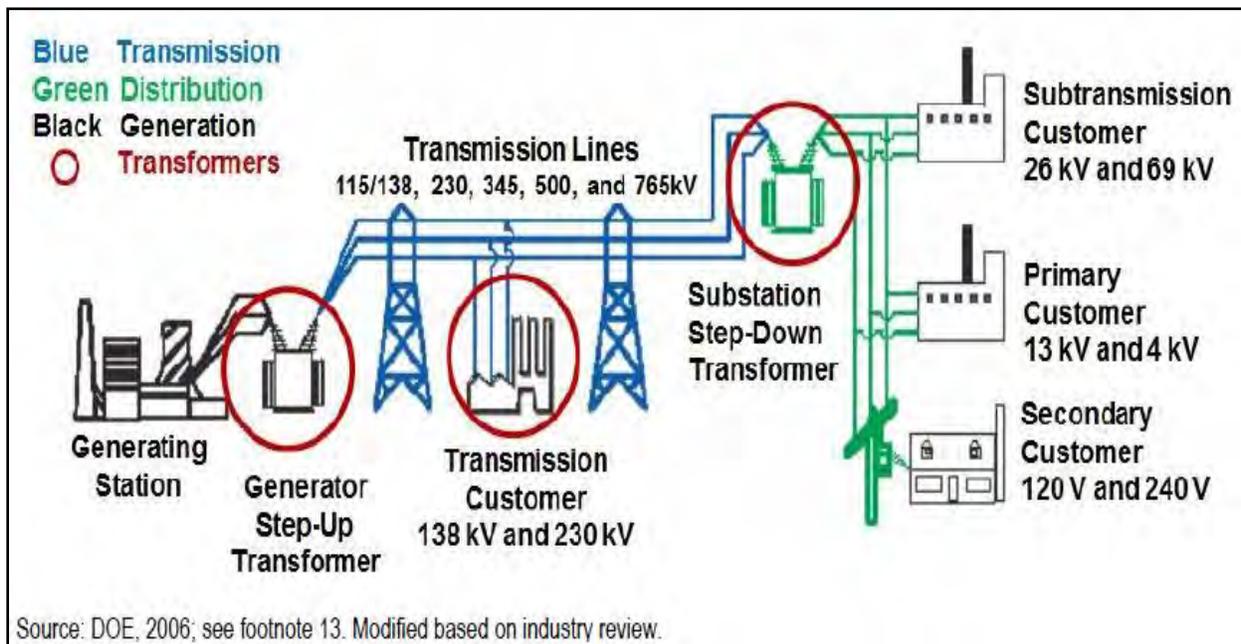
On May 19, 2020, the Department of Commerce (Department) published a Federal Register Notice (*See Appendix C - Federal Register*, 85 Fed. Reg. 29926) announcing the initiation of the investigation and inviting interested parties to submit written comments, opinions, data, information, or advice relevant to the investigation. The Department received 79 public comments and 30 rebuttal comments from a wide range of interested parties, including industry participants, representatives of state and local governments, foreign governments, and trade associations. A summary of the public comments received is included in Appendix D.

In addition, the Department surveyed (*See Appendix E*) 87 U.S. companies identified as participating in production or distribution of electrical steel, laminations and stacked and wound cores for transformers, power and distribution transformers, and voltage regulators. Survey responses provided the Department with detailed industry information that is otherwise not publicly available and was necessary to conduct a thorough analysis for this investigation.

The Department consulted with the Department of Defense (including the Office of Industrial Policy and Defense Logistics Agency) regarding methodological and policy questions that arose during the investigation. Given the vital role that these products play in the energy sector and the critical infrastructure of the country, the Department also consulted with the Departments of Energy (Office of Electricity) and Homeland Security. In addition, the Department consulted with the Office of the United States Trade Representative, given the trade implications of any actions taken with regard to imports of these products.

The products subject to this investigation are essential inputs to the manufacture and functioning of transformers, as well as the finished transformers themselves. In particular, this investigation focuses on **transformers and transformer components (i.e., laminations and cores) for which the crucial input is grain-oriented electrical steel (GOES)**. Transformers are critical assets used to step-up and step-down power voltages throughout the electrical grid. As

such, they are fundamental to the efficient transmission and distribution of electricity across the bulk-power system of the United States. The U.S. electricity grid supplies residential, commercial, and industrial customers, as well as the power required to support military and defense installations, including bases, arsenals, and laboratories. A simplified schematic of the role of transformers in the electrical grid is presented below.



In addition to transmission and distribution, transformers are used widely in major industrial sectors such as mining, manufacturing, and chemical processing. Large commercial users of transformers include hospitals, hotels, office buildings, and airports. Sophisticated military equipment, such as fighter jets and naval vessels, relies on transformers of various types and capacities to provide the correct voltage within subsystems. Due to its importance for certain defense applications,

the Defense Logistics Agency has included GOES among its requests for inclusion in the National Defense Stockpile.

Large Power Transformers (LPTs) are among the most critical elements of the United States Bulk-Power System (BPS), which was the subject of an emergency declaration issued by President Trump on May 1, 2020. Executive Order 13920 (E.O. 13920 or Bulk Power Executive Order), titled “[Securing the United States Bulk-Power System](#),” noted that as the backbone of our Nation’s energy infrastructure, the BPS is fundamental to national security, emergency services, critical infrastructure, and the economy.<sup>1</sup> The President determined that the unrestricted foreign supply of electrical equipment constitutes an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States. The also determined that the evolving threats facing our critical infrastructure have highlighted supply chain risks and the need to ensure the availability of secure components from American companies and other trusted sources.<sup>2</sup>

The global transformer industry is dominated by large multinational companies that offer a wide product range and benefit from economies of scale. In

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<sup>1</sup> <https://www.whitehouse.gov/presidential-actions/executive-order-securing-united-states-bulk-power-system/>.

<sup>2</sup> <https://www.energy.gov/articles/president-trump-signs-executive-order-securing-united-states-bulk-power-system>.

addition to these large global players, in the United States there are also a number of smaller domestic companies that manufacture transformers of various power-handling capacities. Many manufacturers have established production facilities in locations that allow them to take advantage of lower labor costs and environmental standards. Mexico, in particular, has become a significant player in transformer manufacturing.

### **A. GOES**

Grain-oriented electrical steel (GOES) is a critical material essential to the performance of transformers and accounts for a significant portion of the cost of transformer production (about 25 percent based on responses to the Department survey). AK Steel, Inc., a subsidiary of Cleveland Cliffs Inc., is the sole U.S. domestic producer of GOES, which it manufactures at facilities in Zanesville, Ohio, and Butler, Pennsylvania. While still a leader in the domestic market, AK Steel's electrical steel operations are not profitable, in part due to years of pressure from lower cost imports.<sup>3</sup> The CEO of Cleveland Cliffs, Inc., has stated that it may shut down the two unprofitable plants at which GOES is manufactured. If AK Steel's GOES operations were to close, the United States would lack the ability to

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<sup>3</sup> AK Steel Public Comments

produce transformers of any power handling capacity without relying on foreign sources for the key material that is essential to their operation and efficiency.

The threat to national security posed by imports of GOES (among other steel products) was addressed by a Section 232 investigation conducted in 2017, which resulted in the 2018 imposition of 25 percent tariffs on imports of steel products from most countries. As a result, imports of GOES in 2019 were dramatically lower than in 2018 (down 56 percent). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>4</sup> Moreover, many transformer companies, in public comments or survey responses, indicated concern over AK Steel’s capabilities and capacity to supply a full range of GOES products, especially the higher grades that

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<sup>4</sup> Department of Commerce, Section 232 Investigation into Impact of Steel Imports on National Security, 2018.

are increasingly in demand due to current DOE energy standards for distribution transformers as well as general market trends toward energy efficiency.

## **1. Transformer Components (Laminations and Cores)**

This investigation sought to evaluate the status of domestic production and the impact of imports for key subcomponents of transformers, namely laminations for stacked cores for incorporation into transformers, stacked cores for incorporation into transformers, and wound cores for incorporation into transformers.

Arguably the most important part of a transformer is its core, which is made up of thin layers of laminations, usually made of GOES. Cores may have varying designs and specifications, but their function is generally to facilitate the magnetic field necessary for the induction of voltages between the two windings (i.e., in order to “step-up” or “step-down” the power voltage). The layered composition helps reduce the core’s energy losses. Transformer lamination and core producers make up the primary customer base for GOES suppliers such as AK Steel.

However, over the past few years, there has been a marked decline in the domestic manufacturing of laminations and cores (both in-house by transformer companies and by independent producers), and a movement of production offshore

(especially to Canada and Mexico). The United States has become highly dependent on foreign sources for these critical transformer components.

A corollary to the movement of lamination and core manufacturing out of the United States is the decline of the domestic market for AK Steel's GOES. Although not the only factor, the tariffs imposed on imports of electrical steel under Section 232 have raised material costs for lamination and core manufacturers, affecting their ability to compete, because electrical steel accounts for a large percentage of the cost of these items [REDACTED]

In 2019, laminations with a total value of \$40.2 million were sourced by surveyed companies. Of this \$40.2 million, less than 12 percent came from domestic suppliers. **This implies an import penetration level of 88% for laminations.** In the years immediately prior, there was a dramatic increase in imports of these products – from \$18 million in 2017 to \$33 million in 2019 – which displaced U.S. production. Over 95 percent of these imports came from Canada (68 percent) and Mexico (29 percent).

A similar situation exists with regard to stacked and wound cores. Based on survey data, imports account for about 75 percent of wound core purchases by surveyed transformer companies in 2019. With regard to stacked cores, imports accounted for 54 percent of purchases by respondents. [REDACTED]

[REDACTED]

[REDACTED] However, this firm reported that it shut down core production in February 2020 due to its inability to compete with imports. [REDACTED]

[REDACTED]

[REDACTED] With the exit of the leading domestic non-captive supplier, future imports of stacked cores will also likely exceed 80 percent of purchases, with China serving as a major source.

Imports of transformer cores (stacked and wound) rose from \$22 million in 2015 to \$167 million in 2019 – a 650 percent increase –again with Canada (52 percent) and Mexico (45 percent) accounting for more than 95 percent of the total. Since domestic demand for laminations and cores has not increased in parallel with the increase in imports, the surge in imports represents displaced domestic production. Moreover, neither Mexico nor Canada has indigenous production capability for GOES. While Japan is the leading source of GOES for these countries, they also import some of this material from China and Russia.

## **B. Transformers**

This investigation evaluated the status of the domestic transformer industry in several categories: liquid-filled distribution transformers and small power

transformers, medium power transformers, LPT, dry-type transformers, and voltage regulators.

Distribution transformers (both liquid-dielectric as well as dry-type), and small and medium power transformers are used extensively in the U.S. electrical grid – millions are installed and operating. This investigation found that domestic industrial production and capabilities in these sectors is generally adequate. In the liquid-dielectric categories, imports account for less than a quarter of apparent consumption, and companies in this sector are largely financially sound and competitive in the market, based on responses to the BIS industry survey. While import penetration is currently relatively low, survey participants indicated competitiveness challenges, especially from Mexico and China. Survey respondents also mentioned workforce issues, such as difficulty finding and attracting qualified labor, as a concern.

Imports play a major role in the dry-type transformer sector, and leading U.S.-based producers also have overseas production facilities. Countries with low cost labor – including China, Indonesia, and Mexico – are major sources of imported dry-type transformers. Despite relatively strong domestic production capabilities, an in-depth analysis of suppliers found a heavy dependence on foreign sources among domestic manufacturers in all transformer categories for critical

components including laminations and cores and the GOES from which they are made, as described above.

This investigation found shortcomings with regard to domestic production of LPTs that are critical elements of the United States BPS. Because they serve the greatest number of customers, the failure or destruction of just a single unit can have a large impact on U.S. economic, public health, and security interests. Moreover, long procurement lead times and limited availability of spare LPT and parts have serious implications for the resiliency of critical infrastructure.

Domestic production capability falls far short of demand for the LPT segment of the industry, with imports accounting for over 80 percent of consumption. This lack of domestic production capability and the accompanying extreme dependence on imports has persisted for at least a decade, creating a critical infrastructure vulnerability, which has been raised in previous Department of Energy assessments.<sup>5</sup>

Only six companies currently manufacture LPTs in the United States; [REDACTED]

[REDACTED]

[REDACTED]

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<sup>5</sup> . “Large Power Transformers in U.S. Electric Grid”, Department of Energy, Office of Electricity and Energy Reliability, June 2012  
[https://www.energy.gov/sites/prod/files/Large%20Power%20Transformer%20Study%20-%20June%202012\\_0.pdf](https://www.energy.gov/sites/prod/files/Large%20Power%20Transformer%20Study%20-%20June%202012_0.pdf)

[REDACTED]

[REDACTED] The largest domestic producer is Korean-owned Hyundai, which has publicly noted that its Alabama facility will be utilized “in maneuvering U.S. imposed anti-dumping tariff [sic] and its protectionist policies.”<sup>6</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>7</sup> Compounding the issue, domestic LPT producers are highly dependent on foreign sources for GOES, laminations, and cores.

### **C. Findings**

[REDACTED]

[REDACTED] While still a leader in the domestic market, the market has eroded due to the migration of production of transformer components (and finished transformers) out of the United States. If this manufacturer were to shut down GOES production, the United States would be completely dependent on foreign sources for material critical to the manufacture of transformers.

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<sup>6</sup> <http://hhiamerica.com/about/sub04.htm>.

<sup>7</sup> [REDACTED]

There is insufficient or no domestic production capability for certain grades and qualities of GOES that are increasingly in demand to meet efficiency standards for distribution transformers as well as general market trends toward more efficient transformers using higher grades of GOES.

The United States lacks sufficient capacity to produce transformer cores and laminations, which are the key components in transformers. Transformer manufacturers in the United States rely on foreign sources (especially Canada and Mexico) for these critical components to meet over 75 percent of (non-captive) demand.

The United States is also highly dependent on foreign-sourced transformers, most significantly for the LPTs that form the backbone of the BPS.

Based on the overwhelming dependence of domestic transformer manufacturers on foreign sources, the Secretary finds that transformer laminations, stacked cores and wound cores are being imported into the United States in such quantities and under such circumstances as to threaten to impair the national security. In addition, LPTs are being imported into the United States in such quantities and under such circumstances as to threaten to impair national security. This dependence on imports leaves the United States with insufficient production capability for LPTs to meet the needs of the critical energy infrastructure of the United States.

## **II. Legal Framework**

### **A. Section 232 Requirements**

Section 232 of the Trade Expansion Act of 1962, as amended, provides the Secretary with the authority to conduct investigations to determine the effect on the national security of the United States of imports of any article. It authorizes the Secretary to conduct an investigation if requested by the head of any department or agency, upon application of an interested party, or upon his own motion. *See* 19 U.S.C. § 1862(b)(1)(A).

Section 232 directs the Secretary to submit to the President a report with recommendations for “action or inaction under this section” and requires the Secretary to advise the President if any article “is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security.” *See* 19 U.S.C. § 1862(b)(3)(A).

Section 232(d) directs the Secretary and the President to consider, in light of the requirements of national security and without excluding other relevant factors, the domestic production needed for projected national defense requirements and the capacity of the United States to meet national security requirements. *See* 19 U.S.C. § 1862(d).

Section 232(d) also directs the Secretary and the President to “recognize the close relation of the economic welfare of the Nation to our national security, and

... take into consideration the impact of foreign competition on the economic welfare of individual domestic industries” by examining whether any substantial unemployment, decrease in revenues of government, loss of skills or investment, or other serious effects resulting from the displacement of any domestic products by excessive imports, or other factors, results in a “weakening of our internal economy” that may impair the national security.<sup>8</sup> *See* 19 U.S.C. § 1862(d).

Once an investigation has been initiated, Section 232 mandates that the Secretary provide notice to the Secretary of Defense that such an investigation has commenced. Section 232 also requires the Secretary to do the following:

- (1) “Consult with the Secretary of Defense regarding the methodological and policy questions raised in [the] investigation;”
- (2) “Seek information and advice from, and consult with, appropriate officers of the United States;” and
- (3) “If it is appropriate and after reasonable notice, hold public hearings or otherwise afford interested parties an opportunity to present information and advice relevant to such investigation.”<sup>9</sup> *See* 19 U.S.C. § 1862(b)(2)(A)(i)-(iii).

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<sup>8</sup> An investigation under Section 232 looks at whether imports threaten to impair the national security, rather than looking at unfair trade practices as in an antidumping investigation.

<sup>9</sup> Department regulations (i) set forth additional authority and specific procedures for such input from interested parties, *see* 15 C.F.R. §§ 705.7 and 705.8, and (ii) provide that the Secretary may vary or dispense with those procedures “in emergency situations, or when in the judgment of the Department, national security interests require it.” *Id.*, § 705.9.

As detailed in the report, all of the requirements set forth above have been satisfied.

In conducting the investigation, Section 232 permits the Secretary to request that the Secretary of Defense provide an assessment of the defense requirements of the article that is the subject of the investigation. *See* 19 U.S.C. § 1862(b)(2)(B).

Upon completion of a Section 232 investigation, the Secretary is required to submit a report to the President no later than 270 days after the date on which the investigation was initiated. *See* 19 U.S.C. § 1862(b)(3)(A). The report must:

- (1) Set forth “the findings of such investigation with respect to the effect of the importation of such article in such quantities or under such circumstances upon the national security;”
- (2) Set forth, “based on such findings, the recommendations of the Secretary for action or inaction under this section;” and
- (3) “If the Secretary finds that such article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security . . . so advise the President.” *See* 19 U.S.C. § 1862(b)(3)(A).

All unclassified and non-proprietary portions of the report submitted by the Secretary to the President must be published. *See* 19 U.S.C. § 1862(b)(3)(B).

Within 90 days after receiving a report in which the Secretary finds that an article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security, the President shall:

- (1) “Determine whether the President concurs with the finding of the Secretary;” and
- (2) “If the President concurs, determine the nature and duration of the action that, in the judgment of the President, must be taken to adjust the imports of the article and its derivatives so that such imports will not threaten to impair the national security”  
*See* 19 U.S.C. § 1862(c)(1)(A).

## **B. Discussion**

While Section 232 does not specifically define “national security,” both Section 232 and the implementing regulations at 15 C.F.R. Part 705 contain non-exclusive lists of factors that the Secretary must consider in evaluating the effect of imports on the national security. Congress, in Section 232, explicitly determined that “national security” includes, but is not limited to, “national defense” requirements. *See* 19 U.S.C. § 1862(d).

The Department has determined that “national defense” includes both the defense of the United States directly and the U.S. “ability to project U.S. military capabilities globally.”<sup>10</sup> The Department also concluded that “[i]n addition to the satisfaction of national defense requirements, the term ‘national security’ can be interpreted more broadly to include the general security and welfare of certain industries, beyond those necessary to satisfy national defense requirements, which

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<sup>10</sup> Department of Commerce, Bureau of Export Administration; *The Effect of Imports of Iron Ore and Semi-Finished Steel on the National Security*; Oct. 2001 (“2001 Report”).

are critical to the minimum operations of the economy and government.”<sup>11</sup> The Department deemed these certain industries as “critical industries.”<sup>12</sup> This report applies these interpretations of the terms “national defense” and “national security,” in defining “critical industries.” In doing so, this report considers 16 critical infrastructure sectors identified in Presidential Policy Directive 21.<sup>13</sup> Section 232 directs the Secretary to determine whether imports of any article are being made “in such quantities” or “under such circumstances” that those imports “threaten to impair the national security.” *See* 19 U.S.C. § 1862(b)(3)(A). Accordingly, either the quantities or the circumstances, standing alone, may be sufficient to support an affirmative finding.

The statute does not prescribe a threshold or a standard for when “such quantities” of imports are sufficient to threaten to impair the national security, nor does it define the “circumstances” that might qualify.

Likewise, the statute does not require a finding that the quantities or circumstances are impairing the national security. Instead, the threshold question under Section 232 is whether those quantities or circumstances “threaten to impair the national security.” *See* 19 U.S.C. § 1862(b)(3)(A). This demonstrates that

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<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> Presidential Policy Directive 21, *Critical Infrastructure Security and Resilience* (Feb. 12, 2013) (“PPD-21”).

Section 232 may be used to prevent a threatened impairment to the national security from occurring before the national security is actually impaired.

Section 232(d) contains a list of factors for the Secretary to consider in determining if imports “threaten to impair the national security”<sup>14</sup> of the United States, and this list is mirrored in the implementing regulations. *See* 19 U.S.C. §1862(d) and 15 C.F.R. § 705.4. While the list provided by Congress in Section 232 provides mandatory factors for the Secretary to consider, it is not exhaustive.<sup>15</sup> Congress’ illustrative list is focused on the ability of the United States to maintain the domestic capacity to provide the articles in question as needed to maintain the national security of the United States.<sup>16</sup> Congress split the list of factors into two equal parts using two separate sentences. The first sentence focuses directly on

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<sup>14</sup> 19 U.S.C. § 1862(b)(3)(A).

<sup>15</sup> *See* 19 U.S.C. § 1862(d) (“the Secretary and the President shall, in light of the requirements of national security and without excluding other relevant factors...” and “serious effects resulting from the displacement of any domestic products by excessive imports shall be considered, without excluding other factors...”).

<sup>16</sup> This reading is supported by Congressional findings in other statutes. *See, e.g.*, 15 U.S.C. § 271(a)(1) (“The future well-being of the United States economy depends on a strong manufacturing base...”) and 50 U.S.C. § 4502(a) (“Congress finds that – (1) the security of the United States is dependent on the ability of the domestic industrial base to supply materials and services... (2)(C) to provide for the protection and restoration of domestic critical infrastructure operations under emergency conditions... (3)... the national defense preparedness effort of the United States government requires – (C) the development of domestic productive capacity to meet – (ii) unique technological requirements... (7) much of the industrial capacity that is relied upon by the United States Government for military production and other national defense purposes is deeply and directly influenced by – (A) the overall competitiveness of the industrial economy of the United States; and (B) the ability of industries in the United States, in general, to produce internationally competitive products and operate profitably while maintaining adequate research and development to preserve competitiveness with respect to military and civilian production; and (8) the inability of industries in the United States, especially smaller subcontractors and suppliers, to provide vital parts and components and other materials would impair the ability to sustain the Armed Forces of the United States in combat for longer than a short period.”).

“national defense” requirements, thus making clear that “national defense” is a subset of the broader term “national security.” The second sentence focuses on the broader economy and expressly directs that the Secretary and the President “shall recognize the close relation of the economic welfare of the Nation to our national security.”<sup>17</sup> *See* 19 U.S.C. § 1862(d).

In addition to “national defense” requirements, two of the factors listed in the second sentence of Section 232(d) are particularly relevant in this investigation. Both are directed at how “such quantities” of imports threaten to impair national security. *See* 19 U.S.C. § 1862(b)(3)(A). In administering Section 232 to “[determine] whether such weakening of our internal economy may impair the national security,” the Secretary and the President are required to “take into consideration the impact of foreign competition on the economic welfare of individual domestic industries,” as well as to and analyze whether there exist “serious effects resulting from the displacement of any domestic products by excessive imports.” *See* 19 U.S.C. § 1862(d). In certain key product categories, imports of transformers and transformer components accounted for over 80 percent of U.S. consumption in 2019. In the case of transformer cores and laminations, imports have substantially displaced domestic production of these items. Because

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<sup>17</sup> *Accord* 50 U.S.C. § 4502(a).

these products are the primary market for GOES, the displacement of domestic production by imports also threatens threaten the financial viability of the only remaining domestic producer of GOES.

Two other factors included in the statute that are also particularly relevant to this investigation are “loss of skills” and “loss of investment.” *See* 19 U.S.C. § 1862(d). As imports of GOES have increased, losses of U.S. GOES production capacity have caused a decline in the skilled workforce needed for the GOES manufacturing process. Additionally, as a result of their impact on the revenues of U.S. producers, these imports have mitigated investment in U.S. GOES production facilities, precluding future sustainable development of domestic GOES production. Similarly, these imports also create a disincentive for needed investment in U.S. GOES production facilities; without this investment, future production of domestic GOES is not sustainable. These factors are illustrative of a “weakening of the internal economy [that] may impair the national security” as defined in Section 232.

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### **III. Investigation Process**

#### **A. Initiation of Investigation**

On May 4, 2020, the Secretary of Commerce announced that he would initiate an investigation into whether laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators are being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security.<sup>18</sup> Laminations and cores made of GOES are critical transformer components, and transformers are a key element for distribution of all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country. The decision to launch an investigation under Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. § 1862), followed inquiries and requests from multiple Members of Congress, a GOES manufacturer, and producers of power and distribution transformers.

On May 11, 2020, the Department officially initiated the investigation. Pursuant to Section 232(b)(1)(b), the Department notified Secretary of Defense Mark T. Esper of the investigation and requested Department of Defense participation as it relates to methodology, policy questions, and national defense

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<sup>18</sup> Department of Commerce Press Release, May 4, 2020.

requirements for these products. Additionally, given that the products subject to this investigation are used extensively in the electrical grid and critical infrastructure of the United States, the Department also notified Secretary of Energy Dan R. Brouillette and Acting Secretary of Homeland Security Chad F. Wolf. Finally, the Secretary notified United States Trade Representative Robert E. Lighthizer, noting that Department staff will consult with counterparts in the Office of the United States Trade Representative regarding methodological and policy questions that arise during the investigation. (See Appendix A).

On May 19, 2020, the Department published a Federal Register Notice (*See Appendix C - Federal Register*, 85 Fed. Reg. 29926) announcing the initiation of the investigation to determine the effect 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 on the national security. The notice also announced the opening of the public comment period.

## **B. Public Comments**

In the Federal Register Notice announcing the investigation, the Department invited interested parties to submit written comments, opinions, data, information, and advice relevant to the criteria listed in Section 705.4 of the National Security

Industrial Base Regulations (15 C.F.R. § 705.4) as it affects the requirements of national security, including the following:

- (a) Quantity of the articles subject to the investigation and other circumstances related to the importation of such articles;
- (b) Domestic production capacity needed for these articles to meet projected national defense requirements;
- (c) The capacity of domestic industries to meet projected national defense requirements;
- (d) Existing and anticipated availability of human resources, products, raw materials, production equipment, facilities, and other supplies and services essential to the national defense;
- (e) Growth requirements of domestic industries needed to meet national defense requirements and the supplies and services, including the investment, exploration, and development, necessary to assure such growth;
- (f) The impact of foreign competition on the economic welfare of any domestic industry essential to our national security;
- (g) The displacement of any domestic products causing substantial unemployment, decrease in the revenues of government, loss of investment or specialized skills, and productive capacity, or other serious effects;
- (h) Relevant factors that are causing or will cause a weakening of our national economy; and
- (i) Any other relevant factors, including the use and importance of the Products in critical infrastructure sectors identified in Presidential Policy Directive 21 (Feb. 12, 2013) (for a listing of those sectors see <https://www.dhs.gov/cisa/critical-infrastructure-sectors>).

At the request of several parties, and in light of the global pandemic, the initial public comment period, as well as the rebuttal period, were extended ten additional days. The department provided an additional 24 days to submit public comments, with an additional time period provided for the submission of rebuttals to such comments as well. The final deadline for the submission of rebuttals to the public comments July 24, 2020.

The Department received 82 written comments concerning this investigation, 79 of which were responsive on Regulations.gov for public review. Parties that submitted comments included members of industry, representatives of state and local governments, foreign governments, and other concerned groups.

All 79 comments were available for response during the rebuttal period. Thirty-four rebuttal comments from industry participants and other stakeholders were received and 30 were responsive and were posted on Regulations.gov for public review. All of the appropriate comments and rebuttals were reviewed and factored into the investigative process. These responsive public comments received are summarized in Appendix D, along with a link to the Regulations.gov docket (BIS-2020-0015), where comments can be viewed in full.

### **C. Information Gathering and Data Collection Activities**

Because this investigation commenced during a pandemic during which, many public and private sector organizations were shut down or operating under

limited conditions, the Department decided not to hold a public hearing for this investigation. In lieu of a public hearing, the Department issued mandatory surveys (*See Appendix E*) to 87 companies or divisions of companies identified as participating in the production or distribution of electrical steel, laminations and stacked and wound cores for transformers, and power and distribution transformers. Survey responses were received from most of the major participants in the domestic transformer supply chain. The surveys collected both qualitative and quantitative information.

These mandatory surveys were conducted pursuant to Section 705 of the Defense Production Act (DPA) of 1950, as amended (50 U.S.C. § 4555), and collected data on imports, exports, production, capacity utilization, employment, operating status, global competition, and financial information. The resulting aggregate data provided the Department with detailed industry information that is otherwise not publicly available, which was necessary to conduct a thorough analysis for this investigation.

Information furnished in the survey responses is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the DPA.<sup>19</sup>

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<sup>19</sup> Section 705 of the DPA prohibits the publication or disclosure of this information unless the President determines that withholding such information is contrary to the interest of the national defense.

#### **D. Interagency Consultation**

The Department consulted with the Department of Defense (including the Office of Industrial Policy and Defense Logistics Agency) regarding methodological and policy questions that arose during the investigation. Given the vital role that these products play in the energy sector and the critical infrastructure of the country, the Department also consulted with the Departments of Energy (Office of Electricity) and Homeland Security. In addition, the Department consulted with the Office of the United States Trade Representative, given the trade implications of any actions with regard to imports of these products.

The Department also consulted with other U.S. government agencies with expertise and information regarding the domestic and global transformer and GOES industries, including the Department's International Trade Administration and the U.S. International Trade Commission.

#### **E. Product Scope of the Investigation**

The scope of this investigation includes laminations for incorporation into stacked cores, stacked cores for incorporation into transformers, wound cores for incorporation into transformers, electrical transformers, and transformer regulators. While GOES is not the direct subject of this investigation, because it is the primary

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Unless or until such a determination is made, information will not be shared with any non-government entity in other than aggregate form.

material used in laminations, stacked cores, and wound cores, it is included in the scope of products addressed in this report. Products were examined in accordance with the Harmonized Tariff Schedule of the United States (HTS) up to the ten-digit level. The products and their associated HTS code are provided in Figure 1 below.

<b>Figure III-1. Product Scope of the Investigation</b>	
<b>10 Digit HTS</b>	<b>Product Description</b>
7226.19.1000	Non-Oriented Electrical Steel (NOES)(300-600mm)
7226.19.9000	Non-Oriented Electrical Steel (NOES)(<300mm)
7225.11.0000	Grain-Oriented Electrical Steel (GOES) (>600mm width)
7226.11.1000	Grain-Oriented Electrical Steel (GOES) (300-600mm)
7226.11.9030	Grain-Oriented Electrical Steel (GOES)(<300mm; <.25mm thick)
7226.11.9060	Grain-Oriented Electrical Steel (GOES)(<300mm; >.25mm thick)
8504.90.9634 (Post 2016) 8504.90.9534 (2015)	Transformer Laminations (Stacked)
8504.90.9638 (Post 2016) 8504.90.9538 (2015)	Transformer Cores (Stacked)
8504.90.9642 (Post 2016) 8504.90.9542 (2015)	Transformer Cores (Wound)
8504.21.0020	Liquid-Dielectric Transformer Under 50KVA
8504.21.0040	Liquid-Dielectric Transformer 50-100KVA
8504.21.0060	Liquid-Dielectric Transformer 100-500KVA

8504.21.0080	Liquid-Dielectric Transformer 500- 650KVA
8504.22.0040	Liquid-Dielectric Transformer 650-2,500KVA
8504.22.0080	Liquid-Dielectric Transformer 2,500-10,000KVA
8504.23.0041	Liquid-Dielectric Transformer 10,000-60,000KVA
8504.23.0045	Liquid-Dielectric Transformer 60,000KVA-100,000KVA
8504.23.0080	Liquid-Dielectric Transformer Over 100,000KVA
8504.32.0000	Dry-Type/Other Transformer 1-16KVA
8504.33.0020	Dry-Type/Other Transformer 16-50KVA
8504.33.0040	Dry-Type/Other Transformer 50-500KVA
8504.34.0000	Dry-Type/Other Transformer Over 500KVA
9032.89.4000	Voltage Regulators
Source: United States International Trade Commission and U.S. Department of Commerce, Bureau of Industry and Security	

#### **IV. Description of the Products Subject to the Investigation**

The products subject to this investigation are those that are critical to the manufacture and functioning of transformers, as well as the transformers themselves. In particular, this investigation focuses on **transformers and transformer components for which the crucial input is GOES.**

*Transformers* are passive devices that change (or transform) the voltage or electrical current level using a magnetic circuit. They are used to either increase (step-up) or decrease (step-down) voltage to ensure the correct voltage for a specific electricity use application. Transformers are available with a wide range of power-handling capabilities, typically measured in kilo-volt-amperes (kVA), from less than one kVA, to more than 100,000 kVA (which can also be expressed as 100 mega-volt-amperes where  $1 \text{ MVA} = 1,000 \text{ kVA}$ ). LPTs can be several stories tall and weigh hundreds of tons, while transformers for consumer products may be small enough to fit in your hand. No matter the size, the basic purpose of any transformer is to transform electrical power from one voltage to another.

There are many ways in which transformers can be categorized. Common industry terminology may classify by specific type (autotransformer, instrument transformer), current type (direct or alternating), function (step-up, step-down), core type (shell-form or core-form), or type of installation (pole-mounted, pad-mounted, underground). The size of a transformer can be measured by the input

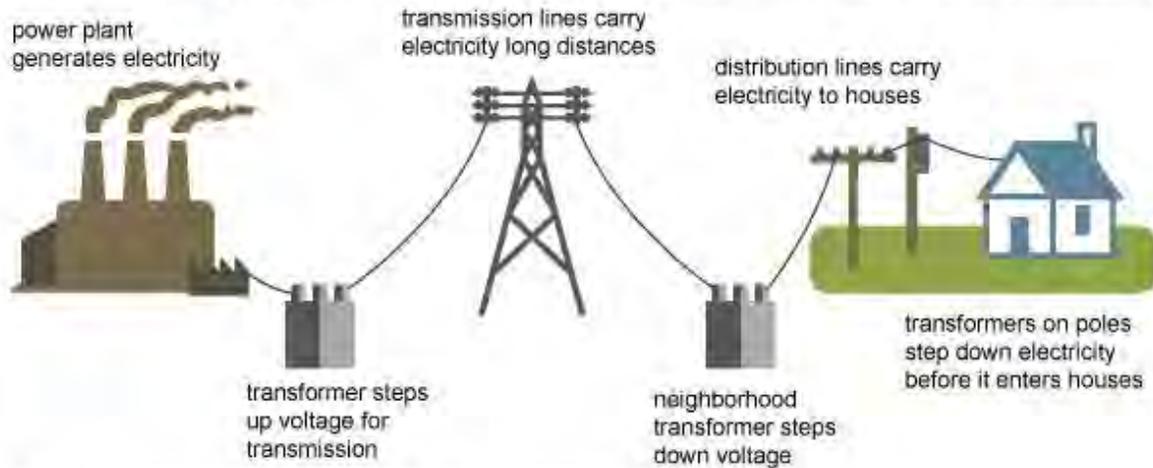
voltage (in kilovolts), the output voltage (in kilovolts), or the load capacity (measured by kilovolt amperes). This report will generally classify transformers based on their power load handling capacity (in kVA) as well as their type of dielectric insulation (liquid or dry). These categorizations were chosen because they correspond with the way in which the U.S. Census Bureau collects information on imports of these items. Transformers of most power-handling capacities are subject to this investigation. The exception is very small transformers (under 1 kVA), such as those typically used in conjunction with power cables for consumer electronics including laptops and cell phones, as these generally do not use electrical steel cores.

The most ubiquitous use of transformers is in the electrical grid, where they are used by electric utilities and power producers for the transmission and distribution of electricity from power generation plants to residential, commercial, and industrial customers. In addition to the electrical grid, large industrial users such as mines and major manufacturing, and chemical plants, as well as large commercial users including hospitals, hotels, office buildings, and airports may connect directly to the transmission grid and utilize their own transformers to take advantage of lower marginal costs.

Transformers are crucial equipment used throughout the electrical grid. Power leaves the generator and enters a transmission substation located at the

power plant. This transmission substation uses LPTs to “step-up” the generator’s voltage to extremely high voltages (155 kV to 765 kV volts) for efficient transmission over long distances (up to 300 miles). For the electricity to be used by commercial, industrial, or residential users, it must be “stepped-down” by transformers to distribution voltages (less than 10 kV; a standard line voltage is 7.2 kV at a substation). From there, the electricity is distributed locally via overhead or sunk power lines before it is further stepped-down by smaller transformers (such as pole mounted units) to the 240 volts that is standard household electrical service. Additionally, as noted above, some large commercial and industrial users may connect directly at substation transmission levels. The diagram below presents a simplified depiction of the use of transformers in the electrical grid.

# Electricity generation, transmission, and distribution



Source: Adapted from National Energy Education Development Project (public domain)

## A. Types of Transformers

LPTs generally have power-handling capacities above 100,000 kVA (100 MVA) and are used to step-up the voltage up to extremely high levels at power generation sites for efficient transmission over long distances. They are used again at substations to step-down the voltage for more local distribution. LPT are also used by manufacturing sectors that require high voltages in their production processes, such as steel mills.



*Small and medium power transformers*, which generally have power handling capacities from 5,000 kVA to 100,000 kVA, are also used extensively throughout the electrical grid. They are available in a wide range of voltage ratings and power handling capacities, to meet the specific needs of consumers. For example, they are used at substations and at industrial facilities.

*Distribution transformers* (up to 5,000 kVA) are used to further step-down the voltage at substations to deliver electricity to customers. Distribution transformers provide the final voltage transformation in the electrical grid. While they are energized for 24 hours a day, their load fluctuates throughout the day with changing energy demands.

Also located along the electric grid are banks of *voltage regulators*, which are used to compensate for voltage fluctuation during power distribution. Voltage regulators play an important role in light of the increasing use of distributed energy resources such as solar and wind, which are intermittent.

Transformers can be classified by the material used in core-insulation (e.g., “Liquid-dielectric” or “Dry-Type”). Cooling is important because transformers generate heat and pose potential fire or explosion hazards. *Liquid-dielectric transformers* consist of the transformer core placed in a metal sealed container filled with mineral oil, which serves as a coolant and insulator.

*Dry-type transformers* have a metal housing for insulation but are cooled by air convection or fans, or may be encased in resin. Oil-filled liquid transformers are generally more efficient than dry-type, which are more limited in their power-handling capacity and size. However, oil-filled transformers require more maintenance, and because the liquid may be flammable or toxic, dry-type may be more preferable in public spaces.

Pole Mounted

Distribution Transformer



Transformer Regulators

Dry-type transformers are commonly used in light industrial and commercial applications; some are used indoors or underground. They are often used in cases in which liquid-dielectric transformers present unacceptable environmental, explosion, or fire hazards.

Specialized transformers perform specific functions in the electric grid. For example, *instrument transformers* step-down currents and voltages for accurate and reliable measurement by secondary equipment such as meters, protection relays, and other devices. Another specialized type of transformer is the *autotransformer*, which is used in power transmission systems to interconnect systems operating at different voltage; this type of transformer can also be used as a voltage regulators.

Transformers have been in use for over 100 years (Westinghouse built the first reliable commercial transformer in 1886) and are becoming more complex as they evolve to become part of the growing interconnected “smart grid.”<sup>20</sup> The smart grid is an automated network with a two-way flow of energy and information that is capable of monitoring and controlling energy metrics between the power plant and the end user, as well as at the many points in between. To function as part of the smart grid, transformers must be able to communicate in real time, be capable of extensive customer interaction, feature remote digital monitoring, and have the ability to self-diagnose and repair malfunctions.

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<sup>20</sup> <https://global.abb/group/en/about/history/heritage-brands/westinghouse>

## B. Transformer Construction

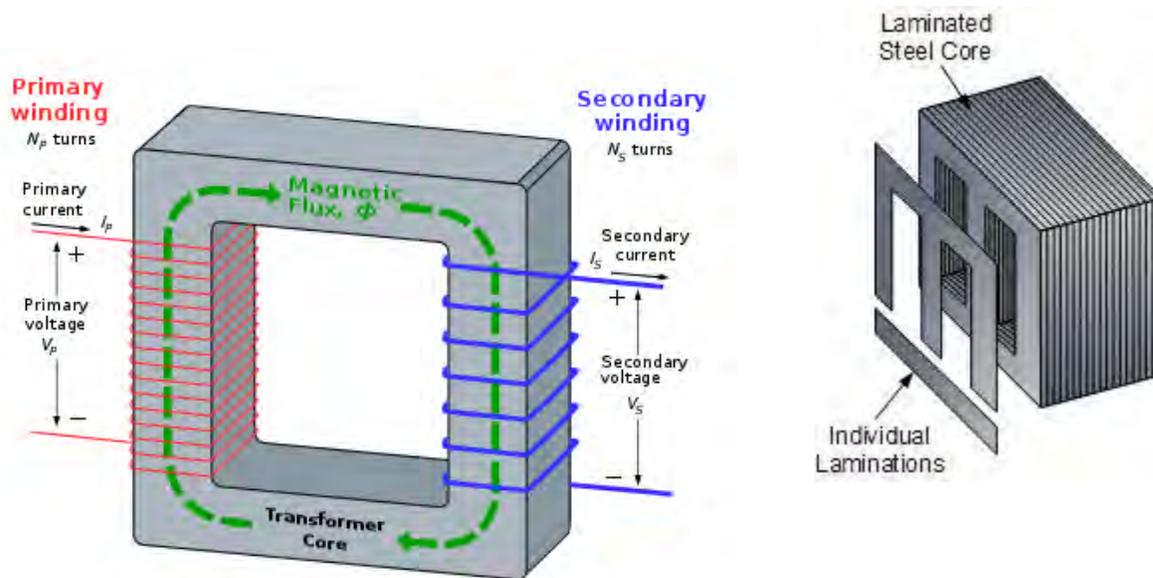
Regardless of their size or application, all transformers work through electromagnetic induction, a process in which a coil of wire magnetically induces a voltage into another coil of wire in close proximity to it. The basic structure of a transformer is two coils of copper wire: the “primary winding” and the “secondary winding.” The primary winding takes the power into the transformer, and the secondary winding delivers the power from the transformer. The difference in voltage between the primary and secondary windings is achieved by differences in the number of coil turns in each winding.<sup>21</sup>

The two windings are not in direct contact with one another, but rather are each wound around a closed magnetic circuit that forms the *core* of the transformer. The core is not solid, but is made up of thin layers, or *laminations*, usually made of GOES. This layered composition helps reduce energy losses (eddy flow and hysteresis) within the core. Core laminations are the main material input in an electrical transformer and can account for up to 50 percent of a transformer’s cost.<sup>22</sup>

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21 <https://circuitdigest.com/tutorial/transformer-basics>

22 <https://www.worldofsteel.com/Types%20of%20CRGO.html>



Electrical transformers are typically produced with either *stacked or wound cores*. Stacked cores are most often used in larger distribution and power transformers, while wound cores are used in small and medium distribution transformers that step-down the voltage from the transmission line and provide power. In either case, GOES is the most common material used.

When used in *stacked cores*, GOES is sheared or stamped into individual laminations, which are then stacked together to form the core. Stacked laminations often resemble letters of the alphabet, including C, E, L, U, and I shapes. Commonly used core shapes include E-I, E-E, L, and U-I. When used in *wound cores*, a continuous length of GOES is wound around a mandrel multiple times to form the core. Copper windings (electricity conductors) are wrapped around both stacked and wound cores.

Transformers can be produced in “single-phase” or “three-phase” models. A single-phase transformer has one primary and one secondary set of windings, while a three-phase transformer has three primary and secondary windings around three core limbs. Most commercial electric power applications use three-phase transformers, while lower voltage and distribution level transmissions use single-phase transformers.

There are two typical configurations for the core and windings of a transformer: **core-form** and **shell-form**. In core-form, the windings are in a cylindrical shape around the legs of the core. In shell-form, the windings are wrapped around the center of the core. Core-form transformers are the most widely used because they are generally simpler in design and less expensive than shell-form transformers. Shell form transformers typically use more electrical steel and are more resistant to short circuit offering an advantage for extra high voltage applications. For this reason, they are often used in industrial applications, such as steel mills, where short circuits are common.

### **C. Electrical Steel<sup>23</sup>**

As noted in the above description of transformer construction, the key material used in the core of most transformers is GOES; this application accounts for the majority of GOES consumption. The magnetic properties of electrical steel are integral to the primary function of transformers, i.e., converting voltage from one level to another.

Electrical steel is a flat-rolled silicon alloy. The benefits of adding silicon to steel include increased electrical resistivity, high permeability, and low hysteresis loss. There are two types of electrical steel: GOES, also known as Cold-Rolled Grain Oriented Steel (abbreviated CRGO), and non-grain-oriented electrical steel (NOES), also known as Cold-Rolled Non-Grain Oriented Steel (abbreviated CRNGO).

GOES is the most energy efficient type of electrical steel used to transport and transform mechanical energy to electrical energy. Its primary application is in transformers where energy or core loss is critical (particularly large and medium-sized electrical power and distribution transformers. In contrast, NOES is more

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<sup>23</sup> This section draws from USITC's report, Grain-Oriented Electrical Steel From the People's Republic of China, the Czech Republic, Germany, Japan, the Republic of Korea, Poland, and the Russian Federation: Initiation of Antidumping Duty Investigations, 78 FR 65283 (October 31, 2013).

commonly used in electric motors and generators, as well as in some smaller transformers.

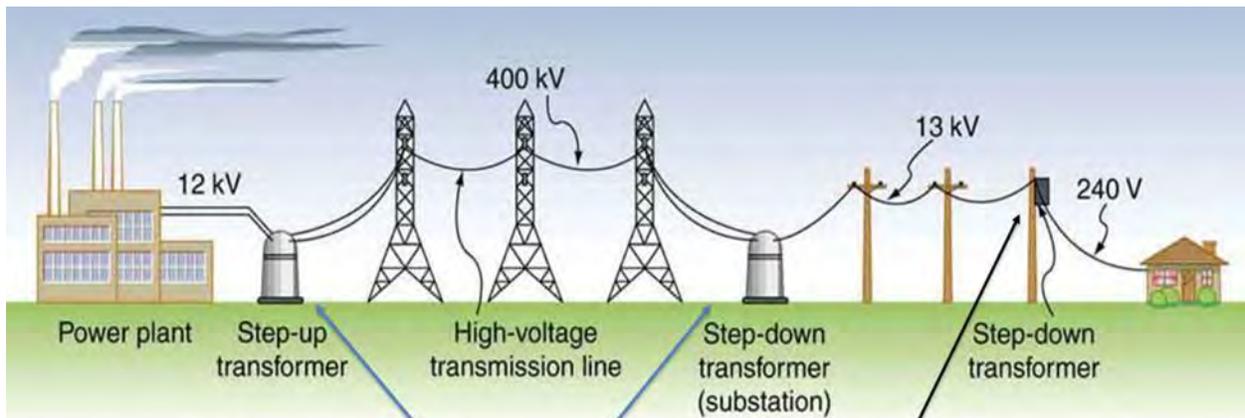
GOES is milled to yield exceptionally good magnetic properties. It can be sold in sheets or strips in fully processed form (annealed by the manufacturer) or semi-processed (requiring further heat treatment by purchaser). GOES, which typically contains approximately 3.2 percent by weight of silicon, is manufactured using specialized rolling and annealing (heat treatment) processes, which produces grain structures uniformly oriented in the rolling (lengthwise) direction of the steel sheet. Compared with NOES, this uniformly oriented grain structure permits the GOES steel sheets to conduct a magnetic field with a higher degree of efficiency in the direction of rolling.

## 1. Types of GOES

GOES is produced in compliance with specifications issued by standards organizations and various proprietary specifications. For example, **conventional GOES** is available in standard gauges (thicknesses), ranging from 0.007 inch (0.18 mm) through 0.0138 inch (0.35 mm), and **high-permeability GOES** is found in two standard thicknesses (0.23 mm and 0.27mm). Conventional products in the standard thicknesses are often referred to as U.S. or American Iron and Steel Institute grades M2 through M6. Thinner gauge GOES is often preferred because

thinner laminations yield lower core losses in transformers, despite the added cost for both the steel and the manufacturing of the transformer core. Within each type of GOES, magnetic characteristics may vary, with producers manufacturing the same product with differing average core losses.

In addition to differences in thickness, GOES is produced with varying levels of magnetic permeability, distinguished by the size and orientation precision of the grains within the steel. Conventional GOES has smaller but less precisely oriented grains, while high-permeability GOES has more precisely oriented but larger grains. High-permeability products allow a transformer to operate at a higher level of flux (flow) density than conventional products, thus permitting a transformer to be smaller and have lower energy operating losses.



**High permeability GOES      Regular GOES**

High permeability GOES is also produced as a domain-refined (surface-treated) type that has even lower core loss at high flux density. Domain refinement

occurs by using laser scribing, mechanical scribing or electrolytic etching to scribe thin lines onto the surface of the steel, which subdivides larger- oriented grains into smaller ones to produce “domain-refined GOES” (DR-GOES). GOES that undergoes laser scribing does not retain its enhanced magnetic characteristics when it is annealed (heat treated) to relieve internal stresses. As a result, laser-scribed GOES (or “non-heat-proof GOES”) is not suitable for producing wound-core transformers, which require superior core-loss properties but must undergo heat treatment to relieve internal stresses (which increase core losses) accumulated from the manufacturing process. By contrast, domain-refined GOES produced by mechanical scribing or electrolytic etching (“heat-proof” or “permanent” DR-GOES”) retains its enhanced magnetic characteristics, even though stress-relief treatment. There is no known production of mechanically scribed or electrolytically-etched heat-proof GOES in the United States.

## **2. Amorphous Metal**

Amorphous metal transformer cores are an alternative to traditional cores made from GOES. Amorphous metal, called metglas, is an alloy of iron that includes boron, silicon, and phosphorous in the form of thin foil. Produced using rapid solidification of molten alloy (at a rate of about one million degrees Celsius per second), it differs from GOES in that it has a random rather than a crystalline structure. While more expensive than GOES on a per kilogram basis and more

labor intensive to form into cores, the material has the potential to reduce costs in the long run for utilities over the life of the transformer. Compared to cores made from GOES, core losses from eddy currents can be 70-80 percent lower in transformers with amorphous metal cores, reducing their operating costs and improving their energy efficiency. Amorphous metal is most often used in industrial and distribution transformers with power handling capacities in the 50 to 1000 kVA range.

#### **D. Transformer Construction**

The typical transformer manufacturing process consists of the following steps:

**1. Engineering and design:** Design is complex, balancing the costs of raw materials (copper, steel, and cooling oil), electrical losses, manufacturing labor hours, plant capability constraints, and shipping constraints.

**2. Core building:** The core is the most critical component of a transformer, and it requires both a highly trained and skilled workforce and a supply of GOES.

**3. Windings production and assembly of the core and windings:**

Windings are predominantly copper and have an insulating material.

**4. Drying operations:** Excess moisture must be removed from the core and windings because moisture can degrade the dielectric strength of the insulation.

**5. Tank production:** A tank must be completed before the winding and core assembly finish the drying phase so that the core and windings do not reabsorb moisture.

**6. Final assembly:** The final assembly must be done in a clean environment; even a tiny amount of dust or moisture can deteriorate the performance of a transformer.

**7. Testing:** Testing is performed to ensure the accuracy of voltage ratios, verify power ratings, and determine electrical impedances.

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## V. Importance for Critical Infrastructure and National Security

### A. Critical Energy Infrastructure

The Cybersecurity and Infrastructure Security Agency (CISA) has identified 16 critical infrastructure sectors whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof.<sup>24</sup> One of these 16 sectors is the Energy Sector. CISA has determined that the U.S. energy infrastructure fuels the economy of the 21st century. Without a stable energy supply, health and welfare are threatened, and the U.S. economy cannot function. In fact, CISA notes that, among the sixteen sectors, the Energy Sector is *uniquely* critical because it provides an “enabling function” across all critical infrastructure sectors. The energy infrastructure is divided into three interrelated segments: electricity, oil, and natural gas. Items subject to this investigation form the backbone of the electricity segment.

The U.S. electricity segment contains more than 9,700 power plants with 1,200 gigawatts capacity, sourced by coal, petroleum, natural gas, nuclear, hydroelectric, and renewable energy sources such as wind and solar.<sup>25</sup> The number

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<sup>24</sup> <https://www.cisa.gov/critical-infrastructure-sectors>

<sup>25</sup> EIA, Electric Power Annual, Table 4.1

of power plants has increased significantly in recent years, due primarily to the expansion of solar and wind power generation. The electricity generated by the plants is processed along hundreds of thousands of miles of high voltage transmission lines and millions of miles of local distribution lines through transformers subject to this investigation. In addition to plant-generated power, there is an evolution of sorts where distributed energy resources are allowing energy resources such as solar, wind, and energy storage, to be owned and operated at the customer level. However, the vast majority of electric power is in plant-generated and delivered via traditional means to consumers.

In its Energy-Sector Specific Plan, CISA notes that the failure of U.S. power infrastructure, and specifically LPTs, could present a vulnerability to the electric grid. CISA further expresses concern that the United States heavily depends on overseas manufacturers to meet its demand for LPTs and that the supply and procurement of LPTs can be challenging because it can take more than 12 months to replace an LPT due to its long and complex procurement process and the uniqueness in construction for the specific voltages and currents at the intended substation.<sup>26</sup>

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<sup>26</sup> <https://www.cisa.gov/sites/default/files/publications/nipp-ssp-energy-2015-508.pdf>

While the electrical grid, especially at the BPS level,<sup>27</sup> has operated at a high-level of reliability, there is a growing concern that the ever-expanding list of threats, which could be physical and/or cyber-related in nature, further increases the grid's vulnerability and the need for enhanced security. In addition to their long manufacturing and acquisition lead time, LPTs pose unique vulnerabilities because of transformer's susceptibility to the serious and evolving threats and hazards. Single or multiple failures of LPTs are becoming a significantly greater concern to grid reliability.

As a result of these concerns, several efforts by the federal government and electric utility industry have been initiated and are underway. For example, the North American Electric Reliability Corporation (NERC) issued the NERC-CIP-14 Standard in 2015, requiring transmission asset owners to apply risk assessments to identify and protect transmission stations and substations, as well as their associated primary control centers. Instability, uncontrolled separation, or cascading failure within an interconnected transmission system could result if these assets were rendered inoperable or damaged as a result of a physical attack.

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<sup>27</sup> The North American Electric Reliability Corporation defines the bulk-power system to consist of all generation components and transmission system elements generally operating at 100 KV or higher. See: [https://www.nerc.com/pa/Stand/Project%20201017%20Proposed%20Definition%20of%20Bulk%20Electri/bes\\_phase2\\_reference\\_document\\_20140124\\_llh.pdf](https://www.nerc.com/pa/Stand/Project%20201017%20Proposed%20Definition%20of%20Bulk%20Electri/bes_phase2_reference_document_20140124_llh.pdf).

In addition, the Fixing America's Surface Transportation Act [P.L. No. 114-94 (FAST Act)], signed into law in December 2015, requiring the DOE to establish a plan for a Strategic Transformer Reserve that could be tapped in the event of a major disruption to the electric grid.<sup>28</sup> DOE's responsive recommendation is that a voluntary industry-based approach would be more feasible and effective than a national, Government-owned stockpile of transformers. The DOE report, however, noted the lack of domestic capacity to produce LPT and the extreme dependence on foreign suppliers, especially for high-voltage transmission (>345 kV).<sup>29</sup>

President Trump signed Executive Order 13920 (E.O. 13920), titled "[Securing the United States Bulk-Power System](#)," on May 1, 2020.<sup>30</sup> The President determined that the unrestricted foreign supply of BPS electric equipment constitutes an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States.

In this Executive Order, the President declared that threats to the BPS by foreign adversaries constitute a national emergency. He also found that as it serves as the backbone of our Nation's energy infrastructure, the BPS is fundamental to national security, emergency services, critical infrastructure, and the economy.

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<sup>28</sup> <https://www.congress.gov/114/plaws/publ94/PLAW-114publ94.pdf>

<sup>29</sup> DOE Transformer Reserve Study, 2017.

<sup>30</sup> <https://www.federalregister.gov/documents/2020/05/04/2020-09695/securing-the-united-states-bulk-power-system>.

Transformers subject to E.O. 13920 include substation transformers, substation voltage regulators, and instrument transformers, which are key elements of the BPS. The E.O. notes that the BPS is a target of those seeking to commit malicious acts against the United States and its people, including malicious cyber activities, because a successful attack on the U.S. BPS would present significant risks to the economy and human health and safety and would render the United States less capable of acting in defense of itself and its allies.

While BPS electric equipment supplied by potential adversaries raises immediate concerns, the Secretary of Energy has also noted that evolving threats facing our critical infrastructure have only served to highlight the supply chain risks and the need to ensure the availability of secure components from American companies and other trusted sources.<sup>31</sup> DOE is currently undertaking a rulemaking effort, in consultation with other agencies, to implement the authorities delegated to the Secretary of Energy in E.O. 13920. E.O. 13920 authorizes the Secretary of Energy to 1) prohibit any acquisition, importation, transfer, or installation of BPS electric equipment by any person or with respect to any property to which a foreign adversary or an associated national thereof has any interest, that poses an undue risk to the BPS, the security or resiliency of U.S. critical infrastructure or the

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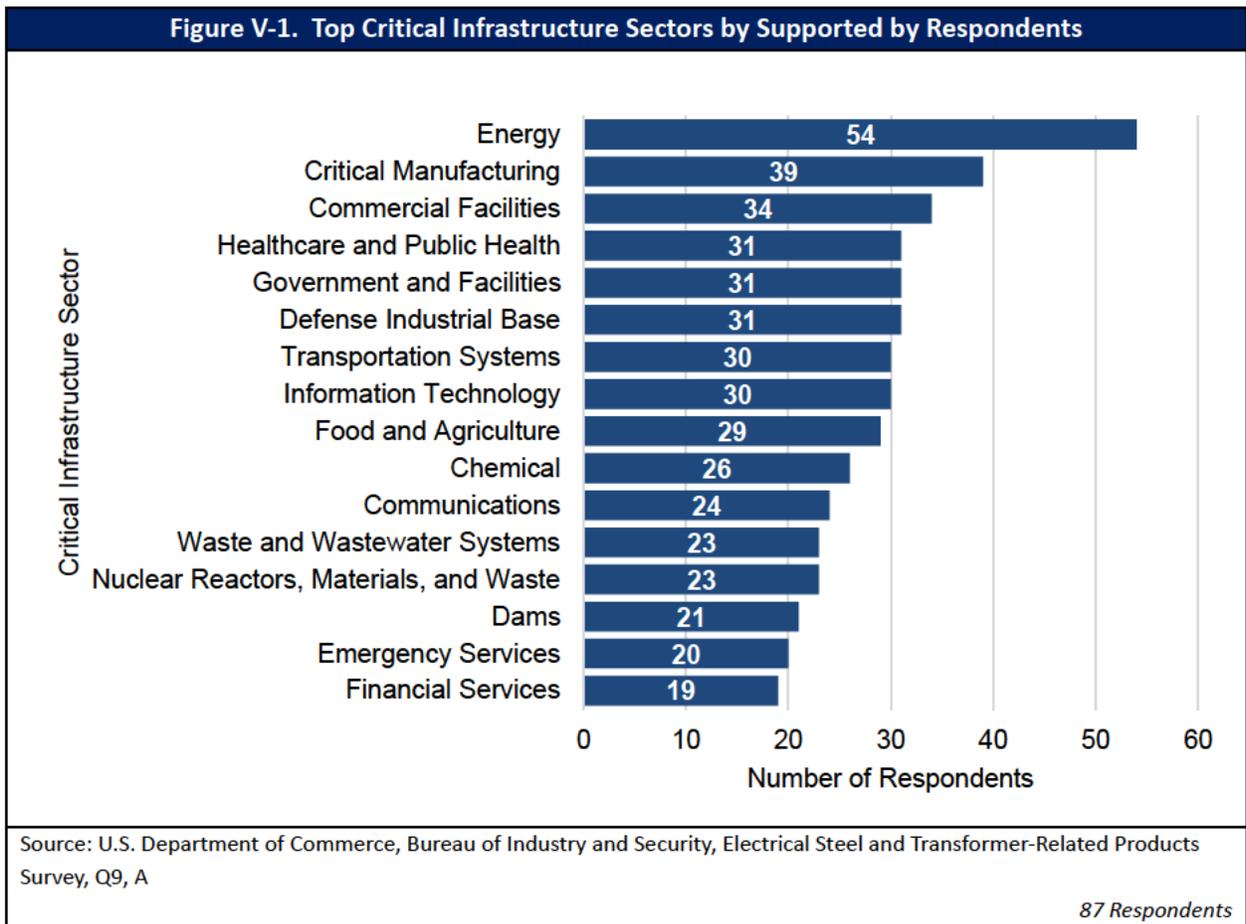
<sup>31</sup> <https://www.energy.gov/articles/president-trump-signs-executive-order-securing-united-states-bulk-power-system>.

economy, or U.S. national security; 2) establish and publicize criteria for recognizing particular equipment and vendors in the BPS electric equipment market as "pre-qualified" for future transactions and to apply these criteria to establish and publish a list of pre-qualified equipment and vendors; 3) in consultation with heads of other agencies, to identify existing BPS electric equipment in which a foreign adversary or associated national thereof has an interest that poses an undue risk to the BPS, the security or resiliency of U.S. critical infrastructure or the U.S. economy, or U.S. national security, and develop recommendations to identify, isolate, monitor, or replace this equipment as appropriate; and 4) establish a Task Force on Federal Energy Infrastructure Procurement Policies Related to National Security, which will focus on the coordination of Federal Government procurement of energy infrastructure, the sharing of risk information and risk management practices, and the development of recommendations for implementation to the Federal Acquisition Regulatory Council (FAR Council). DOE and the Department will coordinate efforts to ensure consistency of rules and supporting program activities.

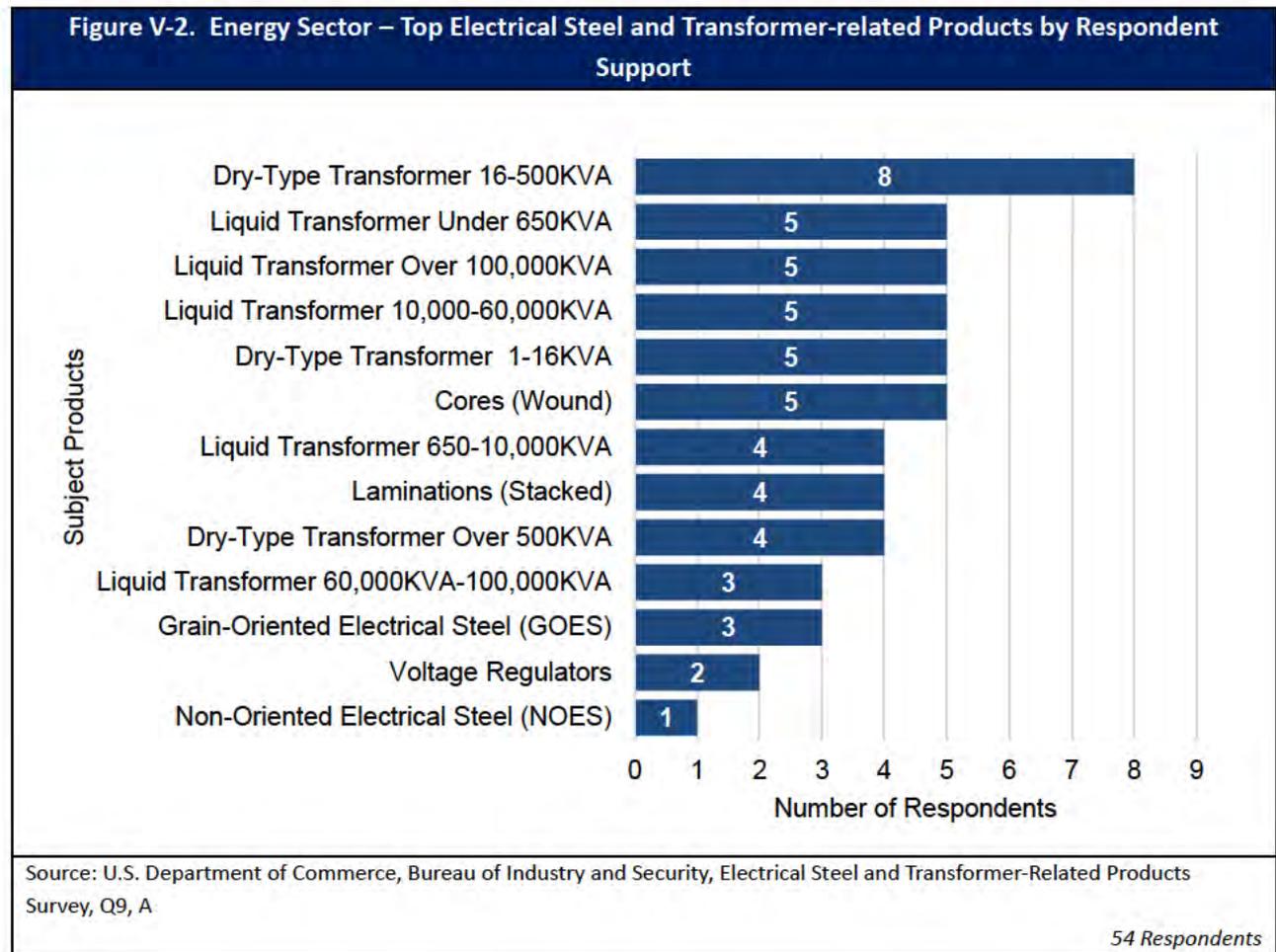
### **1. Role of Transformer Manufacturers in Critical Infrastructure**

As part of its survey of industry conducted for this investigation, the Department requested survey recipients to provide information on which of the 16 critical infrastructure sectors their products support. Respondents indicated

support for all 16 sectors, with the Energy Sector (not surprisingly) indicated most frequently. As mentioned above, the Energy Sector is unique among the 16 sectors because it provides an “enabling function” across all critical infrastructure sectors, and survey responses validated this fact. Other critical infrastructure sectors that received numerous mentions by survey respondents were critical manufacturing, commercial facilities, Government facilities, information technology, chemical sector, defense industrial base, and food and agriculture (see Figure V-1).



By product, all categories were again cited as providing support to critical technology sectors (see Figure V-2). Most frequently mentioned were dry-type transformers 16-500 kVA, followed by liquid-dielectric transformers 60-100 MVA, and liquid-dielectric transformers under 650 kVA.



## **B. National Security/Defense Requirements**

In today's technology-dependent environment, energy requirements are inseparable from the Department of Defense's (DOD) mission requirements, whether discussing weapons platforms or the installations and systems that support those capabilities around the globe. As such, energy resilience, which enables the capabilities of weapons platforms, facilities, and equipment, is a critical investment that must be part of the DOD's research, acquisition, operations, and sustainment conversations.<sup>32</sup>

DOD is the largest single energy-consuming entity in the United States, both within the Federal Government and as compared to any single private-sector entity. DOD operational and installation energy consumption represents approximately 80 percent of total Federal energy consumption, more than sixteen times the total energy consumption of the next closest Federal agency (the United States Postal Service).<sup>33</sup> In FY 2018, DOD spent approximately \$3.49 billion on installation energy, of which \$2.5 billion was for electricity used to power, heat, and cool buildings.

The U.S. electrical grid, primarily under the ownership and control of private organizations, supplies the power required to support DOD installations,

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<sup>32</sup> Department of Defense Annual Energy Management and Resilience Report (AEMRR) for Fiscal Year 2018, <https://www.acq.osd.mil/eie/Downloads/IE/FY%202018%20AEMR.pdf>.

<sup>33</sup> Id, p. 32.

including military bases, arsenals, and laboratories. This supply is a key part of the “Defense Critical Electric Infrastructure,” which is defined as any electrical infrastructure in the 48 contiguous States or the District of Columbia that serves a facility designated by the Secretary of Energy as critical to the defense of the United States and vulnerable to a disruption of the supply of electric energy provided to such a facility by an external provider, but that is not owned or operated by the owner or operator of such facility.<sup>34</sup> In 1998, with the issuance of Defense Reform Initiative #49, the military services were directed to privatize their utility systems. The Department of Defense’s Defense Logistics Agency Energy acts as the procurement agency for contracting with utilities for this purpose.<sup>35</sup>

The Department of Defense operates 500 installations worldwide, with nearly 300,000 buildings covering 1.9 billion square feet. Energy needed to power these fixed installations accounts for nearly 30 percent of DoD’s total energy use, and the installations rely extensively on transformers of various power handling capacities to distribute electricity at the appropriate voltage level.<sup>36</sup>

As noted above, DOD relies primarily on commercial power to support its installations. Commercial power supplies can be threatened by a variety of events,

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<sup>34</sup> <https://www.federalregister.gov/documents/2018/10/29/2018-23459/critical-electric-infrastructure-information-new-administrative-procedures>.

<sup>35</sup> <https://archive.defense.gov/dodreform/drids/drid49.html>.

<sup>36</sup> DOD AEMMR.

ranging from natural hazards and physical attacks on infrastructure (including transformers), to cyber-attacks on networks and Supervisory Control and Data Acquisition (SCADA) systems. Disruption of power could affect critical DOD missions involving power projection, defense of the homeland, or operations conducted at installations in the United States directly supporting warfighting missions overseas.

DOD's efforts to improve the energy resilience of its installations mainly focuses on backup power *generation* to compensate when the commercial grid experiences a disruption. However, emergency power generation assets are ineffective if the surrounding *distribution* system is unable to convey power between the generation asset and final point of use. Therefore, DOD may also pursue upgrading distribution system equipment, including transformers and power lines, as a standalone solution if backup generation is already adequate or as an integrated solution when new backup power generation assets are implemented.

In addition to their vital role in the electricity grid to supply power to military installations, transformers also play an essential role in supporting military operations. Sophisticated military equipment, such as missiles, fighter jets, and naval vessels, rely on transformers of various types and capacities to provide the correct voltage within subsystems. Additional military applications include tactical displays and field operations equipment such as mobile power supplies and

reconnaissance equipment. In addition to reliability and durability, military transformers must meet defense specifications (Mil Spec) and often must be designed and manufactured to withstand extreme environmental conditions, such as high humidity, salt spray, sand, high altitude, shock, and vibration. Military transformers may be specially encapsulated to withstand these types of harsh conditions.

[REDACTED]

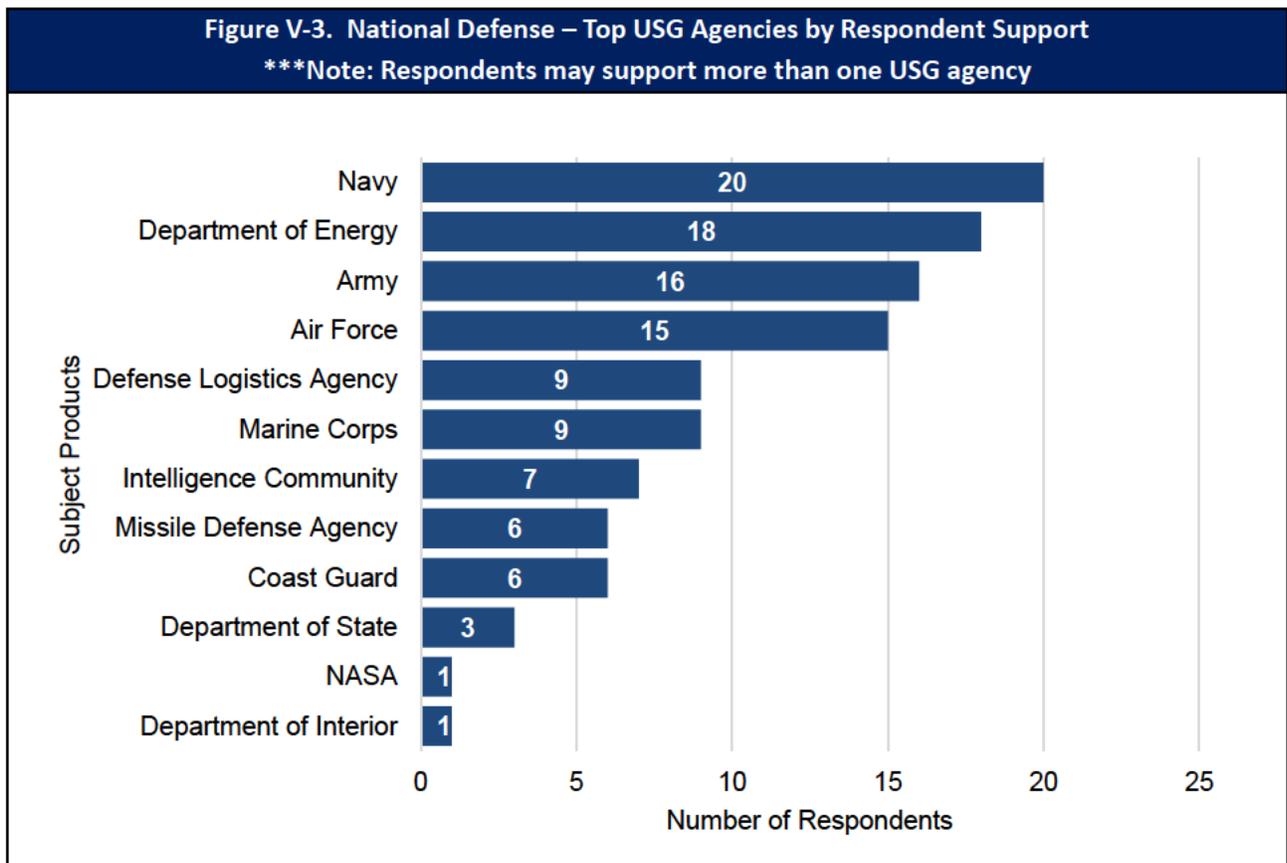
Due to its importance for certain defense applications, the Defense Logistics Agency (DLA) has included GOES among its requests for inclusion in the National Defense Stockpile. In their Fiscal Year 2019 Report to Congress on Stockpile Requirements, DLA Strategic Materials identified a potential shortfall for GOES of approximately [REDACTED]



Most of those that responded to the question with specifics reported that only a small percentage of sales, about 1-3 percent, involved defense-related uses.

Moreover, in most cases, this was just an estimate, as survey respondents typically did not have insight into the ultimate end use of their products.

However, some survey respondents were able to provide precise information on defense and military uses for their products. These respondents supported every branch of the military, as well as the Department of Energy/National Labs, the DLA, the State Department, NASA, the Department of Defense’s Missile Defense Agency, and the U.S. Intelligence Community.

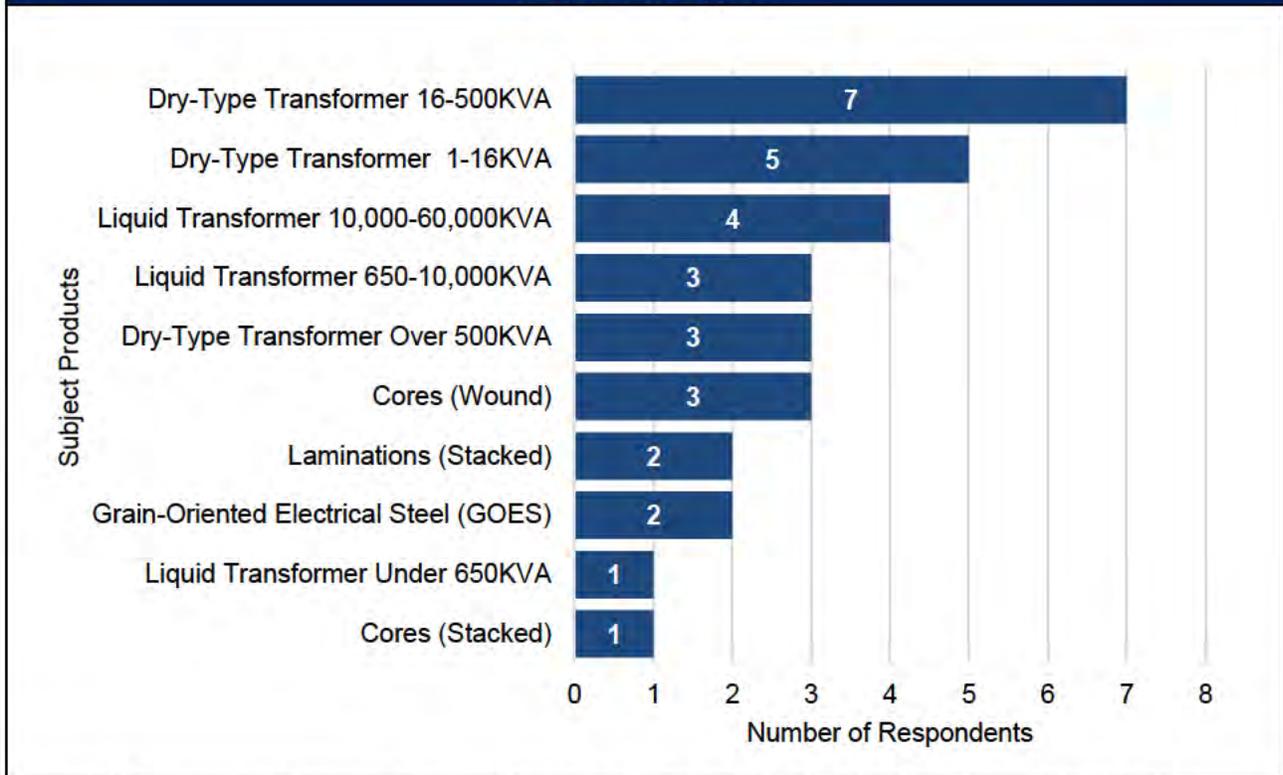


Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q8, B

22 Respondents

Based on survey responses, dry-type transformers (particularly of higher power handling capacities) are suitable for inside installations and thus play an important role in direct defense applications such as onboard radars, missiles, ships, and aircraft.

**Figure V-4. Defense Industrial Base Sector – Top Electrical Steel and Transformer-related Products by Respondent Support**



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q9, A

31 Respondents



[Redacted]

[Redacted]

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## **VI. United States' and Global Markets for GOES, Transformers and Transformer Components**

### **A. GOES Market**

The market for GOES is dominated by transformers, particularly LPTs, which can weigh over 400 tons, and GOES constitutes a significant portion of this weight. Although large transformers by sheer size incorporate more GOES by weight, the market for them is small in terms of units. In contrast, smaller transformers, such as distribution transformers, utilize less GOES by weight, but they are sold in much greater volumes and so also provide a significant market for GOES.

A recent report by a market research firm estimated that the global market for GOES will reach \$20.8 billion by 2025, with a compounded annual growth rate (CAGR) of 5.8 percent. The average annual growth rate in the United States is estimated to be 4.6 percent over the next five years (adjusted downward from 5.7 percent due to the impacts of COVID-19); the market in China will grow at 9.5 percent.<sup>38</sup>

AK Steel is the sole remaining U.S. supplier of GOES. Another domestic producer, Allegheny Technologies, Inc. (ATI) stopped production of GOES in 2016. However, industry reports indicate that Big River Steel (Osceola, AR), a

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<sup>38</sup> [https://www.reportlinker.com/p05798466/Global-Electrical-Steel-Industry.html?utm\\_source=GNW](https://www.reportlinker.com/p05798466/Global-Electrical-Steel-Industry.html?utm_source=GNW).

manufacturer of non-grain oriented steel, intends to produce high quality GOES in the future, including high permeability grades (such as Hi-B).<sup>39</sup>

Outside of the United States, there are 13 manufacturers of GOES, as listed in Figure VI-1.

Figure VI-1. Manufacturers of GOES Outside the United States	
Company Name	Country of Manufacture
Baowu Iron & Steel Co., Ltd	China
Anshan Iron & Steel Group Corp.	China
Hebei Shougang Iron & Steel Co., Ltd.	China
TISCO	China
JFE Steel Corporation	Japan
Nippon Steel & Sumitomo Metal Corp. (NSSMC)	Japan
ThyssenKrupp Electrical Steel GmbH	France/Germany
ThyssenKrupp	India
StalProdukt	Poland
GO Steel Frydek Mistek A.S. (Purchased by StalProdukt from Arcelor Mittal in 2018) <sup>40</sup>	Czech Republic
Novolipetsk Steel (NLMK)	Russia
Aperam	Brazil
POSCO	South Korea
Source: DLA Report	

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

<sup>39</sup> <https://bigriversteel.com/products/electrical/>.

<sup>40</sup> <http://www.corpin.cz/en/arcelorgosteel.html>.

[REDACTED]

[REDACTED]<sup>41</sup>

A limited number of these global suppliers, such as those from Japan and South Korea, are capable of producing the high permeability GOES that the market is demanding in response to current DOE standards. China is the world's largest producer of GOES but much of its production is consumed internally, and Chinese firms have not dominated export markets.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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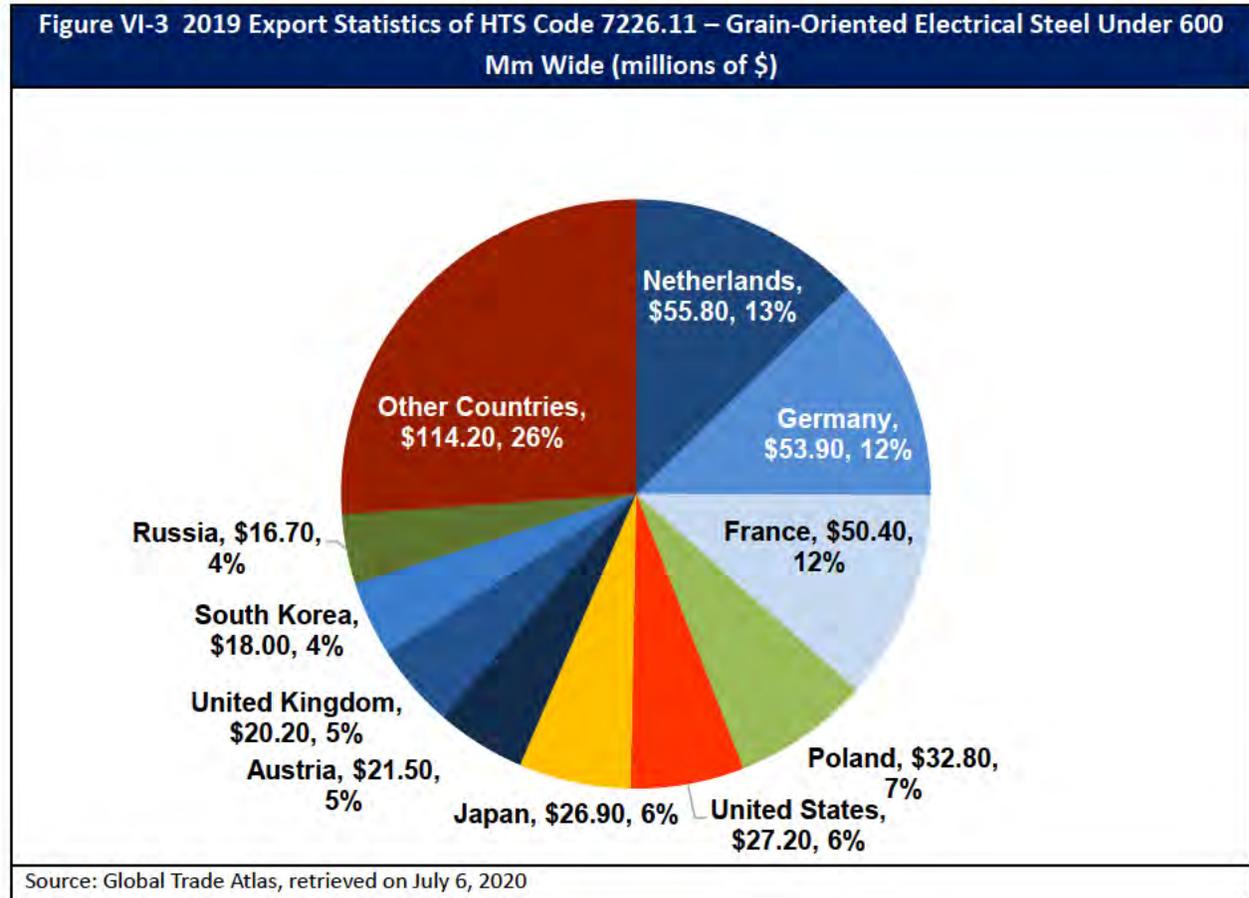
<sup>41</sup> [REDACTED]

**Figure VI-2. 2014-2019 Export Statistics of HTSD Code 7225.11 – Flat-Rolled Silicon Electrical Steel 600 Mm or More Wide, Grain-Oriented**



Source: Global Trade Atlas, retrieved on July 6, 2020

For GOES < 600 Mm in width, the total trade in 2019 was \$437.6 million, much smaller than GOES ≥ 600 Mm in width, and the major players were mainly European countries.



## B. Transformer Laminations and Cores

Most of the major global transformer companies produce laminations and cores for internal consumption, although manufacture of these items does not necessarily occur in the same facility in which they are consumed. However, there are also companies that manufacture these products for transformer producers.

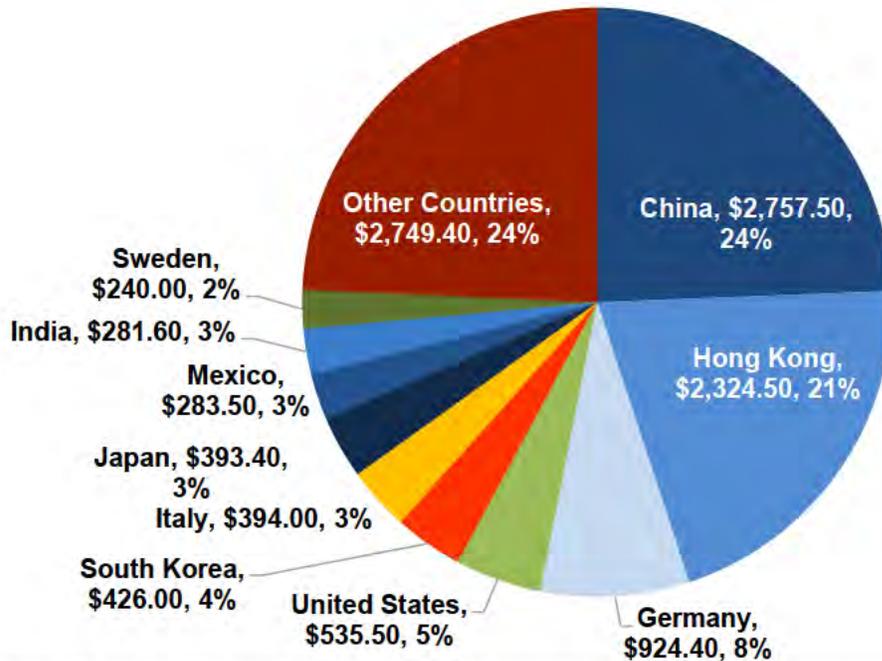
Lamination and core manufacturers tend to be small companies that produce specialized products, and there is little information available on them as a distinct industry sector.

Based on data available from GTAA, the biggest players in the world export market for the category including transformer parts (laminations and cores but also products not subject to this investigation)<sup>42</sup> is China, including Hong Kong. In 2019, of the total \$11.3 billion of trade of transformer parts, China exported \$2.8 billion and Hong Kong exported \$2.3 billion; together, China and Hong Kong accounted for 44.9 percent of the total trade. Germany was second, with exports of \$924.4 million. Although Canada and Mexico are the main sources for U.S. imports of transformer cores and laminations, neither country is significant actors in global exports: Mexico ranked 8<sup>th</sup> with \$283.5 million and Canada ranked 12<sup>th</sup> with \$184.0 million.

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<sup>42</sup> Note: At the 6 digit HTS level for which global trade data are available, this category (8504.90) includes parts and components unrelated to transformers (e.g., parts of static converters and inductors). There is no way to determine how much of this trade is transformer laminations and cores. Therefore, this information should be considered indicative of general trading patterns only.

**Figure VI-4. 2019 Top 10 Exporters for HTS Code 8504.90 – Parts of Electrical Transformers  
(millions of \$)**



Source: Global Trade Atlas, retrieved on July 6, 2020

The leading destination for China's exports of transformer parts was the United States with \$282.4 million total imports in 2019, followed by India with \$256.9 million. The leading destination for Hong Kong's exports of transformer parts during the same year was also the United States with \$152.6 million, followed by Germany with \$77.9 million.

### C. Global and U.S. Transformers Market

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Typical customers are companies in electricity generation, transmission, and distribution industries. End-use customers also include energy-intensive industries such as mining, chemical manufacturing, and steel and pulp/paper mills, as well as large commercial facilities.

The global transformer industry has undergone numerous mergers, acquisitions, consolidations over the past several decades, resulting in fewer, larger players that offer a wider product range and are able to benefit from economies of scale. During the consolidation process, many manufacturers moved their production offshore (e.g., Mexico, India, Colombia), taking advantage of lower labor costs, lower labor and environmental standards, and access to local markets with rapidly increasing demands for electricity.<sup>43</sup> Mexico, in particular, has become a significant player in transformer manufacturing; among the global

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<sup>43</sup> Large Power Transformers and the U.S. Electric Grid, DOE, 2014.

transformer manufacturers with production facilities in Mexico [REDACTED]

[REDACTED]

In addition to these large global players, in the United States there are a number of smaller companies that manufacture transformers of various power-handling capacities. These include [REDACTED]

[REDACTED]

In its most recent market assessment, Global Market Insights estimated the global transformer market to reach \$80 billion by 2024, assuming a CAGR of 6.5 percent. Key markets for transformers are those with rising electricity demands and investments in power distribution infrastructure – namely, the Asia/Pacific region, Africa, and the Middle East. The greatest market potential is in emerging markets such as these; 15 percent of the world’s population does not yet have access to electricity.<sup>44</sup>

In contrast, the U.S. market is mature, and demand for transformers is largely based on upgrades and replacements of aging infrastructure, including efforts to install smart grids to increase energy efficiency. The average transformer in the United States is 38 years old, with 70 percent of U.S. transformers older than 25 years.<sup>45</sup> New transformers are also needed to distribute electricity from the

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<sup>44</sup> Draws from <http://www.firstresearch.com/industry-research/Transformer-Manufacturing.html> (Dun & Bradstreet).

<sup>45</sup> DOE LPT Study, 2014 update.

growing number of renewable energy generation plants. With over 9,000 power plants, 1.2 terawatts of power generating capacity, and 360,000 miles of high voltage transmission lines, the United States remains one of the largest markets for transformers.

Trade data available through GTA show the major players by country in export markets for transformers of various power handling capacities. While only available at broad (6 digit HTS) product categories, these data are useful to show the relative global export market sizes and which countries dominate exports in each broad segment.

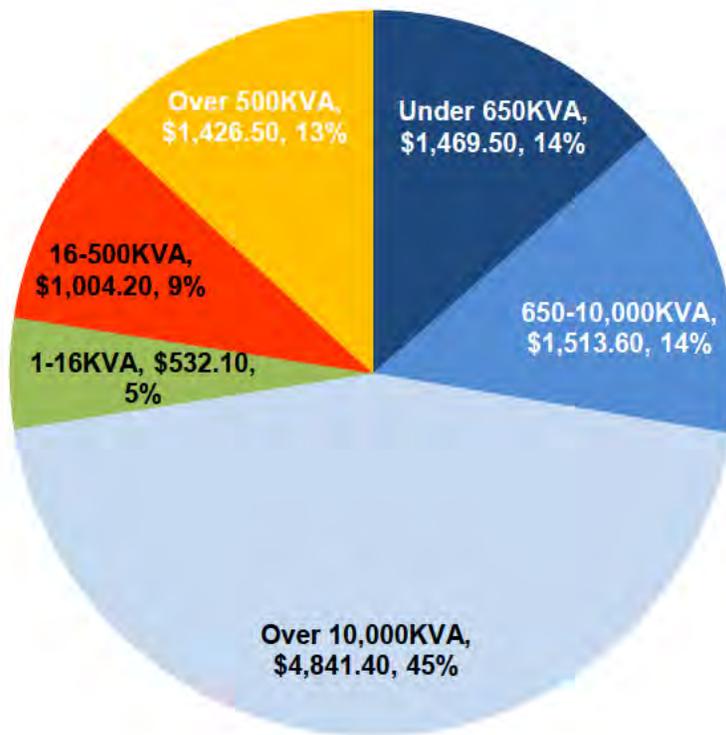
Among all transformer categories, the product with the greatest value of world exports is the liquid-dielectric transformers with a handling capacity of more than 10,000 kVA (HTS 8504.23). This category includes large power transformers, as well as medium sized power transformers and larger distribution transformers. It accounted for nearly 45 percent of total world trade in transformers, based on average annual value of global exports over the 2014–2019 period. In this category, China is the top exporter with an average annual export value of \$893.9 million, followed by South Korea with \$635.9 million, and Germany with \$371.8 million.

For liquid-dielectric transformers with smaller power handling capacities (distribution transformers, HTS 8504.21 and 8504.22), as well as mid-sized dry-

type transformers (HTS 8504.32 and 8504.33), Mexico is a major exporter.

Virtually all of Mexico's transformer exports are destined for the United States.

**Figure VI-5. Transformer World Trade Average Export Value by Power Handling Capacity, 2014-2019  
(millions of \$)**



Source: Global Trade Atlas, retrieved on July 29, 2020

**Figure VI-6. Top Five Exporters for Dry-Type/Other Transformers by HTS Code, 2014-2019**

HTS Code	Power Handling Capacity	Country	Average Annual Export Value, 2014-2019 (\$ millions)
8504.32	1-16KVA	United States	\$70.6
		China	\$68.4
		Hong Kong	\$66.2
		Germany	\$53.5
		Mexico	\$49.0
8504.33	16-500KVA	Mexico	\$255.6
		United States	\$132.3
		China	\$71.6
		Italy	\$57.3
		Germany	\$56.3
8504.34	Over 500KVA	Germany	\$214.9
		China	\$186.7
		Italy	\$147.7
		Denmark	\$137.3
		Spain	\$93.5

Source: Global Trade Atlas, retrieved on July 29, 2020

<b>Figure VI-7. Top Five Exporters for Liquid-Dielectric Transformers by HTS Code, 2014-2019</b>			
<b>HTS Code</b>	<b>Power Handling Capacity</b>	<b>Country</b>	<b>Average Annual Export Value, 2014-2019 (\$ millions)</b>
8504.21	Under 650KVA	Mexico	\$198.3
		United States	\$110.5
		India	\$102.4
		China	\$99.6
		Turkey	\$79.4
8504.22	650-10,000KVA	China	\$150.5
		Mexico	\$133.8
		Turkey	\$104.6
		Switzerland	\$96.3
		Austria	\$92.6
8504.23	Over 10,000KVA	China	\$893.9
		South Korea	\$635.9
		Germany	\$371.8
		Turkey	\$321.8
		Italy	\$298.7

Source: Global Trade Atlas, retrieved on July 29, 2020

#### **D. United State Transformers Market**

In the United States, there are about 250 establishments involved in transformer manufacturing (including units of companies with multiple locations), with a combined annual revenue of about \$5 billion according to Global Market Insights. The National Electrical Equipment Manufacturers Association (NEMA) is the major sector-specific trade association that represents companies in this

industry. NEMA states that there are over two dozen companies and over 15,000 employees involved in transformer manufacturing in the United States.<sup>46</sup>

Transformer manufacturing is most highly concentrated in Mississippi, Wisconsin, Virginia, North Carolina, and California. The industry is highly regulated by local, state, and federal agencies for environmental protection reasons, as well as to ensure workplace safety. DOE sets energy efficiency standards for distribution transformers, with the standards last increased to achieve stricter efficiency in 2016.<sup>47</sup>

The industry is made up of large companies, such as GE (headquartered in the United States but with most transformer manufacturing facilities abroad) and ABB (now called Hitachi ABB Power Grids), which offer a variety of transformer products to utilities and industrial customers. In addition, there are numerous small companies that manufacture specialty transformers and niche products to industrial and consumer products customers. However, the 50 largest companies account for 90 percent of industry revenue.<sup>48</sup>

According to the Census Bureau, in 2018 (the most recent year for which data are available), the U.S. power, distribution, and specialty transformer manufacturing industry employed 19,227 people, operated in 285 locations, and

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<sup>46</sup> NEMA Public Comments.

<sup>47</sup> <https://www.researchandmarkets.com/reports/4376152/transformer-manufacturing>.

<sup>48</sup> <https://www.researchandmarkets.com/reports/4376152/transformer-manufacturing>.

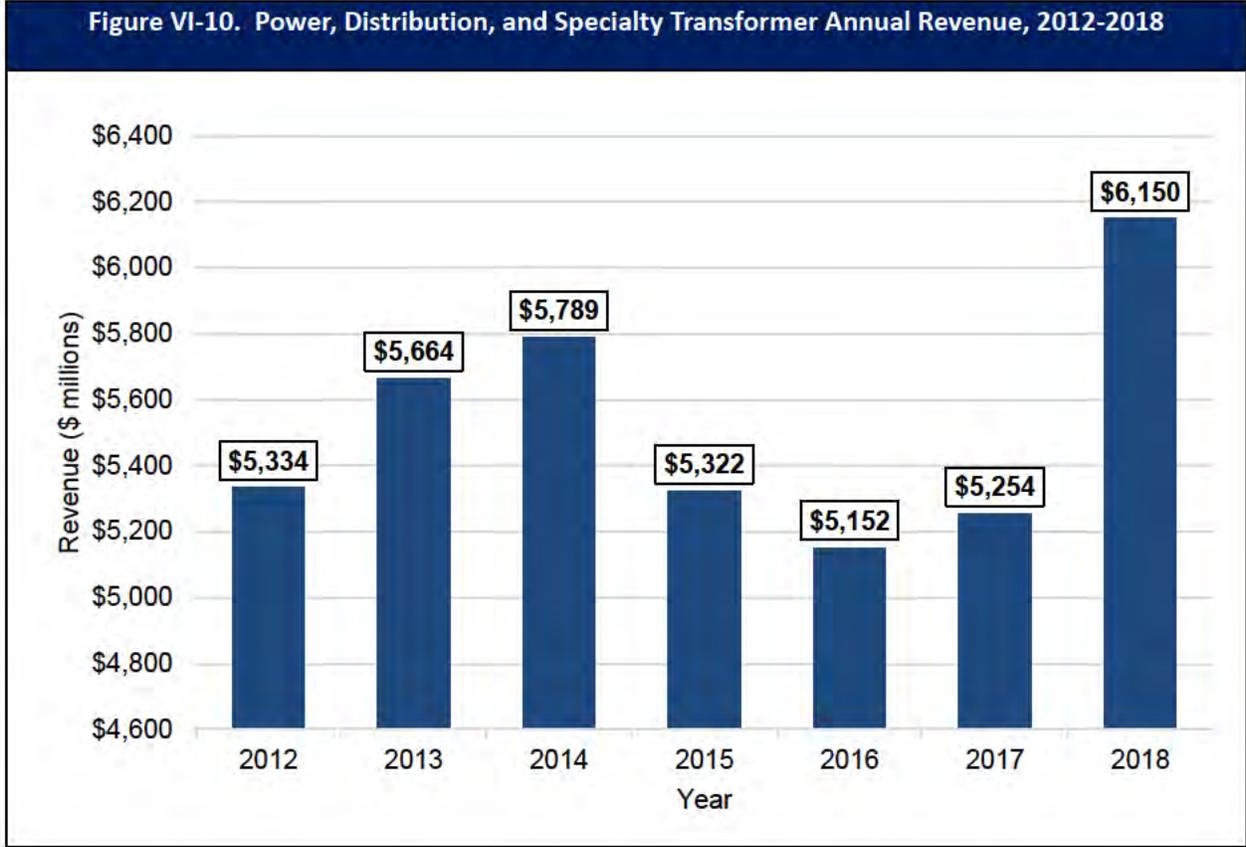
totaled \$6.15 billion in revenue. The Census Bureau classifies data using the North American Industry Classification System (NAICS) codes. Because the NAICS code representing power, distribution, and specialty transformer manufacturing is broader and more inclusive than the scope of this investigation, the data below should be interpreted to represent industry trends.

Figure VI-8. Employment for Power, Distribution, and Specialty Transformer Manufacturing Industry (2012-2018)		
Year	Number of Locations	Number of Employees
2012	253	18,678
2013	253	19,603
2014	256	18,873
2015	246	19,289
2016	246	18,803
2017	242	18,502
2018	284	19,227

Source: United States Census Bureau

Figure VI-9. Employment Distribution by Location Size 2018		
Location Size	Number of Locations	Number of Employees
< 5 employees	100	189
5 < 9 employees	32	203
10 < 19 employees	34	471
20 < 49 employees	43	1,402
50 < 99 employees	26	1,784
100 < 249 employees	30	4,573
250 ≤ 499 employees	16	5,854
500 ≤ 999 employees	3	2,141

Source: United States Census Bureau



Imports account for about 35 percent of the U.S. market for transformers (of all power handling capacities combined); primary sources of imports are Mexico, Canada, South Korea, and China. About 10 percent of U.S. production is exported, mainly to Mexico and Canada.

With regard to specific subsectors of the transformer industry, there are few companies worldwide that manufacture LPTs; in the United States, as previously

discussed, there are six manufacturers but their capability is limited. Distribution transformers are produced by a greater number of companies, including U.S. manufacturers.

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 under the Energy Conservation and Policy Act of 1975, as amended. DOE determined that there is significant domestic manufacturing of these products, finding that 75 percent of the employees who work for manufacturers that provide medium-voltage dry-type transformers are located domestically.<sup>49</sup>

The Edison Electric Institute (EEI), which represents investor-owned electric companies that provide power to about 220 million Americans, estimates that its members have procured about four million transformers, at a total cost of more than \$20 billion, over the last five years. The vast majority of these were distribution transformers. EEI estimates that investments in the grid will continue at similar levels in the coming years. EEI members also reported that transformers

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<sup>49</sup> 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.

were sourced both domestically and internationally, with a majority of the reported distribution transformer purchases sourced domestically.<sup>50</sup>

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<sup>50</sup> EEI et al Public Comments.

## **VII. U.S. Production Capabilities, Industry Health and Competitiveness, and the Impact of Imports on National Security for Transformer Component Manufacturers**

### **A. Introduction**

This chapter evaluates the state of U.S. production capabilities, industry health and competitiveness, and the impact of imports on national security for GOES, transformer lamination, and transformer core manufacturers. In particular, it presents data on U.S. GOES production, as well as production of key transformer components primarily composed of GOES: transformer laminations, stacked cores, and wound cores.

### **B. Grain-Oriented Electrical Steel**

GOES is a highly specialized, technically challenging product that requires dedicated equipment, advanced manufacturing process know-how, and well-trained, experienced employees. This product is absolutely critical to the performance of transformers, as it is the key material used in transformer cores, which constitutes the primary market for GOES.

AK Steel is the only domestic producer of GOES.<sup>51</sup> The company, then known as Armco Steel, invented and introduced GOES products to the market in

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<sup>51</sup> Paul J. Bough, “ATI to Permanently Close Midland, Bagdad Metal Plants,” *Pittsburgh Business Times*, October 25, 2016, <https://www.bizjournals.com/pittsburgh/news/2016/10/25/ati-to-permanently-close-midland-bagdad-metals.html>. Another U.S. company, Big River Inc. (Osceola, Arkansas) has indicated an intention to enter the GOES market. The company currently produces a wide variety of

1926.<sup>52</sup> Another manufacturer, Allegheny Ludlum, a subsidiary of Allegheny Technologies, Inc. (ATI), ceased manufacturing of GOES in 2016, with a loss of 350 jobs. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

AK Steel melts, rolls, and finishes electrical steel at its Butler Works facility in Butler, Pennsylvania (which employs about 1,300 employees; this plant also processes other rolled steel products including Non-Grain Oriented Electrical Steel) and finishes electrical steel at its Zanesville Works plant in Zanesville, Ohio (which employs about 100 employees). However, electrical steel represents only a small percentage of AK Steel's business, accounting for [REDACTED] of revenues (the automotive industry is AK Steel's primary customer). AK Steel was

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non-grain oriented steels for motor laminations. It has invested in plant equipment and infrastructure to expand production to include high permeability grain-oriented electrical steels. It also has expressed interest in utilizing the facility at which Orb Steel formerly manufactured grain oriented electrical steel in the United Kingdom (owned by Tata of India, which is attempting to sell the plant). However, the company's production capacity and product range is unknown at this time so cannot be counted as domestic production capability.

<sup>52</sup> <https://www.aksteel.com/our-products/electrical-steel/grain-oriented-electrical-steels>.

acquired by Cleveland Cliffs Inc., the nation's largest producer of iron ore pellets, in March 2020.<sup>54</sup>

While still a leader in the domestic market, AK Steel's electrical steel operations are in poor financial condition, in part due to years of pressure from lower-cost foreign imports. In his testimony before the Congressional Steel Caucus in March 2020, Lourenco Goncalves, the President & CEO of Cleveland Cliffs, warned that the company would be forced to close the Butler and Zanesville facilities, both of which are unprofitable, unless the U.S. Government were to take action to limit imports of GOES in the form of transformer laminations and cores.<sup>55</sup>

**If AK Steel's GOES operations were to close, the United States would lack the ability to produce transformers of any power handling capacity without relying on foreign sources for the key material that is essential to their operation and efficiency.**

The charts below present the current status of AK Steel specific to several important industry measures.

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<sup>54</sup> <http://www.clevelandcliffs.com/English/news-center/news-releases/news-releases-details/2020/Cleveland-Cliffs-Completes-Acquisition-of-AK-Steel/default.aspx>.

<sup>55</sup> <http://www.butlereagle.com/article/20200306/NEWS12/200309971>.

[REDACTED]

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[REDACTED] 56 [REDACTED]

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56 [REDACTED]

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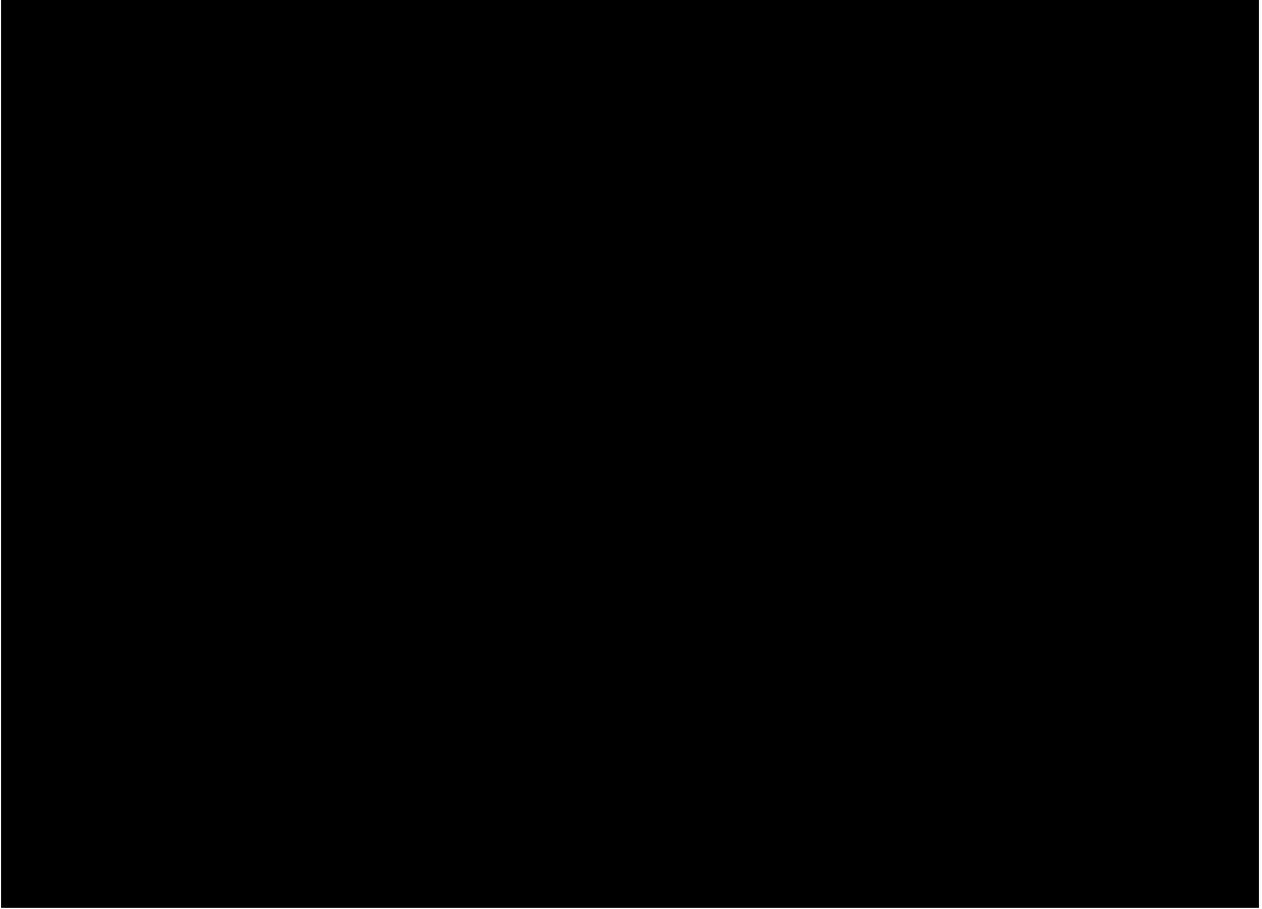
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[REDACTED] <sup>62</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As a result of its inadequate investment, AK Steel says it will not be able to innovate in order to keep pace with the latest production technology or be able to meet increasingly stringent DOE efficiency standards. AK Steel states (and transformer companies validate) that the company can make high-permeability GOES products that have very low losses and are highly efficient.

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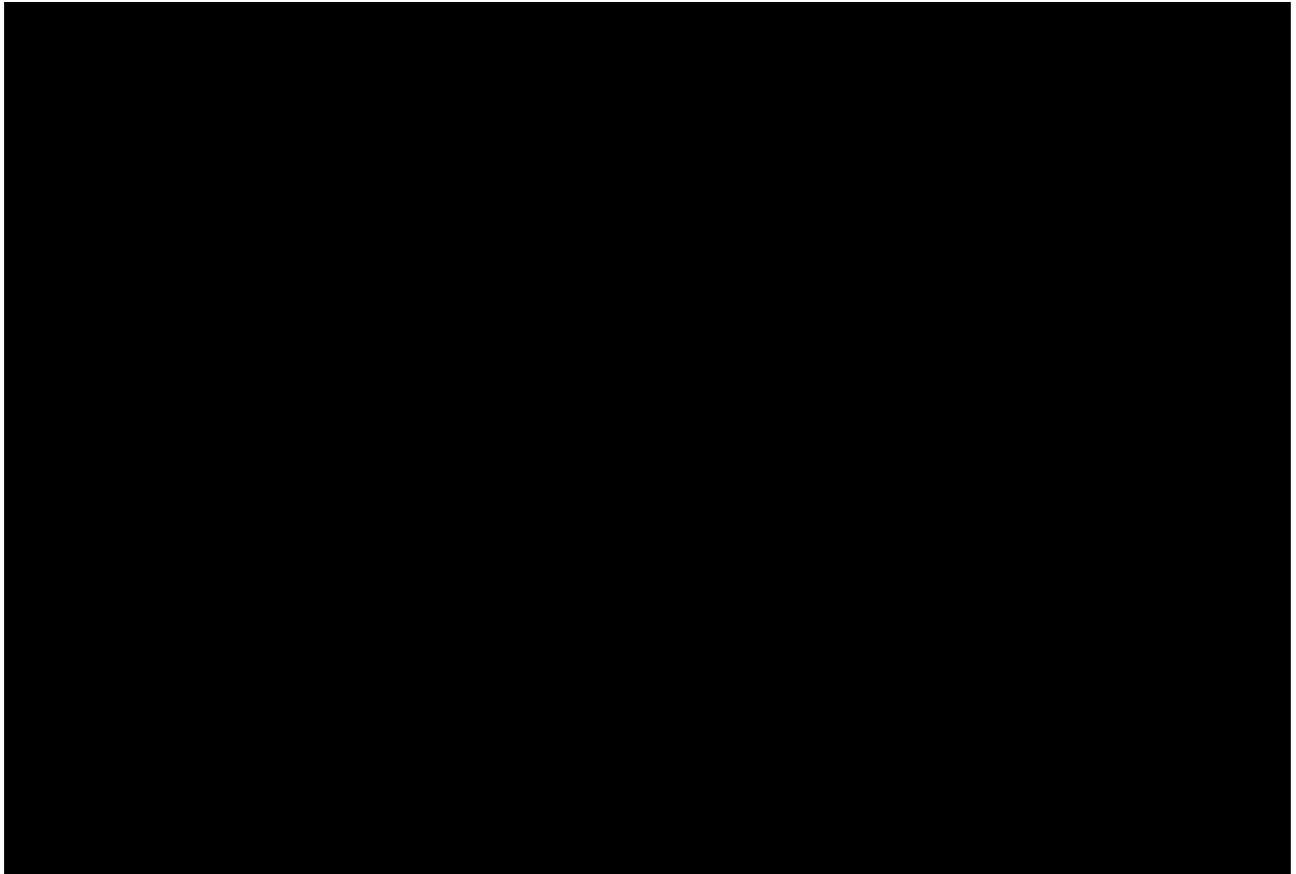
<sup>59</sup> U.S. Department of Commerce, Bureau of Industry and Security, Section 232 Investigation on Impact on National Security of Imports of Steel, 2017.

<sup>60</sup> [REDACTED]

<sup>61</sup> Ibid.

<sup>62</sup> Ibid.

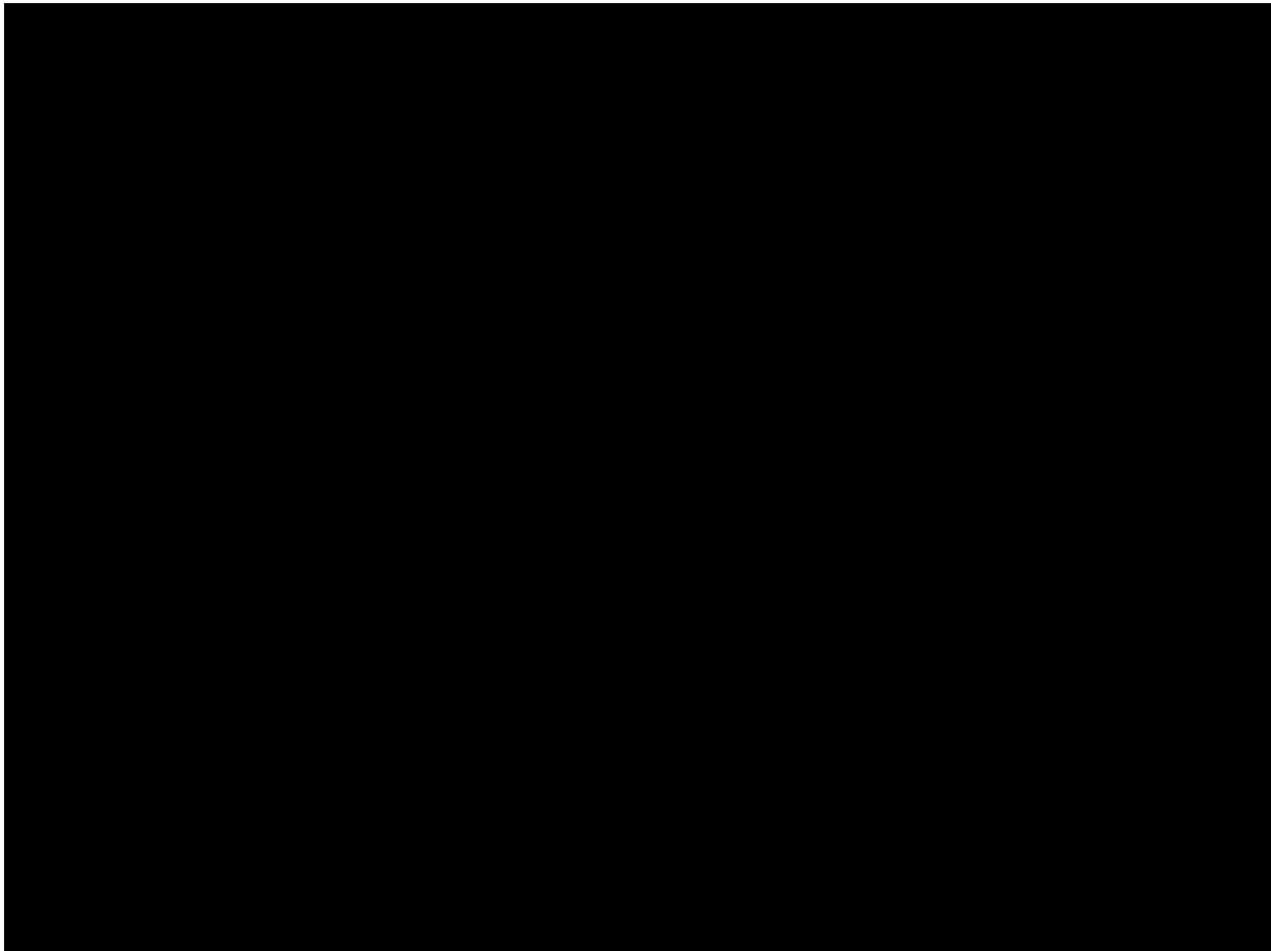
However, if the DOE increases its efficiency standards to require more high-permeability GOES, AK Steel would likely need to invest in more capacity to meet



U.S. demand. Under current market conditions and pricing, AK Steel claims it cannot justify investments to achieve such additional capacity.<sup>63</sup>

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<sup>63</sup> AK Steel Public Comments.



## 1. U.S. GOES Production, Consumption and Import Penetration

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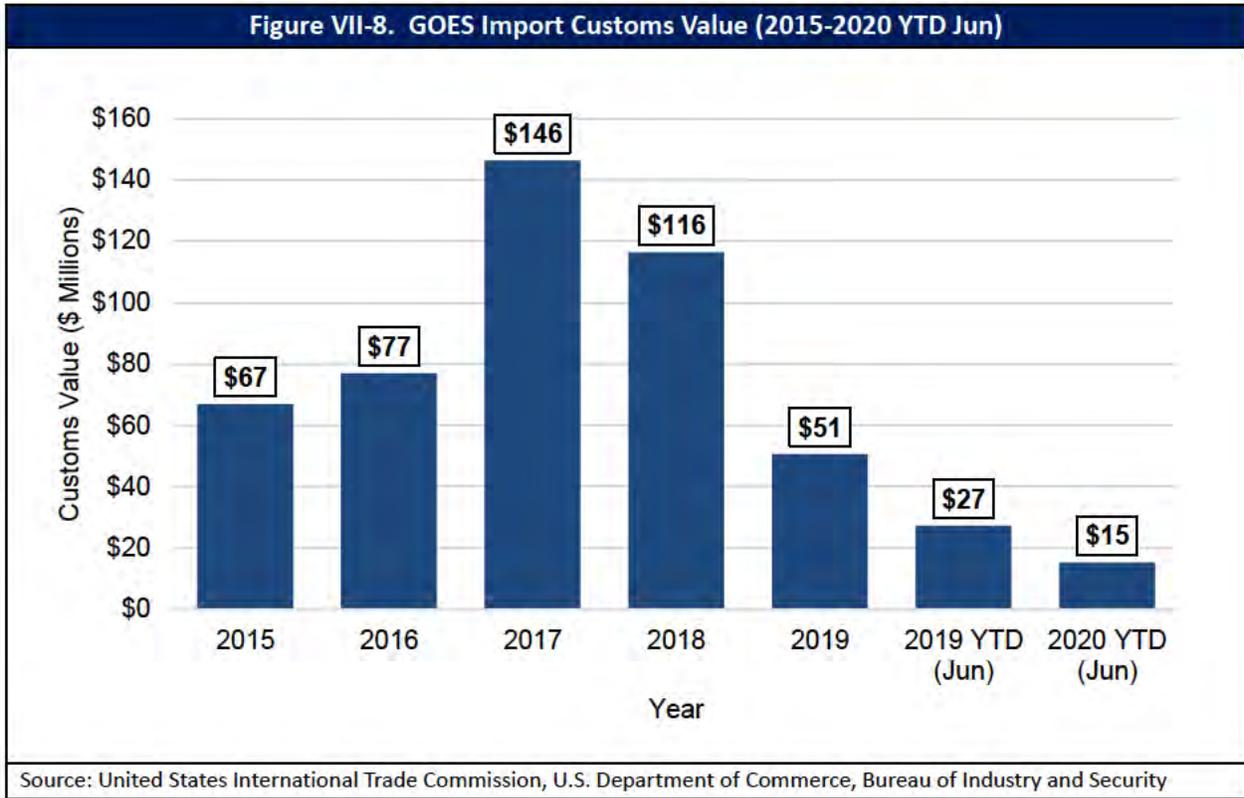
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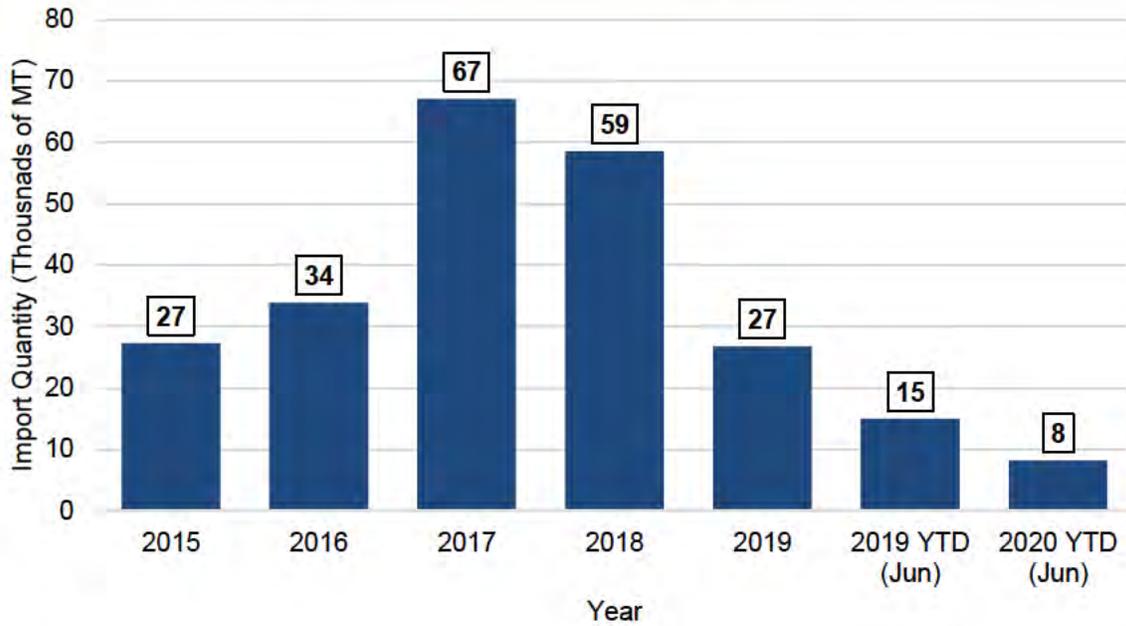
[REDACTED]

The United States imported about 27,000 metric tons of GOES in 2019, for which Japan and Korea were the main sources. Imports of GOES in 2019 were dramatically lower than in 2018 (down 56 percent), a result of 25 percent tariffs imposed on imported GOES from most locations (Steel 232 tariffs). However, the

steel tariffs did not achieve the intended result of increased production and consumption of domestic GOES.



**Figure VII-9. GOES Import Customs Quantity (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VII-10. GOES Import Quantities by Top 10 Countries (MT, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	Total* 2015-2019
Japan	9,705	10,397	25,543	17,251	6,581	4,506	1,711	71,188
South Korea	4,122	5,270	18,868	22,794	11,915	4,770	4,402	67,372
China	455	3,262	9,061	4,608	1,045	571	493	18,924
Russia	3,777	5,701	4,132	2,475	639	397	822	17,546
Czech Republic	2,760	3,704	4,299	916	374	374	13	12,065
United Kingdom	1,990	2,128	2,262	2,835	79	57	35	9,329
Brazil	1,539	2,575	1,120	1,416	2,170	1,113	424	9,245
Thailand	-	-	-	4,110	2,738	2,543	-	6,848
Poland	140	184	1,016	1,652	920	641	240	4,151
Canada	1,006	186	62	338	30	23	60	1,682

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

Figure VII-11. GOES Import Penetration by Weight					
Year	2015	2016	2017	2018	2019
Imports For Consumption	27,311,498	33,893,810	67,082,534	58,572,133	26,764,624
Domestic Exports	96,669,121	57,014,300	42,772,205	41,523,736	34,786,151
Import Penetration	21%	22%	37%	31%	18%

Figure VII-12. GOES Import Penetration by Value					
Year	2015	2016	2017	2018	2019
Imports For Consumption	\$66,915,489	\$76,976,977	\$146,193,243	\$116,343,595	\$50,658,381
Domestic Exports	\$230,523,114	\$138,029,576	\$90,527,328	\$87,625,426	\$69,715,767
Import Penetration	19%	20%	31%	24%	13%
(Table excludes domestic production for 2015/2016 by Allegheny Ludlum)					

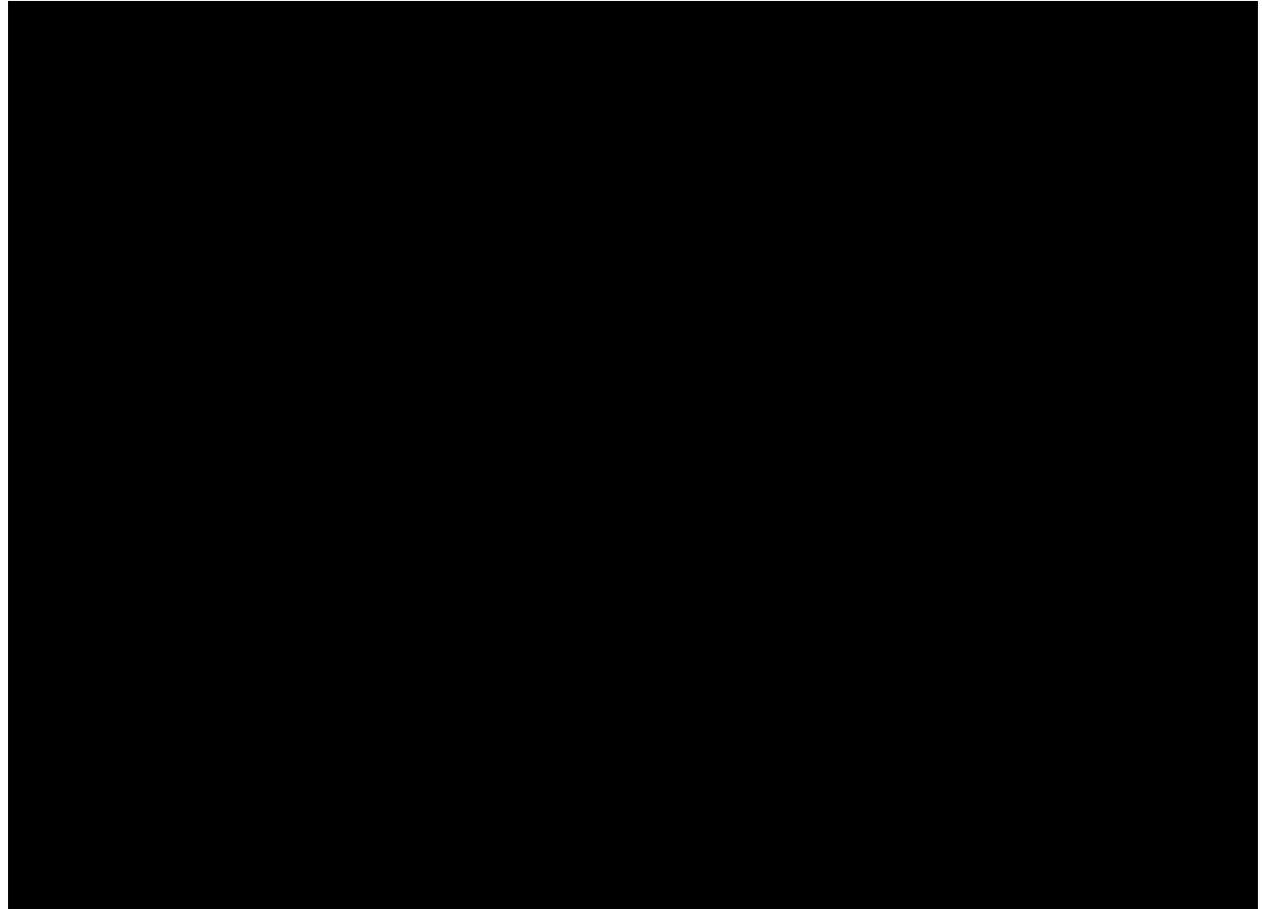
Thus, based on production and trade data for GOES (presented in Table VII-11), imports accounted for less than 20 percent of domestic consumption (on a tonnage basis) in 2019. This is down from a high of 37 percent in 2017, prior to imposition of the steel tariffs. On a value basis, penetration is even lower, at 13 percent. **These simple calculations do not present an accurate picture of the dependence of the domestic transformer industry on imported GOES, however, as will be discussed in the section analyzing suppliers to U.S. transformer manufacturers provided in the BIS industry survey.**

## **2. Analysis of BIS Survey Supplier Data: GOES**

The Department's industry survey provided additional data and insight on domestic consumption of GOES. Thirty-nine survey respondents reported that they directly sourced GOES and provided details on their suppliers and purchases. The aggregated amount of GOES that they procured on an annual basis was relatively stable between 2015 and 2019, [REDACTED]. This figure is roughly consistent with estimates for domestic GOES demand. Moreover, the total amount supplied by AK Steel as reported by survey respondents is consistent with that company's GOES production data. This data indicates that the Department's survey accurately captured most of the market.

The survey respondents reported obtaining GOES from a wide variety of global suppliers. Purchases were made from suppliers in Japan, China, Mexico, Germany, Russia, Canada, France, Brazil, Poland, and South Korea, as well as the United States. In addition to the steel mills that produce GOES sheets in coils, some respondents included in their responses information on purchases from suppliers that provide GOES in slightly more processed forms. These suppliers typically start their production with electrical steel sourced from a steel mill producing electrical steel and perform additional processing such as cutting, slitting, stamping, and/or coating. In this regard, the line between GOES and

transformer laminations is seemingly quite indistinct, as other survey recipients recorded purchases from these same suppliers under the “laminations” category.



Four GOES suppliers accounted for 93 percent of purchases by the survey population in 2019. [REDACTED]



[REDACTED] The remainder of the market shifted considerably among other players, with the most significant development the exit of ATI (Allegheny Ludlum) from the market in

2016. [REDACTED]

### 3. Sufficient Quantity and Quality of Domestic GOES

A number of transformer companies have indicated, through their public comments, through the Section 232 steel tariff exclusion process, and through survey responses, that the sole domestic source of GOES (AK Steel) lacks the capacity to meet the domestic demand for the full range of GOES products. U.S. consumption of GOES is estimated at approximately 220,000 metric tons per year,

[REDACTED]

[REDACTED]<sup>64</sup> However, AK Steel’s stated capacity does not take into consideration the production of variable grades of GOES. For example, much of the company’s production is of conventional grades of GOES (M class); its production capacity for higher grades is limited.

In its public comments, the Core Coalition noted that although AK Steel is widely recognized in the industry as a supplier of high-quality GOES. However, it is a high-cost supplier compared to foreign sources, which the Core Coalition

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<sup>64</sup> Core Coalition Public Comments.

attributes to the company's lack of capital investment and its continued use of obsolete production equipment and processes. AK Steel notes that the Department's antidumping investigations have found that foreign GOES manufacturers sell at unfair prices (dumping) or are subsidized by their governments. The European Union has found AK Steel practices dumping.

In addition, AK Steel does not manufacture or offer an intermediate grade of GOES, called MOH, which is widely available from suppliers in South Korea, Japan, and China. While AK offers a higher grade GOES that can be used instead of MOH, it is more expensive and is not optimal for use in certain standard-issue transformers where GOES price weighs more heavily than energy efficiency in sourcing decisions.

Another concern expressed by domestic transformer manufacturers is the maximum width of AK's Steel's product. The company does not produce steel wide enough (>932mm) to form the laminations and cores of larger transformers. According to the technical specifications on AK Steel's website, the maximum width of its domain-refined products (TRAN-COR) is 920mm.<sup>65</sup> While two pieces of steel can be patched together, this process leads to increased production costs and loss of efficiencies in the core.<sup>66</sup>

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<sup>65</sup> [https://www.aksteel.eu/files/downloads/TRAN-COR\\_H\\_%20Grain\\_Oriented\\_Electrical\\_Steel.pdf](https://www.aksteel.eu/files/downloads/TRAN-COR_H_%20Grain_Oriented_Electrical_Steel.pdf).

<sup>66</sup> Public comments of Domestic Transformer Producers.

Many transformer companies submitting public comments during the investigation indicated that AK Steel’s lack of capital investment over many years has affected the company’s ability to supply the highest grades of steel grades that steel transformer manufacturers prefer to use in the cores of distribution transformers subject to DOE energy standards. In addition, in general, utility companies are increasingly seeking to install transformers with high efficiency/lower losses (that tend to require higher grades of GOES) that reduce costs and are environmentally friendly. For example, European and Asian manufacturers offer a high permeability GOES called HI-B (originally developed by Nippon Steel of Japan but licensed the technology to other companies).<sup>67</sup>

A summarized list of concerns with AK Steel’s capabilities and capacity expressed through the public comments process is provided in the table below.

<b>Figure VII-15. Analysis of Negative Comments Aimed Toward AK Steel</b>	
<b>Public Commenter</b>	<b>Nature of Comment</b>
Central Moloney Inc.	<ul style="list-style-type: none"> <li>• Passing the proposal will create a monopoly for AK Steel, allowing them to control price and determine who is successful in the transformer industry</li> <li>• AK Steel does not have capacity to keep up with the demand, Central Moloney has been put on allocation several times due to capacity issues</li> <li>• AK does not have the ability to make the same quality of steel (Permanent Domain Refined core steel) which meets current efficiency levels set by the Department of Energy</li> </ul>
Southwest Electric Company	<ul style="list-style-type: none"> <li>• There is only one domestic provider and they have not invested and adapted enough to stay competitive with global players</li> <li>• Additionally they would not be able to provide the volumes in specific quality/performance graded needed to support the U.S. market alone</li> </ul>

<sup>67</sup> Public comments of Domestic Transformer Producers.

WEG Transformers USA	<ul style="list-style-type: none"> <li>• Foreign competition is not a significant issue related to GOES</li> <li>• AK Steel already has a 70% market share of the current industry and they are not able to support significant growth and changes to the electrical grid that renewable energy is driving</li> </ul>
Tempel Steel Co	<ul style="list-style-type: none"> <li>• AK Steel's outdated technology and antiquated equipment limits the quantity and quality of grades it offers and inflates the cost structure</li> <li>• A transformer has a life expectancy of 25 years and the average transformer at AK Steel is dated 38 years</li> </ul>
JFE Shoji Steel America Inc.	<ul style="list-style-type: none"> <li>• AK Steel individually does not have the capacity to supply the domestic demand for transformers and transformer parts</li> <li>• AK Steel is not capable today of manufacturing some of the best available and required materials in the world</li> <li>• AK Steel's process capability does not enable them to produce their best published grades in large quantities</li> <li>• All GOES and NOES is not interchangeable. To the extent that AK Steel cannot or will not quickly be able to meet those specifications and obtain certification, those customers will be the most negatively impacted</li> </ul>
U.S. Chamber of Commerce	<ul style="list-style-type: none"> <li>• U.S. production of GOES, including cores and laminations, is insufficient to supply the needs of the entire U.S. transformer manufacturing base</li> <li>• Some specific high-grade silicon electrical steels used in some transformer manufacturers' current designs to meet mandatory U.S. Department of Energy conservation standards for transformers are either not available or are not available in sufficient quantities from domestic producers and therefore must be imported</li> </ul>
ABB Enterprise Software, Inc.	<ul style="list-style-type: none"> <li>• Tariffs on imported transformer components will undermine the industry's ability to supply the U.S. market. Domestic producers are not able to manufacture all of the laminations and cores used in their transformers or secure those components from U.S. sources</li> </ul>
Cogent Power Inc.	<ul style="list-style-type: none"> <li>• AK Steel is also not capable today of manufacturing some of the best available and required materials in the world</li> <li>• Not only will there be restrictions on total capacity output from AK Steel to the US market, there will be restrictions on the best available grades</li> </ul>
Hyosung Heavy Industries Corporation	<ul style="list-style-type: none"> <li>• Currently, there is limited availability of domestically-produced GOES from the single U.S. supplier, AK Steel</li> <li>• Forcing entire U.S. transformer industry to rely on a single U.S. GOES supplier with limited capacity raises serious concerns. Indeed, U.S. transformer manufacturers continue to submit product exclusion requests for GOES under the existing Section 232 measures on steel imports, citing a persistent lack of domestic availability</li> </ul>
Eaton Corporation	<ul style="list-style-type: none"> <li>• The domestic manufacturer of GOES still does not meet the specifications needed to manufacture our specific transformers in the United States</li> </ul>

National Foreign Trade Council	<ul style="list-style-type: none"> <li>• Foreign-produced electrical steel is imported precisely because U.S. electrical steel manufacturing capacity is insufficient to meet domestic demand. The one GOES producer in the United States cannot meet all of the domestic demand and will not be able to do so for the foreseeable future</li> </ul>
Domestic Transformer Manufacturers	<ul style="list-style-type: none"> <li>• These are high-value materials that cannot be replicated by the domestic steel industry (Delta Star, Inc.; SPX Transformer Solutions, Inc.; Pennsylvania Transformer Technology; and Niagara Transformer Corp)</li> </ul>
The Core Coalition	<ul style="list-style-type: none"> <li>• AK Steel, the only current producer of GOES in North America, prices GOES well above all other global competitors—the current 25 percent tariffs still do not make AK price competitive</li> <li>• This gap in prices has persisted for years before tariff protection for all steel products under Section 232</li> <li>• The main reason for high AK prices is an aberrational cost structure, higher than global competition. This disparity stems from AK’s failure to modernize its production methods to keep pace with global competition</li> <li>• The US does not have the production capacity to support total production requirements for inputs for production of Power transformers</li> </ul>
Source: Public Comments Submitted to Federal Register	

[REDACTED]

[REDACTED].<sup>68</sup>

A number of transformer manufacturers indicated that the sole domestic source of GOES does not offer the full range of efficient GOES, with the result that the manufacturers must seek foreign suppliers. For example, transformer manufacturers indicated that they are unable to obtain permanent, heat resistant domain-refined grain oriented steel (PDR GOES) from the sole domestic manufacturer.<sup>69</sup> DOE energy efficiency standards for distribution transformers that came into effect in 2016 have reduced demand for lower-permeability, conventional grades of GOES, and increased the demand for high grades, such as PDR-GOES. PDR-GOES is capable of being annealed after core production while retaining its domain-refined properties, which is important for use in wound cores often used in distribution transformers.<sup>70</sup> Nippon Steel of Japan is recognized as the primary source of this product.

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<sup>68</sup> Joe Paladino Technical Advisor, DOE Office of Electricity, in written comments to BIS submitted on 9/21/202

<sup>69</sup> For example, in its public comments, Central Moloney, a domestic manufacturer of distribution transformers, expressed concern over the quality of AK Steel's GOES. They said that the company's manufacturing equipment and processes are antiquated, and it lacks the capability to produce electrical steel that it prefers to use to meet DOE efficiency standards for distribution transformers – namely Permanent Domain-Refined GOES (PDR). In addition, tariff exclusion requests from Sumitomo, ABB, Eaton/Cooper, and SPX cited lack of domestic capabilities.

<sup>70</sup> <https://Agmetalmminer.com/tag/grain-oriented-electrical-steel/>

[REDACTED]

[REDACTED]

[REDACTED] However, while there is some degree of interchangeability among different grades of GOES in transformer core construction, doing so could result in higher core losses/decreased efficiencies and/or require a larger size transformer. As a result, using non-permanent DR-GOES in lieu of PDR-GOES could affect the competitive position of the transformer manufacturer when bidding for contracts.<sup>71</sup>

This apparent deficiency in U.S. production capabilities for GOES with superior magnetic qualities helps explain continued imports of GOES (especially from Japan) despite the additional cost due imposition of tariffs. In fact, the Department has granted some requests for exclusion from the 25 percent tariffs on imported steel due to lack of domestic capability of the particular product grade. Additionally, some imports of GOES from South Korea and Brazil continue to be economical because the Section 232 remedy resulted in a quota, rather than tariffs for steel from those countries.

While just a rough estimate, the average unit value by country (based on value imports divided by unit imports) is broadly illustrative of the varying grades

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<sup>71</sup> See, e.g., SPX Exclusion Request.

of GOES from different suppliers. Other than the United Kingdom, which is not a major source of GOES imports, GOES imported from Japan has an average unit value significantly higher than from other sources. This suggests that Japan is the source of the highest grades GOES imported into the United States.

**Figure VII-16. GOES Customs Value Imports AUV by Top 10 Countries (\$/Kg, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	Average* 2015-2019
United Kingdom	\$2.64	\$2.64	\$2.88	\$2.28	\$2.68	\$2.83	\$2.41	\$2.59
Japan	\$2.66	\$2.61	\$2.58	\$2.42	\$2.12	\$2.05	\$2.10	\$2.41
Canada	\$2.48	\$2.64	\$2.62	\$2.26	\$2.22	\$0.34	\$1.50	\$2.29
Russia	\$2.52	\$2.31	\$2.75	\$2.04	\$2.19	\$2.04	\$1.60	\$2.24
South Korea	\$2.16	\$2.21	\$1.80	\$1.90	\$1.97	\$1.64	\$1.89	\$1.99
Poland	\$2.25	\$1.99	\$2.00	\$1.90	\$1.73	\$1.90	\$1.67	\$1.92
China	\$2.23	\$1.93	\$1.73	\$1.67	\$2.15	\$2.25	\$1.58	\$1.88
Czech Republic	\$2.17	\$1.82	\$1.66	\$1.71	\$1.62	\$0.67	\$1.77	\$1.79
Brazil	\$1.92	\$1.79	\$1.51	\$1.73	\$1.83	\$1.94	\$1.61	\$1.73
Thailand	-	-	-	\$0.93	\$0.91	\$0.72	-	\$0.92

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Weighted Average by Quantity. Excludes 2019 YTD (Jun) Data

### C. Laminations and Cores

Transformer lamination and core producers make up the primary customer base for GOES suppliers. There are very few companies in the United States that manufacture only transformer laminations and cores; some major transformer companies produce laminations and cores for in-house use in their transformers. Manufacture of these critical transformer components requires expensive,

specialized equipment which can only produce laminations within a specific size range. This limits the ability of independent companies to offer laminations in the varied sizes required across transformer product categories. Over the past few years, there has been a marked decline in domestic manufacturing of laminations and cores (by both transformer companies and independent producers), and a movement of production offshore (especially to Canada and Mexico). A corollary to the movement of lamination and core manufacture out of the United States is the loss of a potential domestic market for AK Steel's GOES.

Because electrical steel accounts for such a large percentage of the cost of transformer laminations and cores (averaging about 60 percent for the surveyed companies), the 25 percent import tariff raised material costs and decreased transformer manufacturers' ability to compete. The CEO of one of the remaining domestic producers of these items, Orchid Monroe LLC (Wisconsin), stated that imported laminations and cores often cost less than the price at which its company can procure domestic electrical steel, without any processing or manufacturing costs included.<sup>72</sup>

Global transformer companies with multiple facilities have adapted to changes in raw material prices by shifting their lamination and/or core production

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<sup>72</sup> Public Comments from Gordon Bibby, Orchid Monroe LLC.

or sourcing offshore in order to continue to utilize foreign-origin GOES without the price premium for domestically produced GOES. Smaller companies that specialize in these products either moved their operations offshore or ceased production.

The trend toward moving lamination production offshore occurred prior to the Section 232 steel tariffs, but the situation worsened after their imposition. The expansion of core-making capacity in Canada and Mexico began in the mid-2010s, at which time the United States had initiated antidumping investigations on GOES from many foreign sources. In the antidumping investigations conducted by the Department, many foreign suppliers of GOES were found to be selling at less than fair value, or in the case of China, with the benefit of government subsidies. However, the International Trade Commission did not find material injury to U.S. industry was not found, no duties were imposed.<sup>73</sup> Despite this, partly to avoid potential duties, transformer and transformer component manufacturers began to shift production offshore where they are able to use foreign origin GOES without the risk of increasing costs due to the imposition of duties.

Another factor in the movement of core and lamination toward offshore outsourcing was the new DOE energy efficiency standards for distribution

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<sup>73</sup> See Grain-Oriented Electrical Steel from Germany, Japan, and Poland, Inv. Nos. 731-TA-1233, 1234, and 1236, USITC Pub. 4491 (Sep. 2014), at 2.

transformers that were implemented in 2016. To meet these standards, transformer companies had to redesign their products, including the choice of electrical steel and core construction. [REDACTED]

[REDACTED]

[REDACTED].<sup>74</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>75</sup>

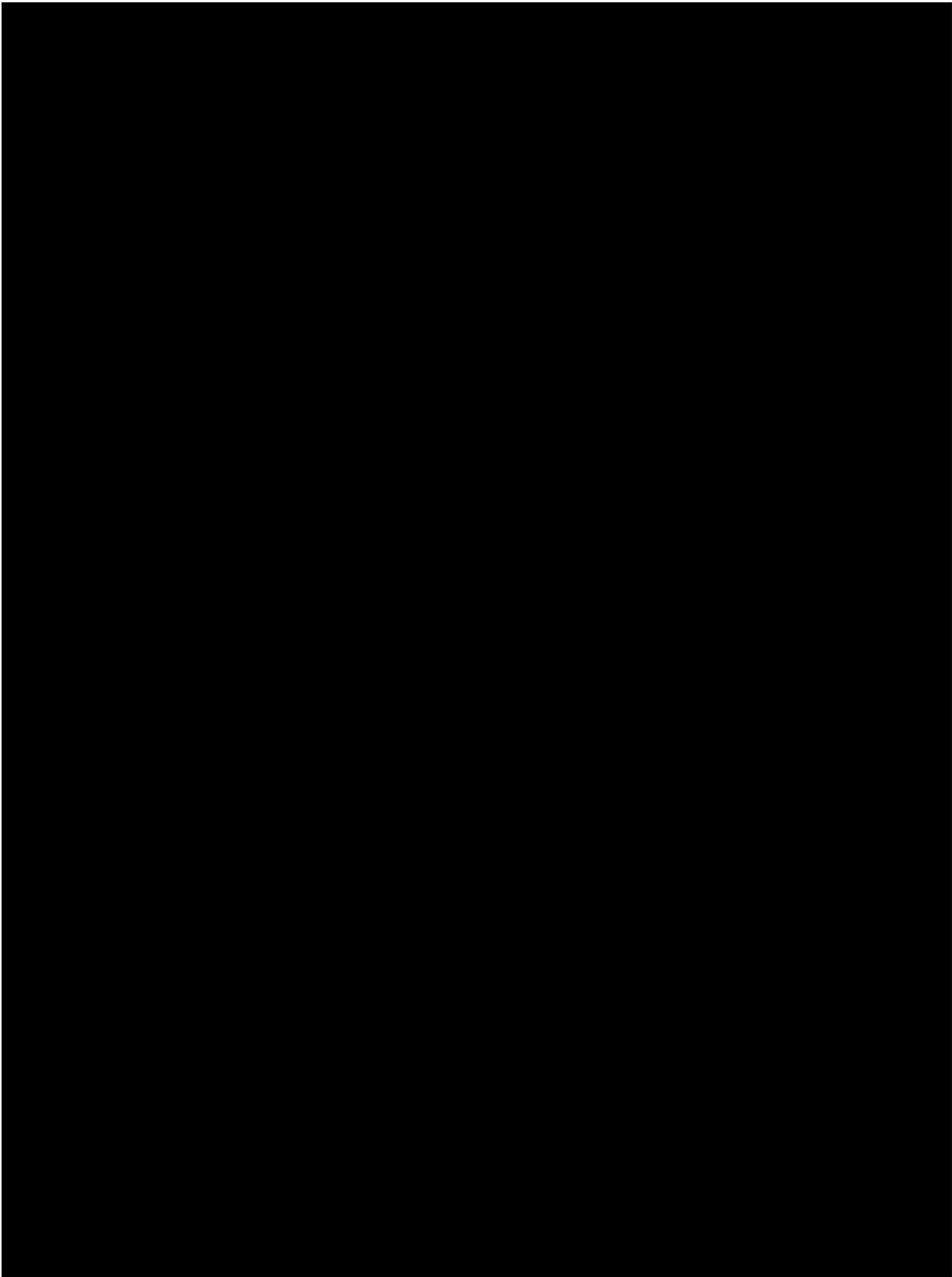
As a result, there are very few remaining domestic producers of laminations and cores. The Department's survey included responses from 10 small businesses in the United States that reported production of laminations, stacked core, and/or wound cores using GOES. The table below presents the state of transformer lamination and core manufacturing in the United States by these non-captive producers.

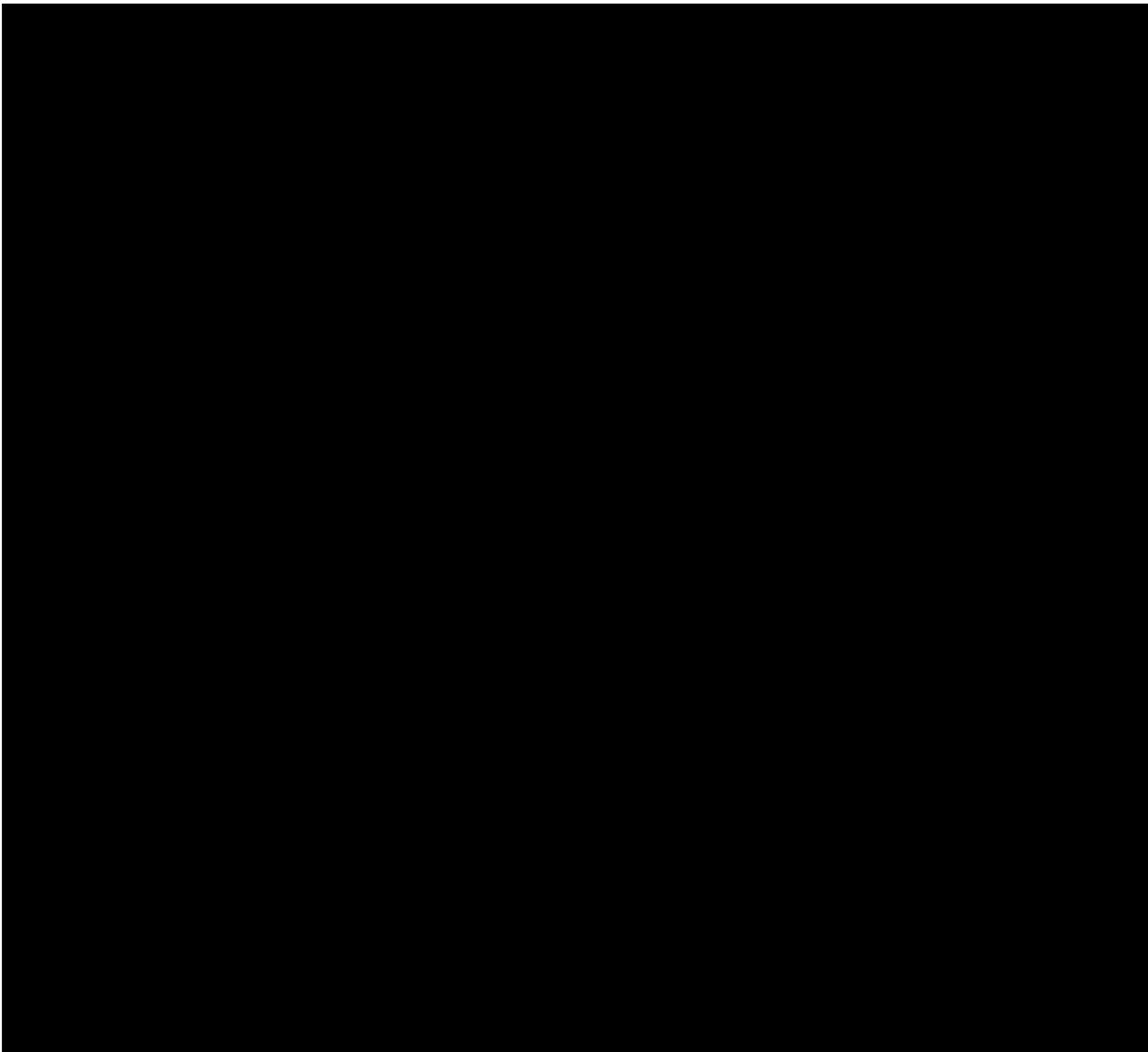
[REDACTED]

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<sup>74</sup> [REDACTED]

<sup>75</sup> [REDACTED]





[Redacted]

[Redacted] Moreover, analysis of these companies' financial reports reveals additional weaknesses. Respondents were assigned a comprehensive financial risk score by the Department, which incorporated yearly scores and trends in financial health. Based on this scorecard,

respondents were categorized as low/neutral risk, moderate/elevated risk, or high/severe risk.<sup>76</sup>



All of the companies noted in their survey responses that they face serious negative impacts from foreign competition. Three of the 10 have shut down their domestic operations in recent years [REDACTED]

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<sup>76</sup> For how BIS assessed financial health, see note [45], *infra*.





[REDACTED]

The new company (80 percent owned by Hitachi and 20 percent by ABB) is called Hitachi ABB Power Grids.<sup>77</sup> Although Hitachi’s long-term plans for the facility are unknown, the sale may impact domestic production of laminations and cores

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<sup>77</sup> [http://www.hitachi.com/New/cnews/month/2020/07/f\\_200701.pdf](http://www.hitachi.com/New/cnews/month/2020/07/f_200701.pdf).

## 1. Lamination Suppliers

The lack of domestic production capability is validated by the lamination and core supplier data provided by survey recipients. Twenty-two survey participants reported sourcing *stacked laminations for use in transformer cores*. They sourced laminations from suppliers in a variety of countries, including the United States, South Korea, Mexico, Canada, Turkey, Italy, and India.

In 2019, laminations with a total value of \$40.2 million were sourced by surveyed companies.<sup>78</sup> Of this \$40.2 million, less than 12 percent came from domestic suppliers, while **88 percent were from foreign sources.** [REDACTED]

[REDACTED]

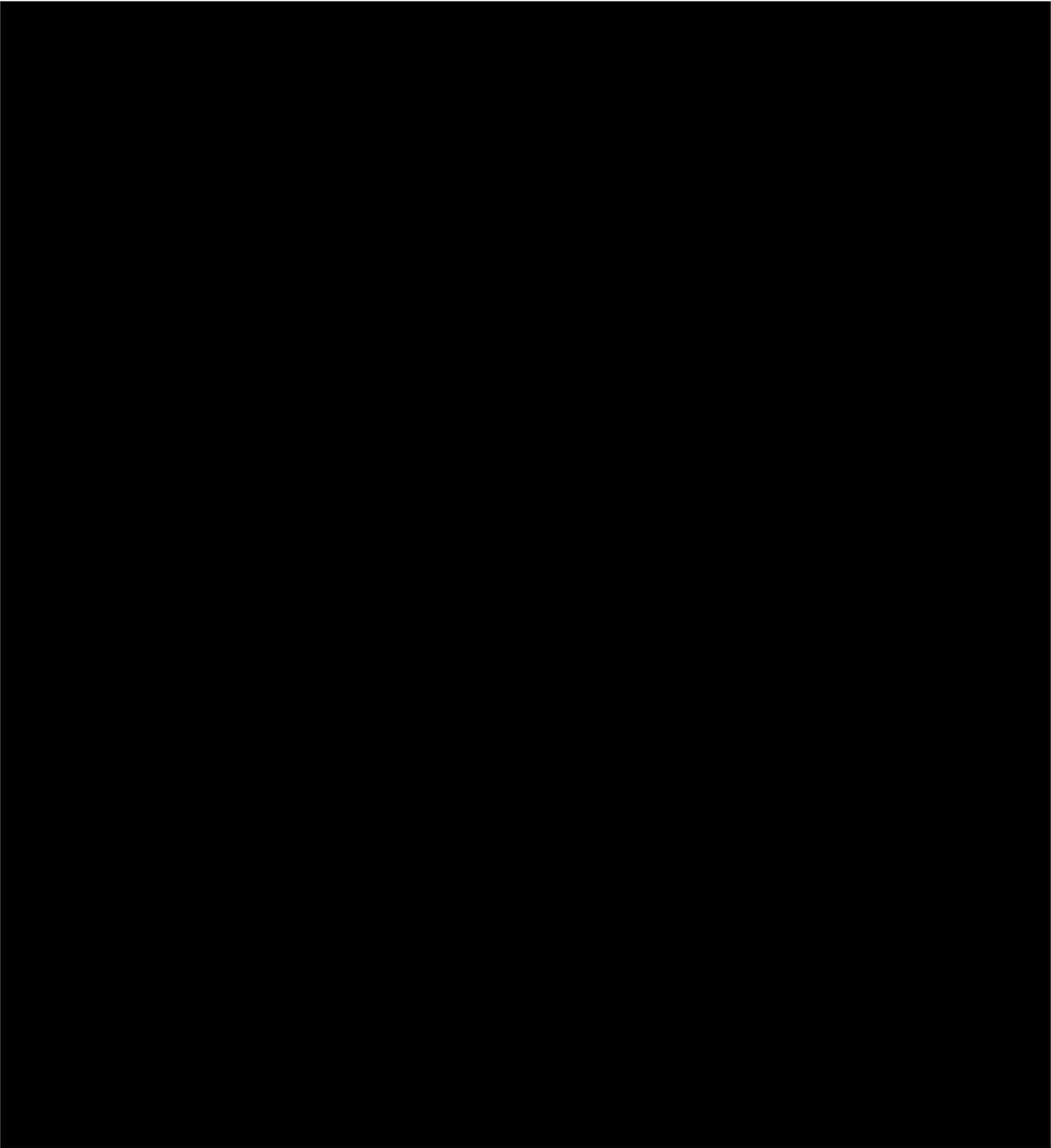
[REDACTED]

[REDACTED]

[REDACTED]

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<sup>78</sup> This figure exceeds the value of imports of laminations (HTS 8504.90.9634) according U.S. Census trade statistics, which was \$33 million in 2019; purchases in an annual period and export shipments in an annual period do not necessarily match.



[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] <sup>9</sup> [REDACTED] In

addition to these two companies, survey respondents reported several other suppliers from Mexico along with minor suppliers located in South Korea, Italy, Turkey, India, and China.

It is clear from respondents' replies to the supplier question that there is an ambiguity between what is considered GOES and what is considered a lamination; data from the survey show that 60 percent of the value of laminations is accounted for by the cost of GOES. Among the suppliers listed, as noted earlier, there is overlap between the two categories. [REDACTED]

[REDACTED]

[REDACTED]

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<sup>79</sup> <https://magneticmag.com/jfe-gains-foothold-in-na-with-acquisition-of-cogent-power-from-tata-steel/>

## 2. Stacked Core Suppliers

Outside of captive production by several transformer manufacturers, 16 transformer companies participating in the Department's survey procured a total of \$114.7 million worth of *stacked cores* in 2019. Their suppliers were located in Canada, Mexico, Italy, and China, as well as the United States. Of the \$114.7 million total, [REDACTED]

[REDACTED]. [REDACTED]

[REDACTED]

[REDACTED]

The other leading core suppliers were [REDACTED]

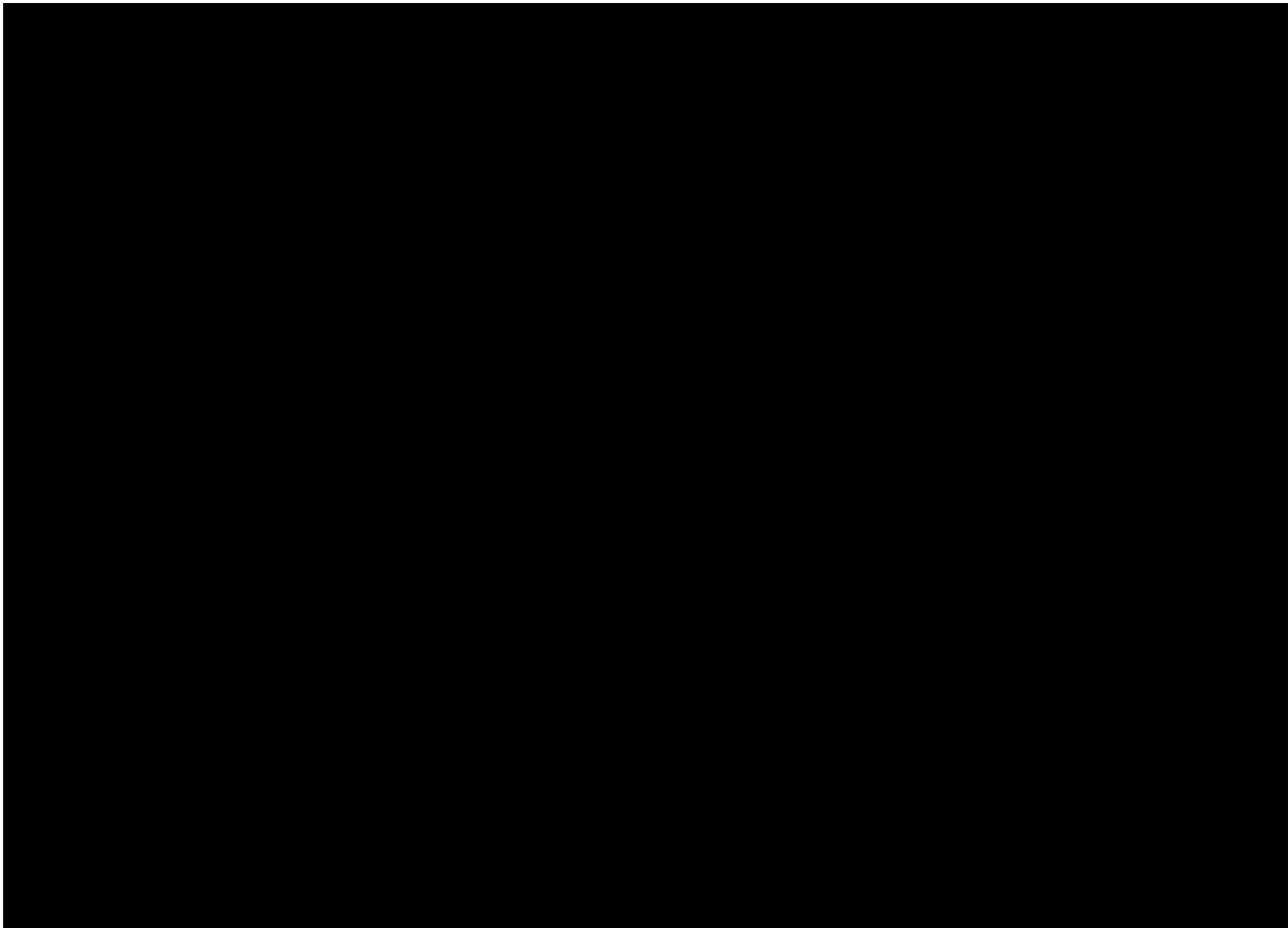
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] As with the

**lamination sector, this would mean that foreign fabricated cores could account for over 80 percent of the future market.**



As noted above, Cogent Power was recently purchased by JFE Shoji. This Japanese steel trading company also acquired an unspecified interest in another leading source of stacked cores, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] several Chinese companies were minor suppliers of stacked cores.

### 3. Wound Core Suppliers

Twenty-nine respondents to the Department’s survey indicated that they procured *wound cores* for use in manufacturing transformers during the 2015-2019 period. The total value of the wound cores that these companies purchased increased markedly in the last three years of the time period, from \$132 million in 2017 to \$410 million in 2019. The increase may be because wound cores are often used in distribution transformers that are subject to the DOE energy efficiency standards. PDR-GOES, which is not produced in the United States, is desirable for use in wound cores because it is capable of withstanding the annealing process.

By far the leading source of wound cores for the survey sample was [REDACTED]

[REDACTED] mentioned that make up the other 25 percent of consumption are domestic companies that have shut down their U.S. facilities since 2019.

#### **4. U. S. Imports of Laminations and Cores**

U.S. import statistics affirm the Department's survey data with regard to the dominant role that foreign sources play in the United States domestic transformer market. **The dramatic increase in imports of these products, particularly from Canada has resulted in the displacement of U.S. production of transformer components.**

**Figure VII-21. Lamination Import Customs Value (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

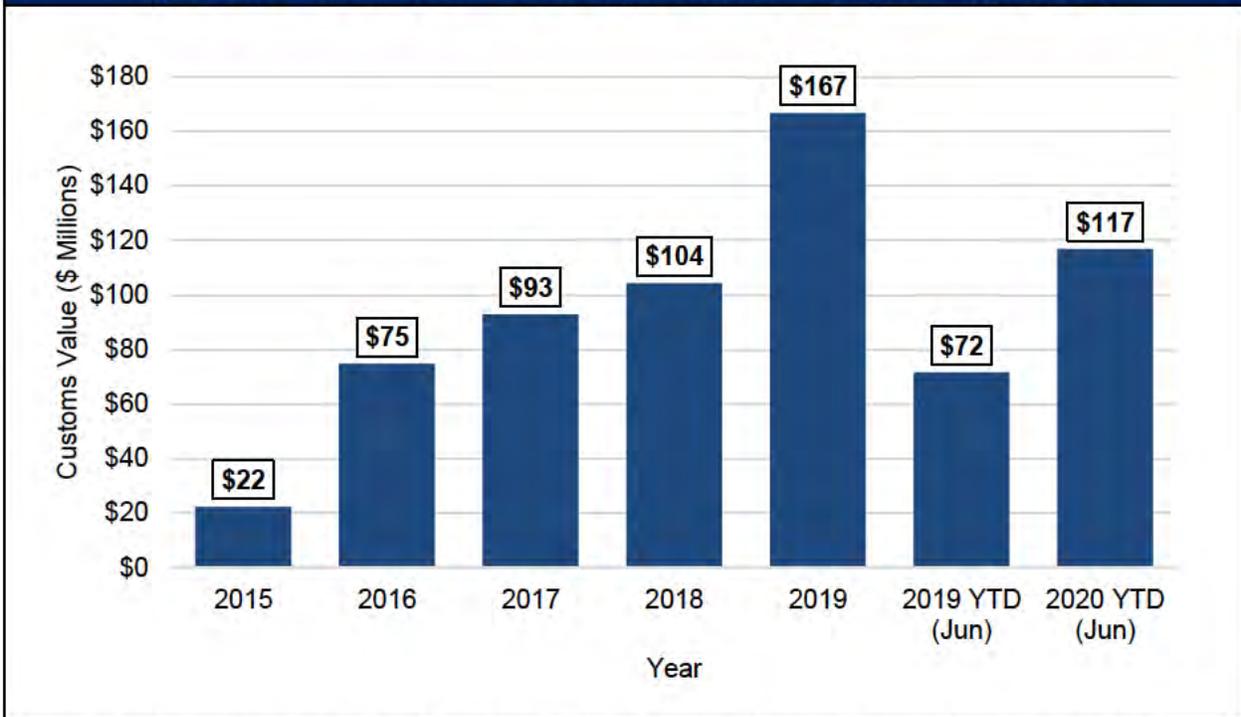
**Figure VII-21. Lamination Import Customs Value by Top 10 Countries  
(\$ Millions, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
Canada	\$0.16	\$8.04	\$8.92	\$15.36	\$22.61	\$11.32	\$10.29	\$65.39
Mexico	\$13.87	\$15.21	\$8.10	\$5.61	\$9.55	\$4.69	\$5.02	\$57.36
Italy	\$0.31	\$0.56	\$0.08	-	\$0.84	\$0.20	\$0.32	\$2.11
South Korea	\$0.73	\$0.70	\$0.29	\$0.17	\$0.13	\$0.03	\$0.02	\$2.05
Germany	\$0.00	\$0.02	\$0.29	\$0.05	\$0.11	\$0.06	\$0.05	\$0.53
China	\$0.03	\$0.03	\$0.11	\$0.14	\$0.04	\$0.01	\$0.04	\$0.39
Japan	-	\$0.01	\$0.16	-	-	-	-	\$0.17
Czech Republic	-	-	\$0.08	-	-	-	-	\$0.08
Taiwan	\$0.01	\$0.02	\$0.05	-	-	-	-	\$0.07
Philippines	-	-	\$0.01	-	-	-	\$0.04	\$0.04

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

**Figure VII-22. Stacked & Wound Core Import Customs Value (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VII-23. Stacked & Wound Core Import Customs Value by Top 10 Countries (\$ Millions, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
Canada	\$1.20	\$54.41	\$69.71	\$70.84	\$86.65	\$42.49	\$58.30	\$341.1
Mexico	\$17.79	\$17.34	\$17.00	\$28.48	\$74.60	\$26.67	\$55.76	\$211.0
China	\$1.65	\$1.55	\$1.85	\$0.78	\$0.46	\$0.27	\$0.32	\$6.61
Bulgaria	\$0.00	\$0.01	\$0.11	\$1.45	\$1.85	\$0.89	\$0.76	\$4.18
Japan	\$0.43	\$0.44	\$0.36	\$0.53	\$1.05	\$0.46	\$0.54	\$3.36
South Korea	\$0.00	\$0.01	\$0.89	\$0.71	\$0.00	\$0.00	\$0.68	\$2.29
India	\$0.16	\$0.08	\$0.52	\$0.42	\$0.63	\$0.21	\$0.05	\$1.86
Turkey	\$0.23	\$0.19	\$0.45	\$0.37	\$0.40	\$0.18	\$0.19	\$1.83
Italy	\$0.02	\$0.01	\$0.50	\$0.17	\$0.27	\$0.00	\$0.04	\$1.01
Thailand	\$0.11	\$0.26	\$0.17	\$0.14	\$0.07	\$0.05	\$0.02	\$0.76

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

U.S. imports of transformer laminations rose from \$18 million in 2017 to \$33 million in 2019, with most of the increase due to imports from Canada. For stacked and wound transformer cores, imports rose from \$22 million in 2015 to \$167 million in 2019 – a 650 percent increase – with Canada and Mexico accounting for more than 95 percent of the total imported. Data for the first six months of 2020 indicate that the trend toward increased imports is continuing. As domestic demand for laminations and cores has not increased, this surge in imports represents displaced domestic production.

The United States-Mexico-Canada Agreement (USMCA) establishes a country of origin (COO) rule for transformers and transformer components, including laminations and cores. These rules of origin, which will come into force in five years (2025), will consider transformer laminations and cores as derived from the country in which the electrical steel from which they are made was produced, based on the high percentage of these products' value that is accounted for by the electrical steel. As Canada and Mexico have no electrical steel production, those cores will not be considered products of either Mexico or Canada when full implementation of USMCA is achieved.<sup>80</sup> However, even when this new requirement for preferential treatment comes into effect, it will likely not

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<sup>80</sup> <https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/04-Rules-of-Origin.pdf>.

discourage the production of these items in Canada or Mexico (using foreign GOES) for export to the United States, because that the general, most-favored-nation U.S. tariff rate on imports of these items is zero.

### **5. Consumption of GOES contained in Transformer Cores**

Due to the movement offshore of lamination and core production, U.S. imports of these products must also be considered as part of U.S. GOES consumption that is not captured in the trade statistics for GOES. In 2019, the United States imported an estimated 68,000 metric tons of GOES in the form of transformer laminations and cores.<sup>81</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Based on these figures, the import penetration for GOES was approximately 44 percent in 2019. (Note: this number could include double counting from U.S. exports of GOES that is then imported into the United States in the form of cores, but this is likely minimal

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<sup>81</sup> Trade data for cores are not collected by weight, but rather by units. Estimate of the weight of lamination and core imports is based on the estimates provided by the Core Coalition in its public comments

because Canada was not a major destination for U.S. GOES exports or a major source of Canadian imports).

A public comment by the Core Coalition estimates that total U.S. core imports, in kilograms, will be much higher in 2020 than in 2019 (due primarily to an anticipated increase in imports of wound cores; trade data from the first half of 2020 validates this). Based on the Coalition's estimate of 2020 core imports of 96,000 metric tons, and assuming steady U.S. GOES production and export and import levels, import penetration is estimated to reach over 50 percent this year.

#### **6. Dominance of Suppliers for Laminations and Cores**

As discussed, Canada and Mexico are by far the leading suppliers of components for U.S. transformer manufacturers. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Until 2019, Cogent was owned by Tata of India, which also owned Orb Steel, which may explain why Orb

was a major supplier to Cogent. Now that Cogent is owned by JFE Shoji, it is likely that JFE Steel will emerge as one of its major suppliers.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

## **7. Consumption of GOES Imported in Finished Transformers**

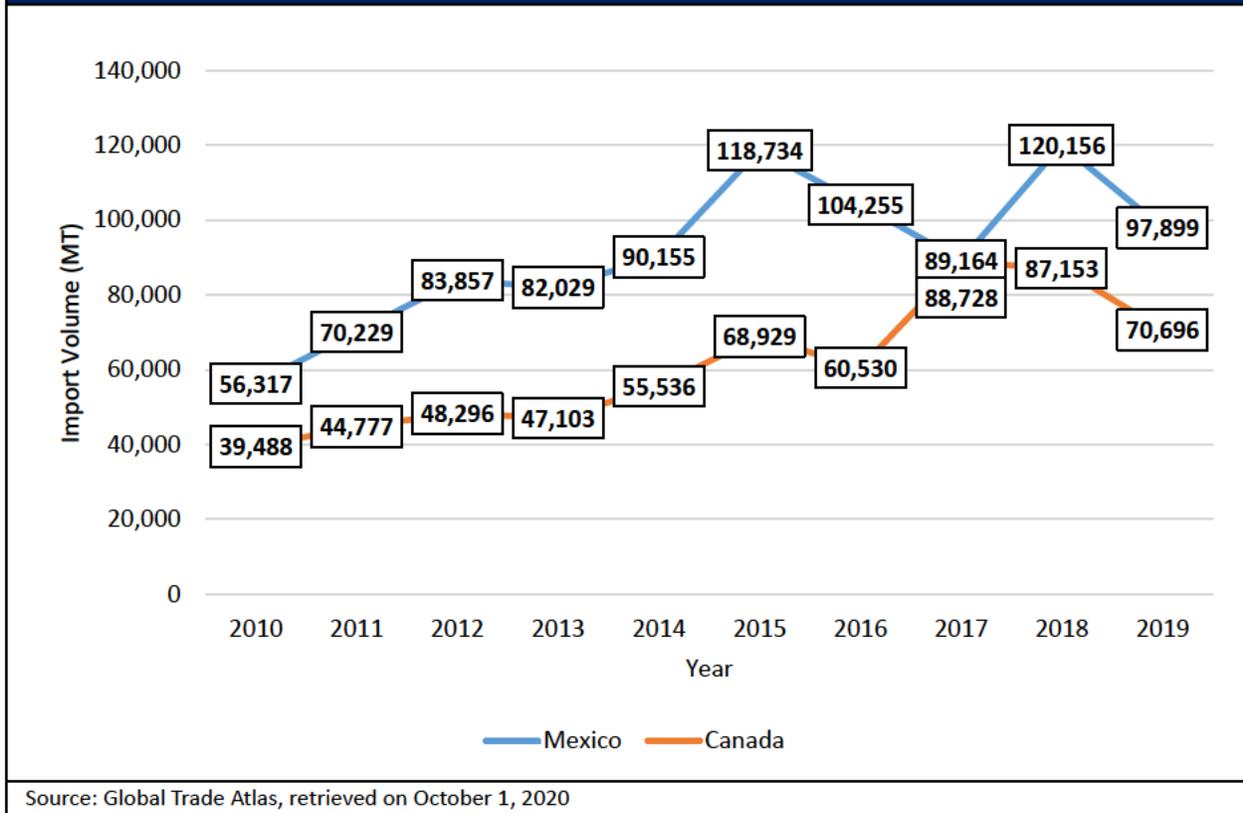
Despite the grim results that the inclusion of the GOES-derivative products discussed above presents, the complete picture with regard to the true dependency of the U.S. electricity grid on foreign sources for GOES, laminations, and cores remains incomplete until the impact of finished transformers is included. Given that transformers have a high percentage value of GOES, domestic GOES production (and transformer production) is adversely impacted by imports of complete transformers. The vast majority of imported transformers contain cores composed of foreign-origin GOES. In 2019, the United States imported a total \$2.56 billion worth of transformers (of all power handling capacities), representing about 35 percent of the market (per Global Insights/D&B). For LPT (which by

nature of their size contain the most GOES by weight), imports accounted for over 80 percent of the domestic market.

## **8. Source of GOES for Mexico and Canada**

Corresponding to the migration of core and lamination production to Canada and Mexico from the United States was an increase in imports by these countries of GOES. As neither Canada nor Mexico have domestic GOES production capability, both needed to increase their imports of GOES in order to increase core and lamination production. The table below shows total imports of GOES by Canada and Mexico over the past ten years. Both are substantial consumers of GOES. The table shows that imports of GOES has been rising substantially over the ten year period, particularly between 2014 and 2016. For both countries, imports of GOES declined significantly in 2019 from 2018 levels, but are still higher than earlier in the decade.

**Figure VII-24. Canada and Mexico GOES Imports by Weight, 2010-2019**  
Includes HTS Codes 7225.11 and 7226.11



The leading sources of GOES imports in Canada in 2019 were Japan and South Korea, but China and Russia were also sources. Note that the United Kingdom was also a major supplier to Canada throughout the period. There was one producer of GOES in the United Kingdom, Orb Steel (owned by Tata of India), which, as previously discussed, shut down production in 2019. One of Canada’s leading transformer lamination and core manufacturers, Cogent Power, was, at the time, also owned by Tata and this might explain why the United Kingdom was such a major supplier. As discussed above, JFE Shoji recently acquired Cogent

Power. In the case of Mexico, Japan was the leading supplier in 2019, with China and Russia ranked second and third. Imports of GOES from the United States declined to virtually zero in Mexico in 2019. In the case of Canada, 2019 imports of GOES from the United States accounted for less than three percent of the total (2,609 metric tons of 97,889 total metric tons), compared to about a third of imports as recently as 2015 (23,210 metric tons out of 68,929 total metric tons).

**Figure VII-25. Mexican GOES Import Quantities by Top 10 Countries (MT, 2010-2019)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Japan</b>	35,538	39,489	54,630	61,440	56,810	67,102	50,827	43,653	45,368	54,151
<b>China</b>	245	335	1,343	1,634	4,700	10,670	19,640	8,142	25,660	23,625
<b>Russia</b>	2,536	4,806	6,905	7,225	7,550	11,885	11,688	9,848	15,035	8,227
<b>Korea South</b>	2,807	6,540	8,000	2,544	5,150	6,858	4,107	4,714	4,101	3,822
<b>Poland</b>	84	1,663	701	278	3,119	6,567	5,099	10,438	13,781	6,325
<b>United States</b>	6,248	9,483	5,738	5,380	3,695	4,957	4,317	1,081	1,529	289
<b>Czech Republic</b>	1,028	1,345	1,531	398	1,540	1,685	1,789	3,979	2,111	---
<b>Germany</b>	1,110	897	310	199	813	1,818	877	904	2,047	---
<b>France</b>	780	1,232	923	348	382	---	618	1,027	54	---
<b>Brazil</b>	61	---	81	20	1,331	298	295	207	1,190	106

Source: Global Trade Atlas, U.S. Department of Commerce, Bureau of Industry and Security

Moreover, transformer components produced in Mexico and Canada were largely destined for the U.S. market. Virtually all of Mexico’s exports of transformer components were to the United States (>99 percent), as were over 90 percent of Canada’s exports of these items.<sup>82</sup> Mexico, also a significant

<sup>82</sup> Global Trade Atlas.

manufacturing center for transformers, had domestic GOES requirements. However, here again, the United States is the primary destination for Mexico’s transformer production so the GOES contained in them is also part of U.S. GOES consumption. Based on the data and statistics on Mexican and Canadian imports of GOES, some transformers in the United States likely contain GOES originating from China and Russia.

**Figure VII-26. 2019 Exports of Transformer Parts Under HTS Code 8504.90 from Mexico and Canada to the U.S.**

Country	Percent of Exports to the U.S./ to the World	Exports to the U.S. (\$ millions)	Exports to the World (\$ millions)
Mexico	99.3%	\$281.4	\$283.5
Canada	91.4%	\$168.0	\$183.9

Source: Global Trade Atlas, retrieved on September 12, 2020

## 9. Amorphous Metal

While not technically subject to this investigation, amorphous metal (also known as metallic glass or metglas) competes with GOES as a material for transformer cores in certain power handling categories. Demand for amorphous metal cores increased as a result of the 2016 distribution transformer efficiency standards. As is the case with GOES, there is only one domestic source for amorphous metal ribbon – Metglas, Inc., based in Conway, South Carolina, which is a subsidiary of Hitachi Metals of Japan. In 1999, AlliedSignal bought

Honeywell and took on the Honeywell name. In 2003, Hitachi Metals of Japan bought Metglas from Honeywell.

Just as AK Steel (then Armco Steel) invented GOES, Metglas pioneered amorphous metal in the 1970s (when the company was known as AlliedSignal). The first commercial transformer using the product in its core was installed in the United States in 1982; and commercial production of transformer core alloy began in 1989.<sup>83</sup>

While more expensive than GOES on a per kilogram basis, and more labor intensive to form into cores, the material has the potential to reduce costs in the long run for utilities over the life of the transformer due to lower core losses. The production technology has been widely adopted in developing countries, including China and India. As producing transformers cores using metglas is more labor intensive, it is more economical in countries with low labor costs. There are about 600,000 amorphous metal transformers installed in the United States, compared to over 1 million in China and 1.3 million in India.<sup>84</sup>

Metglas's patent on the production technology has expired; Metglas' competitive strength is its proprietary production process. The company has accused former employees of divulging confidential information to Chinese

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<sup>83</sup> <https://metglas.com>

<sup>84</sup> Ibid.

competitors and in 2017 filed a case under Section 337 of the Tariff Act of 1930 (investigations conducted by the International Trade Commission involving patent infringement or intellectual property theft in imported goods) against five Chinese companies. The case was suspended without prejudice. Metglas has lost 50 percent of its employees due its inability to compete with imports from China that have flooded the world market. Metglas alleges that the same avoidance of tariffs that occurred with GOES is happening on amorphous metal; in other words, that imported metal goes to Canada and Mexico, where it is made into cores that are shipped to the United States.

Despite this trend in imported amorphous metal cores (the trade statistics for which are combined with GOES cores), in June 2020, Metglas announced the commercial launch of its own amorphous metal transformer core business. The company now has in-house capability to produce distribution transformer cores using its amorphous alloy.

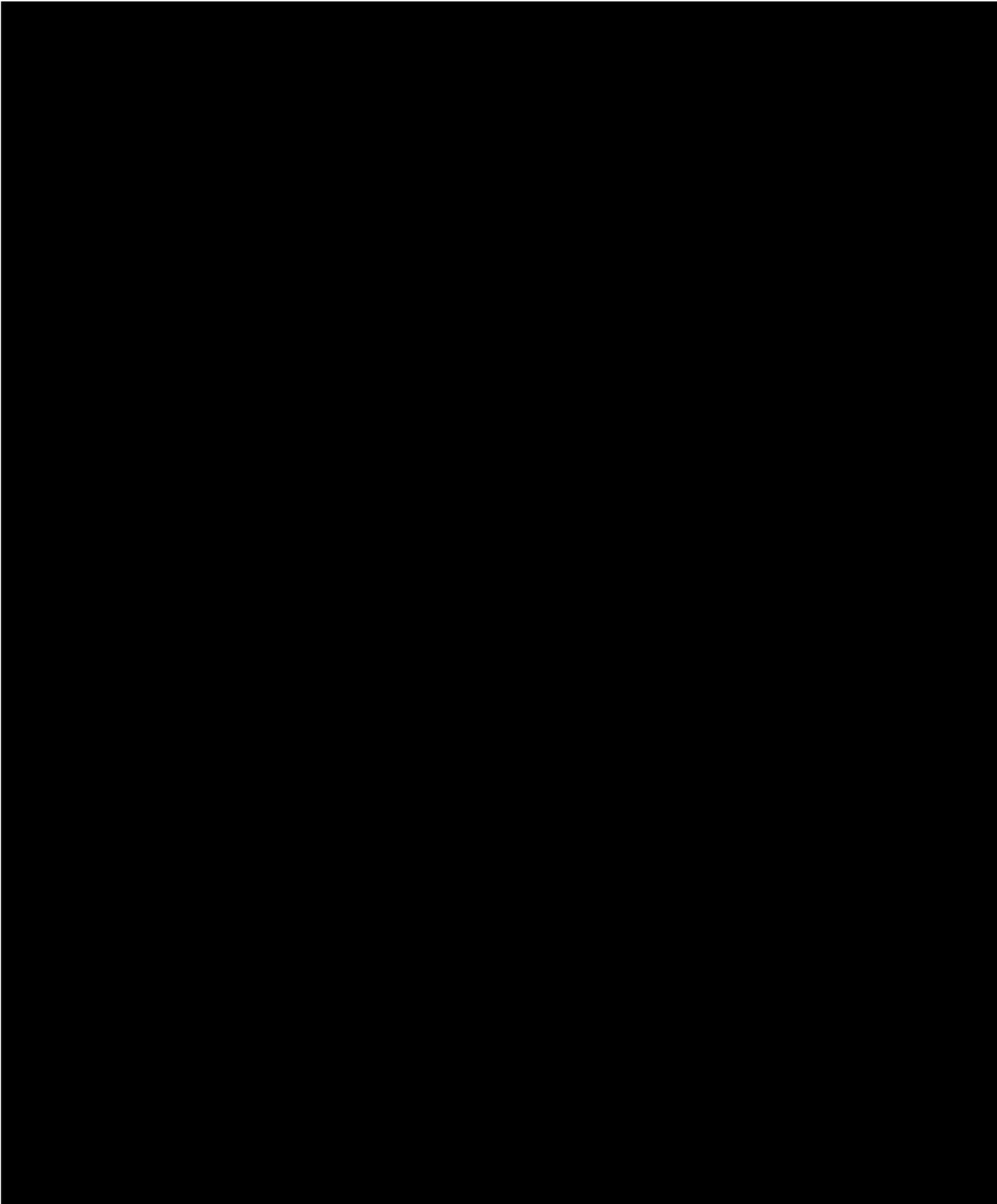
The use of amorphous metals in future innovations of the electric grid is an area of research interest to the Department of Energy/National Labs. The National Labs have partnered with Metglas to supply the metal ribbon to support this research; loss of domestic capability to imports would leave the U.S. Government dependent on foreign suppliers for this promising research.

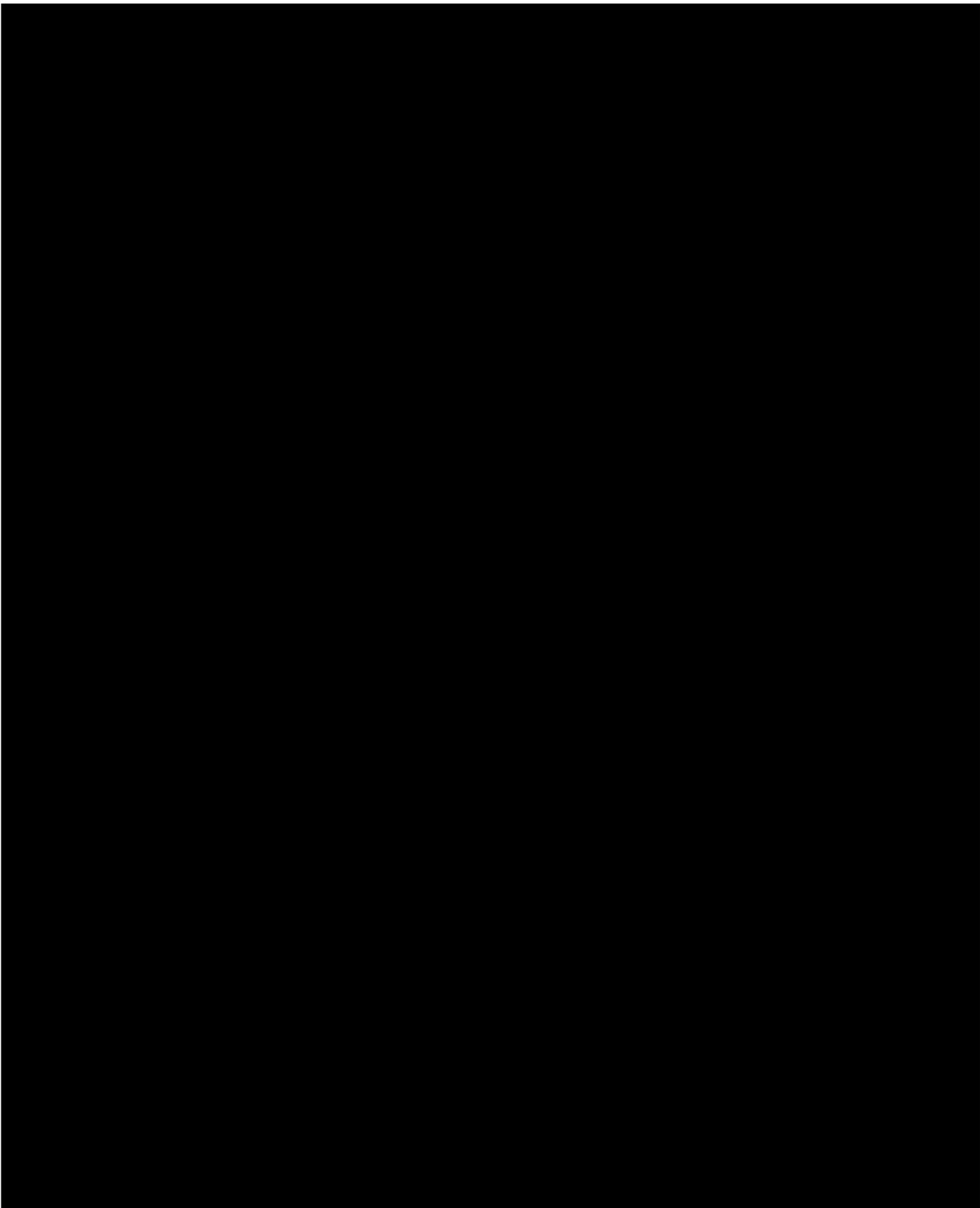
## **VIII. U.S. Production Capabilities, Industry Health and Competitiveness, and the Impact of Imports on National Security for Transformers**

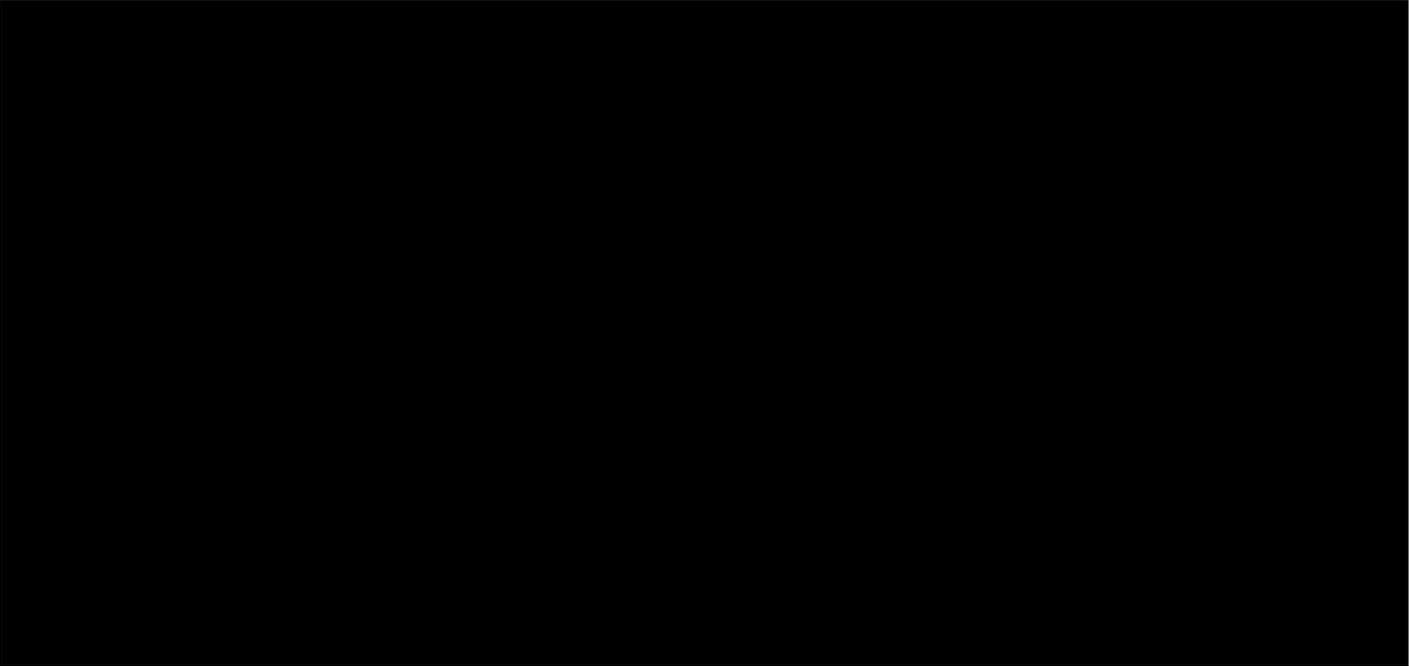
### **A. Introduction/Summary**

As discussed in Chapter V, LPTs are a critical component of the BPS. Distribution transformers and smaller power transformers are used extensively and play an essential role in the electrical grid of the United States in providing power to commercial and residential customers. In addition to their essential role in the electrical grid, distribution transformers, smaller power transformers, and, in particular, dry-type transformers that can be used indoors play a vital role in other critical infrastructure sectors such as manufacturing, hospitals, and in weapons systems. However, they are not considered to be part of the BPS, the security of which is subject to the Presidential Bulk Power Executive Order.

The Department's survey included 36 companies with domestic manufacturing of transformers of various types and power handling capacities, from 1 kVA to over 100,000 kVA. Table VIII-1 below lists these survey participants, as well as the type(s) of transformers that they manufacture. The survey responses indicate that companies tend to produce either liquid-dielectric transformer or dry-type transformers, although some major producers manufacture both types.







Aggregated data on U.S. production of transformers in various power handling capacities by survey participants are presented in Figure VIII-1. Note that most companies produce transformers in multiple categories. In all, the transformer companies participating in the Department's survey employed 15,238 production workers in the United States, and had total transformer sales of \$4.42 billion in 2019.

Over the five-year period covered by the survey, domestic production in each transformer product category was been relatively steady. Survey data indicated that the smaller the transformer in terms of power handling capacity, the greater the volume of production, with over one million liquid dielectric transformers with under 650 kVA capacity produced in 2019, compared to just 137 of the largest power transformers (>100,000 kVA).

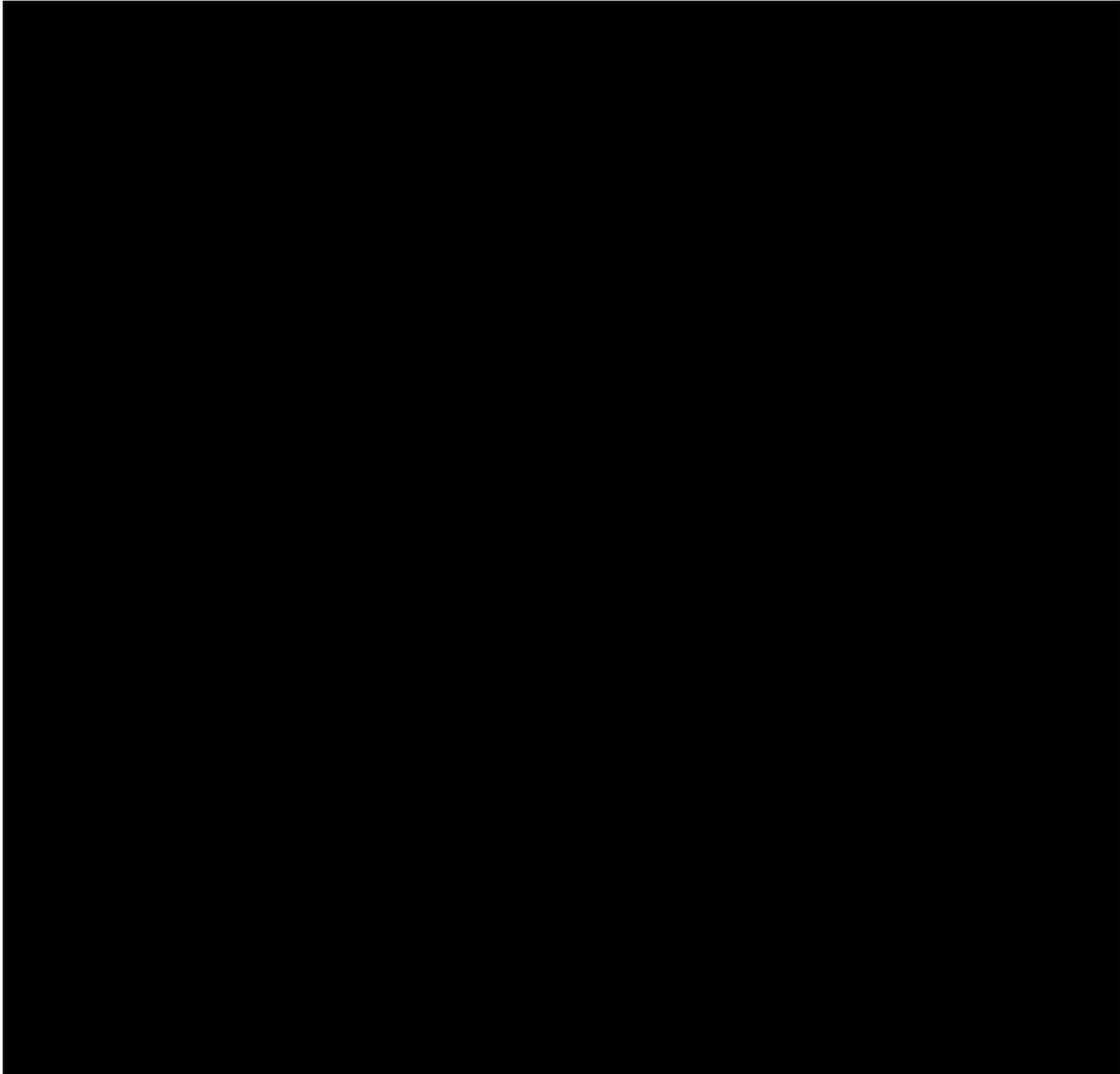


Figure VIII-3 (below) illustrates the import penetration of a range of transformers of various power handling capacities, using the calculation (apparent consumption = domestic production + imports – exports). These import penetration figures are based on unit production of transformers as reported by respondents to the Department’s survey, as well as export and import statistics from the U.S. Census Bureau. Note that actual domestic production is likely higher than listed because the Department’s survey did not capture all producers (while the major players in each sector participated in the survey, it is possible that smaller manufacturers did not). This implies that the import penetration levels in the table are overstated, further verifying the conclusion that, with the exception of the largest transformers, import penetration in liquid dielectric transformer categories remains relatively low and domestic production is robust.

In comparison, dry-type transformers have higher levels of imports. However, particularly for the small dry transformer category (under <16 kVA), the Department’s survey may represent an incomplete sample of the industry. Millions of these small transformers are produced (and imported) on an annual basis. Due to the lack of sufficient data on U.S. production of dry transformers, a reasonable estimate of import penetration is not possible.

Figure VIII-3. Transformer Production, Imports, and Exports by Handling Capacity				
Category (HTS code)	U.S. Production (units)	U.S. Imports	U.S. Exports	Import Penetration
Liquid <650 kVA (8504.21)	1,035,055	210,999	33,871	17%
Liquid 650-10,000 kVA (8504.22)	23,298	8,240	3,029	29%
Liquid 10,000-100,000 kVA (8504.23.0040)	1,640	594	99	28%
Liquid >100,000 kVA (8504.23.0080)	137	617	5	82%
Source: BIS Survey (Production); USITC Dataweb (Exports and Imports)				

The remainder of this section presents industry data and evaluates the status of the domestic industry, as well as the impact of imports, by grouping the transformer industry in general categories: distribution transformers and small power transformers (liquid dielectric transformers with a power handling capacity up to 10,000 kVA); small and medium power transformers (with power handling capacity of 10,000-100,000 kVA); LPT (100,000 kVA and up); dry-type and other transformers (1 kVA-500 kVA); and voltage regulators.

**B. Distribution and Small Power Transformers (up to 10,000 kVA)**

There were 19 survey respondents reporting domestic production of small power transformers (up to 10,000 kVA) during the 2015-2019 period. Companies

in this sector employed more than 10,000 production workers and sold more than a million transformer units, with a total value of \$2.5 billion, in 2019.<sup>85</sup>

[REDACTED]

The data received via the Department’s survey is largely consistent with DOE’s 2009 market study, which identified that, from a manufacturing point of view, the six largest companies operating in the liquid-immersed distribution transformer market at that time were (in alphabetical order): [REDACTED]

[REDACTED]

Together, these six companies represented more than 80 percent of the sales revenue of liquid-immersed distribution transformers in the United States (up to

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<sup>85</sup> Note that there is overlap with employment in other transformer categories as some survey recipients participate in multiple sectors.

2,500 kVA) in 2009. [REDACTED]

[REDACTED]

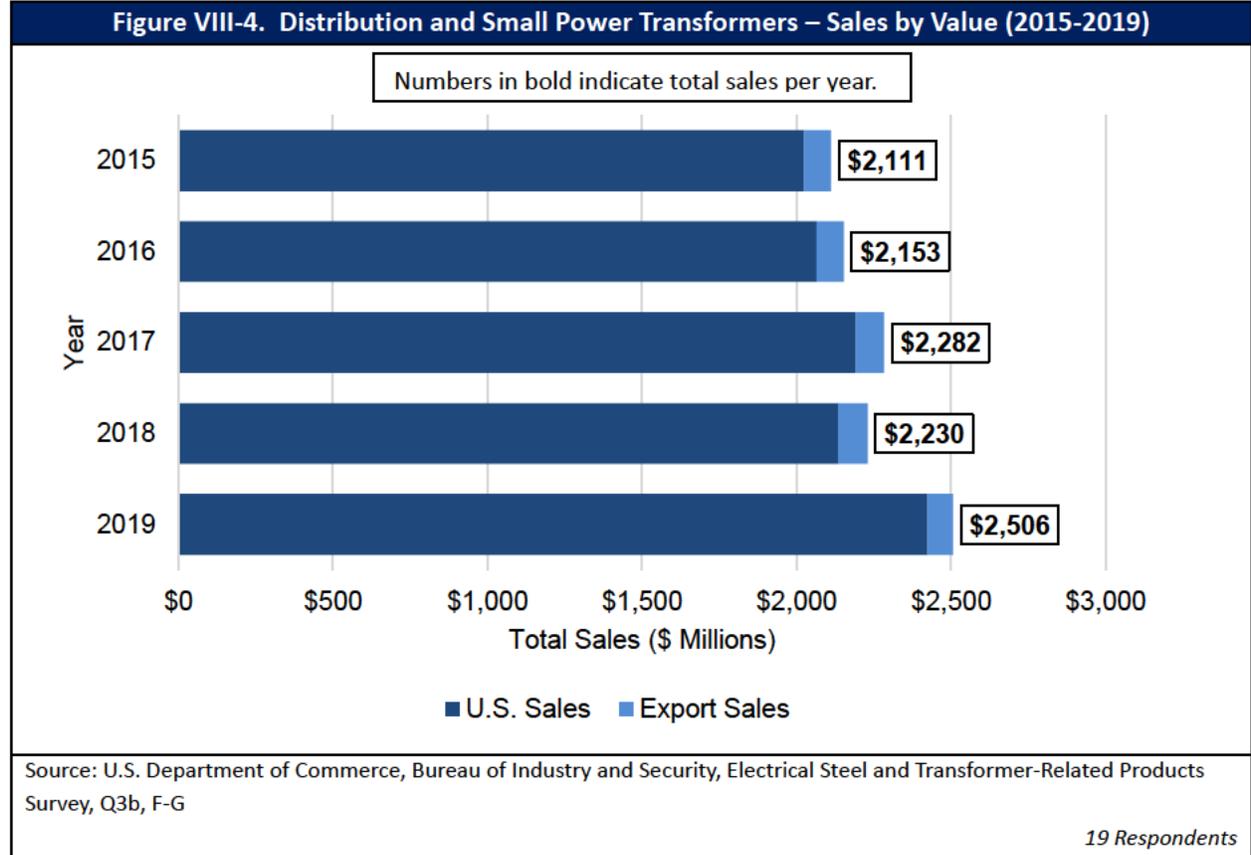
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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



[REDACTED]

[REDACTED]

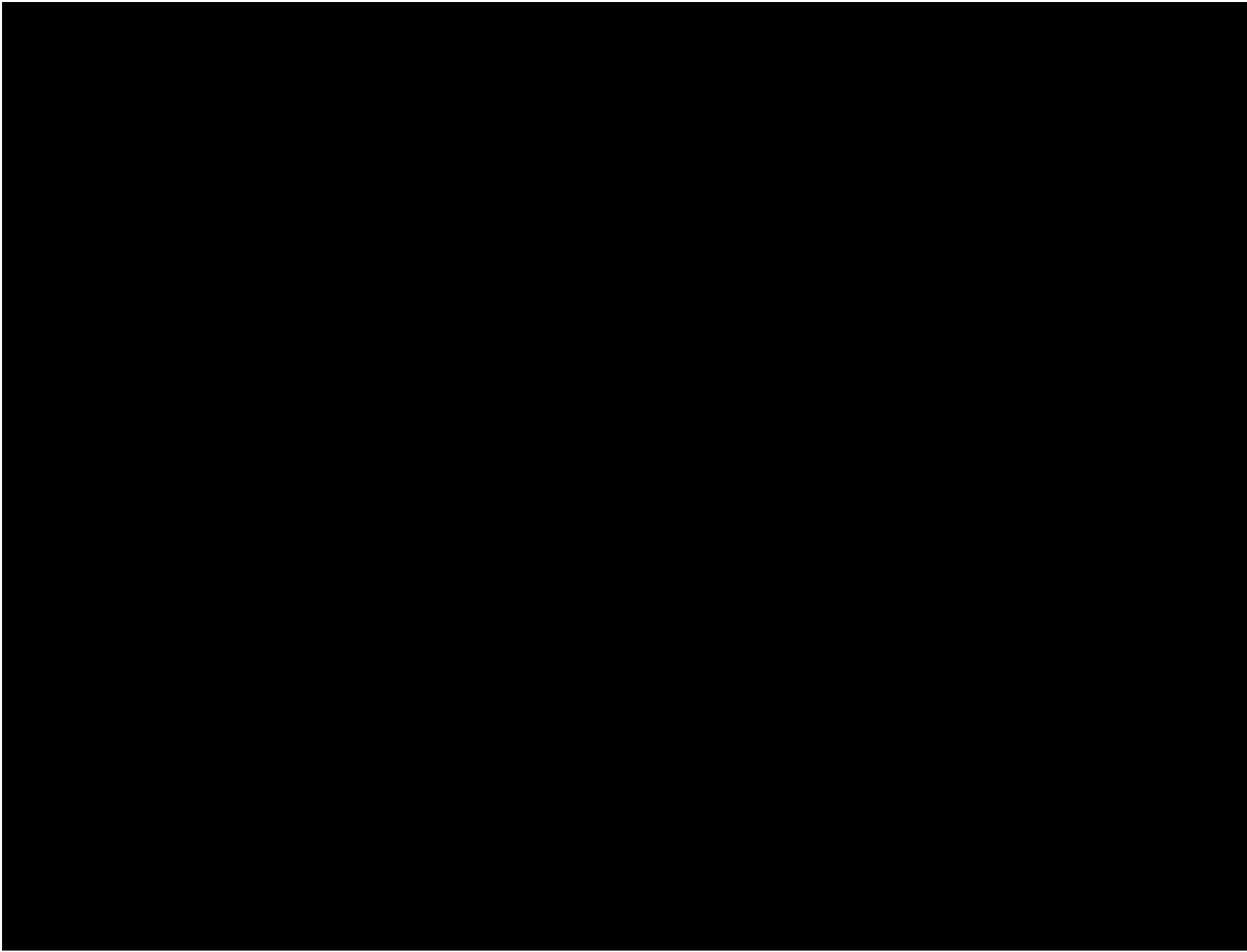
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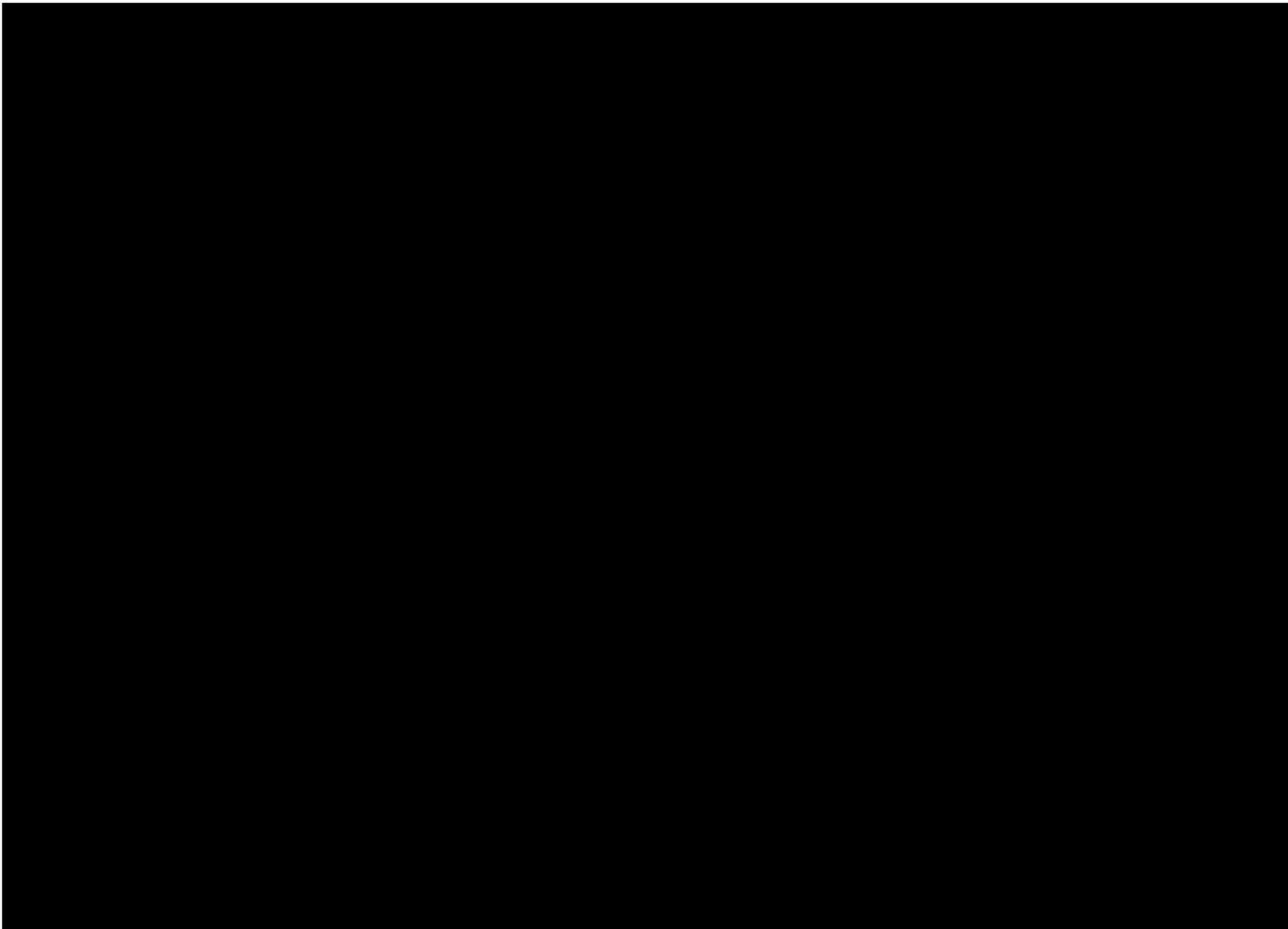
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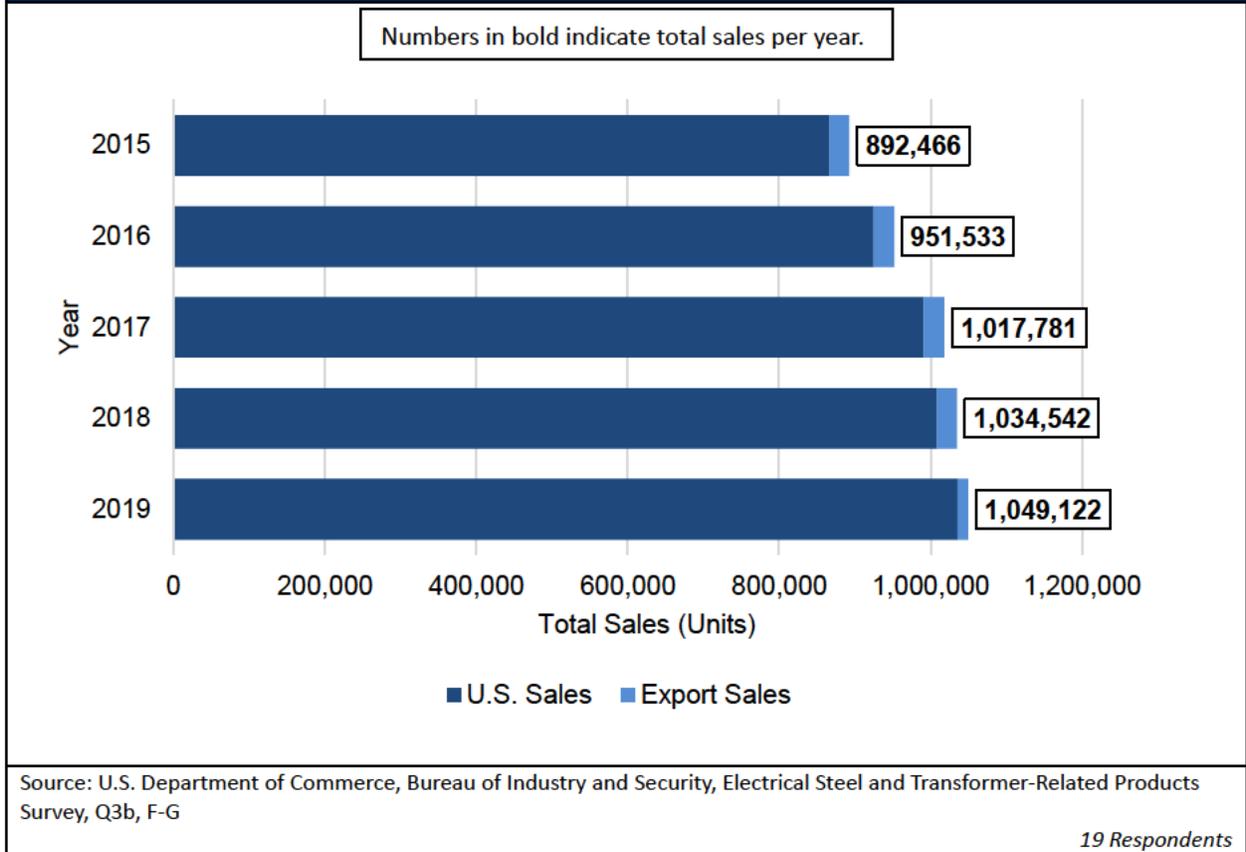
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**Figure VIII-9. Distribution and Small Power Transformers – Sales by Volume (2015-2019)**



Both dollar sales and unit sales of transformers in this category have risen consistently over the past five years. The average price of transformers in this category was \$55,000. A slight majority of these transformers use cores comprised of GOES (as opposed to other core materials, such as metglas), and on average GOES accounted for about 20 percent of the cost of each transformer.

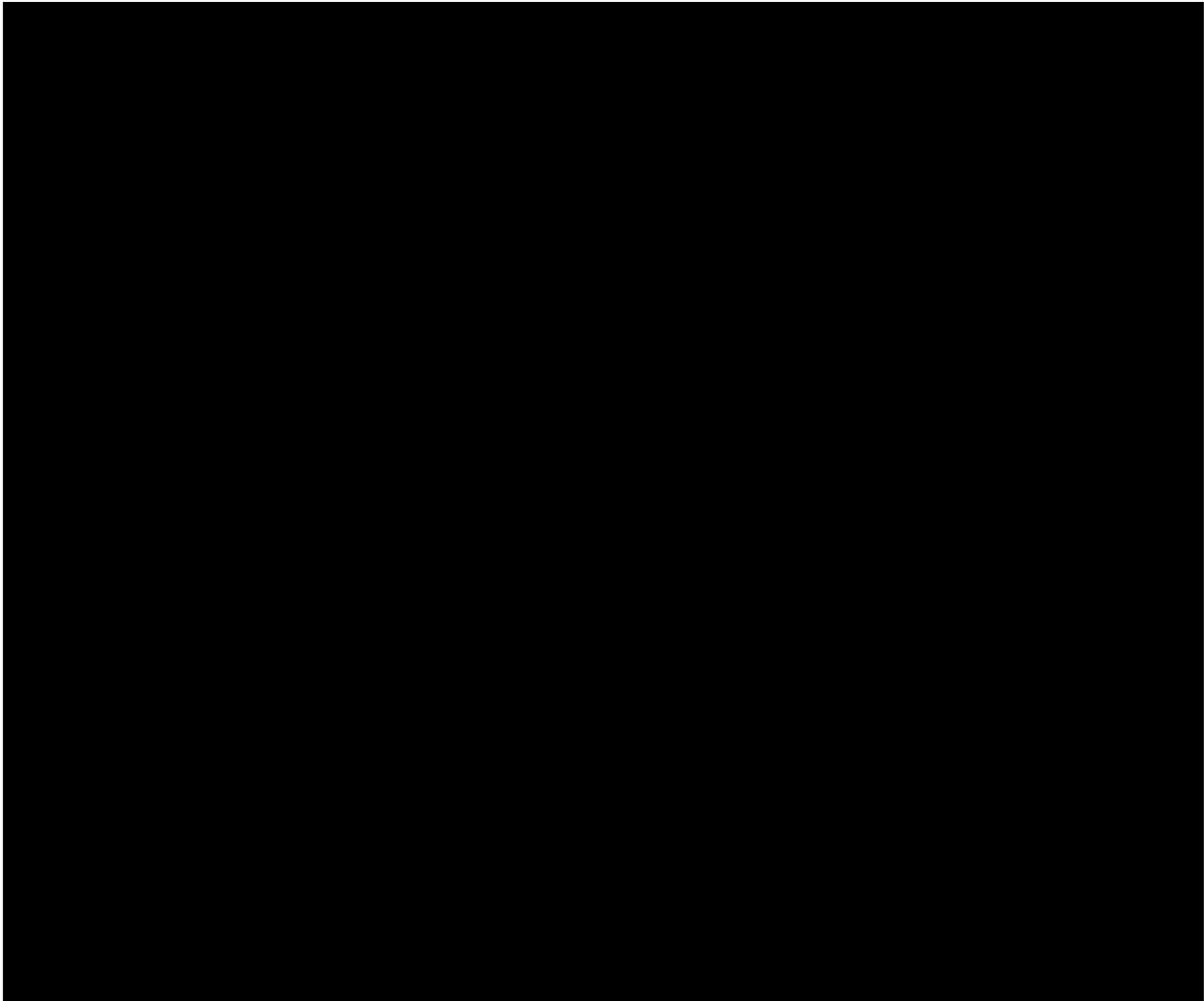


Figure VIII-X assesses the financial status of the major players in this industry segment. The four market leaders all ranked as “moderate/elevated risk” based on the Department’s financial risk metric.

Overall, the companies manufacturing distribution transformers and small power transformers did not devote a high level of funding to research and development (R&D), as compared to R&D spending in other industry sectors. In total, the 19 companies spent about \$650 million on R&D each year between 2015

-2019, with one company – [REDACTED]

[REDACTED]

In part, the low level of R&D spending is because transformers are a mature technology. Other factors include the relatively poor financial status of domestic manufacturers.

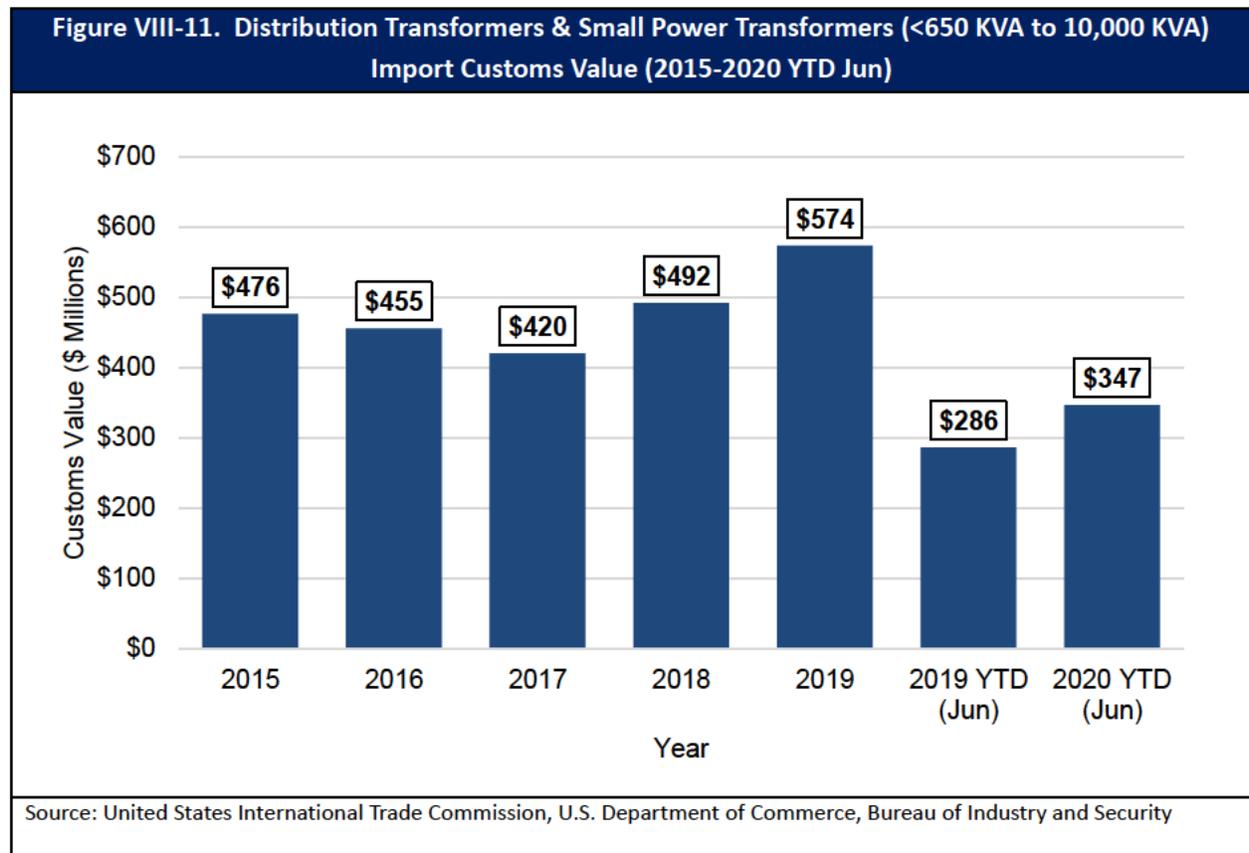
Capital investment by the companies in this industry subsector showed a similar pattern: capital expenditures ranged between \$560 and \$660 million per year, with [REDACTED]

[REDACTED] The relatively low levels of capital investment is likely due to the factors listed above, including the maturity of the technology and the financial status of domestic manufacturers.

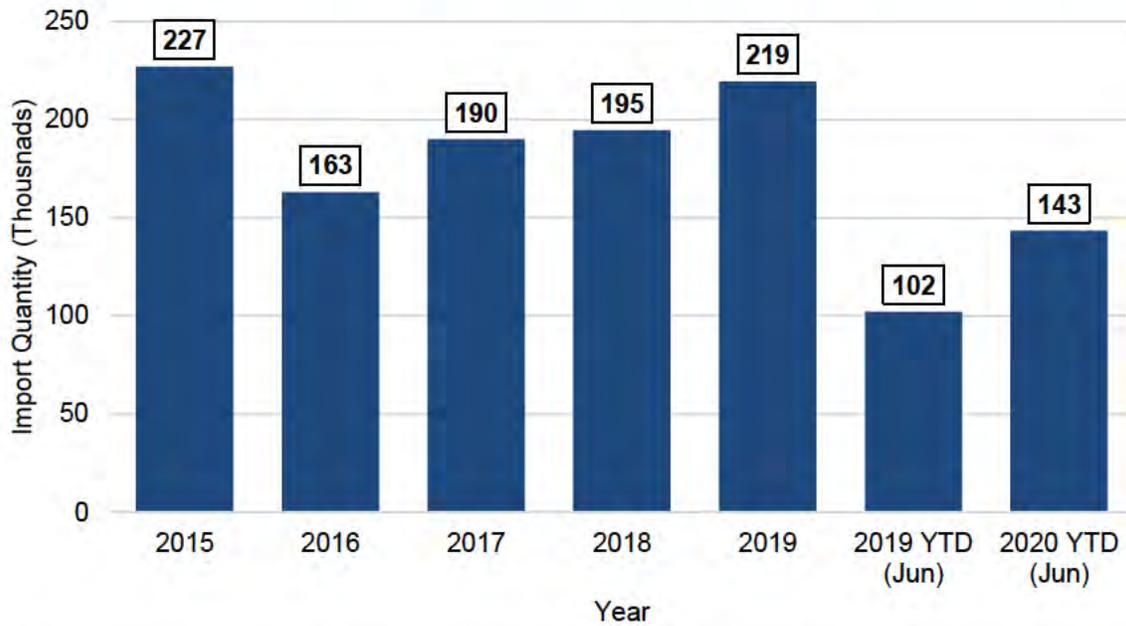
### **1. Apparent Consumption and Import Penetration**

U.S. imports of distribution and small power transformers have remained consistent over the past ten years, averaging about 200,000 units and \$500 million per year. Imports in 2019 were slightly above the long-term average, and imports for the first part of 2020 are significantly higher than during the same period in 2019. Mexico is by far the largest source of these imports, accounting for over 80 percent of the units in 2019. Many major global transformer companies have manufacturing facilities in Mexico [REDACTED] taking advantage of

lower labor costs and duty-free access to the U.S. market. The significant suppliers of transformers of this power handling capacity located outside of Mexico are in Canada and China. However, imports from China have declined in recent years from 2013-2014 levels (likely due to the tariffs on many imports from China imposed in recent years), with an increase in the first part of 2020. Imports from Canada remained steady throughout the period.



**Figure VIII-12. Distribution Transformers & Small Power Transformers (<650 KVA to 10,000 KVA)  
Import Customs Quantity (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VIII-13. Distribution Transformers & Small Power Transformers (<650 KVA to 10,000 KVA)  
Import Quantities by Top 10 Countries (Units, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
Mexico	150,696	136,823	145,907	151,687	178,375	85,592	105,622	869,110
China	29,833	3,706	11,465	16,270	9,075	2,069	4,531	74,880
Canada	11,675	10,441	11,776	12,321	13,937	6,672	6,219	66,369
Taiwan	1,121	713	710	2,722	6,430	138	21,873	33,569
United Kingdom	14,049	1,180	358	267	186	25	103	16,143
Poland	-	-	4,896	2,520	3,059	3,053	8	10,483
Hong Kong	6,297	795	40	32	-	-	-	7,164
India	903	5	4,481	1,007	6	5	7	6,409
Germany	1,295	1,117	915	1,140	779	552	605	5,851
Sri Lanka	5,567	-	-	-	-	-	-	5,567

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

Based on sales information provided through survey responses and Census import and export statistics, import penetration was about 18 percent for this industry segment (liquid dielectric transformers up to 10,000 kVA) in 2019. Based on production data for transformers in these power handling capacities from the survey, import penetration was 20.6 percent.

## **2. Reliance on Foreign Sources for Transformer Components**

Despite the relatively low level of the market for finished transformers accounted for by imports, domestic transformer producers rely heavily upon foreign sources for critical components. Using imported laminations and cores contributes to their competitiveness by reducing costs. Many of them never had or no longer have in-house capability to manufacture transformer cores. Even those that do have this capability have either begun to source some of these items from abroad in order to stay competitive or have eliminated in-house production all together. For the major companies in this industry segment:

█ [REDACTED]

[REDACTED]

[REDACTED]

█ [REDACTED]

**C. Medium Power Transformers (10,000 kVA- 100,000 kVA)**

Ten survey respondents indicated that they domestically produced transformers with power handling capacities between 10,000kVA and 100,000 kVA. The sales price of transformers in this broad category averaged about \$500,000. About 90 percent of these transformers used GOES in their cores, and the cost of GOES accounted for about 13 percent of transformer production costs.

Total domestic employment in this industry segment was about 7,200 production workers. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Survey participants had sales of transformers in this size range of about 1,700 units valued at \$969 million in 2019. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

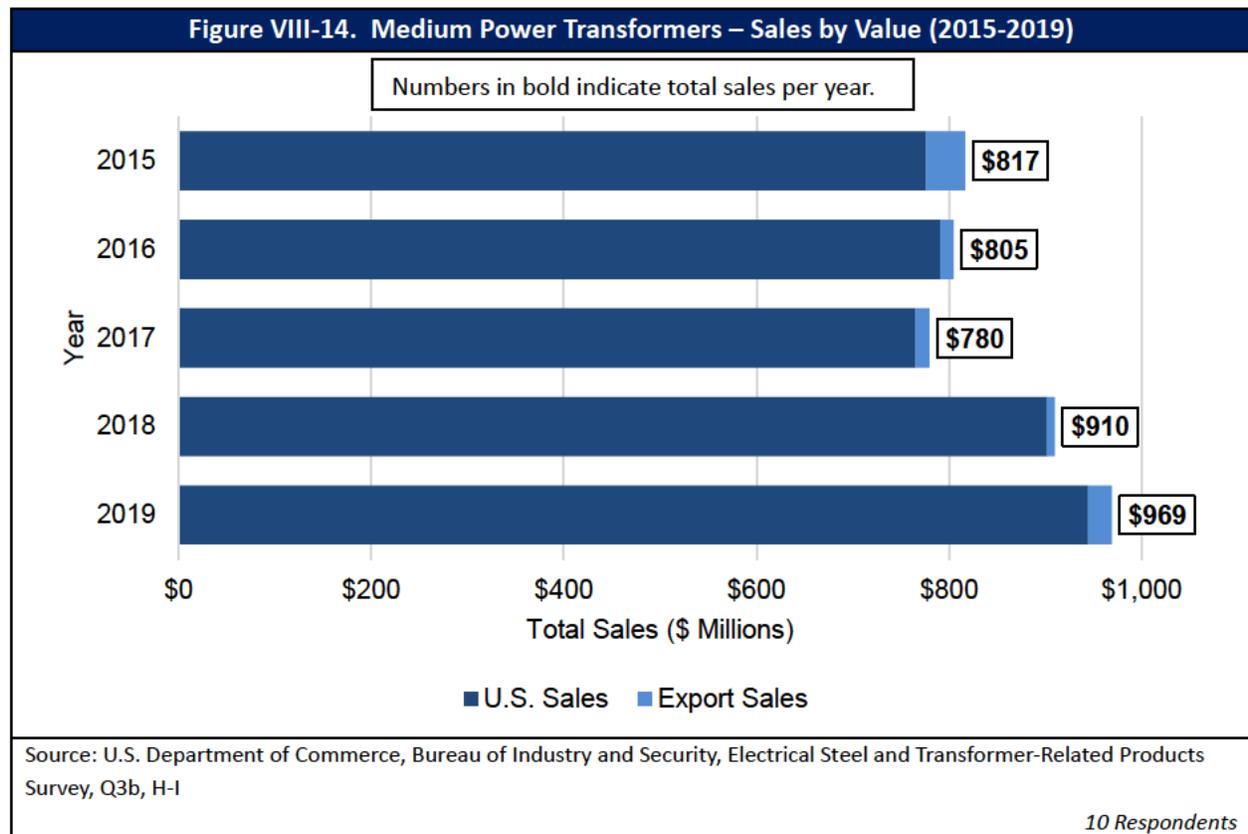
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[REDACTED]



[REDACTED]

[REDACTED]

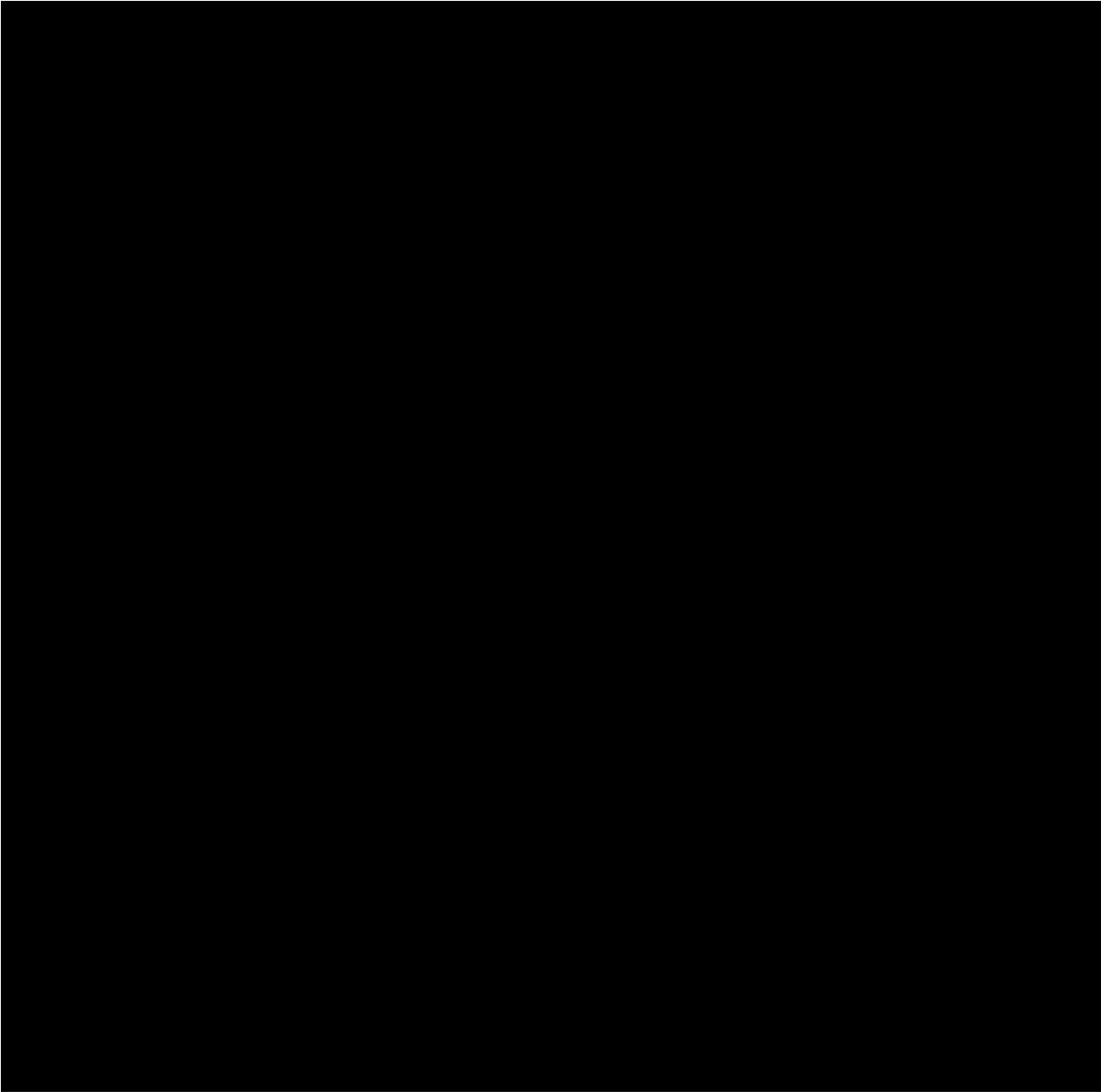
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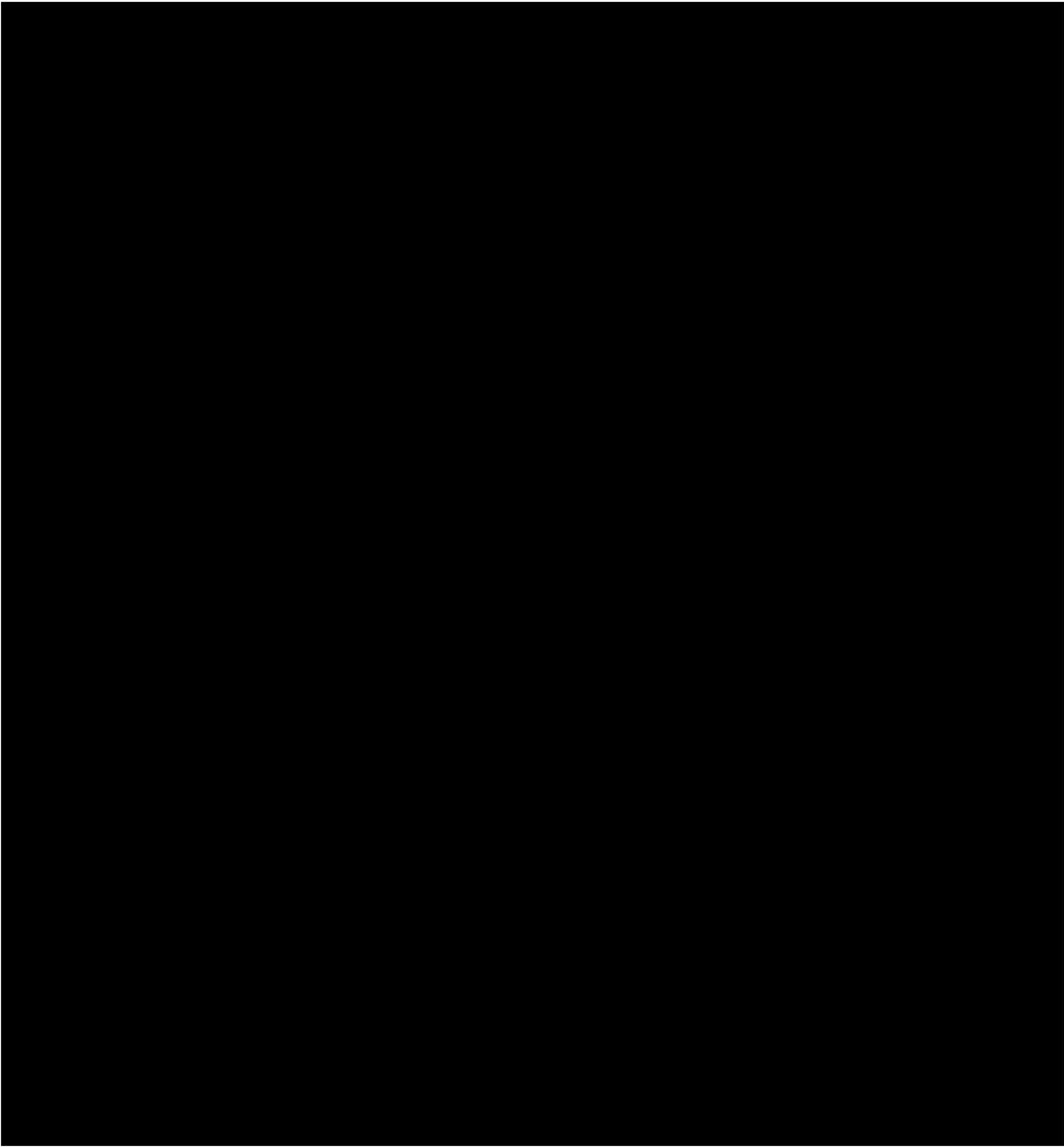
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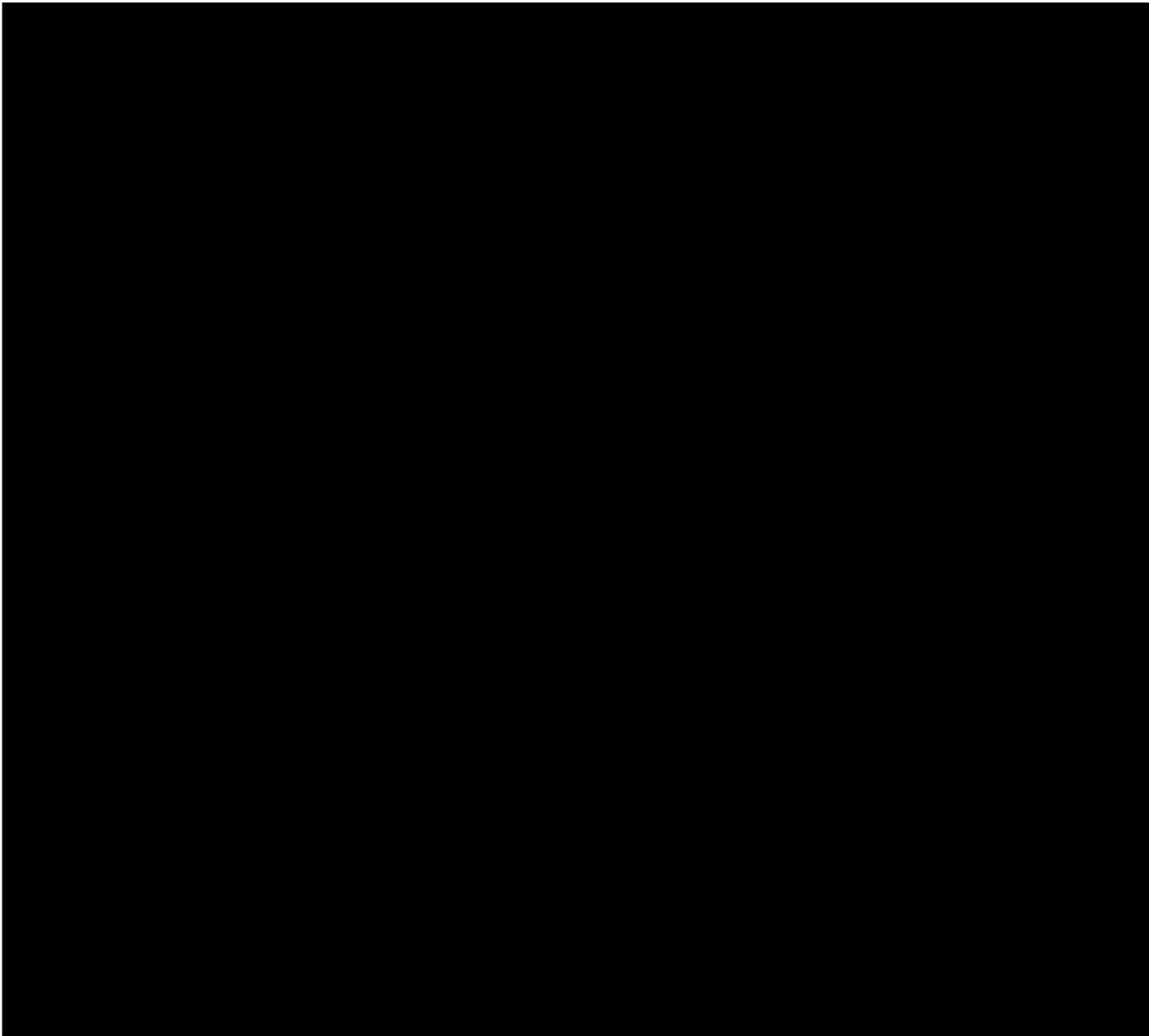
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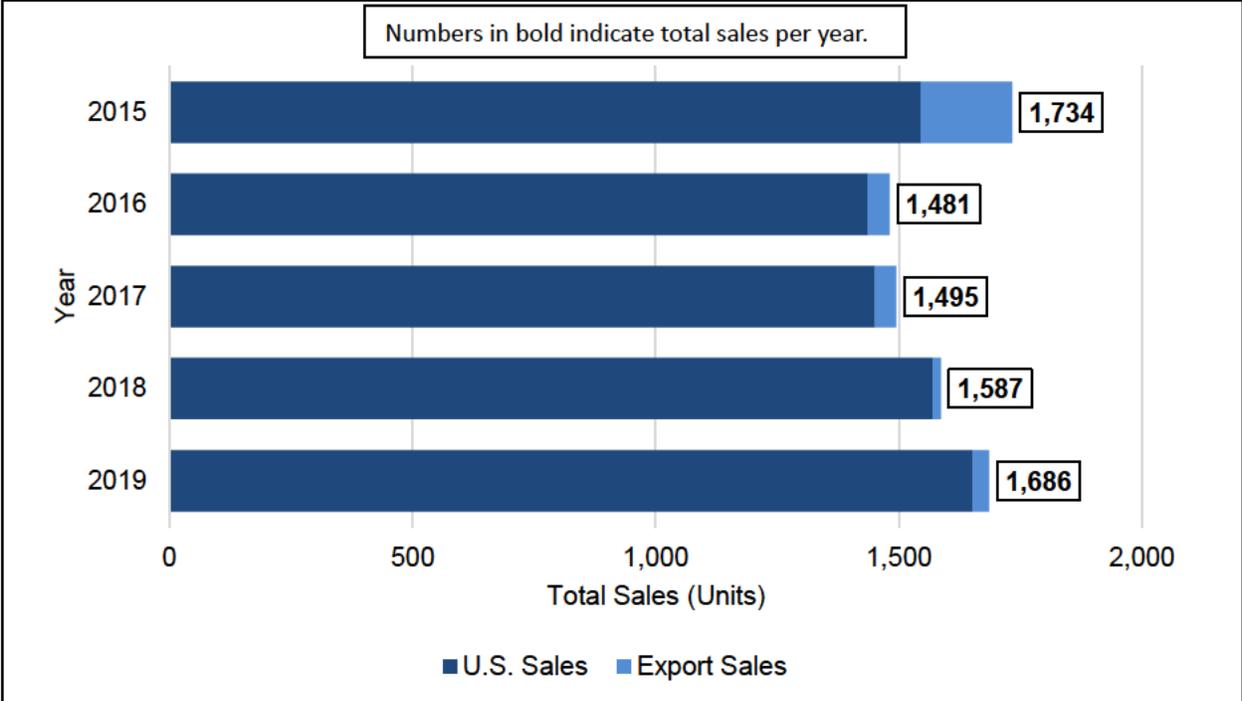
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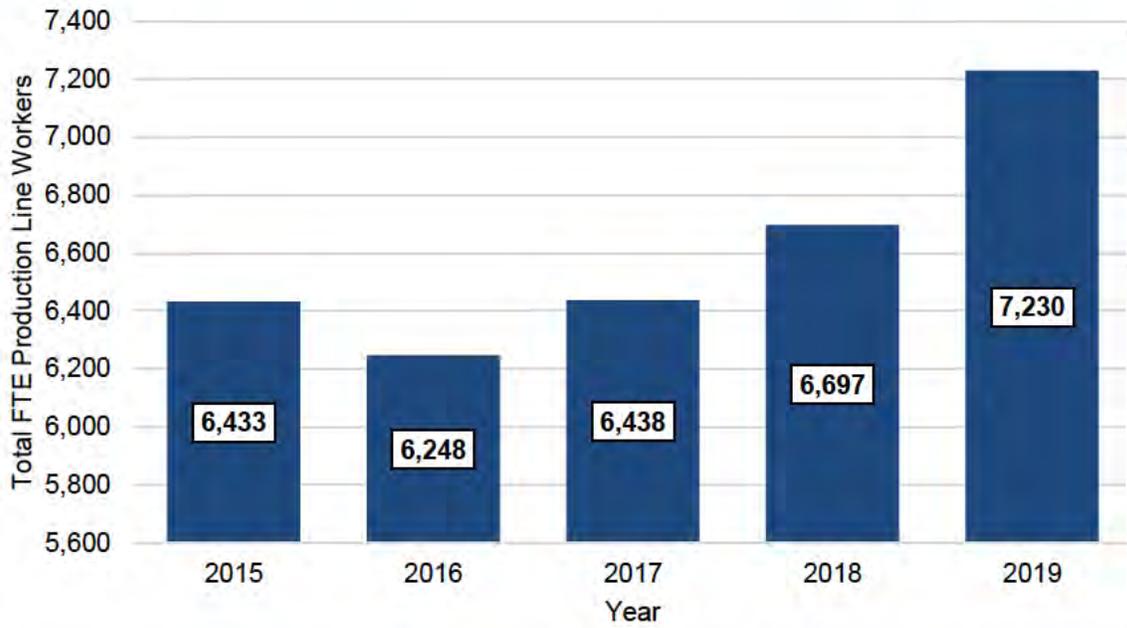
**Figure VIII-17. Medium Power Transformers – Sales by Volume (2015-2019)**



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q3b, H-1

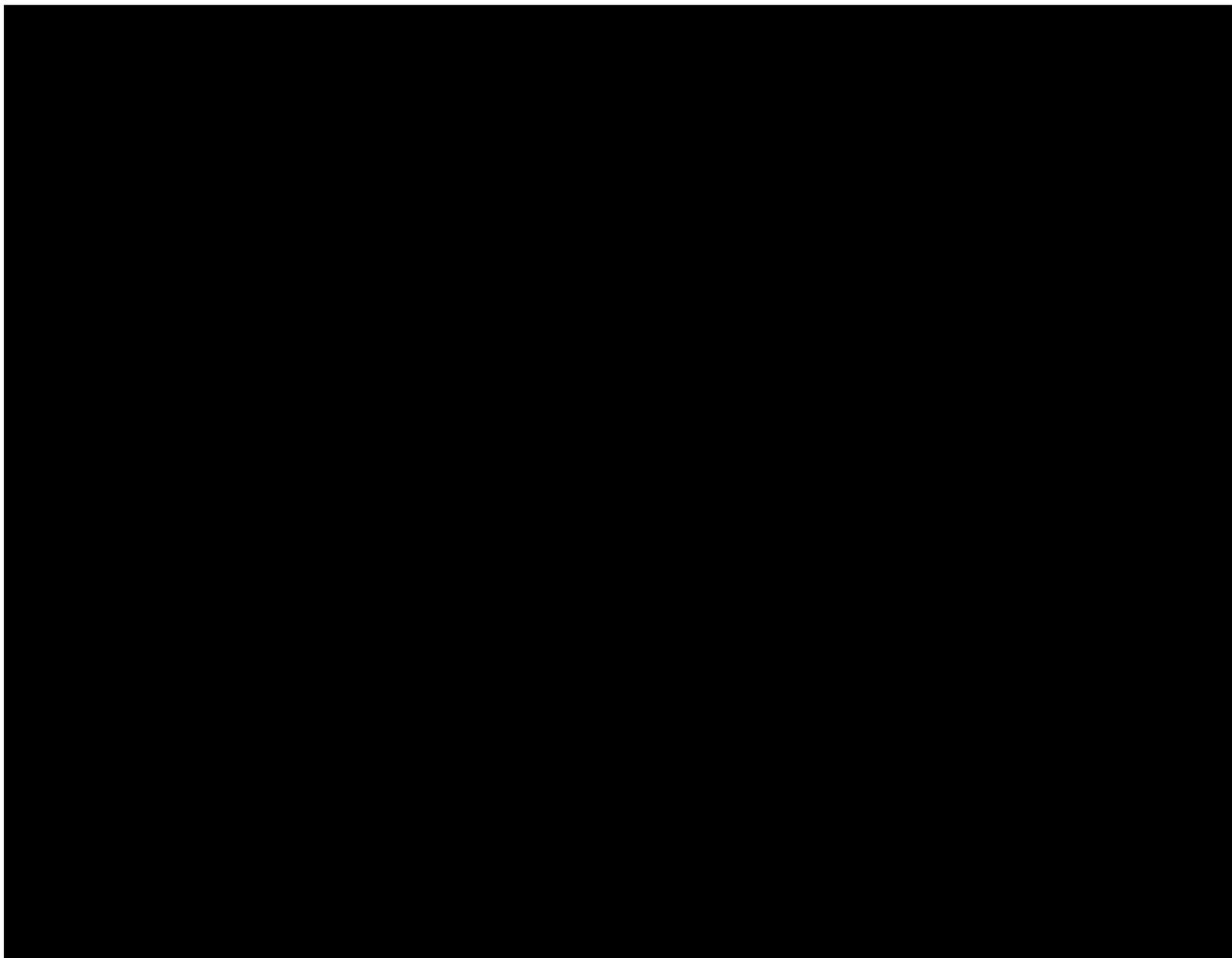
10 Respondents

Figure VIII-19. Medium Power Transformers Production Line Employment (2015-2019)



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q7, A

9 Respondents



A measure of the financial performance of the top firms in the medium power transformer category is presented in Figure VIII-20. In general, the market leaders are financially healthy based on the Department's metrics, with the exception of Hyundai. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

In total, the ten companies with production of transformers in this segment spent \$45 million on R&D in 2019. Of this total, four companies - [REDACTED]

[REDACTED]

[REDACTED]

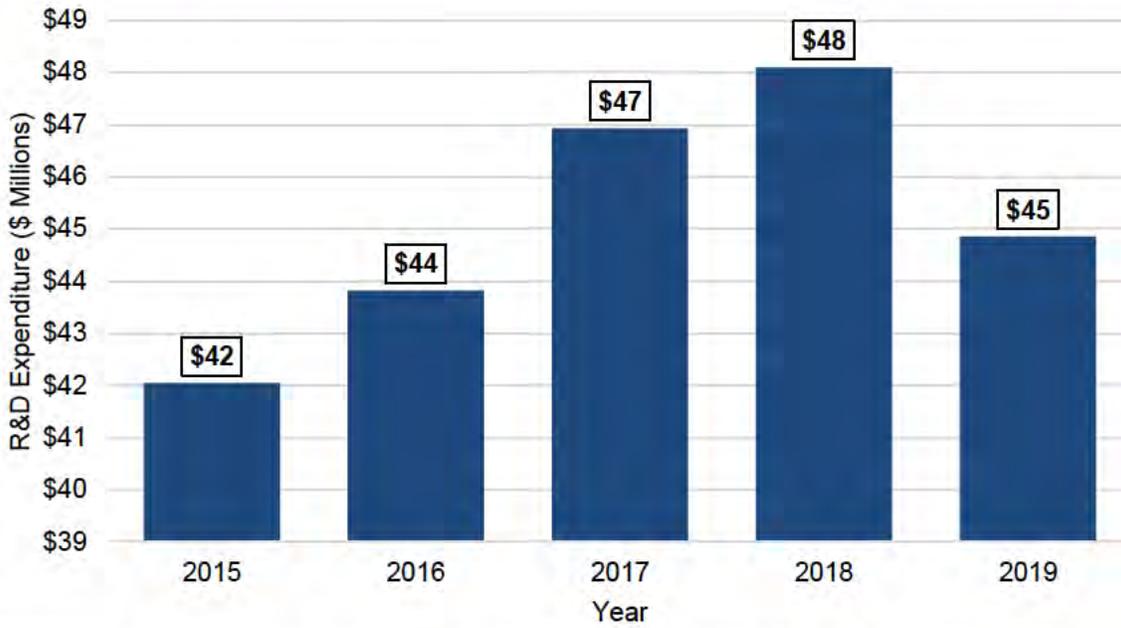
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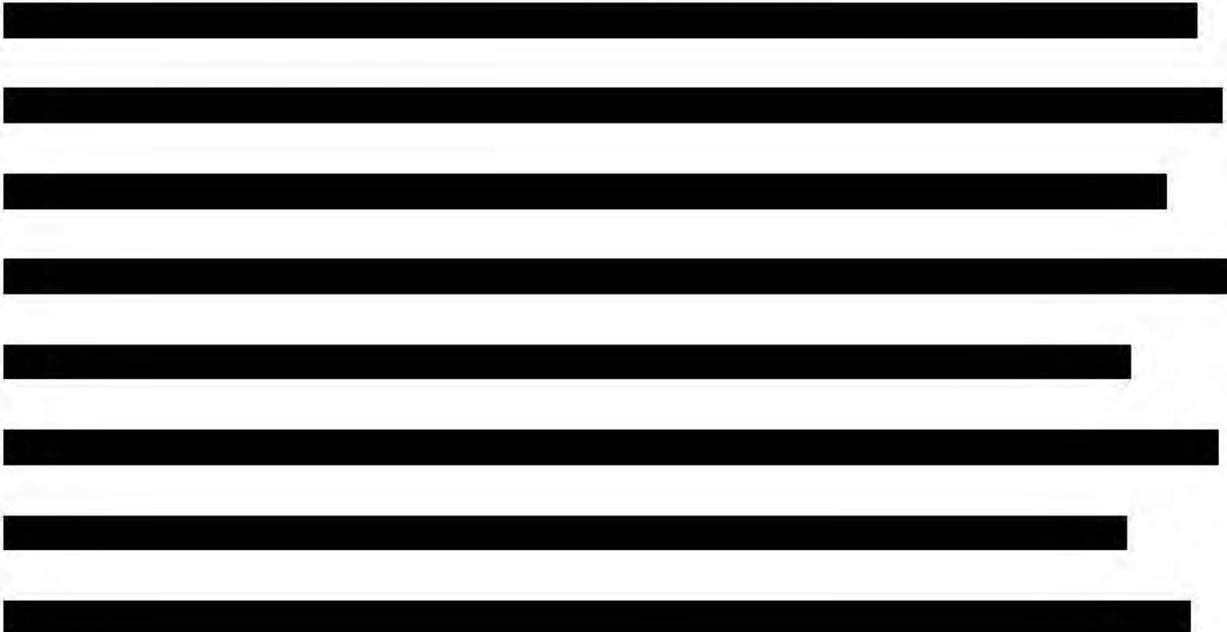
Figure VIII-21. Medium Power Transformer Manufacturers R&D Expenditure (2015-2019)

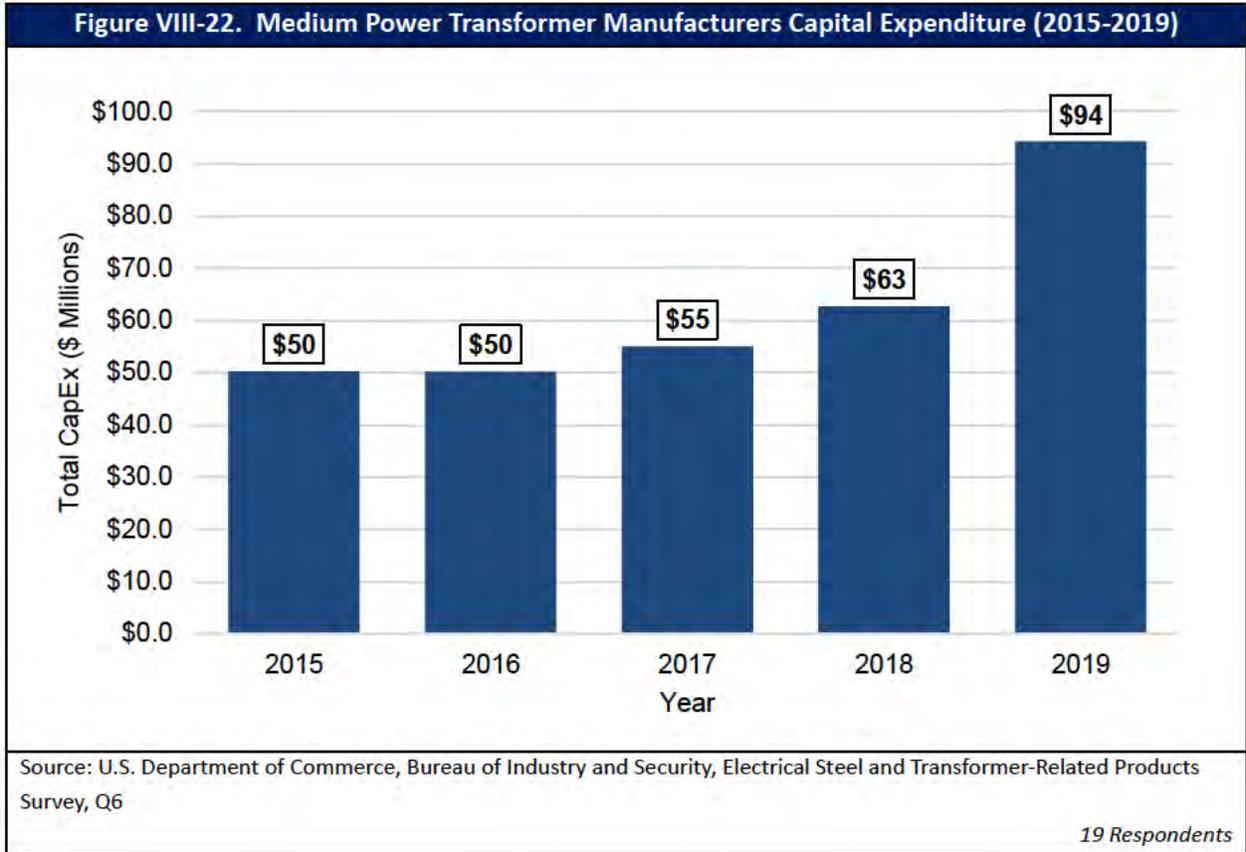


Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q6

10 Respondents

Aggregated capital expenditures for the ten companies are presented below.

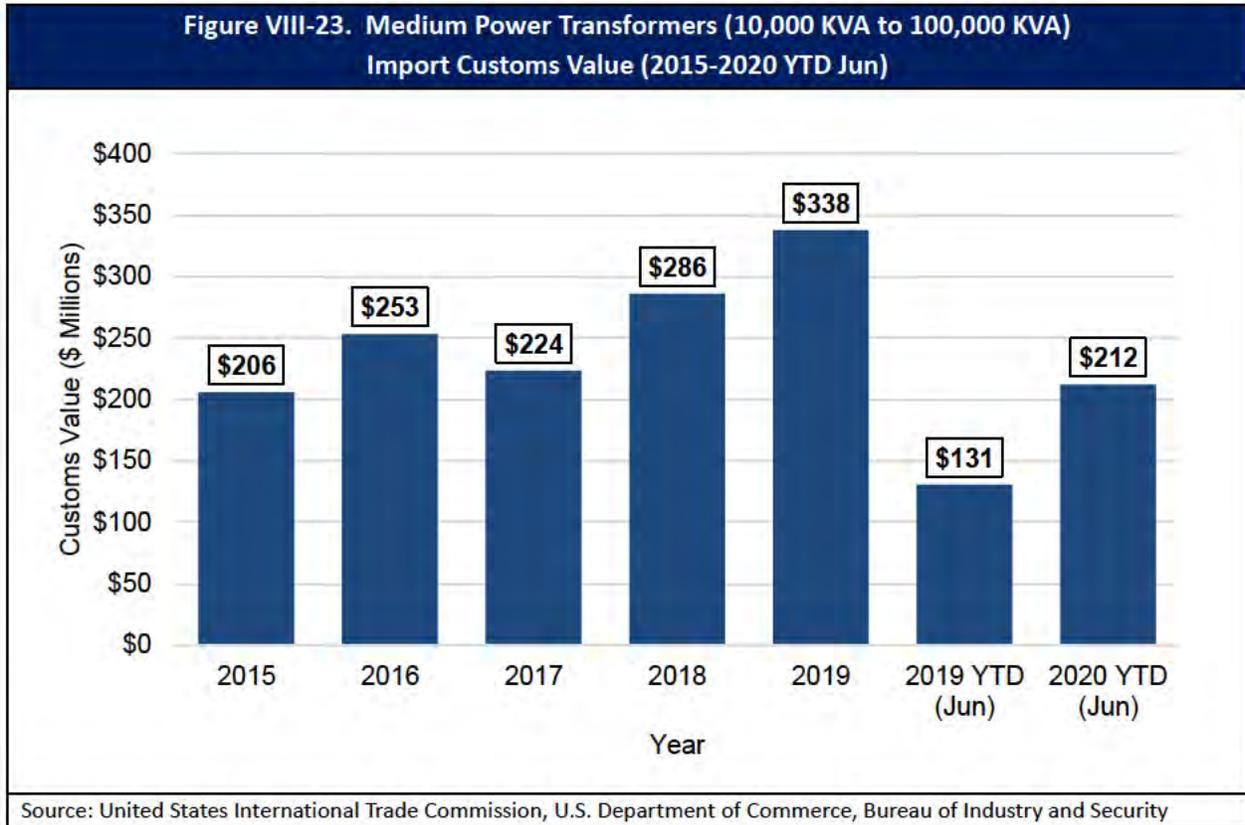




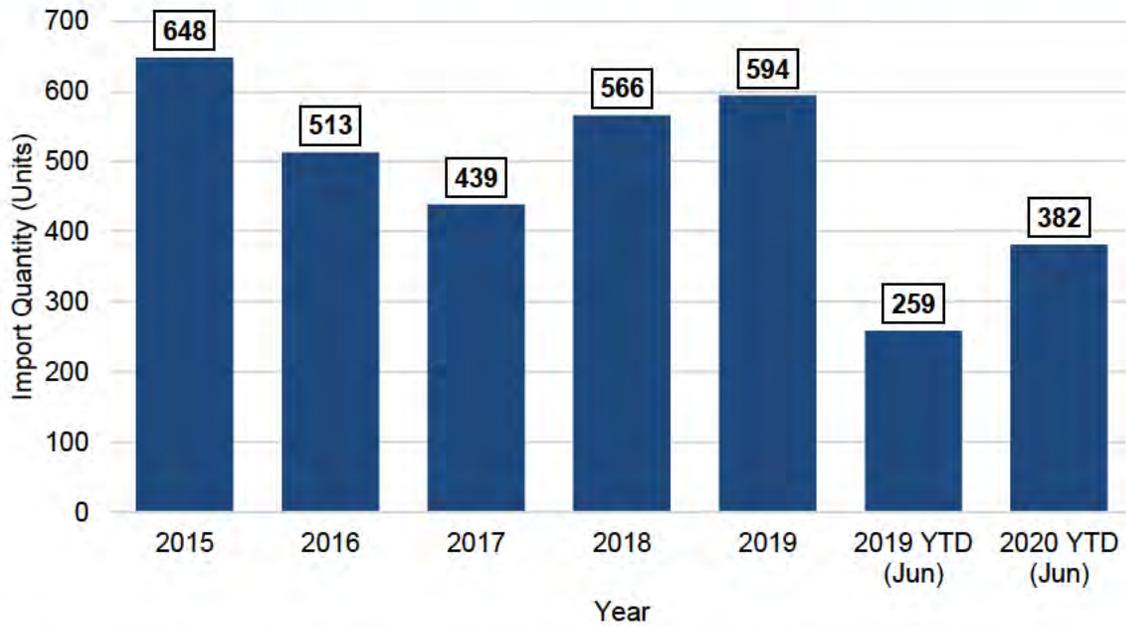
### 1. Apparent Consumption and Import Penetration

Imports of transformers in the medium power handling capacity range have increased over the past three years and are on track to exceed \$400 million in 2020, on the basis of data from the first six months of the year. On a unit basis, imports

show a similar trend, exceeding 600 units per year. Mexico and South Korea are by far the largest sources of imported transformers in this subsector.



**Figure VIII-24. Medium Power Transformers (10,000 KVA to 100,000 KVA)  
Import Customs Quantity (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VIII-25. Medium Power Transformers (10,000 KVA to 100,000 KVA)  
Import Quantities by Top 10 Countries (Units, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
Mexico	430	234	255	254	280	135	150	1,603
South Korea	43	90	66	109	124	61	73	505
Taiwan	72	45	15	37	36	12	26	231
Germany	6	38	42	66	38	13	15	205
Austria	9	19	25	32	39	9	36	160
Portugal	41	6	14	14	30	9	10	115
Colombia	5	18	4	40	13	10	23	103
Brazil	0	11	4	1	0	-	23	39
Japan	12	4	2	0	8	0	12	38
Italy	14	4	1	4	3	0	1	27

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

**Based on production as reported on the Department's survey and Census Bureau-based import statistics, import penetration in this industry segment was 28 percent on both a unit and value basis.**

As with other transformer categories, companies that produce transformers between 10,000 and 100,000 kVA rely heavily on imports for key components. The company snapshots show leading suppliers for the essential items – GOES, laminations, and/or cores.

#### **D. Dry-Type Transformers**

Of all of the transformer categories covered by this investigation, dry transformers had the greatest direct usage in defense applications. This is because this type of transformer is designed for safe usage indoors (including on ships and aircraft), as it poses fewer environmental and fire risks than do oil-immersed transformers. However, defense applications represent only a small percentage of sales of these types of transformers, which are also used extensively in the electrical grid, as well as in a multitude of industrial and commercial applications.

The Department's survey data capture input from the predominant players in the dry-type transformer category, but are less complete than for other industry sub-segments. Particularly for the smallest dry-type transformers (under <16kVA), production (and imports) are in the millions of units, and the survey did

not fully capture this. Despite this, the survey provided useful information on industry trends and competitiveness issues.

Twenty-one survey participants with just over 9,000 production workers sold 1.8 million dry transformers of various power handling capacities between 2015 and 2019. However, production in the United States was about half of this unit total because most of the major players have both domestic and overseas production facilities and distribute the product from both in the United States. Total sales by these respondents were about \$700 million, with the average transformer price about \$13,000. In aggregate, about half of these dry-type transformers require GOES in their cores, according to the survey respondents; when it was used, it accounted for about 25 percent of the cost of the transformer.

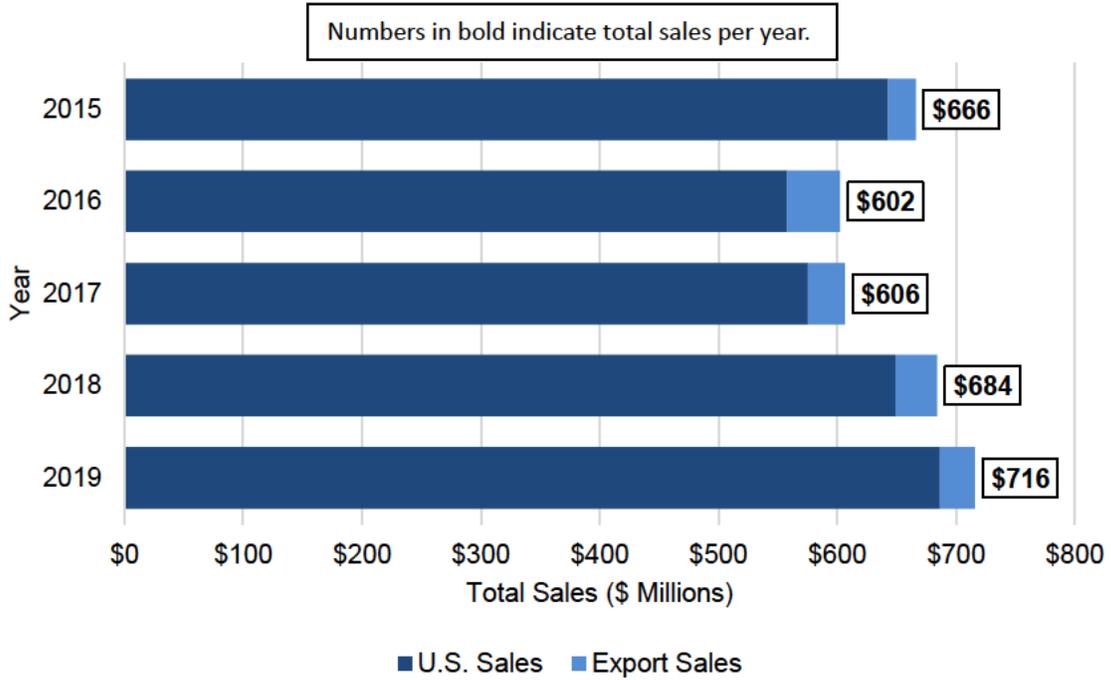
Six respondents represent about 97 percent of dry-type transformer sales (of all capacities) by value from 2015-2019. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Note that these sales values include transformers manufactured outside the United States, as reported by several of the survey recipients.

Figure VIII-26. Dry-Type Transformers – Sales by Value (2015-2019)

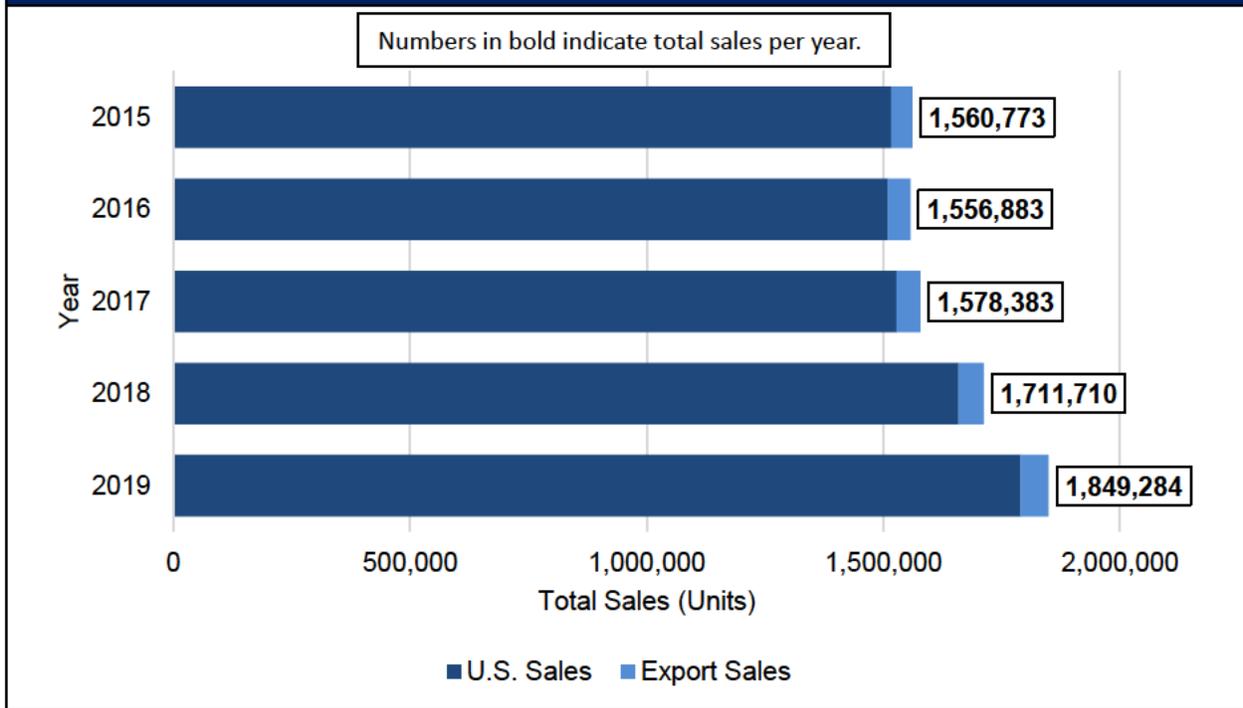


Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q3b, K-M

21 Respondents

**Figure VIII-27. Dry-Type Transformers – Sales by Volume (2015-2019)**

\*\*\*Note: Excludes [REDACTED]\*\*\*

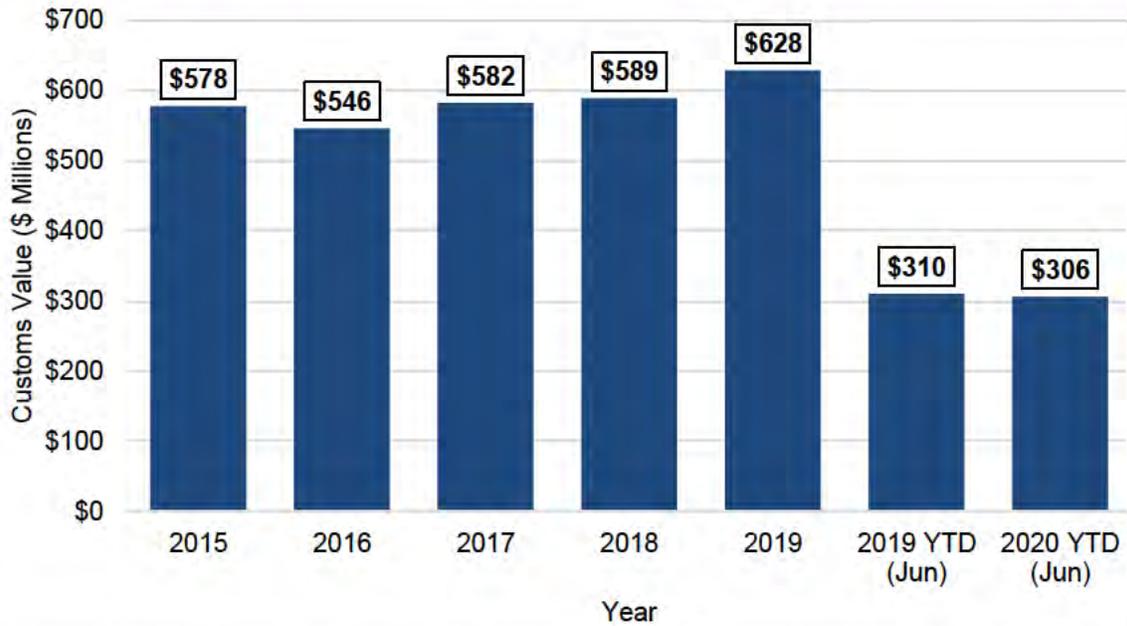


Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q3b, K-M

21 Respondents

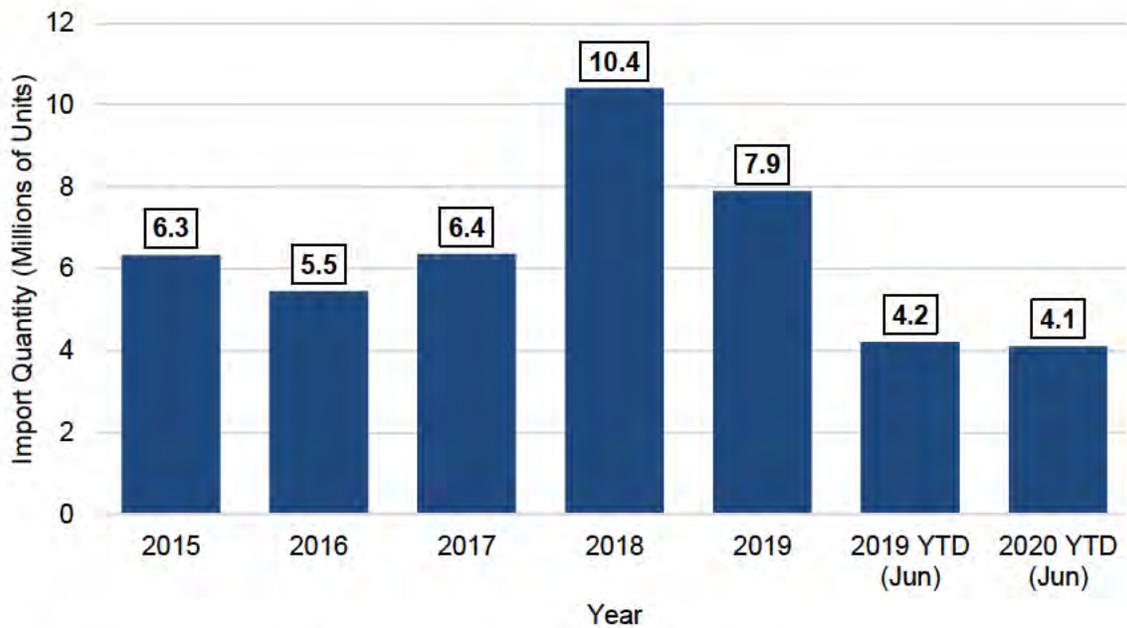
As indicated above, imports play a major role in the dry transformer sector. Countries with low cost labor – including China, Indonesia, and Mexico – are major sources of imported dry-type transformers. On a unit basis, more than half of dry-type transformer imports originate in China.

Figure VIII-28. Dry-Type and Other Transformers Import Customs Value (2015-2020 YTD Jun)



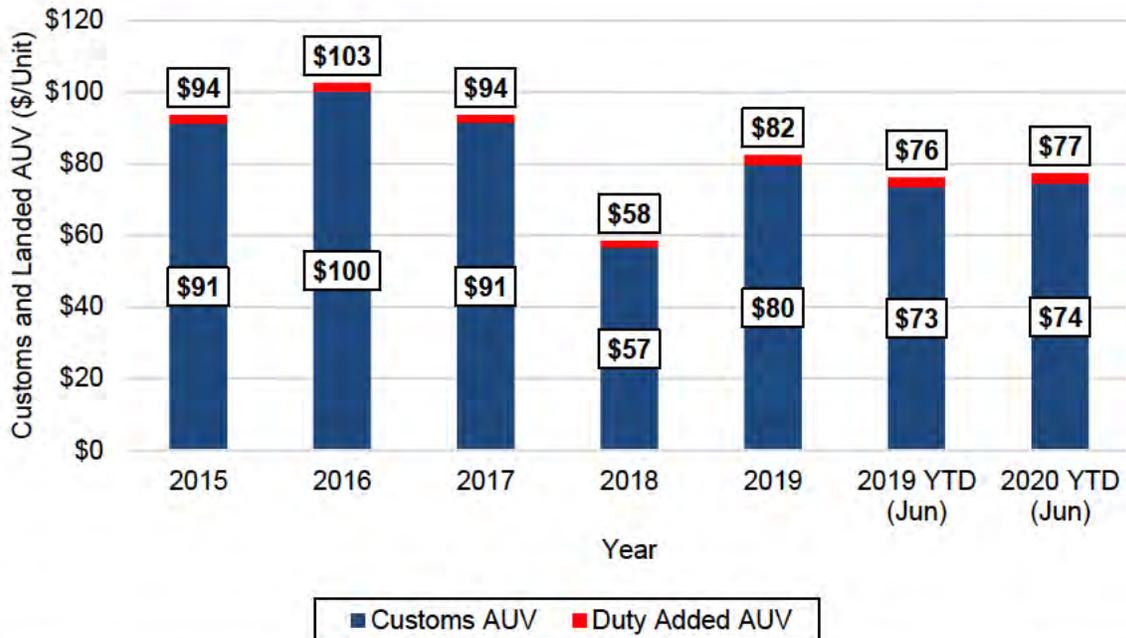
Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

Figure VIII-29. Dry-Type and Other Transformers Import Customs Quantity (2015-2020 YTD Jun)



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VIII-30. Dry-type and Other Transformers Import Customs AUV (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Data labels indicate the final Duty Landed AUV

**Figure VIII-31. Dry and Other Transformers Import Quantities by Top 10 Countries (Thousands of Units, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
China	2,482	2,341	3,006	6,689	4,993	2,785	2,858	22,369
Indonesia	1,736	1,648	1,840	1,253	1,148	658	300	7,926
Mexico	667	528	605	1,082	754	315	323	3,959
India	291	253	207	230	260	157	87	1,328
France	248	18	36	336	223	72	130	991
Honduras	147	92	68	115	128	66	33	584
Germany	276	130	16	42	10	6	3	477
Taiwan	80	83	96	38	32	15	138	468
Canada	94	53	87	117	67	40	35	453
Malaysia	70	167	53	52	13	7	6	361

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Excludes 2019 YTD (Jun) Data

During the time period, dry-type transformers in the 1-16 kVA range were both produced domestically and imported by the millions. Leading domestic producers, including [REDACTED] together accounted for over 80 percent of the production volume by survey participants in 2019. [REDACTED]

[REDACTED]

The average sales price was just \$20. [REDACTED]

[REDACTED] The primary application for these transformers is in industrial settings for power distribution.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

While it was not possible to determine import penetration levels due to lack of data on U.S. production, based on official trade statistics, imports of dry-type transformers in the 1-16 kVA range have a significant market presence. In this sector, Mexico and China are the leading suppliers, with China accounting for

much of the volume (over million units) and Mexico much of the value of total imports (due to varying sizes and prices of transformers). As mentioned, a number of the U.S. companies in participating this sector have overseas production facilities and contribute to the import volume.

<b>Figure VIII-32. Dry and Other Transformers (&lt;1 KVA to 16 KVA)</b>								
<b>Import Value by Top 10 Countries (\$ Millions, 2015-2020 YTD Jun)</b>								
<b>Country</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2019 YTD (Jun)</b>	<b>2020 YTD (Jun)</b>	<b>SUM*</b>
<b>Mexico</b>	\$36.7	\$40.3	\$33.5	\$40.1	\$48.4	\$24.7	\$21.1	\$220.1
<b>China</b>	\$31.0	\$33.5	\$31.1	\$24.1	\$20.8	\$8.3	\$13.1	\$153.7
<b>Canada</b>	\$7.9	\$8.4	\$8.6	\$9.0	\$10.5	\$5.6	\$4.3	\$48.8
<b>Germany</b>	\$6.5	\$6.6	\$4.8	\$7.0	\$6.3	\$2.9	\$2.9	\$34.0
<b>Japan</b>	\$6.8	\$5.6	\$6.1	\$3.0	\$3.3	\$1.1	\$3.5	\$28.4
<b>Philippines</b>	\$4.7	\$3.6	\$3.6	\$4.4	\$4.9	\$2.1	\$2.6	\$23.7
<b>Taiwan</b>	\$4.2	\$3.7	\$2.8	\$3.4	\$3.7	\$1.7	\$1.9	\$19.7
<b>United Kingdom</b>	\$2.8	\$1.9	\$2.8	\$3.0	\$2.3	\$1.3	\$1.4	\$14.1
<b>Sri Lanka</b>	\$2.3	\$2.1	\$2.4	\$2.4	\$2.5	\$0.9	\$1.3	\$13.1
<b>France</b>	\$1.6	\$3.2	\$2.2	\$1.6	\$2.3	\$0.8	\$0.8	\$11.7
<b>ROW</b>	\$11.0	\$9.2	\$12.8	\$13.1	\$13.4	\$5.7	\$6.9	\$66.5
<b>Total</b>	<b>\$115.6</b>	<b>\$118.2</b>	<b>\$110.8</b>	<b>\$110.9</b>	<b>\$118.4</b>	<b>\$55.2</b>	<b>\$59.9</b>	<b>\$633.8</b>
<b>AVG AUV (\$/Unit)</b>	\$25.42	\$28.16	\$22.67	\$13.62	\$17.58	\$16.68	\$16.57	\$20.10

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security (HTS 8504.32)  
\*Excludes 2019 YTD (Jun)

In the 16-500 kVA dry-type transformer category, the leading domestic producers were [REDACTED]. These transformers were produced domestically in the tens of thousands of units, are valued in the \$2,500 to \$25,000 range, and are used in electric power distribution

for commercial and industrial customers. GOES is used in almost all transformers in this range, and accounts for up to 50 percent of production costs.

Manufacturers in this industry sector manufacture distribution transformers that are subject to the DOE Energy Efficiency Standards that took effect in 2016. The new standards increased manufacturers' demand for higher grades of GOES in order to remain competitive in the bidding process. Business decisions to remain competitive after the introduction of the DOE standards also increased demand for the quantity of GOES, as well as laminations, and cores, from global suppliers.

For example, [REDACTED]

Statistics on imports of dry-type transformers between 16 and 500 kVA are presented in Table VIII-33 below. Once again, China and Mexico are the major sources for imports, with India and France also supplying substantial numbers. Based on survey data, it appears that transformers in this broad category that are manufactured in the United States have a higher unit value than imports.

Figure VIII-33. Dry and Other Transformers (<16 KVA to 500 KVA) Import Quantities by Top 10 Countries (Thousands of Units, 2015-2020 YTD Jun)								
Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
China	788	655	782	826	356	224	76	3,483
Mexico	279	206	241	720	237	122	116	1,800
India	258	231	184	213	232	142	76	1,194
France	247	17	35	332	223	72	130	984
Hong Kong	52	12	128	84	0.3	0.3	0.1	276
Canada	14	18	54	54	29	21	19	188
Germany	57	45	10	5	3	1	1	122
Taiwan	25	29	25	8	15	7	9	112
Hungary	26	0.003	5	1	1	1	0.1	32
Spain	0.1	0.4	1	1	25	0	3	31
ROW	14	31	10	16	30	17	14	116
<b>Total</b>	<b>1,762</b>	<b>1,245</b>	<b>1,475</b>	<b>2,260</b>	<b>1,150</b>	<b>607</b>	<b>445</b>	<b>8,337</b>
<b>Average AUV</b>	<b>\$177</b>	<b>\$258</b>	<b>\$245</b>	<b>\$158</b>	<b>\$320</b>	<b>\$360</b>	<b>\$404</b>	<b>\$275</b>
Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security (HTS 8504.33)								
*Excludes 2019 YTD (Jun) Data								

In the largest dry-type transformer category (>500kVA), the domestic industry leaders are [REDACTED]

[REDACTED]

[REDACTED]

The average value of Federal Pacific's transformers in this size range was \$23,000. They are used for electrical power delivery to industrial, commercial, and residential customers. High-quality GOES is required in order to meet DOE energy efficiency standards for this product, and accounts for 50 percent of the cost of the transformers. [REDACTED]

As with the other dry-type transformer categories, imports are significant and the major sources are China, Mexico, and India. Imports in 2015 were significantly greater than in other years, due to high import levels that year reported from China and India. In 2019 and the first six months of 2020, Mexico was by far the leading supplier.

**Figure VIII-34. Dry and Other Transformers (>500 KVA)  
Import Quantities by Top 10 Countries (Units, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
China	15,466	3,828	456	730	1,137	432	1,051	22,668
Mexico	1,691	1,986	1,812	1,671	3,967	2,334	1,673	12,800
India	3,388	392	36	274	1,235	793	513	5,838
Canada	958	718	800	683	793	384	390	4,342
Hong Kong	2,040	1	3	13	1	1	-	2,058
Germany	571	506	193	172	291	168	161	1,894
Malaysia	214	100	336	360	35	18	103	1,148
South Korea	142	49	32	466	98	65	95	882
Poland	13	51	259	334	202	89	-	859
Spain	101	29	144	237	211	160	136	858
ROW	827	1,046	614	767	441	116	439	4,134
<b>Total</b>	<b>25,411</b>	<b>8,706</b>	<b>4,685</b>	<b>5,707</b>	<b>8,411</b>	<b>4,560</b>	<b>4,561</b>	<b>57,481</b>
<b>Average AUV</b>	\$5,936	\$12,216	\$23,349	\$21,137	\$16,884	\$17,276	\$19,911	\$16,673

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security (HTS 8504.34)

\*Excludes 2019 YTD (Jun) Data

## E. Large Power Transformers

LPTs are the transformers most critical to the BPS and the critical energy infrastructure of the United States. They are used to “step-up” power at the power generation site for long-distance transmission, and then to “step-down” the power to the levels that are needed for industrial, commercial, military and household consumers. Because they serve the greatest number of customers, the failure or destruction of just a single LPT can have a large impact on U.S. economic, public health, and security interests. Moreover, long procurement lead times and limited

availability of spare LPTs and the parts thereof have serious implications for the resiliency of critical infrastructure.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]<sup>86</sup> Power transformers fell into the highest category for both criticality and supply chain vulnerability. In terms of criticality, transformers are complex, vulnerable to failure, have a significant impact on the BPS in the case of failure, and have a lengthy replacement time. The Market Study also found transformers pose a high risk in the supply chain, as suppliers are dominated by foreign-owned companies, with a minimum of four years required to establish domestic manufacturing capability.

The U.S. market for LPTs is less than 1,000 units per year; their average lifespan is 30 to 40 years and relatively few are needed because they serve large populations. Despite the relatively small quantities produced and purchased annually, there is a sizable market for LPTs because each has a value in the millions of dollars. Moreover, because of their enormous size (up to 400 tons),

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<sup>86</sup> [REDACTED]

these LPTs account for a significant percentage of consumption of GOES by weight.

### **1. Domestic Production Capacity**

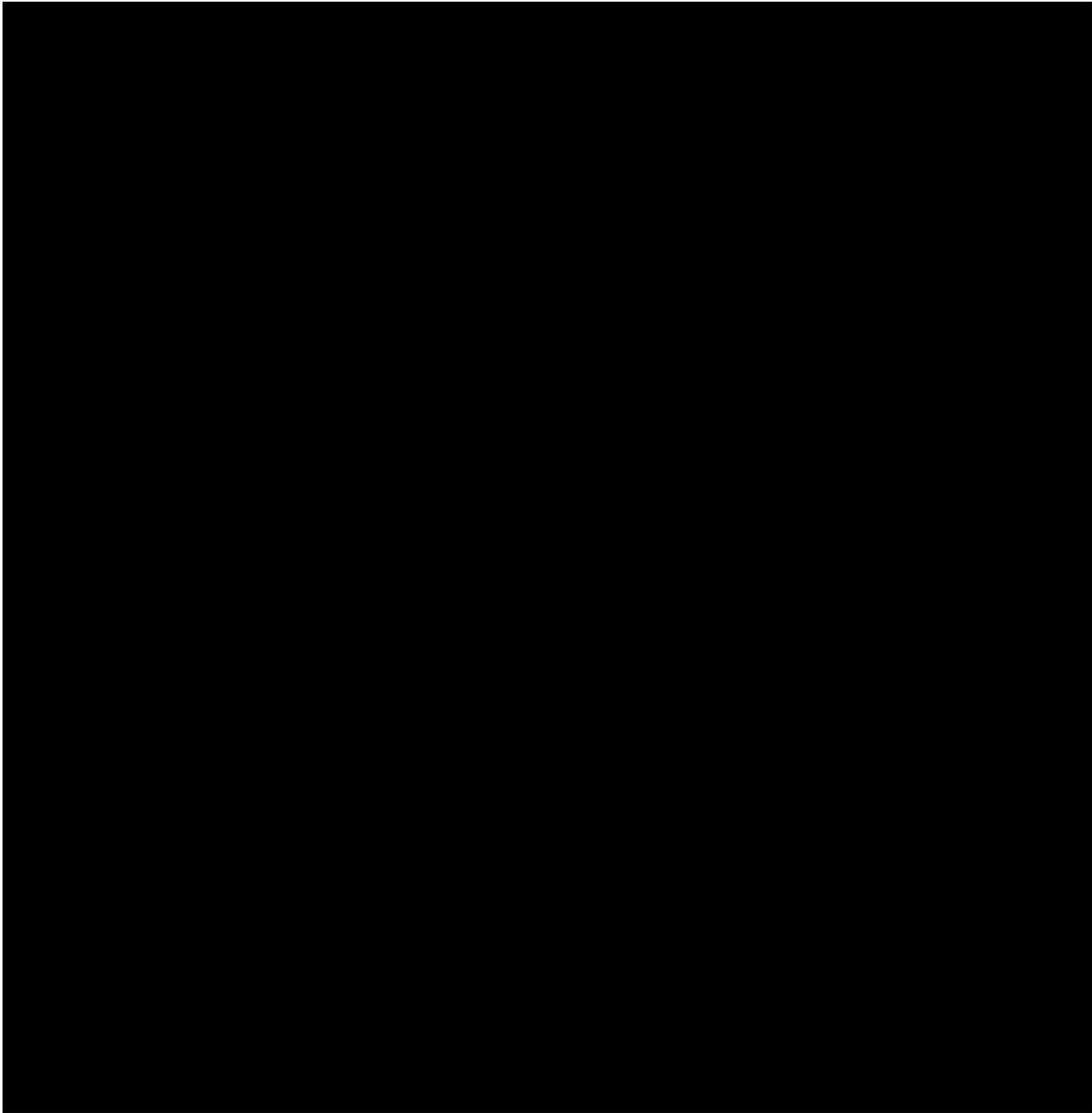
The Department's survey gathered detailed industry data on all domestic manufacturers of LPTs (here defined as those with greater than 100 MVA power handling capacity, HTS 8504.23.0080). While most of these manufacturers of LPTs also make liquid transformers of lesser power handling capacities, manufacturers of smaller power transformers cannot easily produce larger units, as they typically do not have the necessary equipment, such as large overhead cranes and annealing equipment, to produce LPTs.

In 2019, seven companies manufactured LPTs of 100 MVA or more in the United States: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] In 2020, Mitsubishi sold its Memphis transformer facility, and no longer manufactures LPTs (or any transformers) in the United States. Hyosung (HICO) of Korea purchased the facility and intends to manufacture transformers there, including LPTs, but as of the date of this report had not begun production.



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87

[Redacted text]

Domestic production of LPTs has been fairly steady over the past five years, albeit at a low level of about 130 units per year (see Figure VIII-35). [REDACTED]

[REDACTED]

[REDACTED]

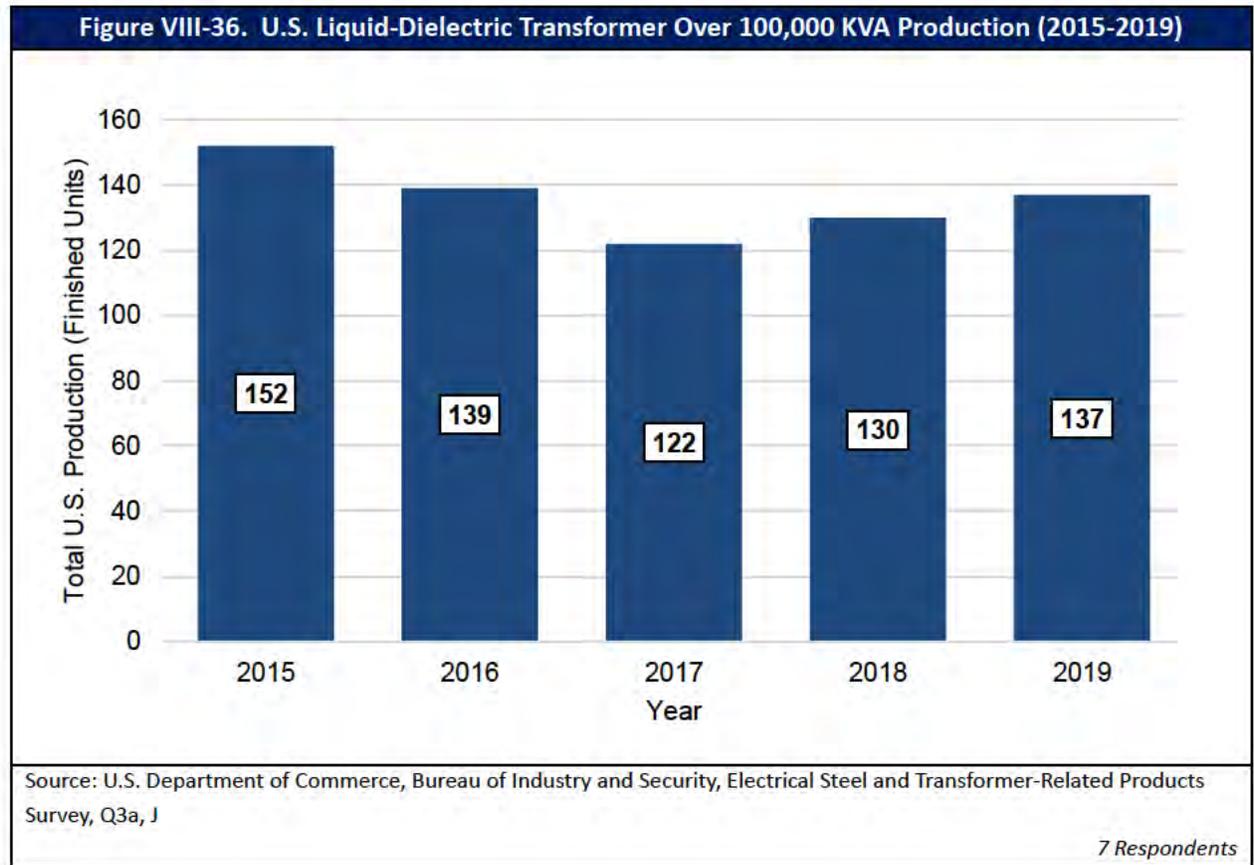
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]



In 2019, [REDACTED]

[REDACTED]

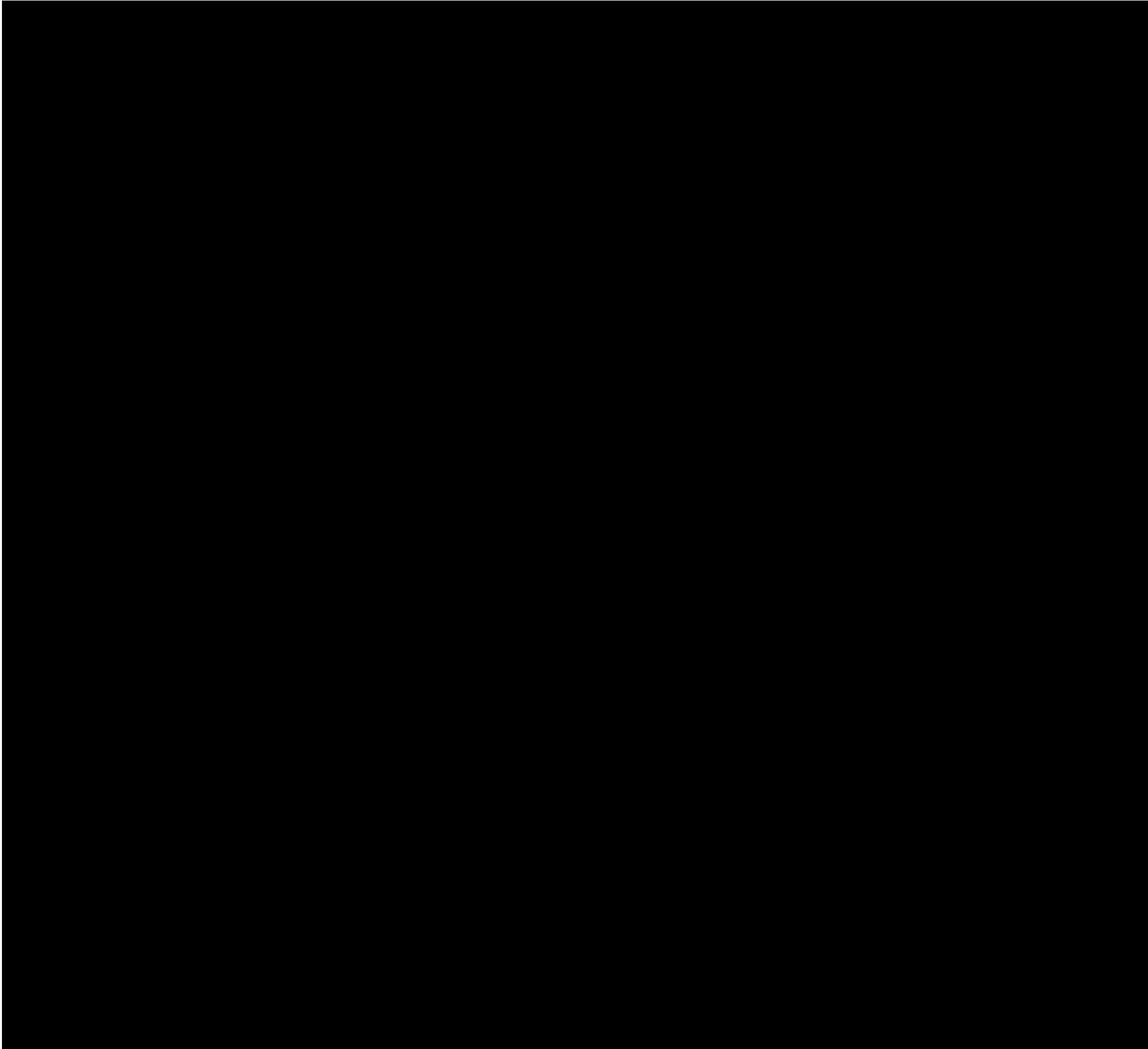
Whereas most domestic producers of LPTs also manufacture transformers of lesser power handling capacities in the same facility, [REDACTED]

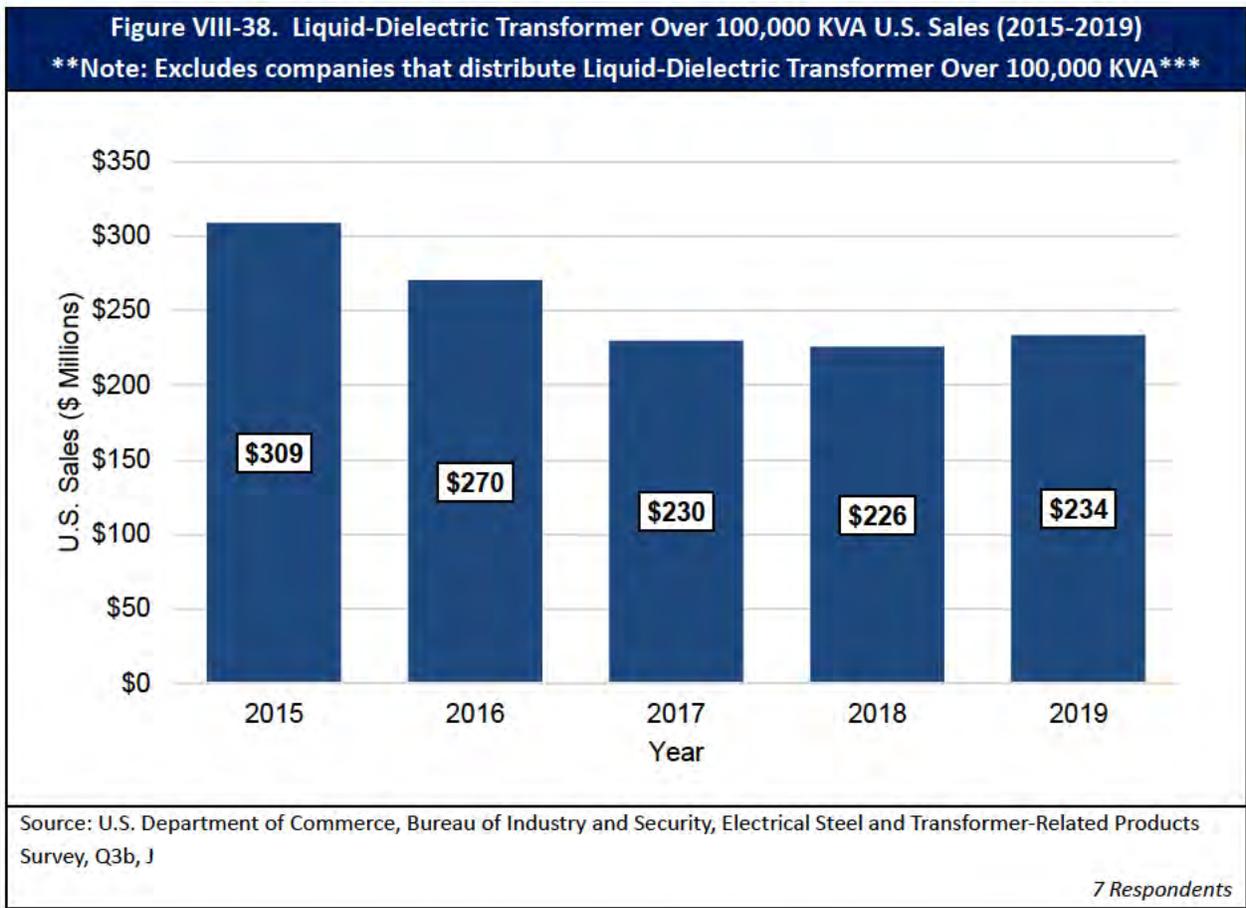
In terms of LPT sales, the trend is similar to production, with total sales averaging around \$250 million per year (Figure VIII-36). [REDACTED]

[REDACTED]

[REDACTED] Export sales of U.S.-produced large

transformers are negligible, with none reported in 2019 by the domestic manufacturers.





Overall domestic production capacity of LPTs remains inadequate to meet domestic demand, particularly with regard to the extra high voltage (EHV) transformers (those with >345 kV voltage rating) that are vital for long distance electricity transmission. While accounting for only a small percentage of units, EHV transformers are the most critical to the security and reliability of the electrical grid, because they handle over 60 percent of all electricity in the

country.<sup>88</sup> The loss of Mitsubishi Electric Power (MEPPI) as a domestic manufacturer is significant in this regard, as their facility produced EVH transformers.

Only three companies – [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>88</sup> Public Comments submitted by the Government of Canada, July 2, 2020.



The domestic industry is in a constant state of flux – due to plant closures, company exits and entrances, and acquisitions – that affects production capacity. As noted above, Mitsubishi ceased production at its facility in Memphis, with a loss of 200 jobs. HICO (Korea) purchased this facility and plans to invest \$103 million in the plant and hire 131 workers by 2021, but at present the facility is not operational. Another company that had briefly produced LPTs in the United States, Portugal-based EFACEC, sold its plant in Rincon, Georgia to Virginia Transformer in 2014.

In addition, ABB shuttered its St. Louis LPT manufacturing facility in late 2018, with a loss of 250 jobs; it also laid off 177 workers at its South Boston, VA plant that primarily produces smaller transformers and has limited capacity to produce LPTs. Some of the production formerly done in the United States will be performed at ABB's Varennes, Quebec plant, which is reportedly Canada's largest LPT manufacturing facility. ABB is also reportedly adding to its transformer production capabilities in India and China.<sup>89</sup>

Moreover, ABB's Power Grids business – including transformers – was sold to Hitachi of Japan in 2018 for \$11 billion (with the deal due to close in mid-2020).<sup>90</sup> Hitachi has not indicated its plans for ABB's U.S. operations, which are substantial (including distribution transformer production). If Hitachi decides not to continue operations once it finalizes the purchase of ABB's U.S. operations, the impact will be significant; ABB claims that it was the manufacturer for 70 percent of the power transformers installed in the U.S. electric grid (including those made by Westinghouse's Transmission and Distribution Division, which ABB acquired in 1989).

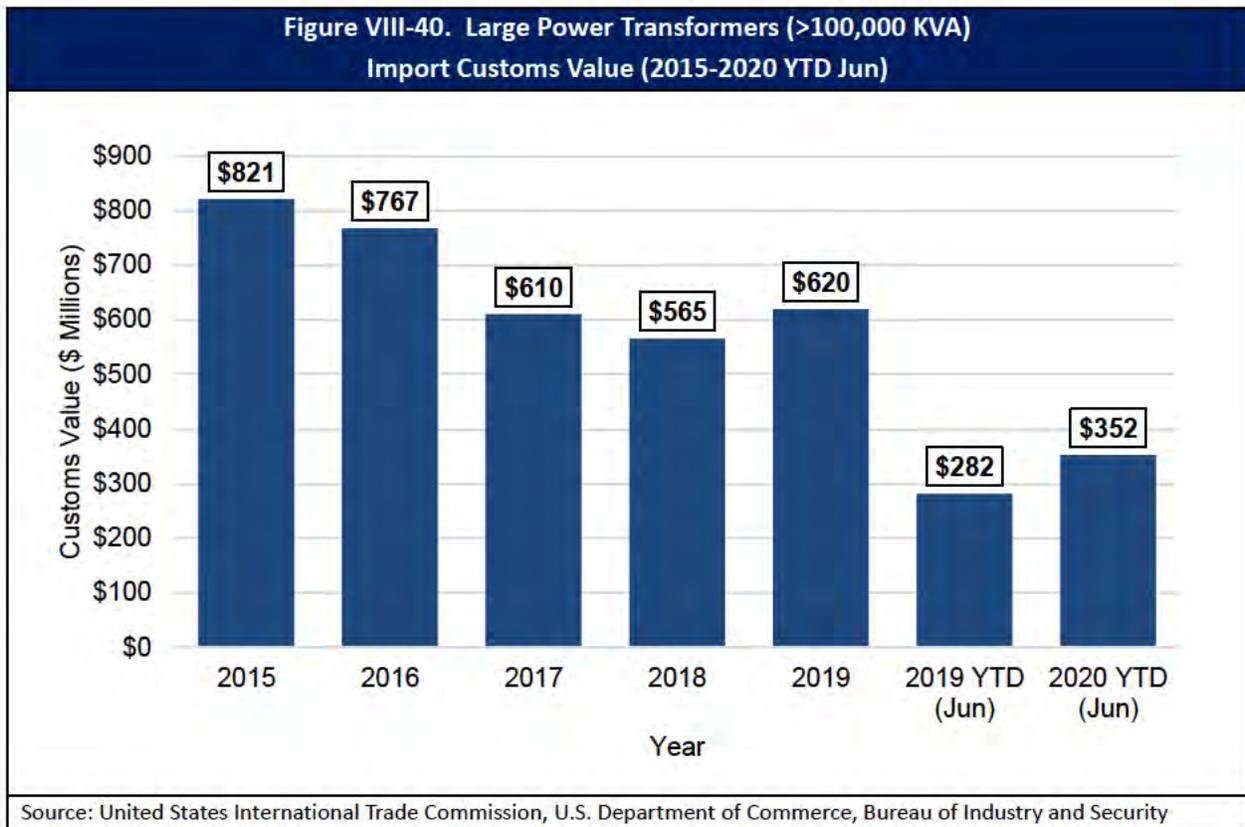
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<sup>89</sup> STLtoday. Nov. 6, 2017. [https://www.stltoday.com/business/local/abb-to-discontinue-production-in-st-louis-120-jobs-lost/article\\_c18fe08f-ab76-5e02-87d7-e4ea49c1d358.html](https://www.stltoday.com/business/local/abb-to-discontinue-production-in-st-louis-120-jobs-lost/article_c18fe08f-ab76-5e02-87d7-e4ea49c1d358.html).

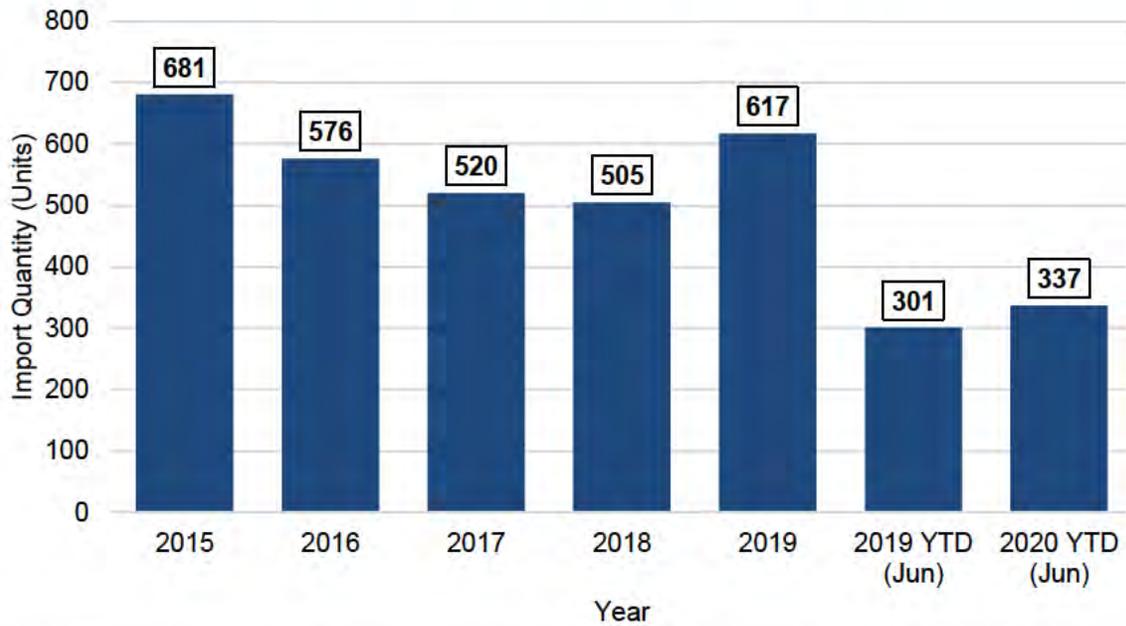
<sup>90</sup> Powermag.com, Dec. 17, 2018. <https://www.powermag.com/hitachi-acquires-abb-power-grids-business-in-11-billion-deal/>.

## 2. Apparent Consumption and Import Penetration

As noted above, domestic demand for the mature LPTs market is relatively stable from year to year and is largely based on the replacement and modernization of aging equipment. Given the limited production and capacity of domestic manufacturers, the majority of demand is met through imports.



**Figure VIII-41. Large Power Transformers (>100,000 KVA)  
Import Customs Quantity (2015-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

**Figure VIII-42. Large Power Transformers (>100,000 KVA)  
Import Quantities by Top 10 Countries (Units, 2015-2020 YTD Jun)**

Country	2015	2016	2017	2018	2019	2019 YTD (Jun)	2020 YTD (Jun)	SUM*
Mexico	297	151	124	150	202	92	139	1,063
South Korea	100	128	123	73	67	27	25	516
Austria	39	60	89	60	103	57	32	383
Netherlands	49	88	51	61	41	20	23	313
Canada	44	41	44	46	63	38	25	263
China	47	27	22	23	25	18	31	175
Taiwan	10	19	18	24	40	20	6	117
Spain	24	12	8	31	1	1	2	78
Brazil	6	7	16	8	14	7	12	63
Poland	6	8	10	13	16	11	3	56

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security

\*Excludes 2019 YTD (Jun) Data

Consistent with stable demand, the level of imports of LPTs was been relatively steady between 2015-2019 at between 500 and 700 units annually. Total value of U.S. imports of these items in 2019 was \$617 million. The leading sources for LPTs (>100 MVA) into the United States in 2019 (by unit) were Mexico, where several global transformer manufacturers have manufacturing facilities (202 units); Austria, where [REDACTED]

[REDACTED] These four countries accounted for 70 percent of U.S. imports by unit in 2019. On a value basis, the leading supplier was Austria with \$188 million out of total U.S. imports of \$620 million, which implies that the LPTs from Austria are on average more expensive than those from Mexico.

One notable trend is that imports from Korea fell from a high of 128 units in 2016 to 67 in 2019, replaced by production at Hyundai's U.S. facilities, which was not subject to tariffs. In addition, while not among the top five sources in 2019, China also supplied some LPTs for the U.S. electric grid. Although imports from China have declined from high of 47 units in 2015, 31 units were imported from China in the first six months of 2020, a number only behind Mexico and Austria. This is significant, as the President's emergency declaration and Bulk Power Executive Order is particularly concerned with possible vulnerabilities in the

critical energy infrastructure due to sourcing from potential adversaries such as Russia and China.

Based on the level of imports compared to domestic production, it is clear that the U.S. BPS is heavily dependent on imported LPTs, which are among the most critical elements in the BPS. The U.S. dependency on foreign sources for LPTs has persisted for at least a decade; there has been little net change in total U.S. production capacity during this timeframe, with new investments offset by plant closures.

U.S. apparent consumption of LPTs was 750 units in 2019 (domestic production of 137 + imports of 617 – exports of 4 units). **Thus, the import penetration level is over 82 percent. On a value basis, import penetration is slightly lower – about 73 percent based on apparent consumption of \$851 million** (domestic sales of \$234 million, plus imports of \$620 million, less exports of \$2.6 million). The dependence of the U.S. electric grid on imported LPTs negatively affects the domestic GOES industry because imported transformers most often utilize foreign-origin GOES.

In contrast to the inadequate domestic production capacity for LPTs in the United States, China has abundant production capabilities. With Chinese demand for LPTs comparable to that of the United States, China has at least 30 LPT

manufacturers. China's top three manufacturers can each produce double the total U.S. production capacity.<sup>91</sup>

As noted above, the grim state of domestic manufacturing capability for LPTs has persisted for more than a decade. In 2011, the ITC completed its antidumping investigation into imports of LPT from Korea. The investigation presented a detailed analysis of the state of the domestic industry at that time.<sup>92</sup> In 2010, there were six domestic manufacturers of LPTs, who were operating at an average capacity utilization rate of just 39.9 percent. Imports accounted for 85 percent of apparent consumption (based on the total power handling capacity of units sold) or 81 percent of apparent consumption (value basis). The ITC found that the domestic industry was materially injured by the imports of LPTs from Korea that were being sold at less than fair value, which led to the imposition of tariffs.

In 2012, with an update in 2014, DOE also issued reports highlighting the deficiencies in domestic LPT industry. DOE's reports drew upon on ITC's industry data, but analyzed the information from the perspective of the implications for the nation's critical energy infrastructure rather than unfair trade practice issues. In its reports, DOE expressed concern over the lack of domestic

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<sup>91</sup> DOE LPT Report, 2014.

<sup>92</sup> [https://www.usitc.gov/publications/701\\_731/Pub4256.pdf](https://www.usitc.gov/publications/701_731/Pub4256.pdf).

production capabilities for large power transformers. DOE's 2014 update noted that some foreign investment in U.S. manufacturing facilities (e.g., by EFACEC, Hyundai, and Mitsubishi), as well as expansions by U.S. firms (SPX), contributed to a slight increase in domestic production capacity in the mid 2010's but that production still fell far short of domestic demand). Of the three foreign companies noted in DOE's report, only Hyundai still manufactures domestically and overall domestic production capacity has not increased.

In September 2018, five years after the imposition of antidumping duties on imports from Korea, the ITC reassessed the status of the domestic industry.<sup>93</sup> Since its initial report in 2011, the ITC noted a number of changes, both positive and negative, in domestic capacity/production (e.g., facilities closed, bought by other companies, opened). The ITC also examined the health of the domestic LPT industry compared to five years earlier (in 2013) and found that on all measures, the industry had deteriorated. Although the ITC withheld specific data from the public report, the report stated that employment, wages, sales, shipments, market share, and financial performance had all declined.

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<sup>93</sup> ITC, "Large Power Transformers from Korea," Investigation No. 731-TA-1189, September, 2018, pp.30-31. See Appendix F for additional information.

### 3. Reliance on Imported Key Components

Lack of domestic production capability for LPTs is exacerbated by the fact that most domestic manufacturers rely on imports for key transformer components, including electrical steel, laminations, and cores. In fact, none of the remaining domestic LPT manufacturers source laminations or cores from U.S. suppliers, which highlights the lack of domestic capability in this area. Imported laminations and cores rely on almost exclusively non-U.S. GOES, which is significant because GOES, along with the copper used in the windings, accounts for a significant percentage of the cost of an LPT (up to 25 percent). GOES also accounts for between 75 percent and 90 percent of the cost of laminations, and 50-60 percent of the cost of transformer cores, based on the Department's survey data. As a result, price volatility and global market conditions for GOES continue to have an impact on the manufacturing and procurement strategies of LPT producers.

Specific company sourcing decisions, based on company responses detailed in the Department's survey, are as follows:

- [REDACTED]
- [REDACTED]

[REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

**4. Other Issues Affecting LPT Manufacturers**

Most of the domestic manufacturers of LPTs reported difficulty in hiring qualified workers, with more than 90 days required to source and train new employees. The companies reported experiencing a shortage of skilled production workers (e.g. testers, welders, and winders), field technicians, and design

engineers. In addition, the workforce is aging, and it is difficult to attract younger workers to this industry and to the geographical regions in which the companies are located.

Several of the companies also reported being negatively impacted by foreign competition, particularly from South Korea and Mexico. Despite the successful antidumping investigation that resulted in the imposition of import duties, domestic transformer manufacturers stated that they continue to be disadvantaged due to the protection/subsidization of South Korean manufacturers by their government. Specific to Mexico, domestic producers cited the low cost labor there as to their detriment. In addition, some domestic transformer companies that make laminations and cores in-house reported adverse effects vis-à-vis their foreign competitors as a result of the Section 232 tariffs on GOES.

#### **F. Voltage Regulators**

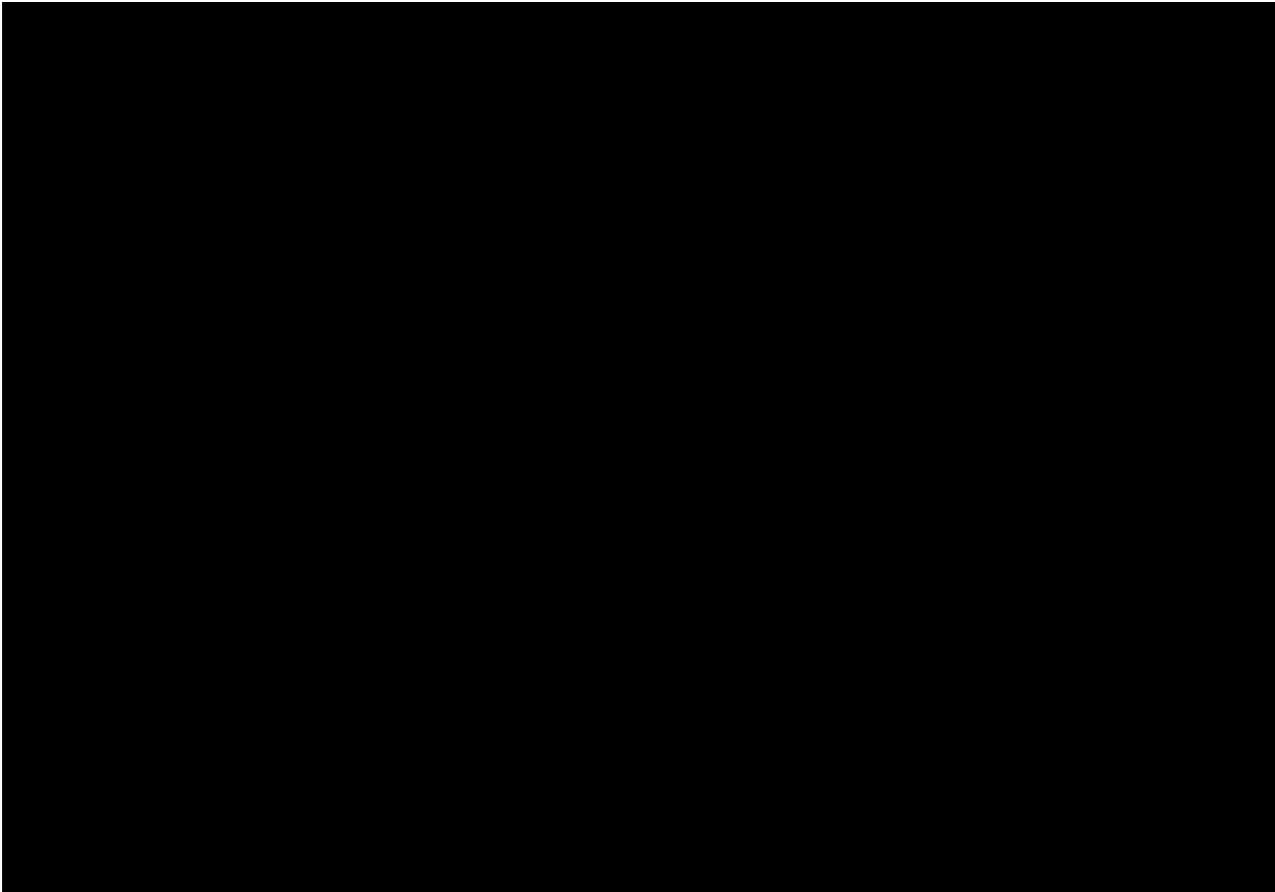
Six companies responding to the Department's survey indicated domestic production of voltage regulators; most of these companies also produce liquid dielectric transformers in the United States. [REDACTED]

[REDACTED] It is a major player in many of the other transformer categories, but the production of these products takes place in at offshore locations.

[REDACTED]

The top four companies, which accounted for over 95 percent of reported production, were [REDACTED]

[REDACTED] Imports of voltage regulators have fallen slightly in recent years, to \$81 million in 2019. The leading sources of imports were Canada, Germany, the United Kingdom, and Mexico.

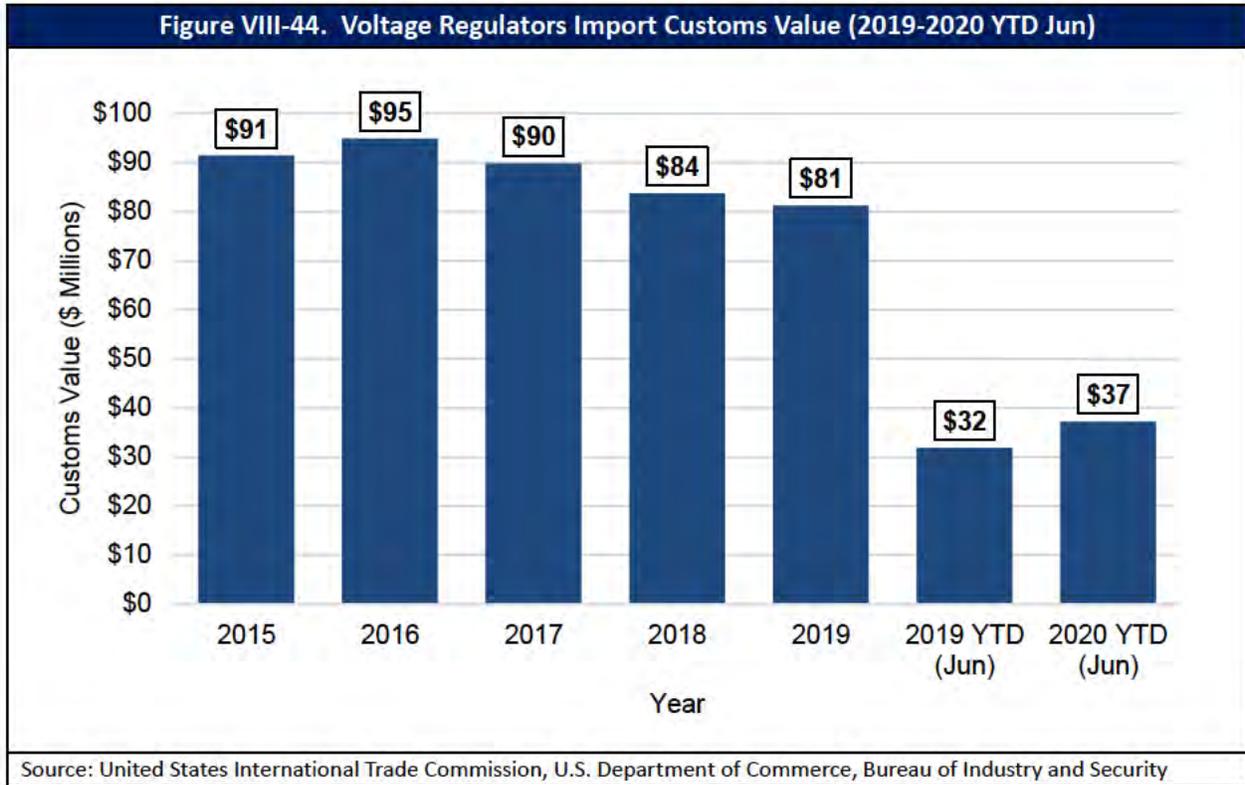


Import statistics do not appear to represent the voltage regulator segment of this investigation well. The large volume of imports (with low average unit values) captured by the Harmonized Tariff Schedule category under which voltage regulators fall (HTS 9032.89.4000<sup>94</sup>) includes many products unrelated to this investigation. Therefore, import penetration levels cannot be calculated. However,

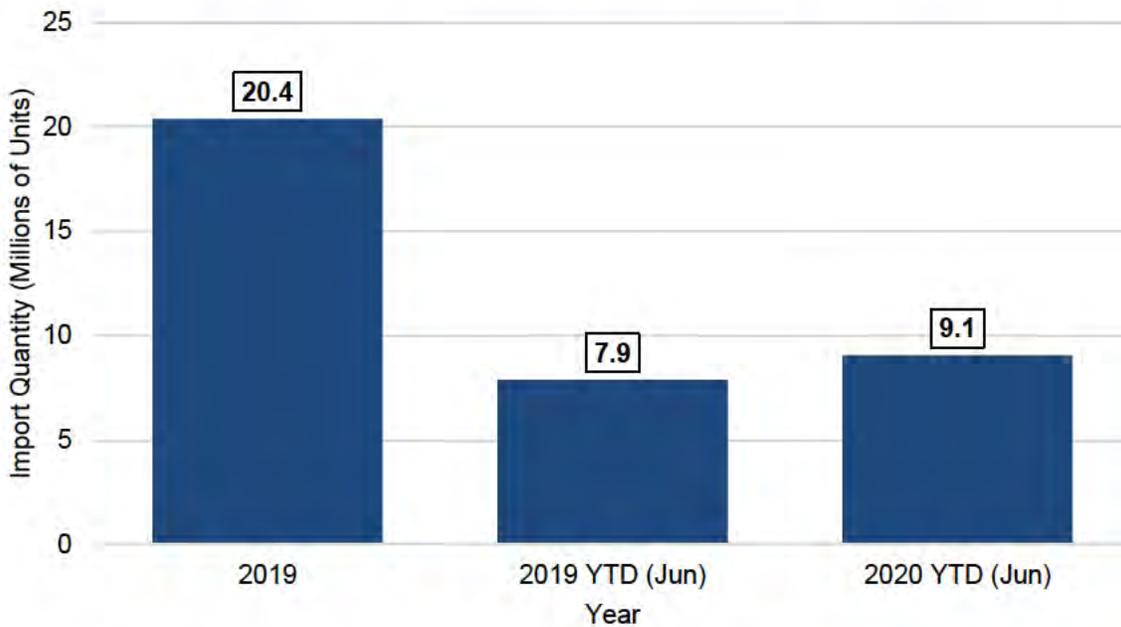
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<sup>94</sup> Automatic voltage and voltage-current regulators, other than designed for use in a, 12, or 24 V system.

as mentioned, the manufacturers of voltage regulators are all major players in the other transformer categories that are addressed in this report.

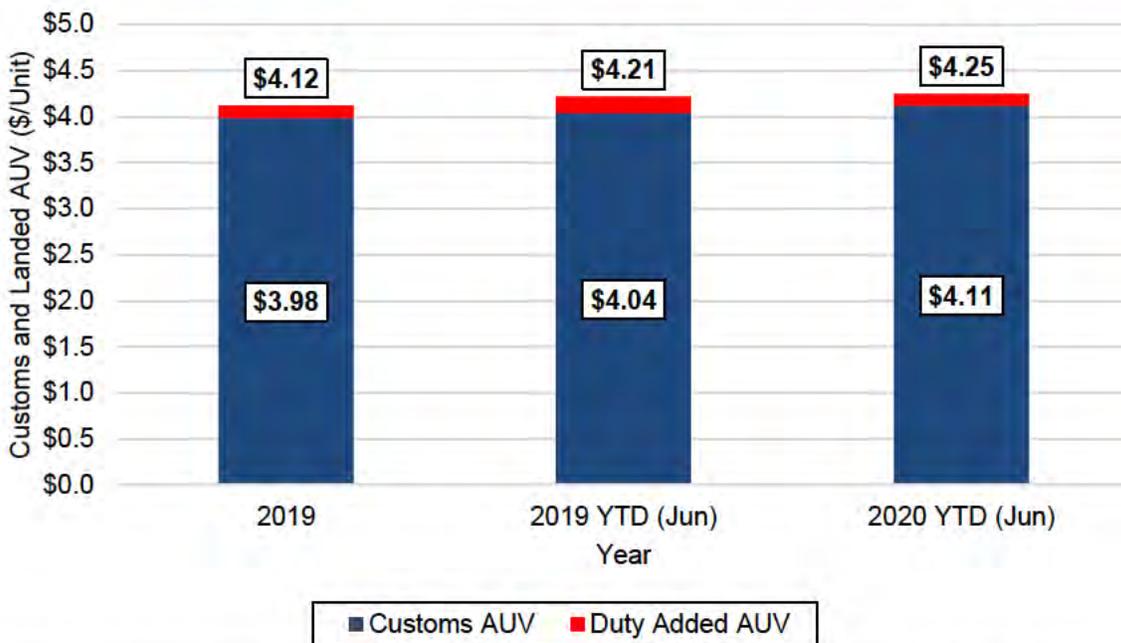


**Figure VIII-45. Voltage Regulators Import Customs Quantity (2019-2020 YTD Jun)\***



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Quantity Data Pre-2019 Unavailable

**Figure VIII-46. Voltage Regulators Import Customs AUV (2019-2020 YTD Jun)**



Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Data labels indicate the final Duty Landed AUV

\*\*Quantity Data Pre-2019 Unavailable

<b>Figure VIII-47. Voltage Regulators</b>				
<b>Import Quantities by Top 10 Countries (Thousands of Units, 2019-2020 YTD Jun)</b>				
<b>Country</b>	<b>2019</b>	<b>2019 YTD (Jun)</b>	<b>2020 YTD (Jun)</b>	<b>SUM*</b>
Canada	9,025	3,435	6,039	15,064
Germany	4,671	1,482	154	4,824
United Kingdom	2,163	989	697	2,859
Mexico	1,165	463	641	1,807
France	650	186	384	1,035
China	746	353	238	984
Philippines	58	52	468	526
Japan	280	157	138	419
Singapore	411	224	0.028	411
India	260	161	32	292

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Excludes 2019 YTD (Jun) Data  
 \*\*Quantity Data Pre-2019 Unavailable

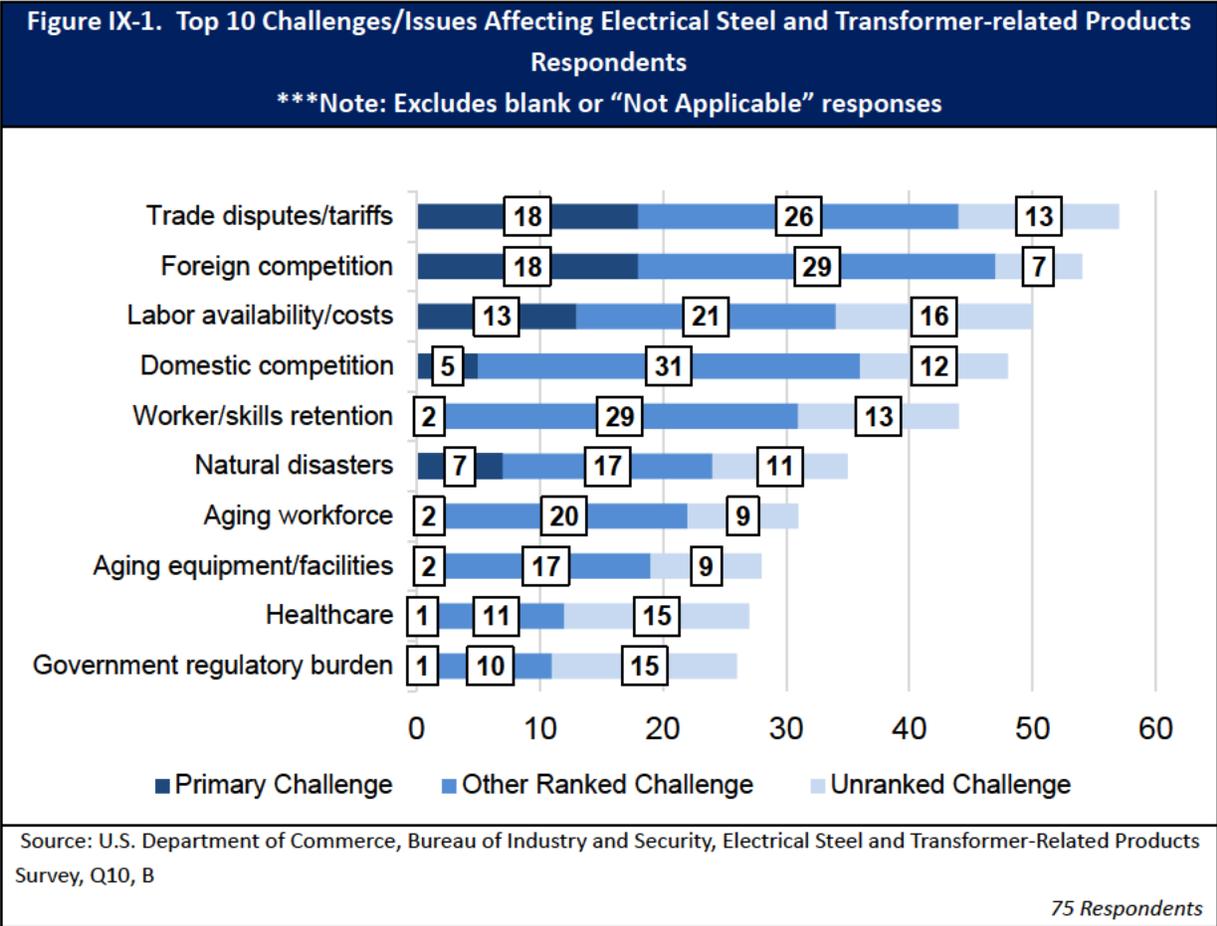
<b>Figure VIII-48. Voltage Regulators</b>				
<b>Customs Value Imports AUV by Top 10 Countries (\$/Unit, 2019-2020 YTD Jun)</b>				
<b>Country</b>	<b>2019</b>	<b>2019 YTD (Jun)</b>	<b>2020 YTD (Jun)</b>	<b>AVG*</b>
Singapore	\$1.9	\$2.1	\$1,798.1	\$900.0
Japan	\$10.0	\$7.3	\$13.6	\$11.8
Mexico	\$10.0	\$6.4	\$12.8	\$11.4
Philippines	\$15.0	\$12.9	\$1.9	\$8.5
Germany	\$2.6	\$3.0	\$14.2	\$8.4
China	\$7.1	\$7.9	\$8.9	\$8.0
United Kingdom	\$6.2	\$5.1	\$5.6	\$5.9
India	\$2.8	\$3.3	\$6.0	\$4.4
France	\$4.5	\$6.5	\$3.5	\$4.0
Canada	\$2.3	\$2.4	\$2.2	\$2.2

Source: United States International Trade Commission, U.S. Department of Commerce, Bureau of Industry and Security  
 \*Weighted Average by Quantity, Excludes 2019 YTD (Jun) Data  
 \*\*Quantity Data Pre-2019 Unavailable

## **IX. Competitiveness and Labor Issues**

### **A. Competitiveness**

Recipients of the Department's survey were asked to identify and rank the top five challenges or issues affecting their global competitiveness position from a list of more than thirty options. In general, there was little difference in responses among the respondents by specific transformer-related product sector. The most commonly identified primary challenge to their competitiveness reported was either trade disputes/tariffs or foreign competition. Seventy-six percent of respondents identified trade disputes/tariffs as a challenge, including 24 percent of respondents that noted it as the number one issue affecting their company's competitiveness. Similarly, 72 percent of respondents identified foreign competition as a challenge. Labor availability/cost was the third most commonly identified challenge and will be addressed in more detail in section B of this chapter.



## 1. Transformer Components

While mentioned by a majority of survey recipients across product categories, foreign competition is a particularly significant problem for the transformer cores and laminations sector. Of the survey respondents who produce laminations and cores for incorporation into transformers, 91 percent indicated that foreign competition is a major challenge. These responses are consistent with

import data which show that imports of laminations increased 57 percent and imports of cores increased 61 percent between 2018 and 2019.<sup>95</sup>

Almost all of the domestic transformer lamination and core producers participating in the Department's survey took the opportunity to provide specific commentary on competitiveness issues. In particular, they were asked to describe how their competitiveness has been affected and to provide any recommendations specific to the U.S. Government's response, including steps to mitigate the challenges that they face (Survey question 10 D). All the respondents in this sector presented similar information on the issues affecting their competitiveness but had different approaches and suggestions to address them. While many recommended imposing tariffs on downstream transformer components and finished transformers, others recommended removing the tariffs on imported GOES.

■ [REDACTED]

■ [REDACTED]

---

<sup>95</sup> [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

█ [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

█ [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] to preserve what is left of the U.S. transformer industry.

While the domestic manufacturers of laminations and cores have been negatively affected by imports, some transformer companies that purchase these components for incorporation into transformers benefitted during the same time period. In particular, increased competition in the lamination and core sector was beneficial to their competitiveness, as it led to reduced costs for these items.

## **2. Distribution, Small & Medium Power Transformers and Dry-type Transformers**

As compared to survey respondents from the transformer core and laminations sector, while increasing foreign competition was also a significant challenge for distribution, small and medium power, and dry-type transformer producers, a larger number of this group of survey respondents indicated labor-related issues as their number one concern. Labor challenges were listed by 17 out of the 19 distribution and small-power transformer manufacturers, and by nine out

of ten medium-power transformer manufacturers. With regard to dry-type transformers, seventy percent of manufacturers indicated trade disputes/tariffs were challenges. Similarly, 60 percent and 55 percent of respondents in this group regarded foreign competition and labor availability/costs as challenges, respectively.

With regard to competitiveness issues, several of the transformer companies expressed strong opposition to the expansion of tariffs to downstream products because such an expansion would harm their competitiveness by increasing their costs and disrupting their supply chain.) Instead, they recommended the elimination of existing tariffs on GOES [REDACTED]

[REDACTED] However, other transformer companies, facing the same competitive pressures due to rising material costs, recommended extending the tariffs to include complete transformers [REDACTED]

### **3. Large Power Transformers**

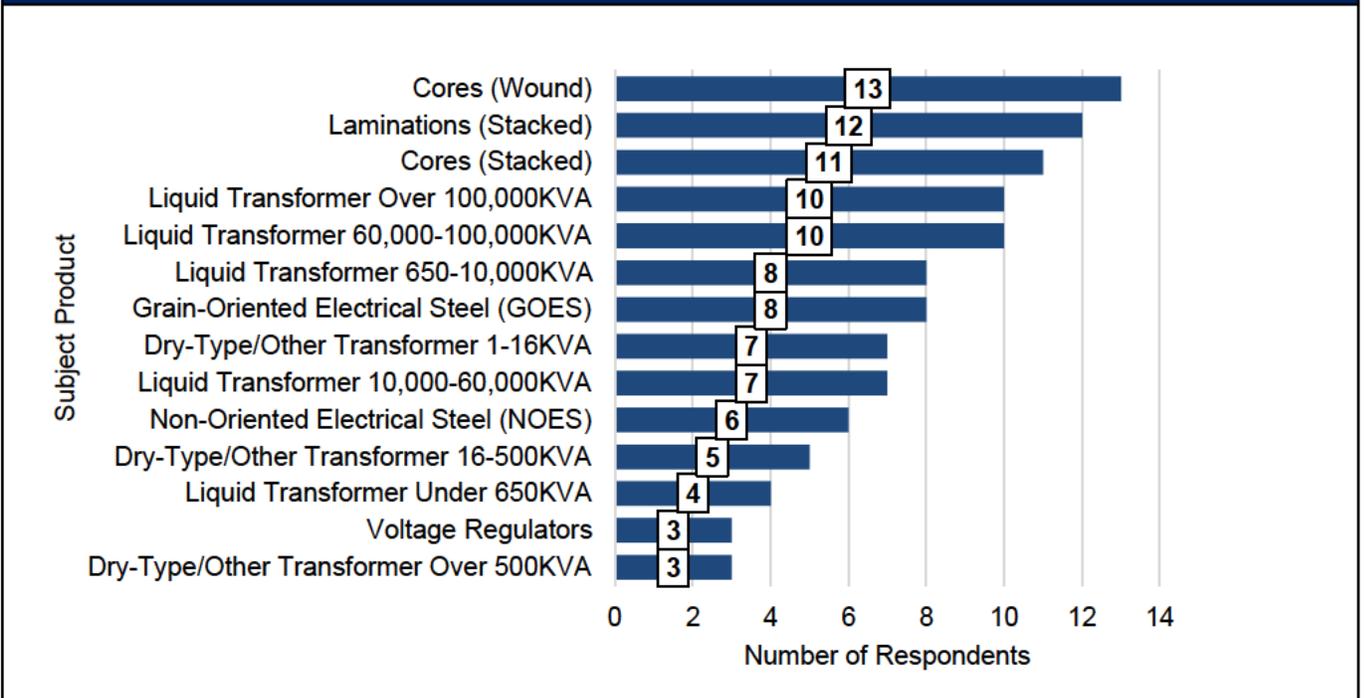
For the manufacturers of LPTs, foreign competition was again the leading problem. All seven survey participants in this industry sector expressed this concern. The domestic producers were particularly concerned about competition from South Korea, where companies benefit from subsidies and protection by the South Korean Government. Increased competition from Mexico was also identified as a challenge. Other frequently mentioned issues affecting the

competitiveness of large power transformer manufacturers were trade disputes/tariffs (specifically the increased production costs due to GOES tariffs), labor availability/costs, and aging equipment, facilities, or infrastructure.

#### **4. Changes in Competition**

In addition to identifying specific factors affecting them, survey respondents were asked to indicate whether or not there had been a significant change since 2018 with regard to foreign competition in any of the product categories subject to this investigation and whether the change was positive, negative, or neutral. Not surprisingly, respondents reported that significant increases in import competition are most prevalent in the wound cores, stacked laminations, and stacked cores product categories (i.e., the product categories of which GOES is the primary input).

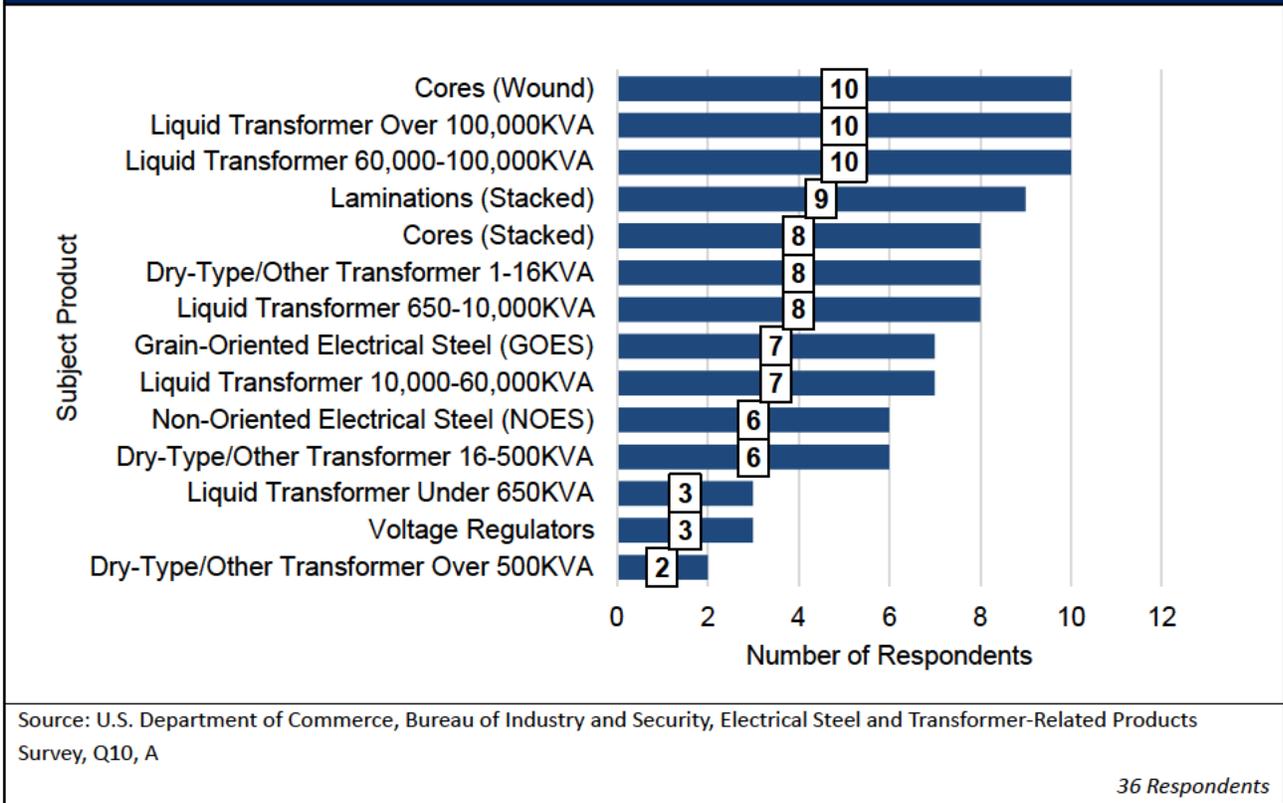
Figure IX-2. Electrical Steel and Transformer-related Products by Increased Import Competition Since 2018



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q10, A  
39 Respondents

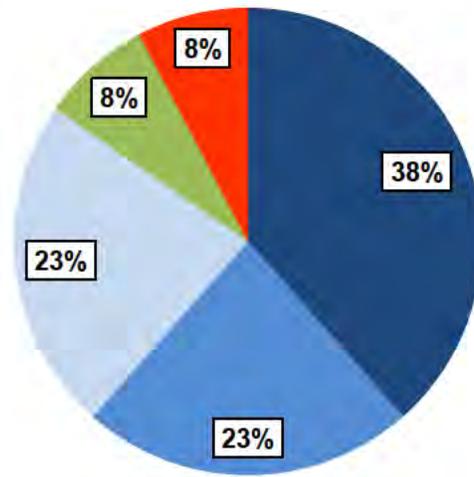
An overwhelming majority of the respondents that indicated an increase in import competition also indicated that the increase in competition had a negative effect on their organizations. However, as mentioned above, some transformer manufacturers have benefitted from increased competition, specifically in the component sector from which they source.

**Figure IX-3. Electrical Steel and Transformer-related Products Import Competition Change Since 2018 by Negative Organization Impact**



The countries most often listed as the source of increased foreign competition were Canada, China, Japan, and Mexico. For wound cores, Japan was mentioned most frequently, followed by Canada and Mexico. In contrast, Japan was not mentioned as a source of competition for laminations; Canada was most often mentioned, followed by China and Mexico. For stacked cores, import competition was identified as coming from Canada, China, Mexico, and Japan.

Figure IX-4. Cores (Wound) – Primary Source Country of Increased Import Competition Since 2018

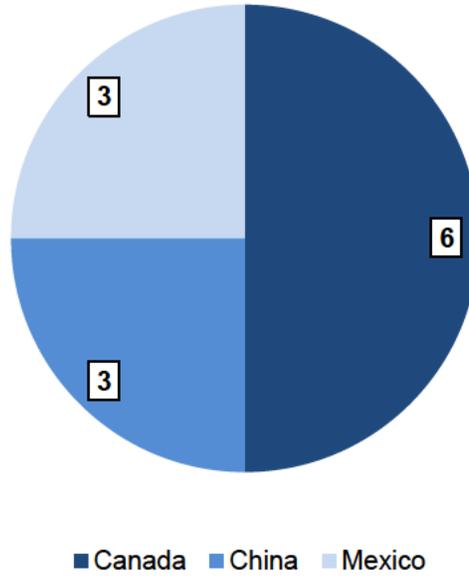


■ China ■ Canada ■ Mexico ■ India ■ Japan

Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q10, A

13 Respondents

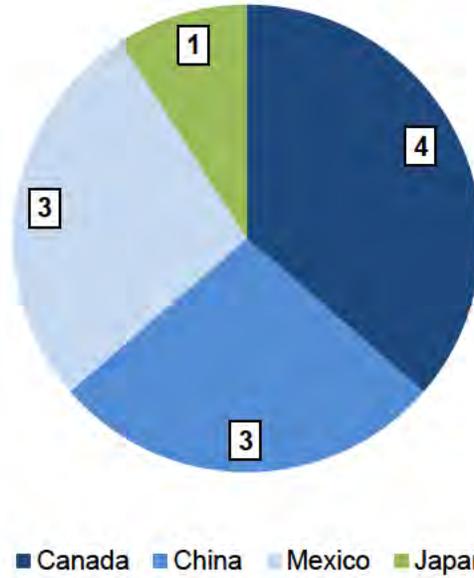
Figure IX-5. . Laminations (Stacked) – Primary Source Country of Increased Import Competition Since 2018



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q10, A

12 Respondents

Figure IX-6. Cores (Stacked) – Primary Source Country of Increased Import Competition Since 2018



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q10, A

11 Respondents

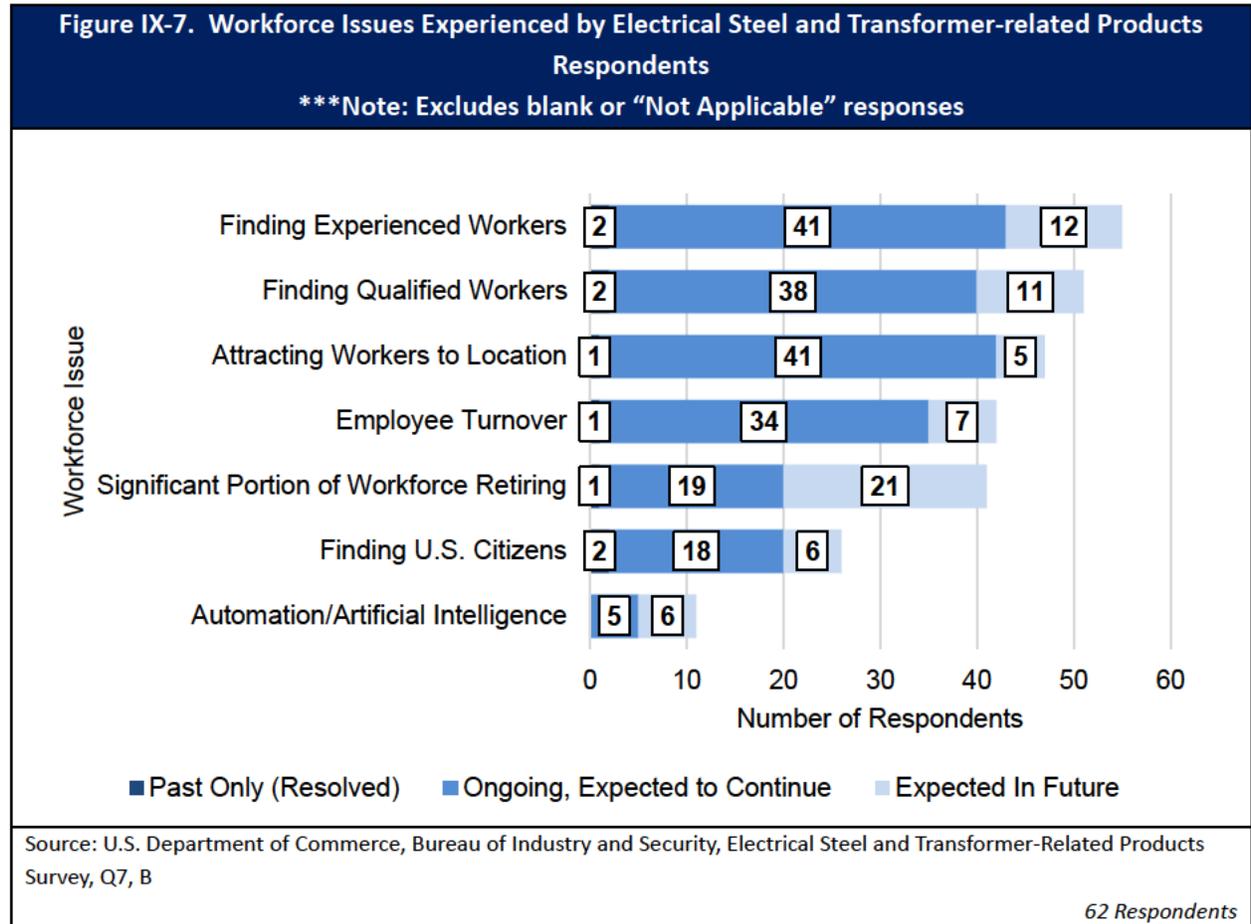
## **B. Labor**

In addition to questions about the labor-related issues affecting competitiveness, survey recipients were asked specific questions related to their workforce. On average, survey respondents that manufactured transformers or transformer components in the United States indicated that labor accounted for 36 percent of their costs, with a range between 1 percent and 83 percent.

Eighty-nine percent of survey respondents reported having had difficulties in finding qualified or experienced workers, including 66 percent that identified the problem as an ongoing issue. This is significant, as transformer manufacturing requires specialized skills including welding, coil winding, and transformer testing. Survey respondents indicated that U.S. high schools do not offer programs that train young people for skills such as these. Transformer manufacturers also experienced difficulties in hiring employees with certain educational backgrounds or training, including manufacturing engineers, power electrical engineers, quality control, and electrical design engineers. Several respondents mentioned that few universities offer training in these areas.

Survey respondents reported an aging workforce and trouble attracting and retaining younger workers. Seventy-eight percent of respondents that identified anticipated future workforce issues regarded the possibility of a significant portion of their workforce retiring as a challenge affecting their company. The location of

the production facilities in remote and/or less desirable/ economically challenged areas was cited by nearly 80 percent of survey respondents as a factor inhibiting attracting qualified labor.



**Figure IX-28. Ongoing Workforce Issues Experienced by Electrical Steel and Transformer-related Products Respondents**

**\*\*\*Note: Excludes blank or "Not Applicable" responses**



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q7, B

52 Respondents

**Figure IX-9. Expected Future Workforce Issues Experienced by Electrical Steel and Transformer-related Products Respondents**

**\*\*\*Note: Excludes blank or "Not Applicable" responses**

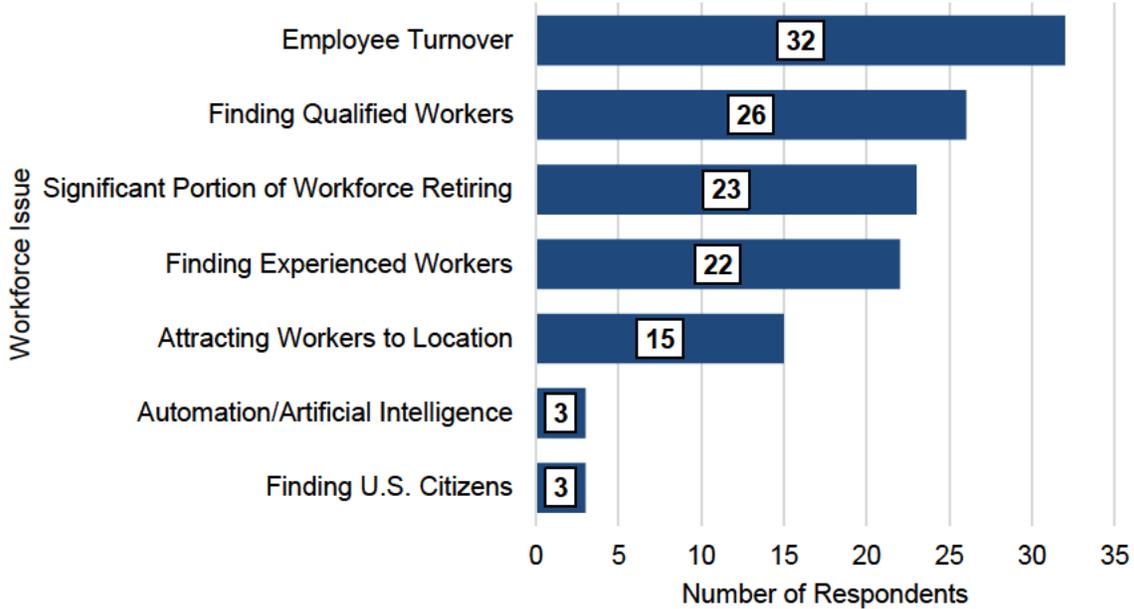


Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q7, B

27 Respondents

**Figure IX-10. Workforce Issues Affecting Production Line Workers among Electrical Steel and Transformer-related Products Respondents**

\*\*\*Note: Excludes blank or "Not Applicable" responses



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q7, B

47 Respondents

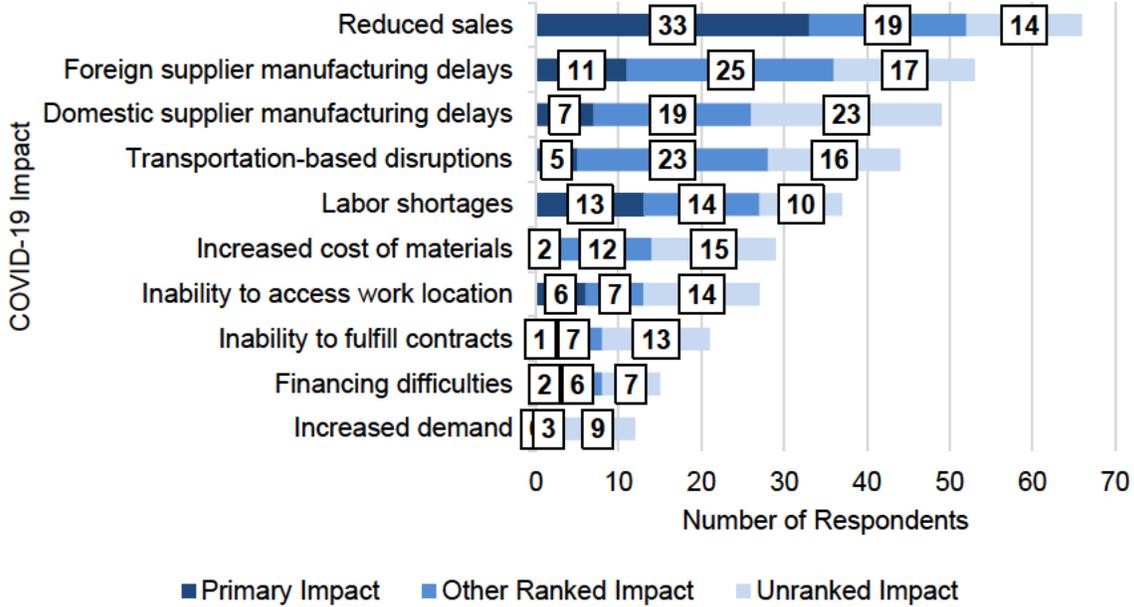
### C. COVID-19 Impact

This investigation and the industry survey associated with it were conducted during the time of the COVID-19 pandemic in the United States. The Department included questions on the survey related to COVID-19, as situations such as a global pandemic can disrupt supply chains and production. If they persist, these disruptions may have implications on the ability of the industry to support critical national security and energy infrastructure needs.

Survey respondents were queried on specific ways the pandemic impacted their organization and their responses are listed in the tables below (note that respondents could list multiple impacts/responses). Only three respondents indicated that they experienced no impact from COVID-19. Of the remaining respondents, 79 percent indicated that the pandemic reduced their organization's sales, including 38 percent that noted reduced sales as the primary coronavirus-related impact. Similarly, 63 percent and 58 percent of respondents, respectively, experienced foreign and domestic supplier manufacturing delays.

**Figure IX-11. Top COVID-19 Impacts Experienced by Electrical Steel and Transformer-related Products Respondents**

\*\*\*Note: Excludes blank responses



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q11, A

84 Respondents

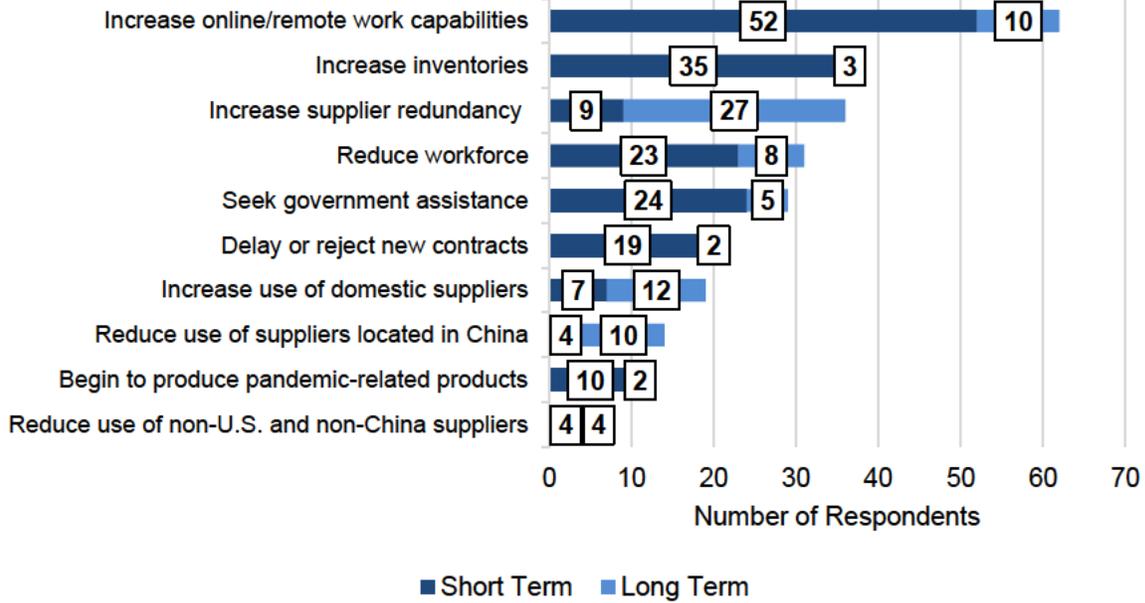
As reported, foreign supplier delays as a result of the Covid19 pandemic were most prevalent among transformer manufacturers. Of the transformer manufactures that experienced foreign supplier delays, 50 percent manufacture dry-type/other transformers 1-16 KVA. An additional 43 percent and 40 percent of respondents that experienced foreign supplier delays manufacture liquid-dielectric transformers 650-10,000KVA and dry-type/other Transformers 16-500KVA, respectively. However, only one wound core manufacturer reported that COVID-19 resulted in foreign supplier manufacturing delays; such delays were not reported

by any lamination or stacked core manufacturers. These percentages generally correspond to the numbers of each type of manufacturer participating in the survey, they do not indicate that foreign supplier delays or other impacts were concentrated in any particular sector.

The most common response to the pandemic was to allow non-production line workers to work remotely, with 76 percent of respondents increasing online/remote work capabilities, including 63 percent of respondents that classified it as a short-term solution. Similarly, 45 percent and 44 percent of respondents increased their inventories and supplier redundancy, respectively. Five respondents indicated that their organizations took no action in response to the COVID-19 pandemic.

**Figure IX-12. Top Actions Taken in Response to COVID-19 by Electrical Steel and Transformer-related Products Respondents**

\*\*\*Note: Excludes blank responses



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q11, A

82 Respondents

Thirty-five respondents indicated that their organizations took no long-term actions in response to the pandemic. Of the respondents that took long-term action, 52 percent indicated that they increased supplier redundancy. Similarly, 23 percent of respondents increased their use of U.S. suppliers and reduced their use of suppliers in China.

**Figure IX-13. Top Long Term Actions Taken in Response to COVID-19 by Electrical Steel and Transformer-related Products Respondents**

\*\*\*Note: Excludes blank responses



Source: U.S. Department of Commerce, Bureau of Industry and Security, Electrical Steel and Transformer-Related Products Survey, Q11, A

52 Respondents

## **X. Findings and Recommendations**

### **A. Findings**

#### **1. Grain-Oriented Electric Steel**

As was determined by the 2017 Section 232 Investigation on the Impact of Imports of Steel on the National Security, GOES is critical to the national security. The United States must maintain a secure supply and robust production capacity for GOES, which was found to be harmed by imports brought on by unfair trade practices and artificially-induced global excess capacity. GOES is essential to the production and function of transformers of all power handling capacities that form the backbone of the U.S. electrical grid. Sufficient domestic production capacity for GOES is necessary in order to ensure the ability of the United States to address threats facing our critical energy infrastructure.

This investigation finds that imports of downstream GOES products, namely laminations for incorporation into transformers, and stacked and wound cores for incorporation into transformers, have negatively affected domestic GOES production, as these key transformer components are the primary market for GOES. The value of U.S. imports of laminations has more than doubled from \$15 million in 2015 to \$33 million in 2019. Core imports were \$22 million in 2015 and soared to \$167 million in 2019. Together, Mexico and Canada account for more than 95 percent of these imports. As domestic demand for transformers has not

increased, increased imports of laminations and cores represent displaced domestic production, and hence, domestic consumption of GOES.

There is only one remaining domestic producer of GOES (AK Steel), at which capacity utilization stands at ██████████ in 2019 due to loss of the domestic market to imported laminations and cores. At this capacity utilization level, the company cannot operate profitably and there is a risk it will cease GOES production altogether. Moreover, poor profitability over a number of years has impeded and will impede the ability of the sole U.S. manufacturer of GOES to invest in modern capital equipment necessary for it to produce sufficient quantities and qualities of GOES to meet domestic demand.

## **2. Transformer Laminations and Stacked and Wound Cores**

The large increase in imports of transformer laminations and cores has not only hindered domestic GOES production, but also leaves the United States with a lack of sufficient capacity to produce these items that are essential to modern, efficient transformers. The United States transformer industry has become highly dependent on foreign sources for laminations and cores, and imports have displaced domestic production, leaving domestic capacity to manufacture them insufficient and in some cases is in danger of closing down. While the majority of imports of these items come from Canada and Mexico, neither country has

indigenous production capability for the GOES which is the main material in them. Therefore imports of transformer laminations and cores contain foreign-origin GOES, including some from potentially unreliable suppliers in China and Russia. Lack of domestic capacity and dependence on imports for these transformer components puts at risk the ability to maintain and repair the existing electric grid in the face of increasingly emboldened foreign adversaries.

### **3. Large Power Transformers**

This investigation further finds that imports of LPT (those with power handling capacities of 100 MVA and above), pose a dual threat to the national security by constraining U.S. GOES production, as well as materially harming domestic LPT production. In this sector, imports account for over 80 percent of consumption, and the five remaining U.S.-based manufacturers are operating at less than 40 percent of capacity. Domestic production capability, even if operating at full capacity, falls far short of the ability to meet demand. Of particular concern is lack of domestic capacity with regard to extra high voltage transformers (those with >345 kV voltage rating) that are vital for long distance electricity transmission. This excessive level of foreign dependence on imported LPT, which are uniquely critical to the BPS, puts the resiliency of the critical energy infrastructure at risk. The global pandemic of 2020 has shown U.S. vulnerability

to supply-chain shocks and has highlighted the need to ensure the availability of key equipment and major subcomponents thereof from American companies.

**The Secretary therefore finds that laminations for incorporation into transformers, stacked and wound cores for incorporation into transformers, and LPT are being imported into the United States in such quantities and under such circumstances as to threaten to impair U.S. national security.**

Because electricity, and therefore transformers, are vital to the nation's national defense and economy, the United States must maintain sufficient capacity to produce GOES, transformer laminations and cores, and LPT that can be drawn upon to address sudden disruptions or outages in the electric grid, be they due to natural disasters, physical strikes or cyberattacks. Moreover, extreme reliance on foreign sources for these essential items leaves the United States vulnerable to disruptions in the supply chain, whether due to interruptions in transportation routes, production processes (e.g., pandemics, civil unrest, work stoppages) or foreign government economic sanctions.

**With regard to other electrical transformers (dry-type and liquid dielectric transformers with less than 100 MVA power handling capacity) and transformer regulators that were also subject to this investigation, the Secretary does not find that these items are being imported in such quantities**

**or under such circumstances as to threaten to impair the national security at this time.**

Overall, domestic production of these products is sufficient to support critical infrastructure and national security requirements, and U.S. firms remain competitive. However, domestic manufacturers of these products were found to be highly dependent on imported transformer laminations and cores and the foreign-origin GOES contained in them. Robust domestic production capability for these subcomponents, including GOES, will minimize supply chain risks for manufacture of these transformers and transformer regulators and support critical infrastructure requirements across all levels of the distribution system.

## **B. Options**

The following are seven non-mutually exclusive options to address the threats to United States national security posed by imports that the Secretary identified in this investigation. A discussion of the potential benefits and drawbacks of each option follows.

1. Negotiate either bilaterally or trilaterally with Canada and Mexico to reduce imports of subject products and/or to utilize more U.S. GOES in their production
2. Impose tariffs or quotas on imports of some or all of the products subject to this investigation

3. Provide direct production subsidies or R&D, capital expenditure loans, or other financial incentives to support domestic production of subject products.
4. Impose domestic content requirements for transformers
5. Establish a Stockpile for some or all of the subject products
6. Change the Harmonized Tariff classification for laminations and cores to the steel HTS category rather than the transformer category
7. Establish a working group to provide further recommendations

## **1. Negotiate With Canada and Mexico**

As this investigation found, Canada and Mexico are the leading sources of imports of products subject to this investigation. Imports of transformer laminations and transformer cores from Canada have increased dramatically since 2015, and with imports from Mexico, account for over 95% of U.S. imports of these products. In addition, Mexico has a substantial transformer manufacturing industry, and is the leading source for LPT for the U.S. electrical grid.

Mexico, and especially Canada, are close allies and trading partners. Per agreement, Canada is considered part of the U.S. Defense and Technology Base. In addition, both countries have highly interconnected electrical grids with the United States, and cooperate on ways to ensure the resiliency and address threats to the North American BPS. Neither country has production capability for GOES that is a key material supporting equipment in the electrical grid. It is therefore not only in the security interests of the United States to maintain a source of GOES, but also in the interests of Canada and Mexico as well.

Thus, negotiate with Canada and Mexico to address the threats to the North American security posed by the potential loss of U.S. GOES production. Seek through negotiations to increase consumption by Mexican and Canadian transformer and transformer component manufacturing sectors of U.S. GOES and sub-assemblies. This option may include purchasing agreements with both

countries, as well as voluntary agreements limiting imports from select countries. This option is expected to be budget neutral and ensures continued cooperation on behalf of all parties through the USMCA and other bi- and multi-lateral treaties.

Under this agreement, a purchasing agreement will increase the demand and production for domestic GOES. A purchasing agreement would guarantee a United States market share in both the Canadian and Mexican transformer manufacturing sectors. Canadian and Mexico primarily export their transformers and transformer components to the United States. A purchasing agreement will ensure that domestically consumed transformers will rely on United States GOES production despite their manufacture in Canada and Mexico. Should a purchasing agreement not be feasible, voluntary trade restrictions may be another option. A voluntary trade agreement to limit the import of GOES from China and Russia by Canada and/or Mexico could encourage demand for U.S. GOES. To complement Executive Order 13920 (E.O. 13920 or Bulk Power Executive Order), limiting GOES, laminations, and core imports from China and Russia will ensure greater security for United States, Canadian, and Mexican BPS. The Secretary of Commerce recommends pursuing both a purchasing agreement and a voluntary limitation on imports from China and Russia.

## **2. Tariff/Quota/Tariff-Rate-Quota Duties**

Extend proclamation 9705 to the following HTS codes: 8504.90.9634, 8504.90.9638, and 8504.90.9642. Should this option be selected, a 25 percent global tariff rate will be applied to imports of laminations and cores (both stacked and wound) for incorporation into electric transformers. This will result in positive tariff revenues and has the potential to reduce the import of laminations and cores (stacked and wound). The alternative is to issue a new global tariff rate on laminations and cores (stacked and wound) and set it to 100 percent. This rate was requested by the domestic GOES producer as they believe it will incentivize both domestic GOES consumption and lamination and core (stacked and wound) production. In the short term, this does not address the shortcomings of domestic GOES production with regard to all grades of GOES.

Applying a quota, or tariff-rate-quota will negatively impact the transformer industry and could be contrary to national security interests as that sector is also vital. Given that the dependency of the U.S. transformer industry on imported laminations and cores (stacked and wound) for incorporation into transformers, Applying a tariff rate to only laminations and cores (stacked and wound) will negatively impact the industry by raising input costs. Transformer manufacturers are likely to offshore their domestic production facilities in order to avoid the increased costs. In addition, offshoring domestic transformer production will

likely decrease the demand for domestic GOES in the longer term, as transformer manufacturers can procure cheaper imports elsewhere.

### **3. Production subsidies, R&D, Capital Expenditure Loans, Or Other Financial Incentives**

Issue a capital expenditure grant or loan to the domestic GOES manufacture to upgrade facilities in order to reduce operating costs and increase production capacity for high grade GOES. This option is the most direct way to address shortcomings identified in this investigation with regard to domestic the GOES industrial capabilities, and has the potential to increase the competitiveness of domestic GOES in both U.S. and foreign markets in the medium to long term. Any production subsidy should consider and account for the different grades of GOES to ensure that subsidies are in fact making domestic GOES price competitive with imports across all grades. In addition, a production subsidy should have a clear termination date in order to avoid overreliance on financial assistance.

Production subsidies however are not solely limited to the existing domestic GOES manufacturer. New entrants could take advantage of such subsidies in order to better compete on price while increasing their production capacities. As production subsidies are directly targeted towards GOES manufacturers, downstream costs are not expected to increase.

This option is expected to be budget negative in the short run, however, it has the potential to be budget neutral, or positive in the long run. Budget neutrality or positivity can be achieved by preferable interest rates, or combining a capital expenditure loan with a strategic stockpile option (which can be liquidated at a future date for profit). This option is not expected to explicitly increase the costs for electrical steel or transformer-related products.

Improving the domestic GOES manufacturer's facilities are expected to reduce operating costs. More importantly, upgrading their machinery can increase capacity for certain GOES grades which would address concerns raised by industry. New entrants into the market may also take advantage of a production subsidy or capital expenditure loan to subsidize their startup costs and encourage future domestic GOES demand and competition. A capital expenditure loan is more preferable than a production subsidy as it has set terms which expire. Special attention, however, will need to be given to the underlying factors which will support this option.

In order for a capital expenditure loan to succeed in reducing operating costs, demand for domestic GOES has to increase. Should demand not increase, there is no guarantee that the loan can be recouped. In addition, low-priced imports may pose a threat as there is no guarantee that after the facilities are upgraded, they will be able to compete with imports on price. Further review into

regulations and other agreements may be necessary to further reduce domestic operating costs. The Secretary of Commerce recommends combining the capital expenditure loan with establishing a strategic stockpile to ensure long-term budget positivity.

#### **4. Enact Domestic Content Requirements**

Enact a domestic content requirement through the Defense Federal Acquisition Regulations (DFAR) and Federal Acquisition Regulations (FAR) to require that all electric transformers purchased by the U.S. government are compliant with the Buy American Act. This option is expected to increase demand for domestic GOES, which will in turn increase demand for transformers produced domestically. This option is expected to be budget neutral and will not explicitly increase the cost of GOES or transformer-related products. Special provisions will have to be implemented in order to avoid explicitly increasing costs.

The main drawback of this option is that direct Department of Defense and U.S. Government purchases of transformers account for only a small percentage of transformer production, and so will have limited impact on domestic GOES production unless the domestic content requirement can be extended to purchases of transformers by public and private utility companies that make up the majority of the market.

## **5. Establish A Strategic Stockpile of GOES**

Establish a strategic stockpile of domestic GOES and subsequent transformer-related products to satisfy U.S. defense and essential civilian transformer demand in case of a national emergency. In fact, the Defense Logistics Agency is seeking funding for inclusion of GOES in the National Stockpile. This option is expected to be budget negative in the short run, however, it can be budget neutral or positive in the long run. This option will ensure that the domestic GOES producer retains business in order to support the stockpile in the short run.

In the long run, a strategic stockpile on its own does not guarantee success for the domestic GOES producer. Should the stockpile be comprised of GOES, a domestic lamination and core (stacked and wound) industry is necessary in order to process the GOES. Should the stockpile include both GOES and laminations and cores (stacked and wound), multiple gauges and specified products will need to be stockpiled to ensure ample coverage. The risk of stockpiling outdated or mismatched GOES also increases as new developments and efficiency standards are implemented. Long lead times may further complicate the stockpiling process in order to balance current U.S. demand and stockpile demand.

## **6. Reclassify the Lamination and Cores HTS Codes**

Reclassify the HTS codes for laminations and cores (stacked and wound) from chapter 85 to chapter 72. This option is expected to be budget positive as

reclassifying the HTS codes to 72 would mean that proclamation 9705 (which imposes tariffs/quotas on steel imports) would apply to laminations and cores (stacked and wound). This option is similar to extending proclamation 9705 to laminations and cores (stacked and wound) (the Tariff/Quota option) however, it is a more permanent shift as HTS codes will have to be re-harmonized. This would forgo the need to apply tariffs on downstream transformer products.

Reclassifying the HTS codes for laminations and cores (stacked and wound) can prove challenging given the re-harmonization efforts required. Given that a 25 percent tariff rate is guaranteed, downstream product costs are expected to increase. This option does not guarantee new entrants into the market as transformer manufacturing will likely offshore in order to avoid the increased costs.

#### **7. Establish A Working Group To Provide Further Recommendations**

Establish a working group comprised of the Department of Defense, Department of Energy, Department of Homeland Security, Department of State, Department of Commerce, and industry stakeholders to conduct further negotiations and research in order to recommend further options. This option is expected to be budget neutral and will not explicitly increase costs across the industry. It will also encourage further dialogue at the USG and industry level in order to recommend other solutions and provide more specific actions.

Establishing a working group, however, does not address the immediate threat of imports of electrical steel, transformer laminations and cores, or LPT. As a consequence of this, the domestic GOES manufacturer will likely continue to face financial hardships, and new entrants into the market are unlikely. The United States will continue to be threatened by imports and have insufficient capacity to produce transformer laminations, cores, and LPT.

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APPENDIX A: Section 232 Investigation Notification Letter



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

May 11, 2020

The Honorable Mark T. Esper  
Secretary of Defense  
Washington, DC 20301

Dear Mr. Secretary:

I am writing to notify you that I am initiating an investigation to determine the effect of imports of laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators on the national security of the United States. This investigation is in response to inquiries and requests from interested parties in the United States, including multiple Members of Congress, a grain-oriented electrical steel manufacturer, and producers of power and distribution transformers.

I am taking this action pursuant to Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. § 1862), which requires that notice be provided to the Secretary of Defense upon initiation of an investigation. During the investigation, Department of Commerce staff will consult with their counterparts in the Department of Defense regarding any methodological and policy questions that arise during the investigation, including the national defense requirements for these products.

My point of contact is Matthew S. Borman, Deputy Assistant Secretary for Export Administration, Bureau of Industry and Security, at [Matthew.Borman@bis.doc.gov](mailto:Matthew.Borman@bis.doc.gov) or (202) 482-5711. I look forward to our collaboration on this important issue.

Sincerely,

A handwritten signature in black ink that reads "Wilbur Ross".

Wilbur Ross



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

May 11, 2020

The Honorable Dan R. Brouillette  
Secretary of Energy  
Washington, DC 20301

Dear Mr. Secretary:

I am writing to notify you that I am initiating an investigation to determine the effect of imports of laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators on the national security of the United States. This investigation is in response to inquiries and requests from interested parties in the United States, including multiple Members of Congress, a grain-oriented electrical steel manufacturer, and producers of power and distribution transformers.

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Sincerely,

A handwritten signature in black ink that reads "Wilbur Ross". The signature is written in a cursive, flowing style.

Wilbur Ross



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

May 11, 2020

The Honorable Chad F. Wolf  
Acting Secretary of Homeland Security  
Washington, DC 20301

Dear Mr. Secretary:

I am writing to notify you that I am initiating an investigation to determine the effect of imports of laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators on the national security of the United States. This investigation is in response to inquiries and requests from interested parties in the United States, including multiple Members of Congress, a grain-oriented electrical steel manufacturer, and producers of power and distribution transformers.

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Sincerely,

A handwritten signature in black ink that reads "Wilbur Ross".

Wilbur Ross



UNITED STATES DEPARTMENT OF COMMERCE  
The Secretary of Commerce  
Washington, D.C. 20230

May 11, 2020

The Honorable Robert E. Lighthizer  
United States Trade Representative  
Washington, DC 20508

Dear Ambassador Lighthizer:

I am writing to notify you that I am initiating an investigation to determine the effect of imports of laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators on the national security of the United States. This investigation is in response to inquiries and requests from interested parties in the United States, including multiple Members of Congress, a grain-oriented electrical steel manufacturer, and producers of power and distribution transformers.

I am taking this action pursuant to Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. § 1862), which requires that notice be provided to the Secretary of Defense upon initiation of an investigation. During the investigation, Department of Commerce staff will consult with their counterparts in the Department of Defense regarding any methodological and policy questions that arise during the investigation, including the national defense requirements for these products.

My point of contact is Matthew S. Borman, Deputy Assistant Secretary for Export Administration, Bureau of Industry and Security, at [Matthew.Borman@bis.doc.gov](mailto:Matthew.Borman@bis.doc.gov) or (202) 482-5711. I look forward to our collaboration on this important issue.

Sincerely,

A handwritten signature in black ink that reads "Wilbur Ross". The signature is written in a cursive, slightly stylized font.

Wilbur Ross

## APPENDIX B: Table of Acronyms

Table of Acronyms	
Acronym	Meaning
ATI	Allegheny Technologies, Inc.
BIS	Bureau of Industry and Security
BPS	Bulk-Power System
CAGR	Compound Annual Growth Rate
CISA	Cybersecurity and Infrastructure Security Agency
COO	Country of Origin
CRGO	Cold-Rolled Grain-Oriented Steel
DLA	Defense Logistics Agency
DoD	Department of Defense
DOE	Department of Energy
DPA	Defense Production Act
DR-GOES	Domain-refined GOES
E.O.	Executive Order
EEL	Edison Electric Institute
EERE	Energy Efficiency and Renewable Energy
ERMCO	Electric Research and Manufacturing Cooperative
FAR Council	Federal Acquisition Regulatory Council
FAST Act	Fixing America's Surface Transportation Act
GOES	Grain-Oriented Electrical Steel
GTA	Global Trade Atlas
HTS	Harmonized Tariff Schedule of the United States
ITC	International Trade Commission
kVA	Kilovolt-ampere
LPT	Large Power Transformers
MEPPI	Mitsubishi Electric Power Products, Inc.
NAFTA	North American Free Trade Agreement
NAICS	North American Industry Classification System
NEMA	National Electrical Equipment Manufacturers Association
NERC	North American Electric Reliability Corporation
NOES	Non-Oriented Electrical Steel
PDR GOES	Permanent, heat resistant domain-refined grain-oriented steel
R&D	Research and Development
SCADA	Supervisory Control and Data Acquisition
USMCA	United States-Mexico-Canada Agreement

APPENDIX C: Federal Register Notice (85 Fed. Reg. 29926)

**DEPARTMENT OF COMMERCE**

**Bureau of Industry and Security**

**RIN 0694-XC062**

**Extension of Deadline for Public Comments for 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**

**Agency:** Bureau of Industry and Security, Office of Technology Evaluation, U.S. Department of Commerce

**Actions:** Notice extending comment period for previously published notice of request for public comment

**SUMMARY:** On May 19, 2020, the Bureau of Industry and Security (BIS) published 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*. The May 19 notice specified that the Secretary of Commerce initiated an investigation to determine the effect 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 on the national security. This investigation has been initiated under section 232 of the Trade Expansion Act of 1962, as amended.

The May 19 notice invited interested parties to submit written comments, data, analyses, or other information pertinent to the investigation to the Department of Commerce's (the "Department") Bureau of Industry and Security. The deadline for written comments was June 9, 2020 and June 19, 2020 for rebuttal comments. Today's notice extends the deadline for written comments to July 3, 2020 and for rebuttal comments to July 24, 2020.

**DATES:** The due date for filing comments is July 3, 2020. The due date for rebuttal comments is July 24, 2020. Rebuttal comments may only address issues raised in comments filed on or before July 3, 2020.

## **ADDRESSES:**

*Submissions:* All written comments on the notice must be addressed to Section 232 Electrical Steel Investigation and filed through the Federal eRulemaking Portal:

<http://www.regulations.gov>. To submit comments via <http://www.regulations.gov>, enter docket number BIS-2020-0015 on the home page and click “search.” The site will provide a search results page listing all documents associated with this docket. Find a reference to this notice and click on the link entitled “Comment Now!” (For further information on using <http://www.regulations.gov>, please consult the resources provided on the website by clicking on “How to Use This Site.”)

## **FOR FURTHER INFORMATION CONTACT:**

Industrial Studies Division, Bureau of Industry and Security, U.S. Department of Commerce  
(202) 482-4952, [ESproducts232@bis.doc.gov](mailto:ESproducts232@bis.doc.gov). For more information about the section 232 program, including the regulations and the text of previous investigations, please see [www.bis.doc.gov/232](http://www.bis.doc.gov/232).

## **SUPPLEMENTARY INFORMATION:**

### **Background**

On May 19, 2020, the Bureau of Industry and Security (BIS) published the *Notice of Request for Public Comments on Section 232 National Security Investigation of Imports of Laminations for 4 Stacked Cores for Incorporation into Transformers, Stacked Cores for Incorporation Into*

*Transformers, Wound Cores for Incorporation Into Transformers, Electrical Transformers, and Transformer Regulators* (85 FR 29926). The May 19 notice specified that on May 11, 2020, based on inquiries and requests from interested parties in the United States, including multiple Members of Congress, a domestic Grain-Oriented Electrical Steel (GOES) manufacturer, and producers of Power and Distribution Transformers, the Secretary of Commerce had initiated an investigation to determine the effects on the national security 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. This investigation was initiated under section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862). See the May 19 notice for additional details on the investigation and the request for public comments.

### **Extension of Comment Period Deadline**

The May 19 notice included a comment period deadline of June 9, 2020 and a rebuttal comment deadline of June 19, 2020. The Department received two requests from the public to extend the comment period deadline, both from trade associations. The Department of Commerce has determined at this time that it is warranted to extend the comment period by twenty-four calendar days and the rebuttal comment period by an additional twenty-one days after the comment period ends. Today's notice specifies that comments may be submitted at any time but must be received by July 3, 2020, to be considered in the drafting of the final report. The due date for rebuttal comments is July 24, 2020, to be considered in the drafting of the final report. Rebuttal comments may only address issues raised in comments filed on or before July 3, 2020. 5 Today's

notice extends the comment period by twenty-four days and the rebuttal comment period by an additional twenty-one days after the end of the comment period to allow for additional time for the public to submit comments to be considered in the drafting of the final report on the 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.

Dated:

Richard E. Ashooh,

*Assistant Secretary for Export Administration*

## APPENDIX D: Summary of Public Comments

# THE EFFECT OF IMPORTS OF ELECTRICAL STEEL AND TRANSFORMER-RELATED PRODUCTS ON THE NATIONAL SECURITY



U.S. Department of Commerce  
Bureau of Industry and Security  
Office of Technology Evaluation

Public Comments – Business Confidential  
July 24, 2020

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**Entity Name:** National Electrical Manufacturers Association

**Date Received:** May 22, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Neutral

**Content Summary:** Federal Registrar Request

The National Electrical Manufacturers Association's main arguments are as follows:

- Requesting extension for July 18, 2020. Reasons for extension:
  - Extent of data requested will be time consuming to organize answers between all involved companies
  - Economic and other analysis identified in comments will need extensive time to ensure a comprehensive response
- Stated confusion regarding provided scope of products covered by the investigation, including Harmonized Tariff Schedule numbers
- Additionally signed by:
  - American Wind Energy Association
  - Energy Storage Association
  - Solar Energy Industries Association
  - The Core Coalition, LLC
  - U.S. Chamber of Commerce

**Entity Name:** Zanesville-Muskingum County Port Authority

**Date Received:** June 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Zanesville-Muskingum County Port Authority's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES used for electrical transformers
- Relief efforts from direct imports of GOES, imposed by the Administration under the Section 232 steel tariff program, has been circumvented by Mexico and Canada who aid foreign producers in countries like: China, Japan, Korea, and Russia
  - The value of these imports from Canada and Mexico are up 105% from 2016 to 2019. Additionally, 95% of Canadian and Mexican lamination and core exports are coming into the U.S., despite neither country having any domestic GOES production
- If no action is taken, Cleveland-Cliff's Butler and Zanesville plants will go idle
  - The U.S. will no longer have any domestic producers of GOES, making the U.S. completely reliant on foreign producers and threatening national security
  - Putting 1,700 jobs at risk for layoff, causing a sales/output loss of \$6,200,000 to local economy. Additionally, property tax loss has a direct impact on the public school system and vocational education of over \$59,640 annually

Executive Director Matt Abbott, and Zanesville-Muskingum County Port Authority, conclude by showing appreciation for the work of the Administration, and urges implementation of an effective trade and enforcement mechanism to address circumvention.

**Entity Name:** Ohio Business Roundtable

**Date Received:** June 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other

**Tone of Comment:** Positive/Supportive

**Content Summary:** Narrative Only Analysis

The Ohio Business Roundtable's main arguments are as follows:

The CEO members that make up the Ohio Roundtable write to show appreciation for the investigation of imports on electrical steel products. AK Steel is the only wholly-owned subsidiary, of Cleveland-Cliffs, Inc., remaining domestic producer of grain-oriented electrical steel (GOES). President Patrick Tiberi states "The domestic GOES market has been battered and degraded by years of unfair trade, historically in the form of dumped and subsidized GOES imports from China, Korea, and Japan". Even with relief efforts, such as the Administration under the Section 232 steel tariff program, companies have found ways around the tariffs and quotas. Mexico and Canada have been helping foreign producers in countries like: China, Japan, Korea, and Russia, circumvent the tariffs.

If no action is taken, these are possible results:

- Cleveland-Cliffs has already announced it will idle the Butler and Zanesville plants in 2020, unless circumvention of national security is stopped
- The U.S. will no longer have any domestic producers of GOES, making them reliant on foreign producers.
- 1,500 layoffs, more than 100 job losses in Zanesville, Ohio
- Layoffs leading to a sales/output loss of \$6,200,000 to local economy
- Loss of property tax, creating impact on public-school system and vocational education

Ohio Business Roundtable concludes by showing appreciation for efforts made, and urges the implementation of trade enforcement in order to address the tariff circumvention and preserve domestic production.

**Entity Name:** City of Zanesville, Ohio

**Date Received:** June 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The City of Zanesville, Ohio's main arguments are as follows:

- AK Steel, a wholly-owned subsidiary of Cleveland-Cliffs, Inc., is the only remaining domestic producer of GOES; with facilities located in Butler, Pennsylvania and Zanesville, Ohio
- Mexico and Canada have been helping foreign producers of GOES in other countries like China, Japan, Korea, and Russia to circumvent the tariffs under the Section 232 steel tariff program
  - The value of these imports are up 105% from 2016 to 2019, and 95% of Canadian and Mexican lamination and core exports are coming into the U.S., despite neither country having any domestic GOES production
- The Cleveland-Cliffs will idle the Butler and Zanesville plants in 2020, unless the circumvention of national security tariffs is stopped
  - The idle of these facilities would result in approximately 1,500 layoffs and have a devastating impact on the local economy, resulting in a sales/output loss of \$6,200,000

Loss in property tax would result in a direct impact on public-school systems and vocational education. The Mayor of Zanesville, Ohio shows appreciation for the work to address these components and urges the implementation of an effective trade enforcement mechanism.

**Entity Name:** Cassidy Levy Kent (Counsel to ABB, Inc.)

**Date Received:** June 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Neutral

**Content Summary:** Federal Registrar Request

Cassidy Levy Kent's main arguments are as follows:

- ABB, Inc. is one of the largest manufacturers of the products subject to this investigation, with facilities in Mississippi, Missouri, North Carolina, Tennessee and Virginia
- ABB is an importer of transformers, laminations, and cores from Canada and Mexico, as well as other countries
- Requesting extension for July 20, 2020. Reasons for extension:
  - Accumulating and analyzing data will take an extensive amount of time, at least sixty (60) days is needed

**Entity Name:** Zanesville-Muskingum County Chamber of Commerce

**Date Received:** June 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other

**Tone of Comment:** Positive/Supportive

**Content Summary:** Narrative Only Analysis

The Zanesville-Muskingum County Chamber of Commerce main arguments are as follows:

- Dana Matz, President of Zanesville-Muskingum County Chamber of Commerce, speaks of his father, a WWII veteran who moved to Zanesville, Ohio to work for two different manufacturers of electrical transformers. Both would be disappointed to see electric steel outsourced to foreign manufacturers
- AK Steel is the only remaining domestic producer of GOES, with facilities in Butler, Pennsylvania and Zanesville, Ohio
- Relief efforts from direct imports of GOES, imposed by the Administration under the Section 232 steel tariff program, have been circumvented. The Section 232 tariffs do not apply to derivative electrical steel articles including laminations and cores
- If no action is taken, Cleveland-Cliffs will idle their plants, meaning the U.S. will no longer have any domestic producer of GOES and be completely reliant on foreign producers to build transformers. This is a serious threat to national security
  - This would additionally create a loss of jobs and estimated sales/output loss of \$6,200,000 on local economy. Furthermore, there would be a loss in property tax creating a direct impact on public-school system and vocational education

**Entity Name:** Ohio Senate, District 20

**Date Received:** June 4, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive/Supportive

**Content Summary:** Narrative Only Analysis

The Ohio Senate, District 20's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES, with facilities in Zanesville, Ohio and Butler, Pennsylvania
- Bad actors have been able to circumvent the tariffs and quotas created under Section 232 steel tariff program
- Mexico and Canada are being used to help foreign producers import into the U.S. Countries including: China, Japan, Korea, and Russia
  - The value of these imports are up 105% from 2016 – 2019, with 95% of Canadian and Mexican lamination and core exports coming into the U.S.
- Cleveland-Cliffs will idle the Butler and Zanesville plants in 2020, unless circumvention of national security tariffs is stopped
  - With no action taken, the U.S. becomes completely reliant on foreign producers of electrical steel to build transformers – important part of critical infrastructure network
  - Idling would layoff approximately 1,500 jobs, and cause a sales/output loss of \$6,200,000 to local economy
  - Loss in property tax would have a direct impact on public-school system and vocational education

**Entity Name:** Muskingum County Commissioners

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive/Supportive

**Content Summary:** Narrative Only Analysis

The Muskingum County Commissioners' main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES. They have two facilities, one in Butler, PA and the other in Zanesville, Ohio
- The Butler and Zanesville facilities will become idle if the circumvention of national security tariffs continues
- The U.S. does not have any other domestic producers of GOES. They would become completely reliant on foreign producers of electrical steel
- Idling facilities would result in approximately 1,500 job layoffs and cause a sales/output loss of \$6,200,000 to the local economy
- Loss in property tax would create a direct impact on the public-school system and vocational education
- The Muskingum County Commissioners urge the implementation of an effective trade enforcement mechanism

**Entity Name:** Central Moloney Inc

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

Central Moloney Inc's main arguments are as follows:

- Passing the proposal will create a monopoly for AK Steel, allowing them to control price and determine who is successful in the transformer industry
- AK Steel does not have capacity to keep up with the demand, Central Moloney has been put on allocation several times due to capacity issues
- AK does not have the ability to make the same quality of steel (Permanent Domain Refined core steel) which meets current efficiency levels set by the Department of Energy
- AK would not lose 1,500+ jobs because they work on other types of steel at the Butler facility
- Central Moloney is not circumventing the original 232 proposal because there was no placement of tariffs on cores (laminations)
- If a tariff is passed, it should include imported transformers from Canada, Mexico and other countries
  - Electrical steel is the single most expensive commodity in a transformer
  - If manufacturers outside of the U.S. procure foreign electrical steel, they will take over the U.S. market and put domestic manufacturers out of business.
- U.S. transformer manufacturers represent more than the 1,500+ jobs that AK is threatening to eliminate

**Entity Name:** KMS Electrical Products, Inc

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

KMS Electrical Products Inc's main arguments are as follows:

- Expanding 232 tariffs would severely impact and limit ability of domestic producers
- Will result in increased costs to the domestic producers, while foreign producers will not be impacted by tariffs on GOES installed in finished goods shipped to the U.S.
- Result in a price increase, impacting manufacturer's ability to compete
- For everyone one job that might be saved, there are multiple numbers of jobs lost at many domestic suppliers of power transformers
- Expanding tariffs would be counterproductive to the directive of having a strong and reliable transmission system
  - Would remove many more domestic jobs from the economy than it would preserve

**Entity Name:** Southwest Electric Company

**Tracking Number:** 1k4-9h36-co59

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

Southwest Electric Company's main arguments are as follows:

- It is important that the focus includes all forms of completed electrical transformers and regulators coming in from offshore, as well as the component parts that go into production
  - Without this there will be a detrimental impact
- GOES is globally produced in Asia, Europe, and Russia mostly
- There is only one domestic provider and they have not invested and adapted enough to stay competitive with global players
  - Additionally they would not be able to provide to volumes in specific quality/performance graded needed to support the U.S. market alone
- Increases in prices for transformers would stall recovery in other industrial markets served by U.S. manufacturers
- Proposed tariffs would put Southwest Electric Co at an approximate one-million-dollar cost hit for a normal year
- The proposal would cause more than 1,500 job losses predicted in OH and PA and put many other transformer manufacturers producing in the U.S. at risk

**Entity Name:** Master Solutions Inc

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

Master Solutions Inc's main arguments are as follows:

- With no U.S. alternative to AK Steel, granting the proposal will create a domestic monopoly for GOES and permanently damage the Transformer Manufacturer's ability to domestically product these critical assets
- Globally competitive prices will have a negative effect to Master Solutions and all behind-the-scenes customers, suppliers, and manufacturers.
  - More than 50% of all U.S. power grid transformers being imported will results in the Transformer Manufacturer's inability to compete with imported products, causing further reductions in the availability of domestically-produced power transformers
- The potential economic impact of a sole-source domestic provider could devastate the entire domestic transformer manufacturing industry
- If the tariff is extended, the entire domestic market will face damage and potentially result in the loss of thousands of jobs throughout the country

**Entity Name:** Pennsylvania State Senate, 11<sup>th</sup> District

**Date Received:** June 5, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

Pennsylvania State Senate, 11<sup>th</sup> District's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES, used for assembly of transformers
- Relief from direct imports imposed by the 232 steel tariff program have been circumvented by bad actors to avoid tariffs and quotas
- Value of imports from Canada and Mexico are up 105% from 2016 to 2019 and 95% of Canadian and Mexican lamination and core exports are coming into the U.S.
- With no action taken, Cleveland-Cliffs will idle the Butler and Zanesville plants in 2020
  - This will lead to approximately 1,500 job losses and cause a negative impact on the local economy

**Entity Name:** Board of Commissioners of Butler County, PA

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Board of Commissioners of Butler County, PA's main arguments are as follows:

- Companies are circumventing existing tariffs and quotas set by the 232 steel tariff program
- The value of imports from Canada and Mexico are up 105% from 2016 to 2019 and 95% of Canadian and Mexican lamination and core exports are coming into the U.S., despite not having domestic GOES production
- With no action taken, the U.S. will become completely reliant on foreign producers and pose a threat to national security
- With productions being idled, AK Steel suppliers would face a significant loss
  - Trucking companies, alloy suppliers, B&LE and BP short line railroads, truck shipments to the east coast, and international markets
- County of Butler, PA would become economically devastated and have negative effect on the generous health care plan provided by AK Steel

**Entity Name:** Butler Township, Butler County, PA

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Butler Township, Butler County, PA's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES, which is used in cores and core assemblies for electrical transformers
- Tariff and quotas reliefs from direct imports of GOES has been circumvented by foreign companies, with the help of Canada and Mexico
  - The value of these imports are up 105% from 2016 to 2019 and 95% of lamination and core exports are coming into the U.S., despite Canada and Mexico having no domestic GOES production
- Cleveland-Cliffs will idle Butler and Zanesville plants will go idle unless the circumvention of national security tariffs is stopped
  - Eliminating all U.S. domestic producers of GOES and making the U.S. reliant on foreign producers resulting in 1,500 layoffs and devastating the local economy

**Entity Name:** LakeView Metals Inc.

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

LakeView Metals Inc's main arguments are as follows:

- The unintended consequence of the Section 232 tariff resulted in significant export of jobs from the U.S. to Canada and Mexico
- Foreign manufacturers benefit from reductions in value of their currencies against the U.S. dollar, eroding effectiveness of efforts to create a level playing field
- A tariff on imported cores and laminations in the range of 50% should be implemented
  - Additionally, the original 25% tariff on cold-rolled grain-oriented steel should be reviewed to keep U.S. manufacturers competitive and maintain security

**Entity Name:** NLMK Trading

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Business

**Tone of Comment:** Negative

**Content Summary:** Narrative and Trade Data Analysis

NLMK Trading's main arguments are as follows:

- Imported transformer components are not a threat to national security because of the quantities and circumstances they are being imported in
  - The U.S. is not dependent on any resource from unreliable or unsafe sources
  - Mexico and Canada are deemed safe sources due to their highly integrated nature of electricity markets
- Canada and the U.S. electricity suppliers rely on Large Power Transformers to provide to their customers.
- Concentration of imports from Mexico and Canada is beneficial to U.S. national security, created a strong interconnected and interdependent market
- There is robust trading of transformers in all three countries: U.S., Canada, Mexico
  - U.S. exports of transformer components in 2019 totaled 9.6 million

**Entity Name:** Korea International Trade Association

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Korea International Trade Association (KITA) main arguments are as follows:

- Hyosung Heavy Industries Corporation invested 47 million dollars in a power transformer production facility in Memphis, Tennessee in 2019
  - Plans to make additional investments of 42 million dollars
  
- Imposing import restrictive measures on electrical transformers
  
- Section 232 investigation could have unintended negative consequences
  
- Recommends that any source of imports that does not harm national security should be appropriately exempt from prospective measures
  
- The U.S. and Korea have always affirmed that they are important allies and critical trading partners

**Entity Name:** Mitsubishi Electric Power Products, Inc.

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

Mitsubishi Electric Power Products, Inc.'s main arguments are as follows:

- Recommends that 500kV and above and/or 600 MVA bank and larger shell-type transformers as well as gas insulated transformers of any voltage with ratings larger than 500kVA should be excluded from any eventual measures recommended
  
- MEPPi rarely competes with other existing U.S. manufacturers regardless of size
  
- There are no U.S. producers of shell-type transformers of any type at 500kV and above voltage classes and/or power ratings of larger than 600 MVA bank
- Measures to restrict imports could negatively impact MEPPi, the U.S. Economy, and Employment
  - Important source of revenue for MEPPi's U.S. operations of more than 800 employees, complement manufacturing of other energy infrastructure products domestically

**Entity Name:** Japan Electrical Manufacturers' Association

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Japan Electrical Manufacturer's Association main arguments are as follows:

- Identifying transformers as the scope of Section 232 investigations and measures would not be appropriate
  - Distribution channels of electrical steel sheets are different from transformers
  - Military sensitivity is not identified in transformers and it is unlikely that there is a need to regulate imports of industrial and consumer transformers for security purposes
  
- Imports of Japanese transformers and components do not harm to threaten U.S. national security
  - They do not cause damage to the U.S. industry and did not cause deterioration or unemployment in the U.S. industries
  
- Trade restrictions measures should be consistent with WTO rules
  
- GATT Article 21 Security Exception should be construed as limited to cases deemed necessary for the protection of significant national security interest and not applicable to general economic matters

**Entity Name:** China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME)

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Business

**Tone of Comment:** Negative

**Content Summary:** Narrative & Trade Data Analysis

The China Chamber of Commerce for Import and Export of Machinery and Electronic Products (CCCME) Association main arguments are as follows:

- Requests BIS to accurately define the scope of product investigated
- In the last decade the U.S. imports electrical transformers and parts from more than 131 countries and territories
  - No individual source country or manufacturer controls or dominates the supply of U.S. imports of electrical transformers and parts
- The U.S. imports relatively small number of Chinese electrical transformers and parts relative to total imports
- Transformers are generally not considered as products that are easily isolated and hacked
  - They do not contain software-based control systems that could be compromised by foreign hackers
- Imports from China do not have a negative impact or threaten U.S. national security due to the variety, quantity, quality, and safety of transformers and parts imported
- The imposition of additional U.S. tariffs will disrupt electrical transformers global production chains, harm the interests of U.S. electrical transformers manufacturing companies and have a negative impact on the competitiveness of the U.S. electrical transformers industry
  - Imposition would inevitably increase the cost of U.S. electrical transformers downstream manufacturing companies and harm interest due to inability to maintain competitive advantage

**Entity Name:** Korea Electrical Manufacturing Association

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Korea Electrical Manufacturing Association's main arguments are as follows:

- Korean imports are not a threat to the U.S. transformer industry
  - Transformers manufactured in Korea have little direct competition with the U.S. electrical industry
  - Korea depends on the provision of U.S.-made core components of transformers, which are then assembled and manufactured in Korea for export back to U.S as finished products
  
- The Korean transformer industry plays a positive role in the U.S. economy
  - Transformer manufacturers have made direct investments in the U.S.
  - Hyosung Heavy Industries acquired Mitsubishi Electric Power Products, Inc., which owns a plant in Memphis, Tennessee and employs many local Americans
  
- Any Section 232 measures would have a negative impact on the U.S. economy
  - The demand for ultra-high voltage transformers that the U.S. imports from Korea cannot be met through U.S. domestic production capacity

**Entity Name:** International Union, United Automobile, Aerospace & Agricultural Implement Workers of America

**Date Received:** June 8, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The International Union, United Automobile, Aerospace & Agricultural Implement Workers of America Association's main arguments are as follows:

- Relief from direct imports of GOES was imposed by the Administration under Section 232 steel tariff programs have been circumvented by foreign manufacturers
- 95% of Canadian and Mexican lamination and core exports are now coming into the U.S. yet there is no domestic GOES production in either Canada or Mexico
- In order to effectively address circumvention and preserve this critical supply chain, section 232 tariffs must be applied to Mexico and Canada as well

**Entity Name:** Foreign Trade Administration, Israel's Ministry of Economy and Industry

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Foreign Trade Administration, Israel's Ministry of Economy and Industry's main arguments are as follows:

- Israel and the U.S. are long-standing trade partners, with the volume of trade in goods in 2019 being 33.9 billion and trade in services was more than 14 billion in 2018
- Israel is the only country defined by U.S. Congress as a strategic partner of the U.S.
  - They are close allies with extensive cooperation in many areas, including homeland security, cyber security, and defense
- Believes partnerships and value chains established since the U.S.-Israel Free Trade Agreement entered into force have made the U.S. more globally competitive and benefitted both parties
- Around 40% of Israeli electrical transformers are exported to the U.S. market, making them the largest export market
- Israeli products directly contribute to American manufacturing jobs, and helps to continue cost-effective production of high-quality products
- Electrical transformers are also used in bulk-power systems of the U.S. power grid, a critical infrastructure recognized by federal government

**Entity Name:** WEG Transformers USA

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Federal Registrar Request and Narrative Analysis

The WEG Transformers USA's main arguments are as follows:

- In the U.S. there is not enough power transformer capacity to produce the full range of electrical transformer for the U.S. market
  - There is no transformer manufacture that can provide a 765kV stacked core design in the U.S., they are currently imported from several other countries
- WEG estimates that transformer prices could go up by more than 15% if U.S. transformer suppliers would have to acquire additional capacity to be sourced from external suppliers, and pay higher prices
- In WEG's opinion, foreign competition is not a significant issue related to GOES
  - AK Steel already has a 70% market share of the current industry and they are not able to support significant growth and changes to the electrical grid that renewable energy is driving
- Views potential tariffs on processed GOES as a significant risk to U.S. security
- Requests additional time to respond as finished good transformers have also been identified as a potential cause for tariffs
  - Requesting more time to provide adequate data regarding this complex chain

**Entity Name:** Government of the Republic of Colombia (Ministry of Trade, Industry, and Tourism)

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative and Trade Data Analysis

The Government of the Republic of Colombia's (Ministry of Trade, Industry, and Tourism) main arguments are as follows:

- Columbia is a trustworthy partner for the U.S. with a substantial trade relationship over the last decades and the Free Trade Agreement (CTPA) has benefitted both countries
  - Negotiated a mechanism aimed at recognizing unsubstantial imports to protect the market, a case called bilateral safeguards regime (Article 8.6.2 of CTPA)
- During the last five years, the U.S. trade balance with Columbia has registered a surplus over \$25 million per year
- During the last five year, U.S. registered imports from Columbia of electrical transformers, inductors, power supplies and parts through ten tariff lines
- Columbian exports are not a substantial cause of injury or threat to the U.S. market
  - The weight of Columbian sales within U.S. imports was only 0.8% in 2019, not making an effect on national security
- Imposing tariffs will create a negative outcome to Columbia and American companies
  - Putting small and medium companies and 3,800 jobs in peril

**Entity Name:** American Iron and Steel Institute

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The American Iron and Steel Institute main arguments are as follows:

- U.S. imports of laminations and transformer cores from Canada and Mexico doubled from 2016 to 2019 , with Canada imports valued at \$110 million in 2019 and Mexico valued at \$85 million
- Without access to a reliable U.S. supply of GOES, transformer components and transformers, the United States would become entirely dependent on foreign producers
- During the first four months of 2018, the U.S. imported 25,126 net tons of GOES, the leading exporter being Japan
- The circumvention of Section 232 tariffs on GOES actively undermines the national security objectives of maintain domestic GOES production capability

**Entity Name:** National Electrical Manufacturers Association

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The National Electrical Manufacturers Association's main arguments are as follows:

- National Electrical Manufacturers Association (NEMA) represents nearly 325 electrical equipment and medical imaging manufacturers that make safe, reliable and efficient products
  - Represent over 370,000 American manufacturing jobs
  
- Any effort to bolster national security must not disrupt the very supply chain that ensures ability to produce electrical transformers in the U.S.
  - This supply chain secures 15,000 direct American transformer jobs
  
- NEMA members confidently assert that the importation of products under scope of this investigation does not threaten to impair the national security, and is in fact necessary to maintain it and protect the existing U.S. transformer manufacturing base

**Entity Name:** National Electrical Manufacturers Association

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The National Electrical Manufacturers Association's main arguments are as follows:

- National Electrical Manufacturers Association (NEMA) represents nearly 325 electrical equipment and medical imaging manufacturers that make safe, reliable and efficient products
  - Represent over 370,000 American manufacturing jobs
  
- Any effort to bolster national security must not disrupt the very supply chain that ensures ability to produce electrical transformers in the U.S.
  - This supply chain secures 15,000 direct American transformer jobs
  
- NEMA members confidently assert that the importation of products under scope of this investigation does not threaten to impair the national security, and is in fact necessary to maintain it and protect the existing U.S. transformer manufacturing base

**Entity Name:** Weidmann Electrical Technology Inc

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Weidmann Electrical Technology Inc.'s arguments are as follows:

- Share concerns regarding bulk power system as outlined
- Concerned with any effort to further restrict availability of GOES
- Weidmann has two manufacturing sites with over 450 employees in the U.S. that would be negatively impacted by any new tariff on GOES
- This particular tariff would be placed only on the domestic manufacturers of power transformers which today supply approximately 50% of the annual national demand for power transformers

**Entity Name:** Tempel Steel Co

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Tempel Steel Co.'s arguments are as follows:

- Imposition of tariffs or other measures restricting imports of products would impair the highly integrated U.S.-Canada electrical grid essential to national security by imposing extra burdens in terms of cost or access to material necessary to support a flexible, reliable and secure grid on both sides
  
- Tempel plays a critical role inside a highly integrated supply chain supporting an integrated electrical grid spanning the U.S.-Canadian border
  - There are 37 transmission interconnections between the two grids that have been interconnected for over 100 years and are now inseparable
  - Any measures negatively impacting the supply chain supporting this integration would also negatively impact U.S. national security and raise costs to utilities and their customers
  
- AK Steel's outdated technology and antiquated equipment limits the quantity and quality of grades it offers and inflates the cost structure
  - A transformer has a life expectancy of 25 years and the average transformer at AK Steel is dated 38 years
  
- There is not enough U.S.-based core-making capacity to support the needs of the U.S transformer industry

[REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

- [REDACTED]

**Entity Name:** LC Drives Corp

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The LC Drives Corp main arguments are as follows:

- LC Drives is a manufacturer of electric motors and generators with locations in Potsdam and Ballston Spa, NY. with over 85 employees in positions that range from skilled manufacturing technicians through PhD trained engineers and physicists
  
- Imports of laminated and wound cores for us in non-transformer applications do not threaten or impair national security
  
- If Commerce determines that national defense and security requirements justify the imposition of new additional measures on imports of laminated and wound cores, then Commerce should ensure that it exercise its discretion to fashion a remedy to protect domestic manufacturers
  
- Non-oriented electrical steel (NOES) is used in industrial applications and in motors for hybrid and electric automobiles, they do not threaten national security because they are integral to the operation of industrial and commercial sectors in the U.S.
  - Also subject to additional tariffs Section 232 tariffs along with GOES

**Entity Name:** Umatilla Electric Cooperative

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Umatilla Electric Cooperative's main arguments are as follows:

- The majority of GOES is sourced domestically from a single supplier of this material with no U.S. alternative
  - Granting the request will further entrench a domestic monopoly for GOES and permanently damage the electric utility industry ability to domestically produce these critical assets from alternative sources of GOES
- Proposed restriction would impact distribution transformers
- It is critical that all manufacturers of both power and distribution transformers can purchase critical raw materials at globally competitive prices
- More than 50% of all U.S. power grid transformers being imported are from countries exempt from Section 232 tariffs
  - Any further restriction will result in the electric utility industry's inability to manage the secure acquisition and economic ramifications of critical power and distribution transformers

**Entity Name:** American Chemistry Council

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The American Chemistry Council's main arguments are as follows:

- The U.S. chemical industry is a \$553 billion dollar enterprise, supporting more than 25 percent of gross domestic product (GDP) and providing 542,000 American jobs
  - 96 percent of manufactures goods are touched by chemistry, making them a true foundation of American manufacturing
- Chemical Manufacturing plants require significant amounts of energy and large quantities of steel to operate and produce chemicals
  - 18,500 tons of steel are used on average in the construction
- Additional tariffs on imports of electrical transformers would harm U.S. chemical manufacturers
  - Increased costs of manufacturing, upgrading, expanding and maintaining manufacturing plants due to higher costs for imported and domestically manufactured transformers
  - Would reduce availability of the highest quality and most reliable transformers on the market
  - Costs of energy would rise for U.S. chemical manufacturers if the conduct of electricity in their plants is less reliable and efficient
  - Higher costs for U.S. manufacturer may result in those costs being passed down to U.S. industries consuming chemicals, such as building and construction, automotive, agriculture, and electrical
- U.S. trading partners have retaliated and will continue to retaliate further if there are additional tariffs on imports of steel and aluminum under Section 232
  - European Union, India, and Turkey are retaliating against \$1 billion in U.S. exports of chemicals
  - This would result in further reduction in market access around the world and undermine the viability of the historic investments in U.S. chemical manufacturing.

**Entity Name:** Orchid Monroe, LLC

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Orchid Monroe LLC's main arguments are as follows:

- It is bad policy that there is a tariff on steel but parts made directly from steel, specifically laminations and cores, can be imported into the country tariff free
  - This causes companies to lose business to suppliers that have setup operations in Mexico and Canada to circumvent the tariff
  - Tariffs applied to steel but not parts made from the steel has resulted in significant job loss to the U.S. and driven the electrical steel transformer component industry out of the U.S.
- If the steel tariff is 25%, the tariff on the laminations and cores produced from the steel should be 40-50% equivalent
- Tariffs on NOES are worse than GOES tariffs since they not only include the 232 tariffs but also anti-dumping tariffs imposed in 2014 by prior administration
  - Tariffs on NOES have virtually driven all of the electric vehicle motor production out of the U.S.
  - An investigation into the tariff implications and circumventions on NOES will result in the same findings as GOES
- The 2014 anti-dumping tariffs are outdated and should be removed, they make production of high efficiency electric motors and generators impossible to be competitive in the U.S.
- The 232 tariff should also include a tariff of 40-50% on laminations and cores made from steel that has a 25% tariff to be equivalent

**Entity Name:** European Union

**Date Received:** June 9, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The European Union's main arguments are as follows:

- The EU cautions the U.S. against pursuing a process which could result in yet another disregard of international law by one of the key actors in the multilateral trading system
  - An import restriction based on Section 232 cannot be a suitable solution for the U.S. semi-finished electrical steel components and transformers markets, part of this market has suffered from previous U.S. import adjustment measures
- In 2019, the U.S. imported GOES derivatives and transformers products from the EU for a total value of roughly \$540 million, a fifth of total U.S. imports
  - European companies have invested over \$700 million and created over three thousand jobs in the power transmission equipment sector alone
- Any new U.S. action pursuant to Section 232 would effectively breach the agreement of our Presidents of July 2018 and damage efforts to develop a positive transatlantic trade agenda

**Entity Name:** Pennsylvania State Senate, 41st District

**Date Received:** June 12, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Pennsylvania State Senate, 41st District's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES, with facilities in Butler, Pennsylvania and Zanesville, Ohio
  
- Bad actors have been circumventing imposed tariffs and quotas, Section 232 tariffs do not apply to derivative electrical steel articles including laminations and cores
  - Mexico and Canada are being used to help foreign producers of GOES, in countries like China, Japan, Korea, and Russia
  - The value of these imports from Canada and Mexico are up 105% from 2016 to 2019 and 95% of Canadian and Mexican lamination and core exports are now coming into the U.S.
  
- Cleveland-Cliffs has announced it will idle the AK Steel plans in 2020 unless the circumvention of national security tariffs is stopped
  - This would result in approximately 1,500 layoffs and cause a devastating impact on the local economy

**Entity Name:** Joshua Nelson

**Date Received:** June 16, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Individual

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

Joshua Nelson's main arguments are as follows:

- This individual is an employee of AK Steel at the Butler plant
- Recently the business has suffered because of cheaper products flowing through Canada and Mexico, which devalues the products and creates an exponential threat to national security
- With more development of weapons and hackers, having an impact that would halt production of steel for the U.S. electrical grid would cause a negative impact and make the U.S. reliant on other countries
- Further tariffs should be made illegal or be taxed on imports so high to preserve the national electrical grid and infrastructure

**Entity Name:** Pennsylvania State Senate, 21st District

**Date Received:** June 16, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Pennsylvania State Senate, 21st District's main arguments are as follows:

- AK Steel is the only remaining domestic producer of GOES, with facilities in Butler, Pennsylvania and Zanesville, Ohio
  
- Bad actors have been circumventing imposed tariffs and quotas, Section 232 tariffs do not apply to derivative electrical steel articles including laminations and cores
  - Mexico and Canada are being used to help foreign producers of GOES, in countries like China, Japan, Korea, and Russia
  - The value of these imports from Canada and Mexico are up 105% from 2016 to 2019 and 95% of Canadian and Mexican lamination and core exports are now coming into the U.S.
  
- Cleveland-Cliffs has announced it will idle the AK Steel plans in 2020 unless the circumvention of national security tariffs is stopped
  - This would result in approximately 1,500 layoffs and cause a devastating impact on the local economy

**Entity Name:** Alliance of American Manufacturing

**Date Received:** June 26, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

The Alliance of American Manufacturing's main arguments are as follows:

- AAM is a non-profit, non-partisan partnership formed in 2007 by some of America's leading manufacturers and the United Steelworkers, with a mission to strengthen American manufacturing and create new private-sector jobs through smart public policies
  
- Electrical steel is necessary for transmission and distribution transformers for all types of energy, including traditional and renewable sources of energy
  - Without adequate domestic production capacity to produce electrical steel, the U.S. would be unprepared to independently respond in the event of a catastrophic attack or natural disaster
  - In 2013, Superstorm Sandy brought attention to what the loss of domestic power transformer manufacturing capabilities meant for the U.S. ability to tackle crisis effectively
  
- If domestic electrical steel production, as well as transformer and generator production, is not maintained in the U.S. it will become entirely dependent on foreign producers to supply these critical materials and products
  
- The impact of Section 232 actions being undermined and resulting spike of imports of downstream GOES products have been the displacement of more than 43,000 net tons of GOES demand per year from 2016 to 2019
  - This displacement translates into lost jobs, lost production, and threatens to leave the U.S. without a single manufacturer of electrical steel

**Entity Name:** Arizona Public Service

**Date Received:** June 29, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

Arizona Public Service's main arguments are as follows:

- A tariff on electrical steel and transformer-related products may or may not help revitalize the production of E-steel (electrical steel) in the United States.
- Arguments against this potential tariff include, but are not limited to the following:
  - Insufficient capacity in US for domestic transformer manufacturing in High and Extra High Voltage categories. The build up of additional capacity for these sizes of equipment would take years along with substantial investment in plant and personnel.
  - Price increases including a 25% import tax, with given current investment budgets will impact the number of projects which can be executed in a given fiscal period. This will delay of renewal of power infrastructure and extension.
  - Limited domestic manufacturers of Large Power transformers.
- A better course of action would be to assist the current US manufacturer of Electrical steel to maintain and increase production.
  - The former manufacturer of Electrical steel could be encouraged to resume production at least of the most utilized sizes of the material. This will assist US manufacturers of transformers instead of penalizing off shore manufacturing.

**Entity Name:** Japan Electrical Manufacturers' Association

**Date Received:** June 28, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Japan Electrical Manufacturers' Association's main arguments are as follows:

- The distribution channels of electrical steel sheets and those of transformers are completely different. Thus, identifying transformers as the scope of the Section 232 investigations and measures would not be appropriate.
  - If this investigation leads to any tariffs on imported transformers from within NAFTA this will have a harmful effect on our business, and our customers.
- The imports of Japanese transformers and components to the U.S. do not cause harm to threaten U.S. national security in any way. The trade restriction measures on transformers could lead to a national security threat to the U.S. industrial infrastructure.
  - The import of transformers from Japan has never been an obstacle to U.S. security and will not in the future.
- The imports of transformers from Japan to the United States are declining overall and cannot pose a threat in the U.S.
- Exclusion measures on the Section 232 should be provided for products that are determined not to pose a national security threat clearly.
- Trade restrictions measures should be consistent with WTO rules.
  - The GATT Article 21 Security Exception should be construed as limited to cases deemed necessary for the protection of significant national security interests and not applicable to general economic matters.

**Entity Name:** Applied Control, Inc.

**Date Received:** June 29, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

Applied Control, Inc.'s main arguments are as follows:

- Imports from Canadian OEMs remain important and critical part to our business, and we rely on our NAFTA suppliers to provide the necessary services and products.
  - If this investigation leads to any tariffs on imported transformers from within NAFTA this will have a harmful effect on our business, and our customers.
- We are unsure if we will be able to acquire the transformers that our customers demand in a timely way, and any additional costs will need to be passed on to our customers which will lead to being not competitive, and potentially loss of business.

**Entity Name:** Brad Staley

**Date Received:** June 29, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Individual

**Tone of Comment:** Neutral

**Content Summary:** Narrative Only

Brad Staley's main arguments are as follows:

- Most core steel for large power transformers is manufactured outside the U.S.A.
- A transition time of 5 years is needed to increase U.S. core manufacturing.
- Utilities must continue to have core steel supplied from outside the USA for upcoming transformer needs from high quality suppliers.

**Entity Name:** Mertz Manufacturing

**Date Received:** June 29, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

Mertz Manufacturing's main arguments are as follows:

- Opposition is based on two significant factors: 1) national security and 2) economic impact to domestic employers.
  - 1. National Security: The national security threat to the United States from a very vulnerable electric power infrastructure has been well-known for many years – even decades
    - The large power transformers used in our electric power infrastructure are significantly sourced from foreign suppliers.
    - The President's Executive Orders are aimed, among other things, at improving the ability of the United States to be more self-sufficient in the production of these vital components along with hardening them.
    - The imposition of Section 232 Tariffs on imported GOES is directly contrary to the President's direction.
  - 2. Domestic Employers:
    - Imposing tariffs on the imported GOES will put DOMESTIC transformer manufacturers at a serious, even insurmountable, disadvantage compared to transformers being imported from foreign suppliers that are NOT subject to tariff on the very same GOES that is incorporated in their products.
    - If unbalanced tariffs are instituted on the GOES components of power transformers, it is highly likely that domestic transformer manufacturers will have to shift production to foreign locations to remain competitive.
    - This action would not only impact our national security, being counter to the President's directive for domestic supply, but would also likely cause the elimination of many thousands of jobs from domestic transformer manufacturers and their suppliers, such as Mertz Manufacturing.

**Entity Name:** Arizona Public Service

**Date Received:** June 30, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

Arizona Public Service's main arguments are as follows:

- Global demand for electricity and open market policies have resulted in a consolidated and complex supply chain for transformer production and material sources which continue to evolve as U.S. production declines.
  - It is not possible for APS to rely on domestic manufacturers alone to supply all our transformer needs.
  
- Applying tariffs, even limited to a few countries of origin, will increase the cost of electrical steel on all customers and have no impact on opening domestic supply.
  - Such tariffs will raise the cost to serve our customers, many of which are already burdened by the current economic recession and loss of employment related to COVID-19.

**Entity Name:** The Government of Manitoba

**Date Received:** June 30, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Government of Manitoba's main arguments are as follows:

- Manitoba and Canada are not circumventing Section 232 steel tariffs by exporting electrical transformers and related parts into the United States and any trade restrictions in this area would harm the United States
  - During the period of the Section 232 steel tariffs, Canadian imports of GOES have actually declined. On a year over-year basis, the volume of Canadian imports of GOES declined by 2% in 2018 to 87,000 tons from 89,000 tons in 2017, and by a further 19% in 2019 to 70,000 tons
  - A large portion of the inputs used in Manitoba manufacturing of electrical transformers and related parts comes from the U.S. Copper and aluminum wire, insulating oil, molded plastics, specialty paints, switches and steel for boxes are imported from the U.S. and used by Manitoba manufacturers
- Manitoba, Canada and the U.S. share essential North American grid connections
  - Beneficial trade flows are not restricted to the electrical grid. Manitoba Hydro regularly procures U.S.-sourced equipment and materials for the development and maintenance of its fleet of fifteen generating stations and its transmission system, including from suppliers in Alabama, Georgia, New York, Massachusetts, Minnesota, Missouri, South Carolina, Tennessee, Virginia, Washington and Wisconsin
  - Over the last 20 years, Manitoba has purchased from the U.S. close to USD\$800 million or an average of USD\$38 million/year of the electrical transformers and related parts under investigation
- The free flow of goods across North American is protected by the Canada-United States-Mexico Agreement (CUSMA)
  - The new and soon to be implemented Canada-United States-Mexico Agreement (CUSMA) reaffirms this relationship with the Canada-United States Energy Side Letter. This Agreement between Canada and the United States recognizes the importance of enhancing the integration of North American energy markets based on market principles, including open trade and investment among the Parties, to support North American energy competitiveness, security, and independence
- Manitoba, Canada and the U.S. share common security concerns about the North American power system
  - To ensure the reliable operation of the bulk power system in North America, the introduction and operation of renewable energy on the bulk power system is conducted under a common standards regime

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**Entity Name:** U.S. Chamber of Commerce

**Date Received:** July 1, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other (Lobbying Group)

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The U.S. Chamber of Commerce's main arguments are as follows:

- The Chamber advocates for policies to ensure the United States is the best place in the world to invest, manufacture, and hire.
  - The Chamber believes such policies also enhance the resilience and reliability of America's energy infrastructure in ways that are essential to national security
  - Advancing pro-growth policies in areas from workforce training and infrastructure investment to access to capital and to foreign markets are just a few of the Chamber's priorities that strengthen the U.S. manufacturing base, including in areas relevant to the power grid
- Tariffs that would negatively impact the functioning of the U.S. bulk power system would undermine rather than enhance U.S. national security.
  - Disrupting the grain-oriented electrical steel (GOES) supply chains that allow U.S. manufacturers to produce electrical transformers for the national grid may inadvertently harm the domestic manufacturing base for these products
  - Disrupting the flow of imports of medium-to-large power transformers from the handful of global factories that produce them will negatively impact utilities from the perspective of both the cost and security of the bulk-power system they operate
- Limiting imports of the aforementioned products would not enhance U.S. national security for three reasons:
  - U.S. production of GOES, including cores and laminations, is insufficient to supply the needs of the entire U.S. transformer manufacturing base
  - Some specific high-grade silicon electrical steels used in some transformer manufacturers' current designs to meet mandatory U.S. Department of Energy conservation standards for transformers are either not available or are not available in sufficient quantities from domestic producers and therefore must be imported
  - Securing access to a geographically dispersed array of suppliers is a tried-and-true risk mitigation tool that enhances the resiliency, reliability, and security of production chains, including those for America's energy infrastructure
    - To the contrary, relying on a single supplier for a key input enhances risks to the entire value chain
- In any event, imposing tariffs on transformers components is highly unlikely to boost U.S. manufacturing of transformers
  - To the extent unfairly traded (dumped or subsidized) products are at issue, those imports should rightly be subjected to trade remedies under the U.S. statutes governing antidumping and countervailing duty investigations

**Entity Name:** Congressman Mike Kelly, U.S. House of Representatives

**Date Received:** July 1, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only

Congressman Mike Kelly's main arguments are as follows:

- As the U.S. Representative of Pennsylvania's 16th Congressional District and .lifelong resident of Butler, Pennsylvania, I am writing on behalf of AK Steel, a wholly-owned subsidiary of Cleveland-Cliffs Inc. and the last producer of grain-oriented electrical steel (GOES) in North America, to express my strong support that the Department of Commerce recommend that President Trump take the necessary steps to preserve the production of this critical-material in the U.S.
- AK Steel employs over 1,300 Butler area residents with family sustaining wages and benefits, and with its multiplier effect, indirectly employees thousands of others who work in businesses that supply and service AK Steel as well as those businesses that provide for the needs of the workforce, such as local restaurants and retail shops
- AK Steel's Butler Works operations are not just an integral and critical part of our community, but as the last producer in .No1ih America of GOES, a material essential to the electric grid, these operations are crucial to the national and economic security of our entire country. As such, I encourage you to address and remedy the unfair trade and tariff circumvention that has undermined the market for electrical steel
- Unfortunately, once the President announced the Section 232 investigation and subsequent tariff and quotas on steel, bad actors quickly found ways to evade the tariff applying to GOES by taking advantage of Canada and Mexico's favored trade status
- Cleveland-Cliffs has announced that it will idle the Butler and Zanesville plants in 2020, unless the circumvention of the national security tariffs is stopped. Failure to address this circumvention would leave the U.S. dangerously reliant on foreign producers in China and elsewhere to help us repair or restore our country's electricity grid in the event of a natural disaster or other major disruption
- The Administration's work to maintain and restore production of materials and components deemed critical to national security and rebuild the U.S. steel industry
  - Consistent with these policy priorities, I urge the implementation of an effective trade enforcement strategy to address this tariff circumvention and to preserve domestic production of GOES

**Entity Name:** The Government of the Republic of Korea

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Government of the Republic of Korea's main arguments are as follows:

- Korean government recognizes that the United States has a justifiable interest in maintaining a stable and secure electric grid, and that ensuring adequate domestic production for key components constitutes an important element to this end
  - However, Korean government is nonetheless concerned that this proceeding may unnecessarily restrain trade as well as have a negative impact on the amicable trade relationship between the United States and the republic of Korea
- The Department Should Ensure that Any Determination Is Based on National Security, and Not Trade Concerns
  - The United States' increased use of Section 232 proceedings raises questions over the intended purpose of these measures, as these products do not appear to be directly related to national security issues
  - The Korean government requests that the Department carefully assess and focus its investigation on genuine national security concerns and refrain from using such investigations as a means to impose trade barriers based on commercial considerations
- The Role of Korean Companies in the Power Transformer Market Serves to Strengthen the U.S. Electric Grid and Does Not Pose a National Security Risk
  - It can be stated with confidence that Korean companies play a key role in providing high quality power transformers and transformer components to the U.S. market
  - The Korean industry recently opened power transformer production facilities in Memphis, Tennessee and Mobile, Alabama, demonstrating the full commitment of Korean power transformer companies to the U.S. market
  - Maintaining a stable supply of components to U.S. manufacturers and a stable supply of power transformers to U.S. electric utility companies is necessary to ensure the continued secure operations of not only the U.S. manufacturing industry, but the electric grid itself
- The Department Should Aim to Minimize the Disruptive Commercial and Trade Impact of its Investigation
  - Imposing even modest trade restrictions, or even the threat of trade restrictions, may therefore have a significant negative impact on the market place as suppliers and customers up and down the supply chain are dependent on one another as well as on long-term supply and price commitments
  - With manufacturing shutdowns in addition to broader economic concerns, imposing trade restrictions at this time risks further exacerbating an already fragile situation

**Entity Name:** The National Chamber of Electrical Equipment Manufacturers of Mexico

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative & Trade Data Analysis

The National Chamber of Electrical Equipment Manufacturers of Mexico's main arguments are as follows:

- The National Chamber of Electrical Equipment Manufacturers of Mexico (CANAME) is a leading trade association representing 92% of electrical transformer manufacturers in Mexico
  - Our association shares the view that a strong manufacturing base that supports a stable and efficient electrical infrastructure is critical to our regional security and prosperity
- Electrical transformers are an essential part of power transmission and distribution systems, which are the backbone of every major industry, including Defense
  - The United States is Mexico's leading customer of electrical transformers, enabling the U.S. energy infrastructure to benefit from regional integration
  - The supply chain required to build and maintain the U.S. electrical infrastructure is highly integrated across North America and leverages national comparative advantages
- Over the past five years, Mexican exports of electrical transformers have remained steady and in line with U.S. domestic demand
  - Recent increases, which offset a declining trend, are due to U.S. incentives to encourage investment and production of renewable energy, not the product of transshipment
  - The extension of the investment and production tax credits resulted in a 28% increase in the U.S. energy renewable market
- Mexican manufacturers of electrical transformers, rather than disrupt the U.S. market, provide stability to it, as they rely heavily on U.S. parts
  - Mexico imports ~\$427 million in transformer inputs and parts from the United States. In turn, Mexico incorporates those parts to manufacture and export of electrical transformers to the United States
  - U.S. manufactured inputs represent nearly half of the value of Mexican of electrical transformer exports worldwide
  - This supply chain contributes to supporting 15,000 direct jobs in the U.S. transformer industry
- For over 30 years, the United States, Mexico and Canada have been strategic allies and reliable partners
  - This strategic partnership is now being reaffirmed with the entry into force of the USMCA on July 1. The agreement's modernized rules of origin will bolster our region's competitiveness and deepen North American integration
  - The USMCA will increase minimum regional value content requirements to qualify for tariff-free access

**Entity Name:** The Government of Canada

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Government of Canada's main arguments are as follows:

- Canadian electrical transformers and related parts are integral to an interconnected North American supply chain that supports the world's largest and most integrated bilateral energy relationship, contributing significantly to U.S. energy security
  - Our two countries share a common bulk power system, with over 34 electric trans-border transmission interconnections forming a highly integrated electricity grid. This cross-border partnership and collaboration has served U.S. and Canadian communities and businesses for over 100 years
- For otherwise WTO-inconsistent trade restrictions to be justified by Article XXI of GATT 1994, those actions must be necessary to protect "essential security interests"
  - It is insufficient for them to focus instead on allegations of unfair trade or injurious import surges which are concerns that are more appropriately addressed under other WTO trade commitments (and their related implementing legislation)
- Furthermore, whatever concerns the United States might have with imports from other sources, there is no factual basis to conclude that subject electrical transformers and related parts from Canada present any possible threat to the national security of the United States. To the contrary, as this submission shows:
  - U.S. policy and law recognizes Canada as an essential security partner
  - Canada and the United States share an established supply chain in transformer parts
  - Trade restrictions on subject electrical transformers and related parts from Canada would harm the integrated Canada-United States electrical grid
  - Canada and the United States share common security concerns about the North American power system
  - Canada and the United States share essential North American grid connections
  - The free flow of goods across North America is protected by the United States-Mexico-Canada Agreement (USMCA) and the Energy Side Letter
- For all of these reasons, imports from Canada do not threaten the national security of the United States
  - In conducting its Section 232 analysis, Canada believes that the United States should follow the approach adopted in the President's Executive Order on Securing the United States Bulk-Power System
  - That Executive Order also addressed the U.S. concern of protecting critical energy infrastructure
  - In this Executive Order, the President explicitly distinguished between U.S. allies and "foreign adversaries" and only prohibited certain conduct by foreign adversaries

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**Entity Name:** Howard Industries Inc

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Positive

**Content Summary:** Narrative Only

Howard Industries Inc.'s main arguments are as follows:

- Howard Industries, Inc., is the nation's leading producer of distribution transformers
  - Howard Industries is now the largest producer of distribution transformers in the United States and is the second-largest privately held corporation in Mississippi, with sales of nearly \$1 billion each year
  - We currently employ more than 4,000 people in our facilities in South Mississippi, where we have grown the business and expanded into four divisions: Howard Transportation, Howard Lighting Products, Howard Technology Solutions, and our core industry, Howard Power Solutions
- Because electricity and transformers are vital to the nation's economy and national defense, we believe electrical steel, transformer cores, and transformer production must be maintained in this country
  - Maintaining domestic production to rapidly respond, as Howard Industries did, during disasters like Hurricanes Katrina and Sandy, minimizes disruptions and is essential in times of national need
- We support AK Steel's request to include cores, toroids, and laminations in the scope of this investigation
  - While AK Steel has pointed to the more than 1,500 jobs at risk at their facilities in Pennsylvania and Ohio, the larger issue is that the entire American transformer industry and electrical grid remain in jeopardy unless the scope of this Section 232 investigation includes protection for all segments of this vital energy sector
  - However, we feel strongly that the solution is simple. Expand the scope of this Section 232 investigation to include:
    - Core-coil assemblies, semi-processed, and finished silicon and amorphous
    - transformers, along with GOES products, cores, toroids, and laminations (which AK Steel has requested)

**Entity Name:** Ontario Ministry of Economic Development, Job Creation and Trade

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Ontario Ministry of Economic Development, Job Creation and Trade's main arguments are as follows:

- Ontario is a secure, safe and reliable trading partner with the United States, and Ontario continues to strongly hold the position that there is no basis to view imports of the products at issue from Ontario as a national security threat to the United States
  - We share the world's largest and most integrated energy relationship, which contributes greatly to our collective national and economic security
  - Ontario and the United States also share a common bulk power system ("BPS"), with net exports of over 16 TWh (terawatt-hours) from Ontario to neighboring U.S. states in 2019
- Reflecting Canada's unique role as an ally and trusted security partner, Canada has been designated part of the National Technology and Industrial Base ("NTIB")
  - The NTIB, as established by 10 U.S.C. §2500, is intended to support national security objectives of the United States, including, among others: supplying military operations; conducting advanced R&D and systems development to ensure technological superiority of the U.S. Armed Forces; securing reliable sources of critical materials; and developing industrial preparedness to support operations in wartime or during a national emergency
- Restricting access to non-domestic GOES and related products will undermine competition and investment in domestic production through increased market uncertainty
  - Such restrictions could also limit United States firms' ability to make use of innovations in resiliency and energy efficiency that have arisen from newer varieties of GOES that may not be available domestically
- The allegation that Ontario companies were circumventing the U.S. Section 232 steel tariffs applicable to other countries by importing GOES and using it, in some instances, to help make parts for electrical transformers, is inaccurate
  - Canadian imports of GOES decreased by 3 per cent in 2018, and by a further 22 per cent in 2019. They have similarly decreased by 8 per cent between January-March 2020 compared to the same period in 2019
  - The facts also suggest that Canadian imports of GOES do not correspond with U.S. imports of Canadian transformers, electrical transformers, and transformer regulators. Ontario's exports of these electrical products fell by only 3 per cent in 2018 and by a marginal 0.3 per cent in 2019

**Entity Name:** Motor & Equipment Manufacturers Association

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other (Industry Association)

**Tone of Comment:** Negative

**Content Summary:** Narrative Only

The Motor & Equipment Manufacturers Association's main arguments are as follows:

- The Motor & Equipment Manufacturers Association (MEMA) is the nation's leading trade association representing motor vehicle parts suppliers representing over 1,000 companies that manufacture components, technologies, and systems for use in passenger vehicles and heavy trucks
  - They directly employ over 871,000 people in all 50 states and generate 2.4 percent of U.S. GDP
- Higher prices on laminations for stacked cores would be highly problematic for some of our members
  - These are critical components of electrical transformers, which are used in all aspects of power generation, including industrial production, as well as in some components made by our members
- Adding more strain to this already stressed manufacturing industry puts pressure up and down the supply chain – from large Tier 1 suppliers to smaller Tier 2 and Tier 3 suppliers
  - Broad tariff relief should be the order of the day, not investigations that seek to impose new tariffs
  - Actions, such as tariffs, on imported materials that are critical and have limited sourcing options further constricts an already limited market and complex supply chain
  - Right now, many of our smaller Tier 2 and Tier 3 suppliers are facing severe liquidity pressures
- The U.S. should seek to incentivize domestic production as a far better course to re-shore production than imposing another set of tariffs that further disrupt trade and increase domestic production costs
  - Tax credits, grants, and additional research and development funding are among the measures that could be employed to encourage manufacturing both the transformer components and the specialty steel that goes into them
  - The fact is that very few companies located in the U.S. manufacture the type of electrical steel that is needed for transformers. Many more fold thousands more manufacture transformers and other transformer components
- While Section 232 cases against Mexico and Canada are technically legal, it would be unfortunate so soon after USMCA entry into force
  - In this or any potential dispute with these two nations, it would be far better to bring action through the USMCA multilateral dispute resolution process

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**Entity Name:** Embassy of the Republic of Colombia

**Date Received:** July 2, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Embassy of the Republic of Colombia's main arguments are as follows:

- 6 different letters were attached in the submission. They are responses from the following companies:
  - Spower, Paradoxe Corporation, Baker Hughes, Fleming Electric Inc, Magnetron S.A.S, and ABB Power Grids Columbia Ltda.
- Magnetron S.A.S and Hitachi ABB Colombia Ltda, are both Electrical Transformers Manufacturers and Exporters to the U.S Market from the Republic of Colombia
  - Spower, Paradoxe, Fleming Electric, and Baker Hughes are U.S. companies that purchase transformers from Magnetron S.A.S
- This group of letters has the purpose to explain to the U.S. Department of Commerce the importance of the strong trade relation, and the benefits for both markets not only in the U.S but also in Colombia, and how a negative outcome of an investigation under section 232 can create to the trade and investment flows between Colombia and the U.S
- Magnetron S.A.S. provides reliable transformers and valuable engineering services to each of the listed companies
- **ABB Power Grids Columbia Ltda:** Currently the transformer market in the United States is around 25 Billion USD. The transformer exports from our factory in Colombia do not in any manner threaten transformer production in the United States, and certainly do not represent a national security risk. On the other hand, imposing a tariff could cause severe damage to the competitiveness of Colombian manufacturers such as our factory

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**Entity Name:** Electro-Federation Canada

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other (Canadian Industry Association)

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

Electro-Federation Canada (EFC)'s main arguments are as follows:

- Electro-Federation Canada (EFC) is a national, not-for-profit industry association, representing over 250 companies that manufacture, distribute, and service electrical and electronics products in Canada
- Provided a transformer meets the design and functional specification of the network application, where a transformer is sourced, from a technological perspective is a neutral consideration. A transformer produced in Canada is technically equivalent to a transformer produced in the United States provided both devices meet specified technical requirements
- Canada has been exporting transformers to the United States for a very long time without causing any security threat. Canadian Transformer Manufacturers are part of an integrated North American supply chain that gives EFC members a comprehensive understanding of the U.S. electrical infrastructure and its operational and security issues
- The strategy of relying solely on the domestic supply chain would represent a serious threat to national security. Manufacturing capacity is insufficient to fill the need for new transformer goods to support a full normal functioning of the US electrical network
- Tariffs, quotas, or other trade-limiting measures will force U.S. and Canadian producers to try to find new suppliers and to rapidly build a supply chain that does not exist in the U.S. market and which is unlikely to develop sufficiently on a timely and sustained basis

**Entity Name:** T&D Europe

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Other (European Industry Association)

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

T&D Europe's main arguments are as follows:

- Many European companies that produce and export the Products also have facilities or factories in the US, thereby contributing to the US economy (jobs, taxes, growth)
- Where the US is unable to cover its entire domestic demand, solid and reliable partners who can are of vital importance to avoid unnecessary higher production costs for customers and thereby also undesirable price increases in utility bills for American industry and household consumers
- Customers are constantly increasing their demands in terms of the energy efficiency performance of their assets. In fact, electricity use is and will grow even more in the near future and the quality of the electric currents is more and more important, as equipment and systems become more sophisticated. This in turn leads to increased demands for high quality inputs, such as high grade GOES
- According to US Trade Statistics, in 2019, in total there was a trade surplus of \$1.934b across all the product codes included in the investigation. For Europe, however, the surplus was only \$199m
- The Products that are subject of this investigation are important for the US. As such it is critical that US industry and its customers can continue to rely on a robust interconnected supply and value chain consisting of reliable providers of quality Products. The existing, well-established trans-Atlantic relationships should be maintained and, where possible strengthened, in a spirit of open trade and fair, undistorted competition

**Entity Name:** Edison Electric Institute

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Edison Electric Institute's main arguments are as follows:

- 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
  - Since 2010, EEI's member companies have invested nearly \$1 trillion to build smarter energy infrastructure and to integrate new generation
- 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
  - 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
  - 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

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**Entity Name:** Eaton Corporation

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The Eaton Corporation's main arguments are as follows:

- Domestic Electrical Transformer and Transformer Component Manufacturing
  - We have nearly 1400 employees at the following locations:
    - Waukesha, Wisconsin (3 facilities) - 1,006 employees
    - Richmond, Virginia - 239 employees
    - Santa Ana, California -129 employees
- Eaton exports \$50,000,000 in value of these transformers annually to customers in Canada, Europe, Australia, South America, the Caribbean, Central America, Saudi Arabia, Africa, Asia and the Middle East
  - Any restriction on the importation of these components made from this type of specialty steel would promote the importation of foreign manufactured transformers into the United States to then be used in the manufacturing of electrical transformers that go into our electric grid
- The United States should invest in the domestic manufacture of Chemically or Mechanically etched Domain Refined Grain Oriented Electrical Steels
  - The domestic manufacturer of GOES still does not meet the specifications needed to manufacture our specific transformers in the United States
  - Two years of tariffs on electrical steel have not resulted in a U.S. entrant into this specialty steel market
  - Research and development investments and/or tax credits would provide domestic steel manufacturers vital resources to produce these specialty steels critical to the transformer market and provide manufacturers with a viable domestic source

**Entity Name:** SGB-SMIT Group

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The SGB-SMIT Group's main arguments are as follows:

- SGB-SMIT (HQ in Germany) is a global transformer manufacturing company with strong ties to the United States
  - SGB-SMIT is the world's largest pure-play transformer manufacturer with 13 locations around the world and more than 3,500 employees
  - SGB-SMIT has three locations in the United States:
    - Louisville, Ohio – a U.S. manufacturing and aftermarket service facility producing new
    - Tallmadge, Ohio – our newest U.S. manufacturing facility producing cast coil transformers and VPI transformers
    - Summerville, South Carolina – a U.S. facility providing transformer sales and business development support
  
- Our Concerns Regarding Section 232 Measures
  - The cost to operationalize a single factory for large power transformer manufacturing in the United States can exceed \$100 million and take several years
  - There is presently an insufficient domestic supply of laminations and cores to meet U.S. demand regardless of any export restrictions that may be adopted or imposed
  - Tampering with this healthy and competitive market through broad measures that do not differentiate friend and foe (unlike the targeted national security measures considered under Executive Order 1392) will have unintended consequences that are difficult to predict

**Entity Name:** National Foreign Trade Council

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Trade Association

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

The National Foreign Trade Council's main arguments are as follows:

- The National Foreign Trade Council (NFTC) represents more than 200 companies and our membership spans the breadth of the national economy. Our companies account for more than \$3 trillion in total sales worldwide, employ over five million Americans and produce a huge share of our nation's total exports
  - NFTC member companies, both U.S. and foreign-owned, are involved in the transformer industry and are committed to the security of the U.S. critical energy infrastructure
  - The U.S. transformer manufacturing industry directly employs over 15,000 workers in seven states
- 232 is Not the Appropriate Tool to Address Alleged Trade Measure Circumvention
  - It is common in parts of the transformer manufacturing industry for companies to maintain minimum contracts with a diversity of suppliers to ensure uninterrupted delivery of GOES to factories
  - Foreign-produced electrical steel is imported precisely because U.S. electrical steel manufacturing capacity is insufficient to meet domestic demand. The one GOES producer in the United States cannot meet all of the domestic demand and will not be able to do so for the foreseeable future
- The Danger of Retaliatory Tariffs and Harm to Our Export Markets Is Real
  - Section 232 tariffs on Transformers and Transformer Parts that are justified on national security grounds will risk reciprocal actions by our trading partners in the same or other sectors

**Entity Name:** Congressman Troy Balderson, U.S. House of Representatives

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** U.S. Government

**Tone of Comment:** Positive

**Content Summary:** Narrative Only Analysis

Congressman Troy Balderson's main arguments are as follows:

- AK Steel, a wholly-owned subsidiary of Cleveland-Cliffs Inc., is the only remaining domestic producer of grain-oriented electrical steel (GOES) which is used in cores and core assemblies for electrical transformers
  - AK Steel melts and finishes GOES at its Butler Works facility in Butler Pennsylvania and finishes the electrical steel at its Zanesville Works facility in Zanesville, Ohio
- Bad actors have been able to circumvent tariffs and quotas imposed on direct imports of GOES
  - Section 232 tariffs do not apply to derivative electrical steel articles, including laminations and cores
  - The value of imports of these goods from Canada and Mexico are up 105% from 2016 to 2019 despite neither Canada nor Mexico having any domestic GOES production
  - Cleveland-Cliffs has announced that it will idle the Butler and Zanesville plants in 2020 if the circumvention of the section 232 tariffs does not stop. Should these plants close, the U.S. will no longer have a domestic producer of GOES
- Central Ohio stands to lose 100 steel jobs should the Zanesville plant close
  - The U.S. cannot afford to lose its last remaining producer of electrical steel

**Entity Name:** ABB Inc

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Business

**Tone of Comment:** Negative

**Content Summary:** Narrative Only Analysis

ABB Inc's main arguments are as follows:

- Based in Zurich, Switzerland, ABB's U.S. headquarters are in Cary, North Carolina and ABB Inc. employs around 20,000 people in the U.S. across approximately 50 manufacturing, assembly, and other major facilities
  - ABB believes in domestic manufacturing, having invested \$14 billion in its U.S. operations and footprint over the past decade
  - ABB manufactures electric transformers and related components and assemblies in Pinetops and Mebane, North Carolina; Mt. Juliet, Tennessee; Burlington, Iowa; and Lake Mary, Florida
- Competitive and Diverse Supply Chains Boost Domestic Manufacturing & National Security
  - Diverse and competitive supply chains allow manufacturers like ABB to properly balance many important objectives when sourcing products, including quality, variety, customer specifications, cost, on-time delivery, and logistics
  - Rarely does a single supplier rank highest in all of these categories at the same time
- Trade Barriers Negatively Impact ABB's U.S. Employees and U.S. Customers
  - Trade barriers on transformers and related components will add new unplanned costs to producing domestic transformers and will impact our ability to competitively manufacture here in the U.S
  - ABB's U.S. operations and customers rely on imports from Mexico of certain transformers and transformer components. Import restrictions on Canada and Mexico would take North American trade relations in a negative direction, harming businesses, employees, and customers in all three nations



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**Entity Name:** Embassy of the Republic of Colombia

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative & Trade Data Analysis

The Embassy of the Republic of Colombia's main arguments are as follows:

- Although Colombia has been increasing sales of these products in the US market, we consider that a high enough volume is not yet being met to impose such a measure on our exports
  - We would like to underscore that Colombian exports have been standing out due to the quality of the products, competitive pricing, and because it satisfies the demand in specific niches, such as electrical substations of transmission and distribution, as well as the oil & gas sector
- The free trade agreement that the US and Colombia enjoy allows Colombian products to be imported to the United States with 0% tariff preference
  - Colombian exports of Chapter 8504 to the US market have grown 51%, comparing the first 4 months of this year to the same period of 2019. It also reflects a 211% increase between 2015 and 2019
  - Our country has not recognized China as a market economy and we have imposed numerous trade remedy measures against steel made products originating from China
- Colombia's share of this market was only 0.10% last year; however, the product quality this share represents was supplied with efficiency and aptly met a demand in the market
  - Should these exports be discontinued, the shortage of this type of electrical transformers provided by Colombia could potentially put the electricity supply of certain US regions at risk
  - In Colombia, the companies that produce electrical transformers include: Siemens, ASEA Brown Boveri – ABB, Electromechanical Industries Magnetron, WEG Colombia, And Rymel Electrical Engineering

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**Entity Name:** Government of Mexico

**Date Received:** July 3, 2020

**Date Posted:** July 6, 2020

**Type of Entity:** Foreign Government

**Tone of Comment:** Negative

**Content Summary:** Narrative & Trade Data Analysis

The Government of Mexico's main arguments are as follows:

- Mexico is a long-standing ally and economic partner of the United States
  - In 2001, DOC in its report conducted under section 232 of the Trade Expansion Act of 1962 (Section 232) on imports of Iron Ore and Semi-finished Steel found that "Mexico – with which the United States shares a 1,550-mile border – is a close ally and is a party to NAFTA"
- The application of Section 232 duties to the products under investigation will negatively affect integrated valued chains in the United States and Mexico
  - None of the three USMCA partners produce enough grain-oriented electric steel to supply the North American region
  - Imposing 232 duties would allow the only producer in the United States to act, in practice, as a monopoly
  - It is estimated that 50% of the transformers that the United States imports from Mexico have high content from the United States
  - A review of the trend of U.S. imports of transformers from Mexico, shows no significant leap at the subheading level (8504.21-8504.34), from 2017 to 2019
- The USMCA is a historic opportunity to enhance the competitiveness of North America
  - In 2019, Mexico became the United States' top trading partner and the second most important destination of American exports
  - The North American Industry has achieved a level of integration that fosters innovation, increases the economic well-being of the sector, and provides a reliable source of goods for all purposes, including consumer demand

# THE EFFECT OF IMPORTS OF ELECTRICAL STEEL AND TRANSFORMER-RELATED PRODUCTS ON THE NATIONAL SECURITY



U.S. Department of Commerce  
Bureau of Industry and Security  
Office of Technology Evaluation

Public Rebuttals

August 3, 2020

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**Entity Name (Rebuttal):** Paradoxe Corporation

**Entity Name (Original Comment):** National Electrical Manufacturers Association

**Date Received:** July 20, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Paradoxe Corporation's main rebuttal arguments are as follows:

- Our company is a small certified woman owned business (nationally certified by WBENC) that has been operating in the energy sector for more than 28 years
  - We are located in Jackson, Tennessee and employ 24 full time employees
  - We have been a transformer component supplier to Prolec-GE in Monterrey, Mexico since we have been in existence. They are our largest customer and a very important part of our business
- If Prolec-GE is negatively impacted by the proposed actions related to the 232 Electrical Steel Investigation, it could be very detrimental to their business and by extension, to our business
- Application of trade actions, including tariffs, as a result of the 232 investigation on transformers would seriously undermine the economic health of our company and the industry as a whole.
  - The likely reduced demand would mean a decline in sales revenue, undermine job growth and certainly would cause a loss of US jobs for many companies
- We are writing in support of National Electrical Manufacturers Association's (NEMA) request that finished transformers not be included in the new 232 Electrical Steel Investigation and to exclude them from any possible trade actions that may result from it

**Entity Name (Rebuttal):** Sunline Commercial Carriers

**Entity Name (Original Comment):** National Electrical Manufacturers Association

**Date Received:** July 21, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Sunline Commercial Carriers's main rebuttal arguments are as follows:

- Sunline Commercial Carriers, Inc (Sunline) is a transportation company based in San Antonio, Texas. Since our inception in 1994, we have provided transportation services in all 48 contiguous states both in the commercial world as well as for the Department of Defense. Our main focus has been cross border operations working with our Mexican customers/partners since 1997
  - Sunline total employees in 2019 – 77
  - Began working with Prolec-GE in 1999 and it represents an estimated 25% of our annual revenue or \$15,000,000 est
  - By including the transformers in the new 232 Electrical Steel Investigation, we could possibly lose the \$15,000,000 in revenue we generate from the Prolec-GE business
- Application of trade actions, including tariffs, as a result of the 232 investigation on finished transformers would seriously undermine the economic health of our company
  - The likely reduced demand would mean a significant decrease in our revenue (see above) and require us to reduce staff and capital investments
- For these reasons, Sunline supports the request that finished transformers be exempted from the 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

**Entity Name (Rebuttal):** City of Clearwater, Florida

**Entity Name (Original Comment):** Instrument Transformers, LLC

**Date Received:** July 22, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Government

**Tone of Rebuttal:** Positive

**Content Summary:** Narrative Only

City of Clearwater, Florida's main rebuttal arguments are as follows:

- The City of Clearwater is filing these comments to express strong support for the request by Instrument Transformers, LLC, of Clearwater, that low and medium voltage transformers hereinafter "instrument transformers") are included in this Section 232 investigation and within the scope of remedial measures
  - (Commerce did not define the products that are subject to its investigation)
- Instrument Transformers, LLC is one of the three largest manufacturers in Clearwater. The company invested \$60 million in our community in 2015 to build a new, state-of-the-art production facility
  - It provides more than 700 families in my community with good jobs and is the source of significant local tax revenue
  - In addition to being a large employer, Instrument Transformers, LLC spends roughly \$7 million annually on goods and services from local material and packaging suppliers and service providers
- Instrument transformers, which are made principally from high-quality U.S. steel and other inputs, are used to meter and protect the flow of electricity, ensuring the safe and reliable operation of our nation's electrical grid
  - Instrument transformers are also used to protect and meter the flow of electricity in many military applications. All these applications make instrument transformers essential to national security
- For the last several years, individuals at Instrument Transformers, LLC have told me that their business is being harmed by low-priced imports made by low-wage labor and low-quality foreign material
  - In the face of intense market competition by foreign suppliers, Instrument Transformers, LLC has been forced to reduce employment by 20%
- I am particularly concerned that should Section 232 tariffs be imposed on imports of transformer components like laminations and cores, this could well lead to an increase in imports of finished instrument transformers — unless instrument transformers are extended equal tariff protection under Section 232

**Entity Name (Rebuttal):** HLI Rail and Rigging, LLC

**Entity Name (Original Comment):** National Electrical Manufacturers Association

**Date Received:** July 23, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

HLI Rail and Rigging, LLC's main rebuttal arguments are as follows:

- Our company, HLI Rail and Rigging (and subsidiaries), located in Lindenhurst-NY with offices in Philadelphia PA, Spring TX and Laredo TX, consisting in 19 employees, have been providing transportation services for Transformer Manufacturers in Mexico over the last 14 years
  - Our main customer, Prolec GE which in average represents a 40% of our business, and an overall for Manufacturers in Mexico of 60%
- Application of trade actions, including tariffs, as a result of the 232 investigation on finished transformers would seriously undermine the economic health of our company
  - The likely reduced demand would mean a decline in revenue, and potential loss of jobs for our employees
- For these reasons, we support the request that finished transformers be exempted from the 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

**Entity Name (Rebuttal):** Korea International Trade Association

**Entity Name (Original Comment):** Domestic Transformer Manufacturers

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Trade Association

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative & Trade Data Analysis

Korea International Trade Association's main rebuttal arguments are as follows:

- In response to the argument that the DOC should recommend restrictions on imports of completed transformers from South Korea and Mexico, but waive any restrictions on completed Canadian-origin transformers<sup>96</sup>, we would like to provide our different views and opinions
- It is true that antidumping duties have been levied on large power transformers from Korea since 2011. However, 'dumped imports' themselves do not threaten to impair the national security and they are duly regulated by trade remedy laws
  - Furthermore, the allegation of the comment that Korea manufactures purposely damage the United States transformer market is groundless and unfounded
  - It is also noteworthy that U.S. imports of large power transformers from Korea have decreased since 2016
  - As we emphasized in our earlier comments, among the major U.S. import sources of electrical transformers, Korea is the only country whose exports to the United States have recently been decreasing dramatically
- The comment also urges the DOC to waive any restrictions on power transformers from Canada highlighting that Canada is a staunch U.S. ally with a new trade agreement effective as of July 1, 2020
  - If "security relationship" matters when the DOC considers exceptions to individual countries, Korea should be also excluded as one of the strongest allies of the United States
  - This is well articulated in the comments by the United States Trade Representative (USTR) following the conclusion of amendments and modifications of the U.S.-Korea FTA in March 2018
    - "The Republic of Korea is an important ally and key trading partner. Improving KORUS by rebalancing our trade and reducing the trade deficit will strengthen our national security relationship"
- We also would like to bring the attention of the DOC to the continued and sincere efforts of the Korean manufacturers in order to support interests of the U.S. economy in general and the U.S. electric power grid in particular

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<sup>96</sup> Comments by Domestic Transformer Manufacturers. Doc. ID. BIS-2020-0015-0082

**Entity Name (Rebuttal):** AK Steel Corporation

**Entity Name (Original Comment):** Government of Canada

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Positive

**Content Summary:** Narrative Only

AK Steel Corporation's main rebuttal arguments are as follows:

- The Government of Canada ignores a recent opinion from the U.S. Court of International Trade ("CIT") that is directly on point. In March 2019, the CIT considered the President's decision to impose tariffs on imports of steel pursuant to Section 232
  - In upholding the constitutionality of the President's actions, the CIT pointed out that under Section 232(c), the President is authorized to "determine the nature and duration of the action that, in the judgment of the President, must be taken to adjust the imports of the article and its derivatives so that such imports will not threaten to impair the national security"
- Even in the absence of such precedent, the plain language of the statute strongly supports the conclusion that the President is authorized to act here
  - AK Steel is the nation's only remaining producer of electrical steel, including grain-oriented electrical steel ("GOES") used to make cores and laminations for transformers
  - AK Steel has already proven that the U.S. market is being distorted by significant volumes of imported cores and laminations made from GOES produced outside North America
  - It has further shown that unless the United States imposes strong and effective trade relief on these imports, AK Steel will exit this business and the United States will lose the ability to make electrical steel
- The Department of Commerce found in its 2018 report on steel that the United States requires an "assured domestic supply" of electrical steel, and that losing that supply could have severe consequences for our national security
  - The President is bound by U.S. law, not the GATT. Furthermore, as the Government of Canada knows, Article XXI of the GATT contains an exception for measures that a contracting party "considers necessary for the protection of its essential security interests [...] taken in time of war or other emergency in international relations"
  - The U.S. government has already invoked GATT Article XXI in the context of recent actions under Section 232 regarding steel and aluminum, and the same provision would apply here
- AK Steel has already shown elsewhere that trade relief here is wholly consistent with the letter and the spirit of the USMCA.
  - The other claims all rest on the apparent assumption that the close economic and political ties between the United States and Canada mean that imports from Canada can never threaten the national security of the United States

[REDACTED]

[REDACTED]

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- [REDACTED]
- [REDACTED]

- [REDACTED]
- [REDACTED]

- [REDACTED]

**Entity Name (Rebuttal):** LC Drives Corporation

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

LC Drives Corporation's main rebuttal arguments are as follows:

- Commerce's notice and its investigation to date has a fatal flaw in that it fails to distinguish between laminated, stacked and wound cores for many different types of transformers
  - Commerce recommending the application of additional tariffs on imports of steel and other products that are already subject to duties and tariffs would be duplicative and cause unreasonable harm to companies such as LC Drives
- Common transformers are three-phase and single-phase transformers, electrical power transformers, distribution transformers, and instrument transformers
  - The Steel Report recognized that "electrical steel is necessary for power distribution transformers for all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country" and that these are critical to the national security
  - Limiting the scope in a manner to only address the national security concerns related to the laminated cores, stacked cores, and wound cores for use in distribution or transmission transformers over 10,000 volts for three-phase and the equivalent single-phase voltage
- Just last week, a unanimous three-judge panel of the Court of International Trade ("CIT") issued a final decision in *Transpacific Steel LLC v. United States*, holding that Section 232's time limits on Presidential action are mandatory and that an untimely proclamation is unlawful and void
  - As submitted in its initial comments, LC Drives believes that this investigation should not continue on the grounds that Commerce is now time barred from expanding the scope of products covered by the Steel Report to include derivative products such as steel laminated, stacked, and wound cores for use in transformers as Proclamation 9705
  - LC Drives reiterates, that Commerce already considered whether or not the derivative steel products used in manufacturing products such as laminated, stacked, and wound cores for transformers should be part of the 2018 Section 232 tariffs on steel and did not include them within the scope of its findings in the Steel Report
    - Commerce cannot now take further remedial action given that the CIT has recently struck down a similar tardy proclamation
- LC Drives urges Commerce to exercise restraint in any determination with respect to its investigation by limiting its scope to specific laminated, stacked, and wound core products that are used in cores and core assemblies for electrical distribution and transmission transformers greater than 10,000 volts for three-phase and the single-phase equivalent which power and transport energy for the nation's electrical grid

**Entity Name (Rebuttal):** LC Drives Corporation

**Entity Name (Original Comment):** ABB Enterprise Software, Inc.

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

LC Drives Corporation's main rebuttal arguments are as follows:

- Commerce's notice and its investigation to date has a fatal flaw in that it fails to distinguish between laminated, stacked and wound cores for many different types of transformers
  - Commerce recommending the application of additional tariffs on imports of steel and other products that are already subject to duties and tariffs would be duplicative and cause unreasonable harm to companies such as LC Drives
- Common transformers are three-phase and single-phase transformers, electrical power transformers, distribution transformers, and instrument transformers
  - The Steel Report recognized that "electrical steel is necessary for power distribution transformers for all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country" and that these are critical to the national security
  - Limiting the scope in a manner to only address the national security concerns related to the laminated cores, stacked cores, and wound cores for use in distribution or transmission transformers over 10,000 volts for three-phase and the equivalent single-phase voltage
- Just last week, a unanimous three-judge panel of the Court of International Trade ("CIT") issued a final decision in *Transpacific Steel LLC v. United States*, holding that Section 232's time limits on Presidential action are mandatory and that an untimely proclamation is unlawful and void
  - As submitted in its initial comments, LC Drives believes that this investigation should not continue on the grounds that Commerce is now time barred from expanding the scope of products covered by the Steel Report to include derivative products such as steel laminated, stacked, and wound cores for use in transformers as Proclamation 9705
  - LC Drives reiterates, that Commerce already considered whether or not the derivative steel products used in manufacturing products such as laminated, stacked, and wound cores for transformers should be part of the 2018 Section 232 tariffs on steel and did not include them within the scope of its findings in the Steel Report
    - Commerce cannot now take further remedial action given that the CIT has recently struck down a similar tardy proclamation
- LC Drives urges Commerce to exercise restraint in any determination with respect to its investigation by limiting its scope to specific laminated, stacked, and wound core products that are used in cores and core assemblies for electrical distribution and transmission transformers greater than 10,000 volts for three-phase and the single-phase equivalent which power and transport energy for the nation's electrical grid

**Entity Name (Rebuttal):** LC Drives Corporation

**Entity Name (Original Comment):** Instrument Transformers, LLC

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

LC Drives Corporation's main rebuttal arguments are as follows:

- Commerce's notice and its investigation to date has a fatal flaw in that it fails to distinguish between laminated, stacked and wound cores for many different types of transformers
  - Commerce recommending the application of additional tariffs on imports of steel and other products that are already subject to duties and tariffs would be duplicative and cause unreasonable harm to companies such as LC Drives
- Common transformers are three-phase and single-phase transformers, electrical power transformers, distribution transformers, and instrument transformers
  - The Steel Report recognized that "electrical steel is necessary for power distribution transformers for all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country" and that these are critical to the national security
  - Limiting the scope in a manner to only address the national security concerns related to the laminated cores, stacked cores, and wound cores for use in distribution or transmission transformers over 10,000 volts for three-phase and the equivalent single-phase voltage
- Just last week, a unanimous three-judge panel of the Court of International Trade ("CIT") issued a final decision in *Transpacific Steel LLC v. United States*, holding that Section 232's time limits on Presidential action are mandatory and that an untimely proclamation is unlawful and void
  - As submitted in its initial comments, LC Drives believes that this investigation should not continue on the grounds that Commerce is now time barred from expanding the scope of products covered by the Steel Report to include derivative products such as steel laminated, stacked, and wound cores for use in transformers as Proclamation 9705
  - LC Drives reiterates, that Commerce already considered whether or not the derivative steel products used in manufacturing products such as laminated, stacked, and wound cores for transformers should be part of the 2018 Section 232 tariffs on steel and did not include them within the scope of its findings in the Steel Report
    - Commerce cannot now take further remedial action given that the CIT has recently struck down a similar tardy proclamation
- LC Drives urges Commerce to exercise restraint in any determination with respect to its investigation by limiting its scope to specific laminated, stacked, and wound core products that are used in cores and core assemblies for electrical distribution and transmission transformers greater than 10,000 volts for three-phase and the single-phase equivalent which power and transport energy for the nation's electrical grid

**Entity Name (Rebuttal):** LC Drives Corporation

**Entity Name (Original Comment):** The Core Coalition

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

LC Drives Corporation's main rebuttal arguments are as follows:

- Commerce's notice and its investigation to date has a fatal flaw in that it fails to distinguish between laminated, stacked and wound cores for many different types of transformers
  - Commerce recommending the application of additional tariffs on imports of steel and other products that are already subject to duties and tariffs would be duplicative and cause unreasonable harm to companies such as LC Drives
- Common transformers are three-phase and single-phase transformers, electrical power transformers, distribution transformers, and instrument transformers
  - The Steel Report recognized that "electrical steel is necessary for power distribution transformers for all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country" and that these are critical to the national security
  - Limiting the scope in a manner to only address the national security concerns related to the laminated cores, stacked cores, and wound cores for use in distribution or transmission transformers over 10,000 volts for three-phase and the equivalent single-phase voltage
- Just last week, a unanimous three-judge panel of the Court of International Trade ("CIT") issued a final decision in *Transpacific Steel LLC v. United States*, holding that Section 232's time limits on Presidential action are mandatory and that an untimely proclamation is unlawful and void
  - As submitted in its initial comments, LC Drives believes that this investigation should not continue on the grounds that Commerce is now time barred from expanding the scope of products covered by the Steel Report to include derivative products such as steel laminated, stacked, and wound cores for use in transformers as Proclamation 9705
  - LC Drives reiterates, that Commerce already considered whether or not the derivative steel products used in manufacturing products such as laminated, stacked, and wound cores for transformers should be part of the 2018 Section 232 tariffs on steel and did not include them within the scope of its findings in the Steel Report
    - Commerce cannot now take further remedial action given that the CIT has recently struck down a similar tardy proclamation
- LC Drives urges Commerce to exercise restraint in any determination with respect to its investigation by limiting its scope to specific laminated, stacked, and wound core products that are used in cores and core assemblies for electrical distribution and transmission transformers greater than 10,000 volts for three-phase and the single-phase equivalent which power and transport energy for the nation's electrical grid

**Entity Name (Rebuttal):** LC Drives Corporation

**Entity Name (Original Comment):** The Core Coalition

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

LC Drives Corporation's main rebuttal arguments are as follows:

- Commerce's notice and its investigation to date has a fatal flaw in that it fails to distinguish between laminated, stacked and wound cores for many different types of transformers
  - Commerce recommending the application of additional tariffs on imports of steel and other products that are already subject to duties and tariffs would be duplicative and cause unreasonable harm to companies such as LC Drives
- Common transformers are three-phase and single-phase transformers, electrical power transformers, distribution transformers, and instrument transformers
  - The Steel Report recognized that "electrical steel is necessary for power distribution transformers for all types of energy – including solar, nuclear, wind, coal, and natural gas – across the country" and that these are critical to the national security
  - Limiting the scope in a manner to only address the national security concerns related to the laminated cores, stacked cores, and wound cores for use in distribution or transmission transformers over 10,000 volts for three-phase and the equivalent single-phase voltage
- Just last week, a unanimous three-judge panel of the Court of International Trade ("CIT") issued a final decision in *Transpacific Steel LLC v. United States*, holding that Section 232's time limits on Presidential action are mandatory and that an untimely proclamation is unlawful and void
  - As submitted in its initial comments, LC Drives believes that this investigation should not continue on the grounds that Commerce is now time barred from expanding the scope of products covered by the Steel Report to include derivative products such as steel laminated, stacked, and wound cores for use in transformers as Proclamation 9705
  - LC Drives reiterates, that Commerce already considered whether or not the derivative steel products used in manufacturing products such as laminated, stacked, and wound cores for transformers should be part of the 2018 Section 232 tariffs on steel and did not include them within the scope of its findings in the Steel Report
    - Commerce cannot now take further remedial action given that the CIT has recently struck down a similar tardy proclamation
- LC Drives urges Commerce to exercise restraint in any determination with respect to its investigation by limiting its scope to specific laminated, stacked, and wound core products that are used in cores and core assemblies for electrical distribution and transmission transformers greater than 10,000 volts for three-phase and the single-phase equivalent which power and transport energy for the nation's electrical grid

**Entity Name (Rebuttal):** Congressman Charlie Crist, U.S. House of Representatives

**Entity Name (Original Comment):** Instrument Transformers, LLC

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Government

**Tone of Rebuttal:** Positive

**Content Summary:** Narrative Only

Congressman Charlie Crist, U.S. House of Representatives's main rebuttal arguments are as follows:

- I have been informed IT is one of the largest producers of instrument transformers in the United States and is potentially deeply affected by this investigation
- IT's public submission describes how instrument transformers are devices used to meter and protect the flow of electricity, including our nation's electric grid and numerous defense applications
  - I understand electrical steel, a critical material in instrument transformers, has been the subject of past fair-trade investigations and is linked to the current investigation
  - Also, I am informed that IT sources most of its electrical steel from the United States, providing an important buyer for U.S.-made electrical steel
- However, Department of Commerce's investigation questionnaire, indicating the current scope, includes the tariff codes for transformer cores and laminations but not for the vast majority (over 95%) of the instrument transformers made in Clearwater
  - As a result of this investigation, if tariffs are imposed on transformer cores, laminations, or finished transformers but not on instrument transformers, I'm afraid the likely impact would be a surge of imports of finished instrument transformers made with low-cost, foreign electrical steel
  - This could have a devastating impact on the Clearwater facility in my Congressional District, along with their 750 employees, my constituents
- For the foregoing reasons, IT has requested that the scope of the Section 232 investigation and any recommended remedies include all its instrument transformers

**Entity Name (Rebuttal):** SGB-SMIT Group

**Entity Name (Original Comment):** SGB-SMIT Group

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Foreign Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

SGB-SMIT Group's main rebuttal arguments are as follows:

- As noted in our previously filed public comments, SGB-SMIT is a global transformer manufacturing company with strong ties to the United States. SGB-SMIT is owned by a U.S. private equity firm and has made significant investments in the United States
  - We have manufacturing and other facilities in Ohio and South Carolina – where we complemented our production in 2019 with a new, innovative transformer product – and plans for further investments and growth of our domestic production capability in the United States
- It is clear that imposing Section 232 duties on transformer cores and laminations would not benefit U.S. industry, nor would it benefit U.S. national security
  - First, as noted by other commenters, AK Steel does not have the production capabilities to supply laminations or cores to domestic transformer manufacturers
  - Second, as indicated in comments from a number of domestic transformer manufacturers, it is incorrect to assume that the sole basis for importing laminations and cores from Mexico and Canada is to circumvent Section 232 tariffs on steel coils
  - Third, outsourcing the production of laminations and cores is a very common practice in the transformer industry. This practice is not limited to the U.S., and is widely used in China, India, and Europe as well
    - The investment required for in-house production of laminations is high. On average, the cutting line required for laminations costs, at a minimum, \$1,500,000 to \$2,000,000 and can typically process only around 2,500 tons per year
- Currently, there is a mismatch between the GOES products and grades that AK Steel is producing and the GOES products and grades that the U.S. market is demanding
  - Even if AK Steel's capacity were sufficient tonnage wise to cover the demand in the U.S., domestic transformer manufacturers would still need to fill product gaps by importing laminations and cores from core manufacturers that use the type of GOES grade demanded
- A comparison of Europe and U.S. data suggests that even if Section 232 duties are imposed on laminations and cores, most U.S. transformer producers will continue to outsource these finished GOES products
  - Domestic transformer manufacturers will still have to continue importing laminations and cores, and will be forced to increase transformer prices to cover these costs

[REDACTED]

[REDACTED]

- [REDACTED]

**Entity Name (Rebuttal):** Domestic Transformer Manufacturers

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Other (Industry Association)

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Domestic Transformer Manufacturers's main rebuttal arguments are as follows:

- Any New Import Restrictions Must Take into Consideration Their Impact on the U.S. Transformer Industry and Must Be Modified Accordingly
  - If tariffs, quotas or other restrictions are imposed on imports of finished GOES, Domestic Transformer Manufacturers will be placed at a competitive disadvantage. This is because foreign transformer manufacturers will be able to source this finished GOES without restrictions, giving them an unfair price advantage over transformers made in the United States
- AK Steel's Operational Problems Are Due to Factors Other Than Imports of Finished GOES
  - First, in its 2014 antidumping ("AD") and countervailing ("CVD") duty case AK Steel was unsuccessful in persuading the International Trade Commission ("ITC") that imports of GOES from Germany, Japan, Poland, China, Korea, the Czech Republic and Russia are injuring domestic production
  - Second, AK Steel lost its export market in China of approximately 50,000 MT in 2011 due to Chinese government restrictions. Its exports were further reduced in 2012 due to restrictions from Europe and loss of competitiveness in India
  - Third, AK Steel's higher prices for all GOES grades also undermine its competitiveness. Its prices are 25 percent higher for similar grades from different suppliers in other parts of the world. This gap has persisted since long before Section 232 tariffs were imposed on imported steel, including GOES
- Imports Are Necessary Because AK Steel Is Not Capable of Producing Finished GOES Needed for the U.S. Market
  - Proposed restrictions on imports of finished GOES would have virtually no impact on AK Steel. U.S. customers' reliance on imported finished GOES due in large part because AK Steel has not invested in its processes in order to keep up with increased efficiencies and GOES quality that international suppliers have produced
- The Assertion of Minimal GOES Processing in Canada Is Incorrect
  - AK Steel ignores the substantial transformation of raw GOES occurring in Canada with high-value and high-skill labor production added to the finished GOES.
  - Domestic Transformer Manufacturers rely on their vendors in Canada to process and finish that GOES into finished cut and stacked pieces at engineered precision because AK Steel does not have the ability or capacity to meet the design demands of this specialty finished GOES

**Entity Name (Rebuttal):** Tempel Steel Company

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Tempel Steel Company's main rebuttal arguments are as follows:

- As part of a highly integrated supply chain supporting the North American electrical grid, Tempel Steel has been producing laminations and cores in Canada long before the 232 steel tariffs were imposed in 2018 and for reasons unrelated to the 232 tariffs on GOES
  - Annex B describes the manufacturing process for "Strip Wound Distributed Gap Core" ("DG Core" production) and Annex C describes the manufacturing process for "Step Lap Mitre Core" ("Mitre Core" production). Both substantially transform the GOES into a new and different article of commerce
- AK Steel has failed to make the necessary investments to produce globally competitive GOES even with relief repeatedly granted by the U.S. Government since the 1980s
  - Even with the current tariffs on GOES, AK Steel still could not compete successfully on price
  - The Southwest president stated that it has been his experience that AK Steel is simply not able to provide the steel volumes in the specific quality/performance grades needed, for US transformer manufacturers like his company to successfully support the US market
- Tariffs or quotas will not fix AK Steel's business problems which have caused them massive losses but will place the entire U.S. electrical transformer industry at its mercy and in chaos
  - Trade restrictions on downstream products will simply drive up the costs of transformers used by North American utilities, which are constrained in raising prices to customers. It will come at the expense of U.S. transformer manufacturers, who will be forced to move offshore
- The real threat to national security would be a serious disruption to the North American electrical supply chain and infrastructure if tariffs or quotas are imposed on transformer inputs and transformers and regulators
  - Average age of a transformer in the field is 38 years, well surpassing its life expectancy of 25 years. U.S. utilities are fighting to allocate needed capital from their limited budgets to address this challenge while state and municipal governments refuse to accept rate increases for their local businesses and individual consumers
  - Trade restrictions would burden the North American electrical supply chain and infrastructure with extra costs and/ or access to material necessary to support a flexible, reliable and secure grid on both sides of the border, posing a real threat to U.S. national security

**Entity Name (Rebuttal):** Domestic Transformer Manufacturers

**Entity Name (Original Comment):** Government of Mexico

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Other (Industry Association)

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Domestic Transformer Manufacturers's main rebuttal arguments are as follows:

- Any New Import Restrictions Must Take into Consideration Their Impact on the U.S. Transformer Industry and Must Be Modified Accordingly
  - If tariffs, quotas or other restrictions are imposed on imports of finished GOES, Domestic Transformer Manufacturers will be placed at a competitive disadvantage. This is because foreign transformer manufacturers will be able to source this finished GOES without restrictions, giving them an unfair price advantage over transformers made in the United States
- AK Steel's Operational Problems Are Due to Factors Other Than Imports of Finished GOES
  - First, in its 2014 antidumping ("AD") and countervailing ("CVD") duty case AK Steel was unsuccessful in persuading the International Trade Commission ("ITC") that imports of GOES from Germany, Japan, Poland, China, Korea, the Czech Republic and Russia are injuring domestic production
  - Second, AK Steel lost its export market in China of approximately 50,000 MT in 2011 due to Chinese government restrictions. Its exports were further reduced in 2012 due to restrictions from Europe and loss of competitiveness in India
  - Third, AK Steel's higher prices for all GOES grades also undermine its competitiveness. Its prices are 25 percent higher for similar grades from different suppliers in other parts of the world. This gap has persisted since long before Section 232 tariffs were imposed on imported steel, including GOES
- Imports Are Necessary Because AK Steel Is Not Capable of Producing Finished GOES Needed for the U.S. Market
  - Proposed restrictions on imports of finished GOES would have virtually no impact on AK Steel. U.S. customers' reliance on imported finished GOES due in large part because AK Steel has not invested in its processes in order to keep up with increased efficiencies and GOES quality that international suppliers have produced
- The Assertion of Minimal GOES Processing in Canada Is Incorrect
  - AK Steel ignores the substantial transformation of raw GOES occurring in Canada with high-value and high-skill labor production added to the finished GOES.
  - Domestic Transformer Manufacturers rely on their vendors in Canada to process and finish that GOES into finished cut and stacked pieces at engineered precision because AK Steel does not have the ability or capacity to meet the design demands of this specialty finished GOES

**Entity Name (Rebuttal):** Domestic Transformer Manufacturers

**Entity Name (Original Comment):** National Chamber of Electrical Equipment Manufacturers of Mexico

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Other (Industry Association)

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Domestic Transformer Manufacturers's main rebuttal arguments are as follows:

- Any New Import Restrictions Must Take into Consideration Their Impact on the U.S. Transformer Industry and Must Be Modified Accordingly
  - If tariffs, quotas or other restrictions are imposed on imports of finished GOES, Domestic Transformer Manufacturers will be placed at a competitive disadvantage. This is because foreign transformer manufacturers will be able to source this finished GOES without restrictions, giving them an unfair price advantage over transformers made in the United States
- AK Steel's Operational Problems Are Due to Factors Other Than Imports of Finished GOES
  - First, in its 2014 antidumping ("AD") and countervailing ("CVD") duty case AK Steel was unsuccessful in persuading the International Trade Commission ("ITC") that imports of GOES from Germany, Japan, Poland, China, Korea, the Czech Republic and Russia are injuring domestic production
  - Second, AK Steel lost its export market in China of approximately 50,000 MT in 2011 due to Chinese government restrictions. Its exports were further reduced in 2012 due to restrictions from Europe and loss of competitiveness in India
  - Third, AK Steel's higher prices for all GOES grades also undermine its competitiveness. Its prices are 25 percent higher for similar grades from different suppliers in other parts of the world. This gap has persisted since long before Section 232 tariffs were imposed on imported steel, including GOES
- Imports Are Necessary Because AK Steel Is Not Capable of Producing Finished GOES Needed for the U.S. Market
  - Proposed restrictions on imports of finished GOES would have virtually no impact on AK Steel. U.S. customers' reliance on imported finished GOES due in large part because AK Steel has not invested in its processes in order to keep up with increased efficiencies and GOES quality that international suppliers have produced
- The Assertion of Minimal GOES Processing in Canada Is Incorrect
  - AK Steel ignores the substantial transformation of raw GOES occurring in Canada with high-value and high-skill labor production added to the finished GOES.
  - Domestic Transformer Manufacturers rely on their vendors in Canada to process and finish that GOES into finished cut and stacked pieces at engineered precision because AK Steel does not have the ability or capacity to meet the design demands of this specialty finished GOES

**Entity Name (Rebuttal):** National Electrical Manufacturers Association

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Trade Association

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative & Trade Data Analysis

National Electrical Manufacturers Association's main rebuttal arguments are as follows:

- The National Electrical Manufacturers Association (NEMA) represents nearly 325 electrical equipment and medical imaging manufacturers that make safe, reliable, and efficient products and systems. NEMA member companies, representing over 370,000 American manufacturing jobs, include manufacturers of transformers and related equipment
- Given the inherent procurement complexities, coupled with their prominent role in national security, any U.S. government activity impacting the industry should make all transformers easier to procure, not more difficult
- Additionally, Canada and Mexico are, and will remain, strategic allies in sustaining our economic activity and national security, including but not limited to the bulk power systems of the three countries. NEMA and its Members do not support actions that disrupt the supply chain especially where they could negatively affect U.S. security and economic recovery.
  - NEMA asserts the import of electrical transformers and related parts from Canada and Mexico pose no threat to American national security, but instead enhance security and wellbeing by ensuring a reliable supply chain and the thousands of U.S. jobs that rely on this tri-national economy
- Simply put, in order to use AK Steel's product, many U.S. transformer manufacturers would have to re-design their own product. Not only are product re-designs costly and time-consuming, but using material with higher losses will lead to larger product footprint and weight, making them incompatible with current end-user installations and impacting product replacement schedules
  - At the same thickness, AK Steel's GOES products are 9%-15% less efficient for stacked cores and 14% - 36% less efficient for wound cores. Again, these lower efficiencies can be accounted for through increased steel thickness and corresponding transformer design
- Beyond a potential on-shoring of the production of cores and laminations, the potential on-shoring of final transformer assemblies would increase U.S. demand for cores and laminations and, by extension, electrical steels even further
  - In 2019, the U.S. imported 15.5 million transformers with ratings of >1 KVA and over 20 million voltage regulators. It is highly likely that most, if not all, of these units were manufactured using foreign electrical steel

**Entity Name (Rebuttal):** Domestic Transformer Manufacturers

**Entity Name (Original Comment):** Korea Electrical Manufacturers Association

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Other (Industry Association)

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Domestic Transformer Manufacturers's main rebuttal arguments are as follows:

- Any New Import Restrictions Must Take into Consideration Their Impact on the U.S. Transformer Industry and Must Be Modified Accordingly
  - If tariffs, quotas or other restrictions are imposed on imports of finished GOES, Domestic Transformer Manufacturers will be placed at a competitive disadvantage. This is because foreign transformer manufacturers will be able to source this finished GOES without restrictions, giving them an unfair price advantage over transformers made in the United States
- AK Steel's Operational Problems Are Due to Factors Other Than Imports of Finished GOES
  - First, in its 2014 antidumping ("AD") and countervailing ("CVD") duty case AK Steel was unsuccessful in persuading the International Trade Commission ("ITC") that imports of GOES from Germany, Japan, Poland, China, Korea, the Czech Republic and Russia are injuring domestic production
  - Second, AK Steel lost its export market in China of approximately 50,000 MT in 2011 due to Chinese government restrictions. Its exports were further reduced in 2012 due to restrictions from Europe and loss of competitiveness in India
  - Third, AK Steel's higher prices for all GOES grades also undermine its competitiveness. Its prices are 25 percent higher for similar grades from different suppliers in other parts of the world. This gap has persisted since long before Section 232 tariffs were imposed on imported steel, including GOES
- Imports Are Necessary Because AK Steel Is Not Capable of Producing Finished GOES Needed for the U.S. Market
  - Proposed restrictions on imports of finished GOES would have virtually no impact on AK Steel. U.S. customers' reliance on imported finished GOES due in large part because AK Steel has not invested in its processes in order to keep up with increased efficiencies and GOES quality that international suppliers have produced
- The Assertion of Minimal GOES Processing in Canada Is Incorrect
  - AK Steel ignores the substantial transformation of raw GOES occurring in Canada with high-value and high-skill labor production added to the finished GOES.
  - Domestic Transformer Manufacturers rely on their vendors in Canada to process and finish that GOES into finished cut and stacked pieces at engineered precision because AK Steel does not have the ability or capacity to meet the design demands of this specialty finished GOES

**Entity Name (Rebuttal):** Government of Canada

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Foreign Government

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Government of Canada's main rebuttal arguments are as follows:

- The U.S. electrical grid requires continued investment over the next several decades
  - A 2015 Department of Energy (DOE) report outlines that 70% of power transformers are 25 years or older, 60% of circuit breakers are 30 years or older and 70% of transmission lines are 25 years or older
  - The DOE report estimates approximately \$1.1 trillion in investments are required to replace, expand, and upgrade the U.S. electrical grid through 2040
- Trade measures are in place on imports of Non-oriented electrical steel (NOES) and grain-oriented electrical steel (GOES) into the United States
  - Anti-dumping and countervailing duties are assessed on NOES imported from China, Germany, Japan, Korea, Sweden, and Taiwan that is used in the production of transformer cores, in addition to the current 25% Section 232 steel tariff
  - We also note that the anti-dumping and countervailing duty investigation into GOES against China, Czech Republic, Germany, Japan, Korea, Poland, and Russia was terminated due to a 2014 International Trade Commission decision that imports had not injured the domestic GOES industry
- The U.S. electrical grid is part of an integrated North American bulk power system, with physical grid connections to the electrical grid in Canada
  - The North American integrated grid is one electrical grid system with closely integrated supply chains across the United States and Canada
  - Any consideration of the U.S. electrical grid must be viewed in the context of the joint Canada-United States grid, and as a result be considered one singular power market
- While AK Steel submits that domestic production of GOES in the U.S. is a matter of national security, the prospect of the entire North American power market relying on one producer of GOES is unrealistic and poses a much bigger threat to the electrical grid than having multiple reliable suppliers of GOES that can provide materials demanded by end-users
- There are already established supply chains across Canada and the United States, with companies in Ontario supplying transformer cores to the North American market for over 40 years
  - The allegation that imports into Canada were used to circumvent the Section 232 steel tariff on GOES (through "a simple transformation process") is simply false

**Entity Name (Rebuttal):** Eaton Corporation

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Eaton Corporation's main rebuttal arguments are as follows:

- AK has stated that they have possession of technology to produce ALL Grain oriented electrical steel required in the United States.
  - As Eaton Corporation has repeatedly stated not only in comments to this investigation but to prior 232 tariff investigations, AK does not possess the capability to manufacture a PERMANENTLY DOMAIN REFINED Grain oriented electrical steel as described in the paragraph below
- AK admits this as much, and we reference the 2020 Electrical steel agreement between AK and Eaton Corporation, where AK agrees that Eaton Corporation has the right to import Permanent Domain Refined (PDR) grain oriented electrical steel cores, as they do not manufacture a product that meets this requirement
  - We are therefore asking for an exemption to any 232 Tariff application to Permanently Domain Refined Cores or Laminations

[REDACTED]

[REDACTED]

- [REDACTED]

**Entity Name (Rebuttal):** The H-J Family of Companies

**Entity Name (Original Comment):** National Electrical Manufacturers Association

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

The H-J Family of Companies's main rebuttal arguments are as follows:

- The H-J Family of Companies is a manufacturer and supplier of electrical components for power distribution and transmission transformers, and electrical grid protection switchgear and protective equipment
  - Our company is headquartered in High Ridge, Missouri, just outside of St. Louis, where we operate two manufacturing, development, testing, engineering, and warehousing facilities to serve our customers in the US and around the world
  - We continue to expand our operations investing significant sums of capital resources, creating new jobs and community development opportunities
- An important factor in the successful growth of our business is the ability to source materials and products from international markets which are not readily available from domestic suppliers
  - As such, it is imperative for the success of our business, our customers' businesses, and the overall electrical grid operation and reliability that we continue to be able to source necessary materials in order to support US jobs, communities and economic growth
- We strongly oppose the tariffs which have been imposed on imported products including but not limited to: aluminum, steel, electrical transformer laminations, electrical grade porcelain, and non-ferrous castings. We request that these tariffs are immediately repealed
  - Additionally, we request that the 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 cease and tariffs are not imposed

**Entity Name (Rebuttal):** Cogent Power Inc

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Foreign Business

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative & Trade Data Analysis

Cogent Power Inc's main rebuttal arguments are as follows:

- Cogent Power Inc. is a supplier of electrical steel materials, transformer cores and laminations, and deploys its technical resources and capabilities to help North American OEMs effectively use electrical steels in their finished transformers, motors and generator equipment
  - We have always been a Canadian company, located in Burlington, Ontario. Our priority has always been to provide our US, Canadian and Mexican customers the most cost-effective products
- Cogent Power has been selling transformer cores to US OEMs for more than thirty-five years and has not increased shipments of transformer cores and laminations in 2018 and 2019, after the imposition of US Section 232 tariffs applied to all steel products
  - A strong and broad supply chain of electrical steels and electrical steel part suppliers is essential to the security and efficiency of our combined electrical grid
- Over the past fifteen years, Cogent Power has purchased typically 30-40% of its GOES raw materials from US mill sources
  - From 2005 to 2016, US GOES producer ATI was Cogent Power's largest mill supplier
  - The decline in purchases from the USA is entirely a result of the change in product and performance demand from US and Canadian transformer manufacturers and demands for increasing electrical efficiency from their products
- Since 2016, many global producers of GOES have shifted most of their production to Hi-B grades. The only apparent exception to this is AK Steel, preferring to stick with most of its production to less efficient CGOES grades thereby limiting its sales of Hi-B grades
  - In 2016, ATI (Allegheny Teledyne Inc.) decided to exit the GOES market because it had not invested in Hi-B technologies
  - Even though AK Steel does offer Hi-B grades of GOES, it does not offer the quality and quantity of these grades to US and global producers as is available from other sources and is uncompetitive with the demands of the global utilities and OEMs for cost effective products and materials
- Today, domestic USA capacity for transformer core manufacturing is such that it alone cannot supply domestic demand, much less the combined demand of the US and Canadian power grid
  - If costly remedies are quickly imposed, this will provide a shock to the US domestic transformer producers through higher prices for less available supply, severely threatening their continued ability to serve US transformer demand

**Entity Name (Rebuttal):** Metglas, Inc.

**Entity Name (Original Comment):** National Electrical Manufacturers Association

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** U.S. Business

**Tone of Rebuttal:** Positive

**Content Summary:** Narrative Only

Metglas, Inc.'s main rebuttal arguments are as follows:

- Metglas is the only Amorphous Metal (AM) producer in the U.S. The Metglas high-grade electrical steel is utilized in manufacturing distribution transformers (DT) for the U.S. power grid, and electrical steel cores which are critical for transformer reliability
- Metglas is both a producer of high-grade AM ribbon used in DTs and has manufacturing capability of DTs themselves to help support the existing market infrastructure for DT core supply in the U.S. grid
  - In fact, Metglas could reasonably address 25% of the current applicable U.S. DT market demands for steel and additional capacity for AM steel ribbon could be installed in our South Carolina facility in less than a year to increase capacity further
- In addition to AM, our South Carolina facility could also provide DT cores if the market demanded it. It is possible today for our facility to provide roughly 15% of the existing demand for Amorphous DT cores
  - If need be, we could further our capacity in less than a year to add additional production to meet an increased demand in core requests from domestic transformer manufacturers
- As long as there is a fair market, Metglas is fully capable of meeting U.S. national security needs. We are able to meet the demand for AM steel in the U.S., including existing and projected national defense requirements in a full range of defense and military applications
  - This is all possible because Metglas currently exists as a manufacturer. Failure to address China's unfair and uncompetitive practices, however, risks the viability of a U.S. manufacturer of AM technology

**Entity Name (Rebuttal):** The Core Coalition

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Other (Industry Association)

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

The Core Coalition's main rebuttal arguments are as follows:

- It is incorrect to pin blame on imports (i.e., cores and laminations). The real cause - and problem - is the high prices, high cost structure and lack of investment at AK Steel
  - Import restrictions cannot solve this problem. To verify, import values on GOES wide coil into the US ( before tariffs) are at similar price levels to those traded in Asia, Western Europe, South America
- We reject AK Steel's conclusion that "there is no reason to believe that any other company would take on the costs and technical challenges of making this critical product in the United States."
  - It is a matter of public record that Big River Steel (AR, USA) has intentions to manufacture both NOES and GOES products and appears to have the technical support to do so
  - The Core Coalition identified in its submission that AK Steel continues to use a high temperature slab reheat process, one of several reasons cited in the submission as being responsible for an extraordinarily high cost structure, compared to competitors
    - AK Steel remains the only company in the world producing GOES that still uses this now-outdated process step
- Allegheny Ludlum's exit from production of GOES was therefore not the result of unfairly low-priced imports. Their exit was a direct result of a high cost structure, low grade coverage, and a lack of investment over many years
  - The example of Allegheny Ludlum is a warning: Propping up an inefficient, high cost company with import restrictions will not work, especially in a rapidly changing GOES market—it never has, and it never will
- Overall, the likely scenario sounds much like a healthy, globally competitive market in which higher wages are off-set by better productivity, better technology and more efficient supply chain economics. This should be the objective of the Department of Commerce (to restore the lost US manufacturing base)
  - Thus, the potential for what AK Steel calls "catastrophic" consequences resulting from AK Steel shutting down production of electrical steel are decidedly unlikely. More likely is a revival of a healthy, competitive transformer industry, new investment, new jobs; national benefits without tariffs or artificial protections. A true free market, without passing the buck to the taxpayer

**Entity Name (Rebuttal):** Government of Mexico

**Entity Name (Original Comment):** AK Steel Corporation

**Date Received:** July 24, 2020

**Date Posted:** July 29, 2020

**Type of Entity (Rebuttal):** Foreign Government

**Tone of Rebuttal:** Negative

**Content Summary:** Narrative Only

Government of Mexico's main rebuttal arguments are as follows:

- This investigation must take into account the United States' international commitments under the WTO and USMCA. Any trade restriction imposed as a result of this investigation must comply with the United States' international commitments. Therefore, it also must be part of the legal standard in this investigation
  - In a recent WTO report, Saudi Arabia - Protection of IPR, the panel applied the same analysis to the equivalent security exceptions provision set out in Article 73 of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)
  - The USMCA also provides in Article 32.2 (Essential Security), the standard to apply measures based on essential security interests of a Party. An investigation on national security must, therefore, be consistent with Article XXI of the GATT 1994 and Article 32.2
- It is relevant to point out that imports into the U.S. of electrical transformers have not had substantial increases in recent years. However, AK Steel's request for tariffs on cores and laminations threatens the electrical transformers market, which is larger—sevenfold larger—and with greater added value
- It should be noted that while only two transformer manufacturers commented in favor of the investigation, 18 did so against. On the electric companies' side, none commented in favor, and the associations that represent virtually all of them submitted comments in opposition
- The application of tariffs as a result of this investigation will be in detriment of the North American region and its competitiveness with respect to other regions in the world due to the increment of costs for the industry, among others. This will ultimately impact a major number of jobs in the region, including the U.S.
- The United States should avoid unnecessary disruptions and uncertainty in the implementation of the USMCA. The Government of Mexico reaffirms our July 3, 2020 comments, in particular the importance of enhancing the competitiveness and integration of North American industries for the mutual benefit of U.S., Mexican and Canadian producers and consumers
- The imposition of Section 232 restrictions on imports from Mexico in this case would be inconsistent with key provisions of USMCA, including Article 2.11 (Import and Export Restrictions), and would arbitrarily undermine confidence in the trading relationship, which would be contrary to the purpose of the USMCA

APPENDIX E: Department of Commerce Survey Instrument

**Section 232 Investigation into Imports of Electrical Steel and Transformer-Related Products**



**SCOPE OF ASSESSMENT**

The U.S. Department of Commerce, Bureau of Industry and Security (BIS), Office of Technology Evaluation (OTE), is conducting a survey of the U.S. grain-oriented electrical steel (GOES) industry and transformer-related parts sector. Specifically, this survey is intended for companies that import, distribute, or produce laminations for stacked cores for incorporation into transformers, stacked and wound cores for incorporation into transformers, electrical transformers, and transformer regulators. The survey results will be used to support an ongoing investigation on the effect of imports of GOES and select downstream GOES products on the U.S. national security, initiated under Section 232 of the Trade Expansion Act of 1962, as amended.

The principal goal of this survey is to assist the U.S. Department of Commerce in determining whether electrical steel and transformer-related products are being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security. Information collected will include facilities and production data, capacity utilization, customers, sales and demand data, employment information, conditions of domestic and global competition, research and development, and other factors. The resulting data will provide the U.S. Department of Commerce detailed electrical steel and related transformer parts industry information that is otherwise not publicly available and needed to effectively conduct this Section 232 investigation.

**RESPONSE TO THIS SURVEY IS REQUIRED BY LAW**

A response to this survey is required by law (50 U.S.C. Sec. 4555). Failure to respond can result in a maximum fine of \$10,000, imprisonment of up to one year, or both. Information furnished herewith is deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C. Sec. 4555). Section 705 prohibits the publication or disclosure of this information unless the President determines that its withholding is contrary to the national defense. Information will not be shared with any non-government entity, other than in aggregate form. The information will be protected pursuant to the appropriate exemptions from disclosure under the Freedom of Information Act (FOIA), should it be the subject of a FOIA request.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB Control Number.

**BURDEN ESTIMATE AND REQUEST FOR COMMENT**

Public reporting burden for this collection of information is estimated to average 10 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information to BIS Information Collection Officer, Room 6883, Bureau of Industry and Security, U.S. Department of Commerce, Washington, D.C. 20230, and to the Office of Management and Budget, Paperwork Reduction Project (OMB Control No. 0694-0120), Washington, D.C. 20503.

**BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act**

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**General Instructions**

<p>A.</p>	<p>Your organization is required to complete this survey of the U.S. electrical steel and transformer-related products industry, which can be downloaded from the BIS website: <a href="https://www.bis.doc.gov/ESProducts232">https://www.bis.doc.gov/ESProducts232</a></p> <p>If you are unable to download the survey document, at your request, BIS survey support staff will e-mail the Excel survey template directly to you.</p> <p>For your convenience, a PDF version of the survey and required drop-down content is available on the BIS website to aid internal data collection. <b>DO NOT SUBMIT</b> the PDF version of the survey as your response to BIS. Should this occur, your organization will be required to resubmit the survey in the requested Excel format.</p>
<p>B.</p>	<p>Respond to every question. Surveys that are not fully completed will be returned for completion. Use the comment boxes to provide any information to supplement responses provided in the survey form. Make sure to record a complete answer in the space provided, even if the space does not appear to expand to fit all of the information.</p> <p><b>DO NOT CUT AND PASTE RESPONSES WITHIN THIS SURVEY OR PASTE IN RESPONSES FROM OUTSIDE THE SURVEY.</b> Survey inputs should be completed by typing in responses or by using a drop-down menu. The use of cut and paste can corrupt the survey template. If your survey response is corrupted as a result of cut and paste response, your survey will be rejected and your organization must immediately resubmit the survey.</p>
<p>C.</p>	<p><b>Do not disclose any USG classified information in this survey form.</b></p>
<p>D.</p>	<p>Upon completion of the survey, final review, and certification, <b>transmit the survey document via e-mail to:</b> <a href="mailto:ESProducts232@bis.doc.gov">ESProducts232@bis.doc.gov</a></p>
<p>E.</p>	<p>Questions related to the survey should be directed to BIS survey support staff at <a href="mailto:ESProducts232@bis.doc.gov">ESProducts232@bis.doc.gov</a></p> <p>E-mail is the preferred method of contact. You may speak with a member of the BIS survey support staff by calling (202) 482-4952.</p>
<p>F.</p>	<p>For questions related to the overall scope of this Section 232 Investigation, contact <a href="mailto:ESProducts232@bis.doc.gov">ESProducts232@bis.doc.gov</a> or:</p> <p>Jason D. Bolton Program Manager, Industrial Studies BIS/Export Administration/Office of Technology Evaluation 1401 Constitution Avenue, NW, Room 1093 Washington, DC 20230</p> <p><b>DO NOT</b> submit completed surveys to Mr. Bolton's postal or personal e-mail address. All surveys must be submitted electronically to: <a href="mailto:ESProducts232@bis.doc.gov">ESProducts232@bis.doc.gov</a></p>



1. Organization Information

Provide the following information for your organization:

Organization Name	
City	
State	
ZIP Code	
A. Country of Global Headquarters	
Street Address	
U.S. Point of Contact Name	
U.S. Point of Contact Email	
U.S. Point of Contact Phone	

Yes  
No

Is this organization owned, in whole or in part, by any private or government entity? If yes, identify in descending order entities with at least 5% ownership.

Entity Name	Global Headquarters Street Address	Global Headquarters City	Global Headquarters State/Province	Global Headquarters Country	Ownership %
B.					

Identify the number of facilities, including standby/idle, currently operated by your organization that manufacture or distribute any of the identified products. Duplicate the facility for each relevant product category, where necessary.

Subject Products	Number of U.S. Facilities	Number of Non-U.S. Facilities
C. Non-Oriented Electrical Steel (NOES)		
Grain-Oriented Electrical Steel (GOES)		
Laminations (Stacked)		
Cores (Stacked)		
Cores (Wound)		
Liquid-Dielectric Transformer Under 650KVA		
Liquid-Dielectric Transformer 650-10,000KVA		
Liquid-Dielectric Transformer 10,000-60,000KVA		
Liquid-Dielectric Transformer 60,000KVA-100,000KVA		
Liquid-Dielectric Transformer Over 100,000KVA		
Dry-Type/Other Transformer 1-16KVA		
Dry-Type/Other Transformer 16-500KVA		
Dry-Type/Other Transformer Over 500KVA		
Voltage Regulators		
Other (specify)		

Identify the subject products that your organization currently imports and exports.

Subject Products	Imports	Exports
D. Non-Oriented Electrical Steel (NOES)		
Grain-Oriented Electrical Steel (GOES)		
Laminations (Stacked)		
Cores (Stacked)		
Cores (Wound)		
Liquid-Dielectric Transformer Under 650KVA		
Liquid-Dielectric Transformer 650-10,000KVA		
Liquid-Dielectric Transformer 10,000-60,000KVA		
Liquid-Dielectric Transformer 60,000KVA-100,000KVA		
Liquid-Dielectric Transformer Over 100,000KVA		
Dry-Type/Other Transformer 1-16KVA		
Dry-Type/Other Transformer 16-500KVA		
Dry-Type/Other Transformer Over 500KVA		
Voltage Regulators		
Other (specify)		

Import Only  
Source Domestically Only  
Import and Source Domestically  
Not Applicable

Export Only  
Source Domestically Only  
Export and Source Domestically  
Not Applicable

Comments:

**2. Facility Information**

First, indicate how many of your organization's U.S. based facilities (including idle or on standby) are involved in the importation, distribution or production of electrical steel or transformer-related products. Facilities supporting multiple product categories should be counted just once for the total number but duplicated for each product category supported in the facility description.

Then, in accordance with the header, describe each U.S. facility (including idle or on standby) involved in the importation, distribution or production of electrical steel or transformer-related products. Remember to duplicate the facility in a dedicated row for each product category supported. In addition to standby or idle facilities, include any facilities shutdown since 2015.

Facility Name	City	State	Product Category Supported	Function	Current Operating Status				Future Operating Status	Comments
					Current Operating Status	Date of Standby/Idle or Shutdown (MM/DD/YYYY)	Primary Reason for Standby/Idle or Shutdown	Months to Reconstitute if Idle/Standby or Shutdown	Primary Change in 2020-2023	
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Operating  
Idle/Standby  
Shutdown

Manufacture  
Distribute  
Both  
Other

Loss of Market Share to Import  
Loss of Market Share to Domestic  
Competition  
Declining Demand  
Low Profitability  
Firm Restructuring  
COVID-19/Pandemic  
Other

Expansion  
Upgrade  
Starting Operations  
Restarting Operations  
Idle/Standby  
Significant Modernization  
Shutdown  
None

- Non-Oriented Electrical Steel (NOES)
- Grain-Oriented Electrical Steel (GOES)
- Laminations (Stacked)
- Cores (Stacked)
- Cores (Wound)
- Liquid-Dielectric Transformer Under 650KVA
- Liquid-Dielectric Transformer Under 650KVA - 10,000KVA
- Liquid-Dielectric Transformer Under 10,000KVA - 60,000KVA
- Liquid-Dielectric Transformer Under 60,000KVA - 100,000KVA
- Liquid-Dielectric Transformer Over 100,000KVA
- Dry-Type/Other Transformer 1-16KVA
- Dry-Type?Other Transformer 16-500KVA
- Dry-Type?Other Transformer 1Over 500KVA
- Voltage Regulators

44										
45										
46										
47										
48										
49										
50										

For each identified facility scheduled to incur a change in operating status in 2020-2023, describe the circumstances behind your decision.

1	
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For each identified idle/standby facility scheduled [or considering to schedule] for restart in 2020-2023, describe the circumstances behind your decision.

2	
---	--

Comments



**Dropdown options also apply to the following categories:**

Grain-Oriented Electrical Steel (GOES)  
(Stacked)

Laminations (Stacked) Cores  
Cores (Wound)

Liquid-Dielectric Transformer Under 650KVA  
650-10,000KVA

Liquid-Dielectric Transformer

Liquid-Dielectric Transformer 10,000-60,000KVA    Liquid-Dielectric Transformer 60,000KVA-100,000KVA    Liquid-Dielectric Transformer Over 100,000KVA    Dry-Type/Other Transformer 1-16KVA

Dry-Type/Other Transformer 16-500KVA  
Transformer Over 500KVA Voltage Regulators

Dry-Type/Other

<a href="#">Previous Page</a>		<b>3b. U.S. Sales and Exports</b>					<a href="#">Next Page</a>
For your organization's U.S. operations, by subject product category, record both your U.S. sales and export sales (shipments from the U.S. to destinations outside the U.S.) from 2015-2019. Distributors must complete this section. Record Sales \$ in Thousands USD, e.g. \$12,000.00 = survey input of \$12. Average sales price per unit should not be in thousands USD.							
<b>Non-Oriented Electrical Steel (NOES)</b>							
Select 'Not Applicable' if category is not relevant to your operations	<	<b>Not Applicable</b>					
Record data in Kg. If unable to record data in Kg, indicate unit used here							
U.S. and Export Sales		2015	2016	2017	2018	2019	
A. U.S. Sales (Kg)							
U.S. Sales (Thousands USD)							
Average U.S. Sales Price per Kg (\$)							
Export Sales (Kg)							
Export Sales (Thousands USD)							
Average Export Sales Price per Kg (\$)							
Percentage of Total 2019 Sales Attributable to Product							

Respond to the following questions related to your organization's inputs and sourcing decisions.

1. (Primarily, how has your sourcing and/or usage of GOES for the production or distribution of subject products changed since 2015?	Explain
2. If applicable, indicate your primary reason for any change GOES-related inputs	Explain
3. If applicable, indicate your primary reason for any change in non-GOES production (i.e. costs of labor, etc.) increased	Explain
4. For each product category, indicate whether, in general, GOES is required or preferred, or if substitutes are used	GOES Sourcing Decision
5. Transformer Type	
6. Wet Order 650KVA	
7. Liquid-Dielectric Transformer Under 650KVA	
8. Liquid-Dielectric Transformer 650KVA-10,000KVA	
9. Liquid-Dielectric Transformer 10,000-60,000KVA	
10. Liquid-Dielectric Transformer 60,000-100,000KVA	
11. Liquid-Dielectric Transformer Over 100,000KVA	
12. Dry-Type/Other Transformer 1-16KVA	
13. Dry-Type/Other Transformer 16-500KVA	
14. Dry-Type/Other Transformer Over 500KVA	

Cost  
 Availability  
 Performance/Technical  
 Consideration  
 Other

Source more domestically-produced GOES  
 Use more non-GOES inputs  
 Source more domestically produced products containing GOES (laminations, cores, transformers)  
 Source more non-U.S.-produced products containing GOES (laminations, cores, transformers)  
 No Change  
 Not Applicable  
 Other

Yes  
 No  
 Combination

Identified product category, record the manufacturing cost percentage (per unit) typically associated with each variable input, as appropriate.

Subject Product	Average Percentage Cost of GOES Per Unit	Average Percentage Cost of GOES Substitute Per Unit	Average Percentage Cost of Laminations (Stacked) Per Unit	Average Percentage Cost of Cores (Stacked) Per Unit	Average Percentage Cost of (Wound) Per Unit	Cores
1. Laminations (Stacked)						
2. Cores (Stacked)						
3. Cores (Wound)						
4. Liquid-Dielectric Transformer Under 650KVA						
5. Liquid-Dielectric Transformer 650KVA-10000KVA						
6. Liquid-Dielectric Transformer 10,000-60,000KVA						
7. Liquid-Dielectric Transformer 60,000-100,000KVA						
8. Liquid-Dielectric Transformer Over 100,000KVA						
9. Dry-Type/Other Transformer 1-16KVA						
10. Dry-Type/Other Transformer 16-500KVA						
11. Dry-Type/Other Transformer Over 500KVA						
12. Voltage Regulators						

GOES Required  
 GOES Preferred  
 Substitute Required  
 Substitute Preferred  
 Combination  
 Not Applicable

For each identified product category, in accordance with the header criteria, describe your organization's experience with shortage of/limited supply.

Subject Product	Supply Shortage Experienced?	Reason for Supply Shortage	Primary Source of Supply Shortage	Country of Primary Supplier to your Organization	Explain
1. Non-Oriented Electrical Steel (NOES)					
2. Grain-Oriented Electrical Steel (GOES)					
3. Laminations (Stacked)					
4. Cores (Stacked)					
5. Cores (Wound)					
6. Liquid-Dielectric Transformer Under 650KVA					
7. Liquid-Dielectric Transformer 650KVA-10,000KVA					
8. Liquid-Dielectric Transformer 10,000-60,000KVA					
9. Liquid-Dielectric Transformer 60,000-100,000KVA					
10. Liquid-Dielectric Transformer Over 100,000KVA					
11. Dry-Type/Other Transformer 1-16KVA					
12. Dry-Type/Other Transformer 16-500KVA					
13. Dry-Type/Other Transformer Over 500KVA					
14. Voltage Regulators					
Comments:					

Ongoing  
 Past  
 Future Expected  
 None

Customs/Port Issue  
 Disease/Quarantine  
 Labor Disruption  
 Natural Disaster  
 Supplier Ended Production  
 Supplier Production Delays  
 Supplier Went Out of Business  
 Trade Dispute/Tariffs  
 Transportation Issue  
 Other

## Dropdown options also apply to the following categories:

Grain-Oriented Electrical Steel (GOES)  
(Stacked) Cores (Stacked)

Laminations  
Cores (Wound)

Liquid-Dielectric Transformer Under 650KVA

Liquid-Dielectric Transformer 650-10,000KVA

Liquid-Dielectric Transformer 10,000-60,000KVA  
Liquid-Dielectric Transformer Over 100,000KVA

Liquid-Dielectric Transformer 60,000KVA-  
Dry-Type/Other Transformer 1-16KVA

Dry-Type/Other Transformer 16-500KVA  
500KVA Voltage Regulators

Dry-Type/Other Transformer Over

Supplier Name (in descending order by period)		Country of	Related Party?	Primary Source of Disruption Experienced, If Applicable	Single/Sole Source?	Primary End-Use	Top Factor Influencing	2015		2016		2017		2018		2019		
								Volume	Value (\$000)									
							Percentage of Purchases that are Imported	2015		2016		2017		2018		2019		
1				Customs/Port Issue	Single Source	Non-Oriented Electrical Steel (NOES)												
2				Disease/Quarantine	Sole Source													
3				Labor Disruption	Neither	Grain-Oriented Electrical Steel (GOES)												
4				Natural Disaster		Laminations (Stacked)												
5				Supplier Ended Production		Cores (Stacked)												
6				Supplier Production Delays		Cores (Wound)												
7				Supplier Went Out of Business		Liquid-Dielectric Transformer Under 650KVA												
8						Liquid-Dielectric Transformer 650-10,000KVA												
9						Liquid-Dielectric Transformer 10,000-60,000KVA												
10						Liquid-Dielectric Transformer 60,000KVA-100,000KVA												

Price  
Quality  
Delivery  
Relationship  
Technical  
Specification



**6. Financials**

Record your organization's financial line items for 2015-2019. BIS expects each subsection to be reported at the same source level.

Source of Income Statement Items:

Reporting Schedule:

Income Statement (Select Line Items)

Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12

	2015	2016	2017	2018	2019
A. Net Sales (and other revenue)					
1 <i>National Security/Critical Infrastructure-Related Sales Percentage (see Definitions tab)</i>					
B. Cost of Sales / Cost of Goods Sold					
C. Depreciation and Amortization					
D. Total Operating Income (Loss)					
E. Earnings Before Interest and Taxes					
F. Net Income					

Source of Balance Statement Items:

Reporting Schedule:

Balance Sheet (Select Line Items)

Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12

	2015	2016	2017	2018	2019
A. Cash					
B. Inventories					
C. Current Assets					
D. Total Assets					
E. Current Liabilities					
F. Total Liabilities					
G. Retained Earnings					
H. Total Owner's Equity					

Source of Other Items:

Reporting Schedule:

Other Select Items

Record \$ in Thousands, e.g. \$12,000.00 = survey input of \$12

	2015	2016	2017	2018	2019
A. Research & Development (R&D) Expenditure					
1 <i>National Security/Critical Infrastructure-Related R&amp;D Percentage (see Definitions tab)</i>					
B. Capital Expenditure (CapEx)					
1 <i>National Security/Critical Infrastructure-Related CapEx Percentage (see Definitions tab)</i>					
C. Total Security Expenditures					
1 <i>Cybersecurity Expenditures Percentage</i>					
2 <i>Physical Security Expenditures Percentage</i>					

Comment:

Location  
Division/Business Unit

Calendar Year  
Fiscal Year

Data Confirmation  
**2019 Net Sales**  
None

Location  
Division/Business Unit

Calendar Year  
Fiscal Year

Location  
Division/Business Unit

Calendar Year  
Fiscal Year

**7. U.S. Employment**

Record your organization's U.S.-based 2015-2019 personnel information.

Source of Employment Items:					Location Division/Business Unit Corporate/whole Organization	
Reporting Schedule:					Calendar Year Fiscal Year	
A		2015	2016	2017	2018	2019
	FTE Employees					
	FTE Contractors					
	Production Line FTE Employees or Contractors					

Identify the key workforce issues your organization has experienced or anticipates in the next five years in relation to the subject product categories.

	Issue	Primary Occupation Affected	Timeframe	Explain
B	Attracting Workers to Location	Engineers Information Technology Professionals Production Line Workers Scientists Testing Operators, QC, & Support Technicians Other None	Ongoing, Expected to Continue Past Only (Resolved) Expected In Future No or Not Applicable	
	Employee Turnover			
	Finding Experienced Workers			
	Finding Qualified Workers			
	Finding U.S. Citizens			
	Significant Portion of Workforce Retiring			
	Automation/Artificial Intelligence			
	Other (specify)			
C	For 2019, indicate the percentage of your organization's total operating costs represented by personnel-related expenditures.			
D.	Describe any significant changes in the recruitment, hiring and/or retention of human capital as a consequence of recent market conditions.			
E.	If you resumed operations at an idled, on standby or shutdown facility, do you reasonably anticipate being able to hire or rehire workers? Provide an estimate of how long it would take to restore requisite personnel levels in the Explain box.		Explain:	

Comments:

**8. National Defense Support**

A. Since 2015, has your organization directly or indirectly supplied any of the subject product categories for incorporation into U.S. defense systems or related installations? If no, proceed to the next tab. If yes, complete sections B, C and D.

Identify the U.S. Government agencies whose systems your organization has supported since 2015 with the supply of subject products.

B.	U.S. Air Force		U.S. Coast Guard		Department of Energy (including National Labs)	
	U.S. Army		U.S. Intelligence Community (such as CIA, NGA, NRO, NSA)		Other	(Identify Agency)
	U.S. Marine Corps		Missile Defense Agency (MDA)		Other	(Identify Agency)
	U.S. Navy		Defense Logistics Agency		Other	(Identify Agency)

In accordance with the header criteria, indicate which product categories you directly or indirectly provide for U.S. defense systems, installations or known U.S. defense end uses.

Product	Defense Support?	Percentage of 2019 Sales Attributable to Defense Sales	Primary DOD ACAT/MDAP Supported, if known*	Comments
1 Non-Oriented Electrical Steel (NOES)	Direct Indirect Both None Unknown			
2 Grain-Oriented Electrical Steel (GOES)				
3 Laminations (Stacked)				
4 Cores (Stacked)				
5 Cores (Wound)				
6 Liquid-Dielectric Transformer Under 650KVA				
7 Liquid-Dielectric Transformer 650-10,000KVA				
8 Liquid-Dielectric Transformer 10,000-60,000KVA				
9 Liquid-Dielectric Transformer 60,000-100,000KVA				
10 Liquid-Dielectric Transformer Over 100,000KVA				
11 Dry-Type/Other Transformer 1-16KVA				
12 Dry-Type/Other Transformer 16-500KVA				
13 Dry-Type/Other Transformer Over 500KVA				
14 Voltage Regulators				

\*U.S. Department of Defense Acquisition Category (ACAT) and Major Defense Acquisition Program (MDAP)

		U.S. Department of Defense Acquisition Category (ACAT) and Major Defense Acquisition Program (MDAP)		Non-Oriented Electrical Steel (NOES) Grain-Oriented Electrical Steel (GOES) Laminations (Stacked) Cores (Stacked) Cores (Wound) Liquid-Dielectric Transformer Under 650KVA Liquid-Dielectric Transformer 650-10,000KVA Liquid-Dielectric Transformer 10,000-60,000KVA Liquid-Dielectric Transformer 60,000KVA-100,000KVA Liquid-Dielectric Transformer Over 100,000KVA Dry-Type/Other Transformer 1-16KVA Dry-Type/Other Transformer 16-500KVA Dry-Type/Other Transformer Over 500KVA Voltage Regulators
		DO Rated	DX Rated	
D.	1	Since 2018, provide the number of priority rated contracts or orders under the Defense Priorities and Allocations System (DPAS) regulation (15 CFR part 700) that you has received by their level of priority (DO or DX).		
	2	Since 2018, provide the number of priority rated contracts or orders you have placed with other entities by their level of priority.		
	3	Since 2018, indicate which of your subject product categories has most frequently received a priority rated contract or order.		

Comments:

**9. Critical Infrastructure Support**

Describe your organization's support for each Critical Infrastructure Sector in accordance with the header criteria.

Definitions of each sector may be found at: <https://www.dhs.gov/cisa/critical-infrastructure-sectors>

Critical Infrastructure Sector	Sector Support	Primary Product Support	Primary Customer Associated with Sector/Product Support	Explain
Chemical Sector		Non-Oriented Electrical Steel (NOES)		
Commercial Facilities Sector		Grain-Oriented Electrical Steel (GOES)		
Communications Sector		Laminations (Stacked)		
Critical Manufacturing Sector		Cores (Stacked)		
Dams Sector		Cores (Wound)		
A. Defense Industrial Base Sector		Liquid-Dielectric Transformer Under 650KVA		
Emergency Services Sector		Liquid-Dielectric Transformer 650-10,000KVA		
Energy Sector		Liquid-Dielectric Transformer 10,000-60,000KVA		
Financial Services Sector		Liquid-Dielectric Transformer 60,000KVA-100,000KVA		
Food and Agriculture Sector		Liquid-Dielectric Transformer Over 100,000KVA		
Government and Facilities Sector		Dry-Type/Other Transformer 1-16KVA		
Healthcare and Public Health Sector		Dry-Type/Other Transformer 16-500KVA		
Information Technology Sector		Dry-Type/Other Transformer Over 500KVA		
Nuclear Reactors, Materials, and Waste Sector		Voltage Regulators		
Transportation Systems Sector				
Waste and Wastewater Systems Sector				

How have current market conditions involving the subject product categories affected your ability to meet current Critical Infrastructure Sector requirements?

B.

Do you recommend any actions by the U.S. Government to better facilitate your ability to meet current Critical Infrastructure Sector requirements?

C.

Comments:

10. Competition and Trade

Since 2018, by subject product category and in accordance with the header criteria, has there been a significant change in import competition? Do not limit your organization's response to the categories in which you operate if you also have visibility into other product category imports.

Product Category	Change in Import Competition	Primary Source Country of Import Competition	Impact on Your Organization	Explain
1 Non-Oriented Electrical Steel (NOES)	Increase Decrease No Change		Positive Negative Neutral	
2 Grain-Oriented Electrical Steel (GOES)				
3 Laminations (Stacked)				
4 Cores (Stacked)				
5 Cores (Wound)				
A. 6 Liquid-Dielectric Transformer Under 650KVA				
7 Liquid-Dielectric Transformer 650-10,000KVA				
8 Liquid-Dielectric Transformer 10,000-60,000KVA				
9 Liquid-Dielectric Transformer 60,000-100,000KVA				
10 Liquid-Dielectric Transformer Over 100,000KVA				
11 Dry-Type/Other Transformer 1-16KVA				
12 Dry-Type/Other Transformer 16-500KVA				
13 Dry-Type/Other Transformer Over 500KVA				
14 Voltage Regulators				

Do you anticipate any impact on your business due to future imports of subject products into the United States from any country? Indicate your anticipated primary future source of import competition, the impact this competition will likely have on your organization, and explain.

Product Category	Primary Future Source of Import Competition	Primary Impact from Import Competition	Explain
1 Non-Oriented Electrical Steel (NOES)		Positive Negative Neutral	
2 Grain-Oriented Electrical Steel (GOES)			
3 Laminations (Stacked)			
4 Cores (Stacked)			
5 Cores (Wound)			
B. 6 Liquid-Dielectric Transformer Under 650KVA			
7 Liquid-Dielectric Transformer 650-10,000KVA			
8 Liquid-Dielectric Transformer 10,000-60,000KVA			
9 Liquid-Dielectric Transformer 60,000-100,000KVA			
10 Liquid-Dielectric Transformer Over 100,000KVA			
11 Dry-Type/Other Transformer 1-16KVA			
12 Dry-Type/Other Transformer 16-500KVA			
13 Dry-Type/Other Transformer Over 500KVA			
14 Voltage Regulators			

Identify the primary challenges/issues affecting your competitive position in the overall [U.S. and non-U.S.] subject product markets. Rank the leading 5 most significant challenges (1 being the most important issue/impact; 2 being the next most important issue/impact, etc.). Explain your response.

Challenge/Issue	Challenge Experienced?	Rank Top 5	Explain
1 Aging equipment, facilities, or infrastructure			
2 Aging workforce			
3 Counterfeit parts			
4 Cyber security			
5 Domestic competition			
6 Environmental regulations/remediation			
7 Export controls/ITAR & EAR			
8 Financing/credit availability			
9 Foreign competition			
10 Government acquisition process			
11 Government purchasing volatility			
12 Government regulatory burden			
13 Healthcare			
C. 14 Industrial espionage - domestic			
15 Industrial espionage - foreign			
16 Input availability			
17 Intellectual property/patent infringement			
18 Labor availability/costs			
19 Natural disasters (including disease/quarantine)			
20 Obsolescence			
21 Pension costs			
22 Proximity to customers			
23 Proximity to suppliers			
24 Qualifications/certifications			
25 Quality of inputs			
26 R&D costs			
27 Reduction in USG demand			
28 Taxes			
29 Trade disputes/tariffs			
30 Worker/skills retention			
31 Other (specify)			
32 Other (specify)			

Describe one of the five leading challenges/issues affecting your organization's competitive position in the marketplace for subject product categories. Then, describe in detail both how long and in what manner this leading challenge/issue has affected your competitive position in the marketplace.

Challenge/Issue	How long and in what manner has this affected your competitive position in the market for subject products? Describe.
D. 1 (specify)	
2 How can the U.S. Government aid in the response to/mitigation of this challenge?	
Comments	

11. COVID-19 Impacts

Identify any impacts or actions resulting from the COVID-19 pandemic at your organization, ranking the three most significant impacts and three most important actions (1 being the most important impact/action; 2 being the next most important impact/action, etc.):

Impacts Experienced	-Yes/No-	Rank Top 3	Actions Taken	Short Term/ Long Term	Rank Top 3
Increased cost of materials			Reduce workforce		
Inability to access work location			Increase online/remote work capabilities		
Inability to fulfill contracts			Seek government assistance		
Reduced sales			Delay or reject new contracts		
Foreign supplier manufacturing delays			Begin to produce pandemic-related products		
Domestic supplier manufacturing delays			Increase use of domestic suppliers		
Increased demand			Reduce use of suppliers located in China		
Transportation-based disruptions			Reduce use of suppliers located outside the U.S. and China		
Financing difficulties			Increase inventories		
Labor shortages			Increase supplier redundancy		
Other (specify)			Other (specify)		
Other (specify)			Other (specify)		
Identify any USG actions that could have better mitigated/prevented COVID-19 impacts to your organization:					
Identify any USG actions that will limit future COVID-19-related impacts to your organization:					
Comments:					

BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act

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### 12. Certification

The undersigned certifies that the information herein supplied in response to this questionnaire is complete and correct to the best of his/her knowledge. It is a criminal offense to willfully make a false statement or representation to any department or agency of the United States Government as to any matter within its jurisdiction (18 U.S.C. 1001 (1984 & SUPP. 1197)).

Once your organization has completed this survey, save a copy and submit it via email to [ESProducts232@bis.doc.gov](mailto:ESProducts232@bis.doc.gov). Be sure to retain your survey for your records and to facilitate any necessary edits or clarifications.

Organization Name	
Organization's Internet Address	
Name of Authorizing Official	
Title of Authorizing Official	
E-mail Address	
Phone Number and Extension	
Date Certified	

In the box below, provide any additional comments or any other information you wish to include regarding this survey assessment.

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How many hours did it take to complete this survey?	
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**BUSINESS CONFIDENTIAL - Per Section 705(d) of the Defense Production Act**

## APPENDIX F: Tariffs and Trade Agreements

Current general tariff rates that are in effect for the products subject to this investigation are as follows:

Appendix F: Tariffs and Trade Agreements			
HTS Code	Subject Product	Rates of Duty – General	Rates of Duty - Special
8504.21.0060	Liquid-Dielectric Transformer Under 650KVA	Free	---
8504.21.0080	Liquid-Dielectric Transformer Under 650KVA	Free	---
8504.22.0040	Liquid-Dielectric Transformer 650-10,000KVA	Free	---
8504.22.0080	Liquid-Dielectric Transformer 650-10,000KVA	Free	---
8504.23.0041	Liquid-Dielectric Transformer 10,000-60,000KVA	1.6%	Free (A, AU, BH, CA, CL, CO, D, E, IL, JO, KR, MA, MX, OM, P, PA, PE, SG)
8504.23.0045	Liquid-Dielectric Transformer 60,000KVA-100,000KVA	1.6%	Free (A, AU, BH, CA, CL, CO, D, E, IL, JO, KR, MA, MX, OM, P, PA, PE, SG)
8504.23.0080	Liquid-Dielectric Transformer Over 100,000KVA	1.6%	Free (A, AU, BH, CA, CL, CO, D, E, IL, JO, KR, MA, MX, OM, P, PA, PE, SG)
8504.32.0000	Dry-Type/Other Transformer 1-16KVA	2.4%	Free (A, AU, B, BH, C, CA, CL, CO, D, E, IL, JO, KR, MA, MX, OM, P, PA, PE, SG)
8504.33.0020	Dry-Type/Other Transformer 16-500KVA	1.6%	Free (A, AU, B, BH, C, CA, CL, CO, D, E, IL, JO, JP, KR, MA, MX, OM, P, PA, PE, SG)
8504.33.0040	Dry-Type/Other Transformer 16-500KVA	1.6%	Free (A, AU, B, BH, C, CA, CL, CO, D, E, IL, JO, JP, KR, MA, MX, OM, P, PA, PE, SG)
8504.34.0000	Dry-Type/Other Transformer Over 500KVA	1.6%	Free (A, AU, B, BH, CA, CL, CO, D, E, IL, JO, JP, KR, MA, MX, OM, P, PA, PE, SG)

8504.90.9634	Laminations for incorporation into stacked cores	Free	---
8504.90.9638	Stacked cores for incorporation into transformers	Free	---
8504.90.9642	Wound cores for incorporation into transformers	Free	---
9032.89.4000	Voltage Regulators	1.7%	Free (A, AU, BH, C, CA, CL, CO, D, E, IL, JO, KR, MA, MX, OM, P, PA, PE, SG)

In general, these tariff rates are either zero or low enough not have a significant impact on trade or sourcing decisions. In addition, the United States has bilateral or multilateral trade agreements that eliminate tariffs on most trade, including in the transformer-related categories.

There are also certain special tariff rates in effect that apply to some of the subject products (that have arisen out of antidumping and previous Section 232 investigations), which have a much more significant impact on trade.

**A. United States Canada Mexico Agreement (USCMA)**

In 2018, the United States reached an agreement with Mexico and Canada in the renegotiation of the North American Free Trade Agreement (NAFTA).<sup>97</sup> The USMCA seeks to create a more level playing field for American workers, including improved rules of origin for automobiles, trucks, and other products, and

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<sup>97</sup> <https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement>.

disciplines on currency manipulation.<sup>98</sup> It seeks to modernize and strengthen food and agriculture trade in North America, protect U.S. intellectual property, and promote small and medium sized businesses. The USMCA entered into force on July 1, 2020.

The USMCA establishes a country of origin (“COO”) rule for transformers and transformer components such as laminations and cores. These rules of origin, to come into force in five years, will consider transformer laminations and cores as derived from the country where the electrical steel in them was produced, based on the high percentage of these products’ value that is accounted for by the electrical steel. Since Canada and Mexico have no electrical steel production, those cores will not be considered products of either Mexico or Canada, for purposes of USMCA preferential treatment, when full implementation is achieved.<sup>99</sup> However, even though not treated as North American products eligible for preferential treatment under the USMCA, the current U.S. MFN tariff rate on imports of these items is zero compared to the current tariff on GOES (25 percent). Therefore, implementation of the COO rule will likely not discourage the production of these items in Canada or Mexico (using foreign GOES) for export to the United States.

## **1. Section 232 Side Letters with Mexico and Canada**

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<sup>98</sup> Ibid.

<sup>99</sup> <https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/04-Rules-of-Origin.pdf>.

Separate side agreements with Mexico<sup>100</sup> and Canada<sup>101</sup>, respectively, provide that the United States shall not adopt or maintain a measure imposing tariffs or import restrictions on goods or services from Mexico and Canada under Section 232 for at least 60 days after imposition of a measure. During that 60-day period, the United States shall seek to negotiate an appropriate outcome based on industry dynamics and historical trading patterns with either respective country individually.<sup>102</sup> The side letters also provide that Canada and Mexico retain the rights to take countermeasures and challenge a Section 232 measure at the World Trade Organization.<sup>103</sup>

## **2. Energy Side Letter with Canada**

In a side agreement with Canada, both countries recognized the importance of enhancing the integration of North American energy markets based on market principles, including open trade and investment among the parties, to support North American energy competitiveness, security, and independence.<sup>104</sup> The Parties agreed to endeavor to promote North American energy cooperation, including with respect to energy security and efficiency, standards, joint analysis,

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<sup>100</sup> [https://ustr.gov/sites/default/files/agreements/FTA/USMCA/Text/MX-US\\_Side\\_Letter\\_on\\_232\\_Process.pdf](https://ustr.gov/sites/default/files/agreements/FTA/USMCA/Text/MX-US_Side_Letter_on_232_Process.pdf).

<sup>101</sup> [https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/CA-US\\_Side\\_Letter\\_on\\_232\\_Process.pdf](https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/CA-US_Side_Letter_on_232_Process.pdf).

<sup>102</sup> Ibid.

<sup>103</sup> Ibid.

<sup>104</sup> [https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/CA-US\\_Side\\_Letter\\_on\\_Energy.pdf](https://ustr.gov/sites/default/files/files/agreements/FTA/USMCA/Text/CA-US_Side_Letter_on_Energy.pdf).

and the development of common approaches. Additionally, the United States and Canada agreed to certain measures to promote energy regulatory transparency and access to electric transmission facilities and pipeline networks.

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## APPENDIX G: Summary of Previous U.S. Government Studies

## **A. Section 232 Investigation into the Effect of Imports of Steel on the National Security (2017)**

In April 2017, the Department of Commerce initiated an investigation into the effects of steel imports on U.S. national security. The report found the following: (i) steel is important to U.S. national security; (ii) imports in such quantities as were presently found adversely impacted the economic welfare of the U.S. steel industry; (iii) displacement of domestic steel by excessive quantities of imports had the serious effect of weakening our internal economy; and (iv) global excess steel capacity is a circumstance that contributes to the weakening of the domestic economy. The report concluded that the quantities and circumstances of steel imports “threaten to impair the national security,” as defined by Section 232 and recommended that the President take action to protect the long-term viability of our nation’s steel industry. The President concurred with the Secretary’s findings and imposed a 25 percent tariff on steel imports, which applies to imports of grain-oriented electrical steel, with exemptions for Canada and Mexico.

## **B. International Trade Commission Report on Large Power Transformers from Korea**

Based on the results of an antidumping investigation by the Department of Commerce, in July 2011, the ITC initiated an antidumping investigation into LPTs from Korea, in accordance with section 733(a) of the Tariff Act of 1930, as amended (the Tariff Act).<sup>105</sup> The investigation was initiated in response to a petition filed by domestic LPT producers: ABB Inc., Cary, NC; Delta Star Inc., Lynchburg, VA; and Pennsylvania Transformer Technology Inc., Canonsburg, PA. Petitioners alleged that LPTs from Korea were being imported to the United States and sold for less than fair value.<sup>106</sup>

The scope of the investigation covered liquid-dielectric LPTs having a top power handling capacity greater than or equal to 60,000 kilovolt amperes (60 megavolt amperes), whether assembled or unassembled, complete or incomplete.<sup>107</sup> These LPTs are provided for in subheadings 8504.23.00 and 8504.90.95 of the Harmonized Tariff Schedule of the United States.

The investigation period spanned July 1, 2010, through June 30, 2011.<sup>108</sup>

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<sup>105</sup> See *Large Power Transformers From Korea*; Institution of Antidumping Duty Investigation and Scheduling of a Preliminary Phase Investigation, 76 Fed. Reg. 43343 (July 20, 2011).

<sup>106</sup> See *Large Power Transformers from Korea*, Inv. No. 731-TA-1189 (Final), USITC Pub. 4346 (Aug. 2012), at 3 (“LPTs from Korea”).

<sup>107</sup> See *Id.* at 4.

<sup>108</sup> See *Large Power Transformers from the Republic of Korea: Final Determination of Sales at Less Than Fair Value*, 77 FR 40857 (July 11, 2012).

The investigation concluded that “an industry in the United States is materially injured by reason of subject imports of LPTs from Korea that are sold in the United States at less than fair value.”<sup>109</sup> The weighted-average dumping margins ranged from 14.95 percent to 29.04 percent.<sup>110</sup> In August 2012, an antidumping duty order was issued on the subject merchandise, imposing duties consistent with the weighted-average dumping margins.

In July 2017, in accordance with section 751(c) of the Tariff Act, the ITC initiated a five-year sunset review of the August 2012 antidumping duty order on LPTs from Korea.<sup>111</sup> The review concluded that revocation of the order “would be likely to lead to continuation or recurrence of material injury to an industry in the United States within a reasonably foreseeable time.”<sup>112</sup> As a result, the dumping order was reaffirmed.

### **C. International Trade Commission Reports on Grain-Oriented Electrical Steel from China, Czech Republic, Germany, Japan, Korea, Poland, and Russia**

In September 2013, the Department of Commerce initiated antidumping investigations into GOES from China, the Czech Republic, Germany, Japan, Korea, Poland, and Russia and a countervailing duty investigation into GOES from

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<sup>109</sup> See LPTs From Korea at 23.

<sup>110</sup> See Large Power Transformers from the Republic of Korea: Final Determination of Sales at Less Than Fair Value, 77 FR 40857 (July 11, 2012).

<sup>111</sup> See Large Power Transformers from Korea, Inv. No. 731-TA-1189 (Review), USITC Pub. 4826 (Sep. 2018), at 11.

<sup>112</sup> *Ibid.*, at 3.

China.<sup>113</sup> These investigations were initiated in response to a petitions filed by AK Steel Corp., West Chester, Ohio; Allegheny Ludlum, LLC, Pittsburgh, Pennsylvania; and the United Steelworkers, Pittsburgh, Pennsylvania. Petitioners alleged that GOES was being imported to the United States and sold for less than fair value, and that GOES from China was being subsidized.<sup>114</sup>

The scope of these investigations covered GOES containing by weight at least 0.6 percent, but not more than 6 percent of silicon, not more than 0.08 percent of carbon, not more than 1.0 percent of aluminum, and no other element in an amount that would give the steel the characteristics of another alloy steel, in coils or in straight lengths.<sup>115</sup>

The investigation period in the antidumping investigations into GOES from Czech Republic, Germany, Japan, Korea, Poland, and Russia spanned July 1, 2012 through June 30, 2013. The investigation period for the antidumping investigation into GOES from China spanned January 1, 2013 through June 30, 2013. The investigation period for the countervailing duty investigation into GOES from China spanned January 1, 2012, through December 31, 2012.

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<sup>113</sup> See Grain-Oriented Electrical Steel From the People's Republic of China, the Czech Republic, Germany, Japan, the Republic of Korea, Poland, and the Russian Federation: Initiation of Antidumping Duty Investigations, 78 FR 65283 (October 31, 2013).

<sup>114</sup> Ibid.

<sup>115</sup> Ibid.

Although the Department of Commerce found dumping, the ITC concluded that, pursuant to sections 705(b) and 735(b) of the Tariff Act, an industry in the United States was “not materially injured or threatened with material injury,” and the establishment of an industry in the United States was “not materially retarded,” by reason of imports of GOES to be sold in the United States from China, the Czech Republic, Germany, Japan, Korea, Poland, and Russia.<sup>116</sup>

The investigation determined that although the domestic industry had experienced declines in performance and operating income levels, there was no significant causal relationship between the subject imports and the domestic industry’s performance during the period.<sup>117</sup> The investigation further concluded that subject imports had no significant actual or potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product.<sup>118</sup>

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<sup>116</sup> See Grain-Oriented Electrical Steel from Germany, Japan, and Poland, Inv. Nos. 731-TA-1233, 1234, and 1236, USITC Pub. 4491 (Sep. 2014), at 2.

<sup>117</sup> See *Id.* at 35.

<sup>118</sup> See *Ibid.*