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May 31, 2017

BY ELECTRONIC FILING

The Honorable Wilbur L. Ross
Secretary of Commerce
U.S. Department of Commerce
Attn: Bureau of Industry and Security
Office of Technology Evaluation
14th Street and Constitution Ave., NW
Washington, DC 20230

Re: ***Section 232 National Security Investigation of Imports of Steel***: Written Comments of Nucor Corporation

Dear Secretary Ross:

On behalf of Nucor Corporation ("Nucor"), we hereby submit the following comments in response to the Department of Commerce's (the "Department") request in the Section 232 National Security Investigation of Imports of Steel.[1] For the reasons discussed below, the Department should find that steel imports threaten to impair U.S. national security (i) by fundamentally threatening the viability of the U.S. steel industry and its ability to supply goods necessary to ensure U.S. national security, and (ii) by leaving the United States excessively dependent on imports from unreliable and unsafe sources. Given the breadth and severity of the current crisis, the Department should recommend comprehensive action to adjust imports.

We request that the information contained in single brackets ("[ ]") throughout this letter be treated as business confidential information and withheld from public disclosure pursuant to 15 C.F.R. § 705.6(a). The information contained in brackets constitutes company proprietary information, including trade secrets and commercial and financial information, the release of which to the public would cause substantial harm to the competitive position of the submitters. This company proprietary information is exempted from public disclosure by the Freedom of Information Act. 5 U.S.C. § 552(b)(4). This information is also exempted from public disclosure in trade remedy cases, pursuant to 19 U.S.C. § 1677f(b). A non-

[1] *Notice Request for Public Comments and Public Hearing on Section 232 National Security Investigation of Imports of Steel*, 82 Fed. Reg. 19,205 (Dep't Commerce Apr. 26, 2017) (notice of request for public comments and public hearing).

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confidential version of this letter with business confidential information redacted is being submitted concurrently with this business confidential version.

I. LEGAL FRAMEWORK

Section 232 of the Trade Expansion Act of 1962 requires the Department to determine whether an "article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security," and to issue a report advising the President of its findings and any recommended actions in response.[2] For the purpose of this determination, the statute directs the Department to consider the following factors: (i) domestic production needed for projected national defense requirements; (ii) the capacity of domestic industries to meet projected national defense requirements; (iii) existing and anticipated availabilities of human resources, products, raw materials, production equipment and facilities; (iv) the growth requirements of domestic industries to meet national defense requirements and the supplies and services, including the investment, exploration, and development necessary to assure such growth; and (v) any other relevant factors.[3]

The statute also provides that the investigation should consider a broad definition of national security that includes important U.S. economic interests. Specifically, the statute provides that the Department

> shall further recognize the close relation of the economic welfare of the Nation to our national security, and shall take into consideration the impact of foreign competition on the economic welfare of individual domestic industries; and 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 shall be considered, without excluding other factors, in determining whether such weakening of our internal economy may impair the national security.[4]

In light of this statutory mandate, the Department has interpreted "national security" broadly in previous investigations. The 2001 investigation into *The Effect of Imports of Iron Ore and Semi-Finished Steel on the National Security*, for example, explained that "'national security' should encompass certain domestic economic concerns, in addition to national defense concerns."[5] These economic concerns include the "welfare of certain industries, beyond those necessary to satisfy national defense requirements, that are critical to the minimum operations of

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2 19 U.S.C. § 1862(b)(3)(A).

3 19 U.S.C. § 1862(d); 15 C.F.R. § 705.4(a).

4 19 U.S.C. § 1862(d). *See also*, 15 C.F.R. § 705.4(b).

5 U.S. Department of Commerce, Bureau of Export Administration, *The Effect of Imports of Iron Ore and Semi-Finished Steel on the National Security* (Oct. 2001) ("Iron Ore and Semi-Finished Steel Report") at 5.

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the economy and government."[6] The Department thus explained that imports may threaten to impair the national security in either of two ways. First, "imports can threaten to impair U.S. national security if the United States is excessively dependent on imports from unreliable or unsafe sources" and is "vulnerable to a supply disruption" as a result.[7] Second, "imports can threaten to impair U.S. national security if they fundamentally threaten the viability of U.S. industries and resources needed to produce domestically goods and services necessary to ensure U.S. national security."[8] The term "national security" is thus interpreted "in the manner most likely to result in a positive finding."[9]

Under this framework, it is clear that steel imports threaten to impair U.S. national security. Growing global steel overcapacity has generated a sustained surge of steel imports across all major product lines and has eroded U.S. steel production, capacity, employment, investment, and financial performance. If this erosion continues, the steel industry will not be able to sustain production of steel inputs that are vital to U.S. national defense, critical infrastructure, and critical industries. Many of the largest import sources are either geopolitical rivals of the United States or otherwise cannot be relied upon as stable sources of supply. The Department should therefore determine that imports of steel products threaten to impair the national security and should recommend that the President take comprehensive action to adjust imports in a manner that ensures the long-term sustainability of the U.S. steel industry.

II. NUCOR IS A MAJOR SUPPLIER OF STEEL PRODUCTS THAT ARE VITAL TO NATIONAL SECURITY AND CRITICAL INFRASTRUCTURE

Steel is a vital input for U.S. national defense, critical infrastructure, and critical industries. The United States military relies on steel to protect our men and women in uniform and ensure their success on the battlefield. Steel bars and structural components are used for tank track pins, missiles, and ammunition. Steel plate provides the armor for tanks, armored vehicles, ships, and submarines. High-performance specialty steels are used for the engines, gears, bearings, and body of the F-35 Joint Strike Fighter and other military aircraft.[10] Steel beams, fasteners, bars, pipes, plate, and other products are the backbone of U.S. transportation, energy, and water infrastructure. According to the Federal Highway Administration, Americans in 2016 drove 3.2 trillion miles on U.S. roads and highways, which include more than 600,000 bridges made of steel or steel-

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6 *Id.*

7 *Id.* at 6.

8 *Id.* at 7.

9 *Id.*

10 *See, e.g.*, *Steel and the National Defense*, American Iron and Steel Institute (January 2007) at 3, Appendix 1, excerpts attached as **Exhibit 1**.

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reinforced concrete.[11] The U.S. electricity grid relies on hundreds of thousands of steel utility poles and transmission towers that support more than 360,000 miles of transmission lines.[12] According to the Department of Transportation, there were approximately 1.8 million miles of oil and gas pipeline in the United States as of 2014,[13] most of which are made of steel. All of this infrastructure requires regular repair and maintenance and even total reconstruction in the event of natural disaster or other emergency.

Nucor is proud to be a major producer and supplier of these national defense and critical infrastructure products, and to do it entirely in the United States. Nucor is the largest U.S. steel producer, with production capacity that exceeds 27 million tons and a workforce of nearly 24,000 teammates. Headquartered in Charlotte, North Carolina, Nucor has approximately 200 operating facilities throughout North America. Nucor manufactures a wide range of steel products at its 24 scrap-based steel mills, including: carbon and alloy steel (*e.g.*, bars, beams, sheet, and plate); hollow structural section tubing; electrical conduit; steel joists and joist girders; steel deck; fabricated concrete reinforcing steel; cold finished steel; steel fasteners; metal building systems; sheet piling and piling pipe; steel grating and expanded metal; and wire and wire mesh. Many of Nucor's products are used in U.S. national defense and critical infrastructure applications, as detailed below.

Nucor's operations are composed primarily of five main steel mill segments: (i) bar products, (ii) structural products, (iii) sheet products, (iv) plate products, and (v) tubular products. Nucor is also the largest U.S. producer of semi-finished steel and manufactures a variety of downstream steel products.

***Bar Segment*:** Nucor's bar products segment consists of approximately 8.5 million tons of production capacity in 13 mills across the United States. These mills produce carbon and alloy rebar, hot-rolled bars, steel rounds, light shapes, structural angles, channels, wire rod, and highway products. A focus of these operations has been to expand production of engineered bars like special bar quality ("SBQ"), which are used to manufacture a variety of products for national defense applications, including:

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11 *3.2 Trillion Miles Driven on U.S. Roads in 2016*, Federal Highway Administration (Feb. 21, 2017), attached as **Exhibit 2**; 2016 National Bridge Inventory Data, attached as **Exhibit 3**.

12 Curt Hickox, *Maintaining the Electric Grid: It's Time*, Journal of Protective Coatings and Linings (July 2010) at 3, attached as **Exhibit 4**; United States Department of Energy, *United States Electricity Industry Primer* (July 2015) at 13, excerpts attached as **Exhibit 5**.

13 Department of Transportation, Bureau of Transportation Statistics, Oil and Gas Pipeline Mileage, attached as **Exhibit 6**.

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- [ ]:
- [ ];
- [ ];
- [ ];
- [ ]; and
- [ ].

As illustrated in the table attached to this submission, Nucor sells merchant bar quality products, rebar, wire rod, SBQ bar, and semi-finished bars to each of the 16 critical infrastructure sectors identified by the U.S. Department of Homeland Security ("DHS").[14] For example, Nucor supplies SBQ and cold-finished bars for vehicle, rail car, and heavy equipment manufacturing in the transportation and critical manufacturing sectors; concrete reinforcing bar for roads and bridges in the transportation systems sector; and various engineered bar products for oil and gas drilling, production and transmission in the energy sector.

Structural Segment: Nucor's structural steel operations include two mills with combined annual production capacity of approximately 3.25 million tons. These mills produce steel beams, pilings, and other heavy structural steel products. The Nucor-Yamato joint venture in Blytheville, Arkansas is the only North American producer of high-strength, low-alloy steel beams. Nucor also owns Skyline Steel, which manufactures steel foundation products like threaded bar, micropile, strand anchors, and hollow bar. Skyline also manufactures sheet and pipe piling, which play vital structural roles in critical infrastructure like ports and highways. The national defense applications of Nucor's structural steel products include:

- [ ];
- [ ];

[14] Department of Homeland Security, Critical Infrastructure Sectors (accessed May 25, 2017), attached as **Exhibit 7**.

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- [ ];
- [ ];
- [ ]; and
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Nucor also sells wide flanges, channels, angles, I beams, M beams, sheet piling, and pipe piling sections for use in all 16 critical infrastructure sectors as defined by DHS. For example, Nucor supplies beams for shipbuilding, bridge construction, and highway safety applications in the transportation systems sector; industrial foundations for oilfield and other equipment in the energy sector; and sheet piling sections for ports and dams. In the wake of Hurricane Katrina, Nucor-Yamato supplied over [ ] of H-pile and custom-designed sheet pile for reconstruction of damaged levees and pump stations.

Sheet Segment: Nucor's sheet production operations include five mills with a total capacity of approximately 12 million tons per year. Four of these mills include cold-rolling and galvanizing lines that enable Nucor to produce a complete range of hot-rolled, cold-rolled, and corrosion-resistant products. The national defense applications of Nucor's sheet products include:

- [ ];
- [ ]; and
- [ ].

Nucor's sheet mills also provide hot-rolled, cold-rolled, and galvanized steel for use in all 16 of DHS's critical infrastructure sectors. Steel sheet products are particularly important to the critical manufacturing sector, which includes machinery manufacturing (*e.g.*, earth moving, mining, agricultural, and construction equipment manufacturing) and transportation equipment manufacturing. Nucor sells steel sheet for applications including the bodies of combines, the blades of bulldozers, and a variety of other equipment within the scope of the critical manufacturing sector. Nucor is also a major supplier of corrosion-resistant sheet products for the bodies of automobiles and trucks. Nucor is also a major supplier of

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API grade hot-rolled steel for manufacturing oil country tubular goods ("OCTG") and line pipe for the energy sector.

Plate Segment: Nucor operates three plate mills with a combined annual capacity of approximately 2.8 million tons per year. Nucor's plate mills produce carbon and alloy plate ranging from 1 to 12 inches thick and up to 138 inches wide. In addition, with its 2016 acquisition of the Longview, Texas plate mill, Nucor is now able to produce a full range of tool, mold, and high speed steels – markets that had largely been abandoned due to unfairly traded imports, but that are now seeing growing domestic capabilities as a result of trade relief on cut-to-length plate.[15]

The national defense applications of Nucor plate products include:

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  ];
- [
  ]; and
- [
  ].

Nucor's plate products are also used for applications in all 16 of DHS's critical infrastructure sectors. Nucor supplies plate products for the construction of bridges in the transportation systems sector; for manufacturing construction and mining equipment, shipbuilding, and railroad cars in the critical manufacturing sector; and API grade plate for manufacturing large diameter oil and gas pipeline and plate for manufacturing wind towers and electricity transmission towers in the energy sector.

Tubular Segment: Nucor has recently expanded into the tubular segment with a series of acquisitions, including Independence Tube Corporation in October 2016, Southland Tube in January 2017, and Republic Conduit in January 2017. Independence Tube and Southland Tube have the capacity to produce approximately 900,000 tons of structural and mechanical tube annually. Republic Conduit produces approximately 146,000 tons-per-year of electrogalvanized electrical metal tubing and intermediate metal conduit, as well as hot-dip galvanized electrical rigid metal conduit. These products are used in marine and land based structural applications for both civilian and military infrastructure, and to protect and route electrical wiring in construction and infrastructure projects.

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[15] This is one example of how alleged lack of domestic supply chains are often the result of unfair trade. Reconstituting domestic capabilities is almost always feasible, but qualification and redevelopment may take time.

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***Semi-Finished Steel*:** Nucor also produces semi-finished steel products for both internal consumption and for sale in the commercial market to downstream U.S. producers. Semi-finished steel production is where the chemistry is formed and is the foundation for all downstream products. It is therefore vital to ensure that the final products that Nucor and other U.S. steel producers supply for national defense and critical infrastructure are wholly U.S.-made. Nucor's semi-finished steel products include API grade rounds for production of seamless oil and gas pipe, as well as billets, blooms, ingots, and slabs, some of which are sold in the merchant market.

***Other Steel Products*:** Nucor's operations also include a variety of downstream steel products that are vital to critical infrastructure. Nucor's downstream operations include (i) rebar fabrication; (ii) wire mesh manufacturing; (iii) steel fastener production, including custom engineered fasteners used in advanced structural and military applications; and (iv) steel grating manufacturing for industrial platforms and other structural applications.

Nucor has invested approximately $7.3 billion in capital expenditures and acquisitions since 2009 in an attempt to maintain and expand its capabilities, and to meet the evolving needs of its national defense and critical infrastructure customers. For example, the Nucor-Yamato joint venture is the only North American supplier of certain types of high-strength, low-alloy structural sections. Nucor is also [

], as discussed in greater detail below. But Nucor has made only a portion of the investments that it would have made in a healthy market environment. As with much of the industry, [

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The steel industry's ability to continue innovating to meet the evolving needs of the military and critical infrastructure applications depends on continuing investments in new products and capabilities.[16] But steelmakers can only justify such investments if there is an expectation that the market will sustain adequate returns. In recent years, the persistent problem of global overcapacity has reached crisis levels and has driven a sustained surge of steel imports in nearly every major product line. These imports have eroded the domestic industry's market share and depressed prices. They threaten the viability of existing investments in advanced national defense and critical infrastructure products. And they compromise the industry's ability to continue investing in the development of new products and processes.

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16 *See, e.g.*, Brigadier General John Adams, *Remaking American Security*, Alliance for American Manufacturing (May 2013) at 33, excerpts attached as **Exhibit 8** (noting that "U.S. firms still need to attract investment to maintain, upgrade, and expand existing facilities.").

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The investment in new heat treating, normalizing, and vacuum degassing equipment at Nucor's Hertford mill is perhaps the best example of this. As noted above, Nucor installed this equipment in large part to obtain the technological capability to produce advanced armor plate products for the U.S. military, including Navy destroyers, aircraft carriers, and submarines. As a result of these investments, Nucor has become [

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Steelmakers do not acquire the capability to produce advanced steel grades like these overnight.

Rather, Nucor's ability to produce this product has required nearly a decade of investments and upgrades. Nucor has developed advanced steel chemistries that involve a far more complex mixture of expensive alloying elements (*e.g.*, chrome, molybdenum, and nickel) than needed for standard grades of steel. Nucor has purchased and installed specialized heat treatment equipment that is capable of reaching higher temperatures to achieve the required strength and durability of the steel. The final product must also undergo stringent ballistic testing in certified facilities to measure resistance to high-impact and explosive projectiles. Finally, each step in the production process, from the scrap and alloy mixture through the testing procedures, must be audited and certified in accordance with [

]. In addition to investing upwards of [ ] to purchase and install the new equipment to manufacture these grades, Nucor invested approximately [ ] to undertake all of the rigorous testing and certification procedures.

According to retired Brigadier General John Adams, "The inability to utilize domestically produced steel plate would incapacitate U.S. military capabilities, rendering the United States unable to construct and repair many military platforms used by the U.S. Army, U.S. Marine Corps, and U.S Navy."[17] However, sales volumes of these advanced armor plate products are a small share of the equipment's total capacity, so Nucor and other steelmakers rely on commercial sales of standard grade products to justify the investment. As a result, if Nucor loses markets for standard grade plate products to surging imports, it will lose its ability to supply armor plate as well.[18] With only two steelmakers certified to produce and supply these products, the loss of either could lead to a critical shortage of a vital national security product.

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17 *Id.* at 25 (emphasis in orginal).

18 *Id.* at 27 ("Given that steel armor plate is a relatively small portion of the total output for any particular manufacturer in the United States, commercial sales make up a majority of orders. Therefore, a high level of commercial demand is necessary to keep the specialized facilities used to manufacture steel armor plate economically viable.").

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III. STEEL IMPORTS THREATEN TO IMPAIR U.S. NATIONAL SECURITY

The U.S. steel industry currently faces an unprecedented crisis. Government ownership and intervention in steel industries around the world have created and sustained chronic overcapacity that threatens the viability of market-oriented steel producers. According to the OECD, global crude steelmaking capacity reached nearly 2.4 billion metric tons in 2015, with anticipated expansion to 2.42 billion metric tons by the end of 2017. Overcapacity in the steel industry has reached approximately 700 million metric tons, more than seven times total U.S. crude steel production.[19] China is at the heart of this crisis, accounting for approximately 425 million metric tons of global overcapacity, but it is not alone. The steel industry has expanded rapidly in a number of non-OECD countries, primarily in Asia, the Middle East, Latin America, the Community of Independent States, and Africa.[20]

This crisis has been created and sustained by large-scale intervention in the steel industry by governments that view steel production as a political imperative. In its 2016-2020 *Steel Industry Adjustment and Upgrading Plan*, for example, the Chinese government describes the steel industry as "a basic industry of the people's economy" and as "the country's cornerstone," noting that the steel industry "has provided important safeguards for the fast and stable growth of the people's economy."[21] China and other countries have thus placed the steel industry at the heart of their broader industrial policy objectives and have provided massive state support to preclude import competition and promote total self-sufficiency in every major steel product category. China's *Steel Industry Adjustment and Upgrading Plan* approvingly notes the effect of what is essentially an import substitution scheme on an unprecedented scale, when it proclaims that domestic steel production now provides for 99 percent of domestic consumption. State-engineered steel industries like these produce far more steel than would otherwise be supported by the market, and this excess production inevitably flows into the global supply chain through exports. The United States, with low tariff barriers and minimal policy protection for the steel industry, is a primary target for these exports.[22]

A. Steel Imports Fundamentally Threaten the Viability of the U.S. Steel Industry and Its Ability to Produce Goods Necessary to Ensure U.S. National Security

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19 AISI, Policy Priorities – Trade, attached as **Exhibit 9**.

20 OECD, *Capacity Developments in the World Steel Industry*, DSTI/SU/SC(2015)8/FINAL (2016) at 8, excerpts attached as **Exhibit 10**.

21 *Steel Industry Adjustment and Upgrading Plan (2016-2020)* (钢铁工业调整升级规划（2016－2020 年）) at 1, 2, attached as **Exhibit 11**.

22 For a more detailed discussion of the global steel overcapacity crisis, *see, e.g.*, Alan H. Price et al., *Unsustainable: Government Intervention and Overcapacity in the Global Steel Industry* (Apr. 2016), attached as **Exhibit 12**.

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The overcapacity crisis in the steel industry has driven a surge in U.S. steel imports that is eroding the economic viability of the U.S. steel industry. After falling in the wake of the global financial crisis, steel imports have surged back into the U.S. market in flagrant disregard for actual market conditions. From 2009 to 2016, total steel imports increased by more than 100 percent, from approximately 14.8 million metric tons to 30.1 million metric tons.[23] This increase in import volumes outpaced growth in U.S. apparent consumption, which increased by only 53 percent over the same period.[24] As a result, import market share has also increased steadily, from 22.7 percent in 2009 to 30.1 percent in 2016.[25] Although import volumes declined in 2016 from record highs in 2015, the most recent year-to-date import license data indicates that this downturn was temporary. According to the American Iron and Steel Institute ("AISI"), total steel imports through April 2017 reached 12.3 million net tons, a 23.6 percent increase from the same period last year.[26] Imports have flooded the market across the major product lines. In 2016, flat products accounted for 41 percent of total steel imports, long products accounted for 23 percent, semi-finished products accounted for 20 percent, pipe and tube accounted for 14 percent, and stainless products accounted for 3 percent.[27]

These persistently high import volumes have significantly eroded the U.S. industry's performance, just after it began to recover from the depths of the global financial crisis. The U.S. industry's total raw steel production increased from 2009 to a peak of approximately 98 million tons in 2012, but it has been decreasing ever since, as imports have surged back into the market. Between 2012 and 2016, U.S. crude steel production fell to approximately 86.4 million tons, a loss of more than 11 million tons of output. To put this decline in perspective, 2016 steel output in the United States was more than 2 million tons less than in 2010, two years after the onset of the global financial crisis, and more than 22 million tons less than it was a decade ago. The industry operated at an unsustainable 70.5 percent capacity utilization rate in 2016.[28]

The industry's financial performance has deteriorated along with its output. Again, after beginning to recover from the effects of the global financial crisis, U.S. steelmakers have experienced a gradual erosion of sales, income, and profit margins as the volume and market share of imports have increased. After reaching a peak of $57.4 billion in 2011, the industry's sales fell to $42.3 billion in 2015, the most

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23 Global Steel Trade Monitor at 6, attached as **Exhibit 13**.

24 *Id.*

25 *Id.* This market share is far higher than the 7 percent market share of semi-finished products that the Department considered in its 2001 investigation. Iron Ore and Semi-Finished Steel Report at 31.

26 Press Release, AISI Releases April SIMA Imports Data; Import Market Share 28 Percent in April, American Iron and Steel Institute (May 3, 2017), attached as **Exhibit 14**.

27 Global Steel Trade Monitor at 2, attached as **Exhibit 13**.

28 U.S. Steel Industry Data, attached as **Exhibit 15**.

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recent year for which industry-wide data is available. Industry-wide net income was negative in four of the six years from 2010 to 2015. In 2015, the industry suffered a net loss of $1.7 billion, similar to its performance in 2009, when U.S. GDP contracted by 3.5 percent.[29]

With deteriorating sales and financial performance, the industry has been unable to invest to maintain existing operations, let alone expand and develop new production capabilities. The net value of the steel industry's property, plant, and equipment fell by nearly $2 billion from 2015 to 2016.[30] In other words, instead of investing, the industry is divesting. Similar trends have affected the steel workforce. U.S. steel industry employment gradually recovered towards pre-crisis levels by 2012. Since then, however, the industry has been forced to cut workers as imports have taken market share. According to AISI, the industry lost more than 14,000 jobs in 2015 and 2016 alone.[31]

Recent closures and curtailments of U.S. steelmaking operations and investments include:

- AK Steel's December 2015 idling of steelmaking operations in Ashland, KY, with layoffs of 633 workers. As of December 2016, the Ashland facility remained idled due to "the dramatic increase in imported carbon steel and the associated declines in AK Steel's order intake rates and selling prices."[32] The mill's idling has contributed to substantial losses in local tax revenue, forcing officials to slash the local budget.[33]

- U.S. Steel's December 2015 decision to idle two blast furnaces at its Granite City, Illinois mill. Although U.S. Steel reopened the hot-strip line at Granite City in 2016, the blast furnaces remain idled, and operations are now limited to processing slab.[34]

- U.S. Steel's December 2016 announcement of permanent closures of pipe welding lines in Lone Star, Texas and Lorain, Ohio, resulting in hundreds of

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29 *Id.*

30 U.S. Census Bureau, Quarterly Financial Report at 39, excerpts attached as **Exhibit 16**.

31 Press Release, *AISI Comments on Administration Investigation Into National Security Implications of Unfair Foreign Steel Imports*, American Iron and Steel Institute (Apr. 19, 2017), attached as **Exhibit 17**.

32 *See, e.g.*, Andrew Adkins, *Layoff Status to Remain in Place at Ashland Steel Mill*, Daily Independent (Dec. 15, 2016), attached as **Exhibit 18**.

33 Andrew Adkins, *Boyd County Takes Revenue Hit, Introduces New Budget*, Daily Independent (May 14, 2017), attached as **Exhibit 19**.

34 Joseph Bustos, *Some Granite City steelworkers get good news from U.S. Steel*, Belleville News Democrat (Dec. 13, 2016), attached as **Exhibit 20**.

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layoffs.[35] U.S. Steel has also been forced to delay construction of a $277.5 million dollar electric arc furnace in Fairfield, Alabama.[36]

- Evraz North America's February 2016 decision to indefinitely close a large diameter pipe facility in Portland, Oregon and lay off 230 workers.[37] Evraz also idled a plate mill in Claymont, Delaware in 2013 and ultimately sold the property at auction in 2015.[38]

- ArcelorMittal USA's decision to idle a hot strip mill in East Chicago, Indiana, displacing more than 300 workers, as part of a plan to respond to global overcapacity and high import volumes.[39]

- Gerdau North America's decision to shut down a rolling mill in Calvert City, Kentucky, with layoffs of 130 workers, because of global overcapacity, depressed prices, and high import volumes.[40] Gerdau was also forced to sell idled mills in Perth Amboy, New Jersey and Sand Springs, Oklahoma, mills that it had hoped to ultimately reopen.

1. *The Injurious Effects of Imports are Similar in Every Major Product Line*

In recent years, the U.S. International Trade Commission ("ITC") has investigated products in all major segments of the market and has found that imports injured the U.S. industry in almost every case. The findings in these investigations show that the U.S. steel industry's performance has suffered significantly across every major product line because of surging imports from a variety of sources.

- With respect to flat products, the ITC found that imports of hot-rolled steel, cold-rolled steel, corrosion-resistant steel, and cut-to-length plate have injured the U.S. steel industry. Aggregate U.S. industry data from these investigations show that U.S. flat-rolled producers in 2015 lost approximately $2.5 billion dollars, made a negative 10 percent return on

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35 Ken Hedler, *U.S. Steel Permanently Closing Pipe Mill at Lone Star Plant Idled in March*, Longview News-Journal (Dec. 29, 2016), attached as **Exhibit 21**.

36 Kelly Poe, *U.S. Steel CEO Gives Update on Postponed $277 Million Fairfield Project*, AL.com (May 19, 2016), attached as **Exhibit 22**.

37 Mike Rogaway, *Evraz Will Close Portland Pipe Mill in April, Lay Off 230*, The Oregonian (Feb. 10, 2016), attached as **Exhibit 23**.

38 USTIC Pub. 4664 at III-5.

39 Joseph S. Pete, *ArcelorMittal to Idle Hot Strip Mill, Displace 300 Workers*, NWI Times (Mar. 31, 2016), attached as **Exhibit 24**.

40 *Company to Shut Down Steel Facility in Calvert City*, WKYT (Aug. 18, 2016), attached as **Exhibit 25**.

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assets, and incurred $3 billion more in depreciation costs than they invested through capital expenditures.[41]

- With respect to bar products, the ITC found that imports of concrete reinforcing bar and wire rod injured the U.S steel industry.

- With respect to tubular products, the ITC found that imports of oil country tubular goods, welded line pipe, and standard pipe injured the U.S. steel industry.[42]

Other products that have not been subject to ITC investigation are also surging into the U.S. market, illustrating the limited effects of targeted, narrowly focused antidumping and countervailing duty investigations. For example, Nucor has seen declining shipments and revenue because of rapidly increasing volumes of sheet piling imports, primarily from China and the UAE. If these import trends continue, Nucor could be forced to drastically reduce production of this vital structural product, which is used in numerous civilian and military infrastructure applications like ports, levees, and highways. There are limited manufacturers of certain types of sheet piling in the United States (in some cases, only one U.S. producer), so the loss of this production could lead to a significant disruption in domestic supply.

2. *Imports of Semi-Finished Steel Threaten the Viability of the U.S. Steel Industry's Hot End Capabilities*

Surging volumes of imported semi-finished steel also threaten the U.S. industry's ability to maintain a complete production chain, beginning with melting and pouring steel. As with other products, these imports are frequently subsidized or sold at prices that undermine the viability of the U.S. industry's hot end and prevent expansion of U.S. semi-finished steel production. Indeed, the threat to the industry is particularly acute at the hot end of the production chain. This is where the steel is actually made, and the process accounts for up to 90 percent of the cost of the finished product and approximately two-thirds of total steel employment. It also accounts for the largest share of the investment in a new steel mill. Once a furnace is idled, however, it is frequently the most difficult part of the operations to restart. In 2016, the United States imported nearly 6 million tons of semi-finished steel products, approximately 20 percent of total steel imports, even as U.S. blast furnaces like AK Steel's in Ashland, Kentucky and U.S. Steel's in Granite City, Illinois remained idled.

The availability of low-priced imports of semi-finished steel has incentivized certain U.S. producers of downstream steel products to change their

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41 Internal calculations based on ITC data collected in the investigations noted above.

42 A more detailed summary of the ITC's findings in the investigations mentioned above is provided in Appendix 2.

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business models specifically to take advantage of low prices for semi-finished steel inputs. [

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]. There is virtually no need for imported semi-finished steel in the United States. Nucor, like other U.S. producers, has invested [

] in the production of semi-finished products like steel bloom and billet, specifically for the purpose of selling to downstream producers of long products like seamless pipe and tube and U.S. producers of forged steel. The only reason that the U.S. industry does not sell significant volumes of semi-finished flat products (*e.g.*, slab) is that imports of low-priced semis have crashed market prices in the United States, preventing sales at a price that would generate sufficient profits and returns on investment.

These imports have ripple effects throughout the entire production chain, as a distorted input cost ultimately distorts the price of every subsequent downstream product. Nucor itself [

]. In other words, semi-finished steel that is melted and poured abroad and shipped to the United States from overseas is priced so low that it is, in many cases, less expensive than Nucor's own internal production. As was the case in the U.S. primary aluminum industry, even though the impact of these imports may appear to be limited in the short-term, once the effects of unfair trade take hold, the result could be a sudden and catastrophic collapse in U.S. production. Remedying such a collapse would be costly and complicated and could take a decade or more of reinvestment and reconstruction in the industry.

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43 [ ], excerpts attached as **Exhibit 26**.

44 *Id.* at 1.

45 [ ], attached as **Exhibit 27**.

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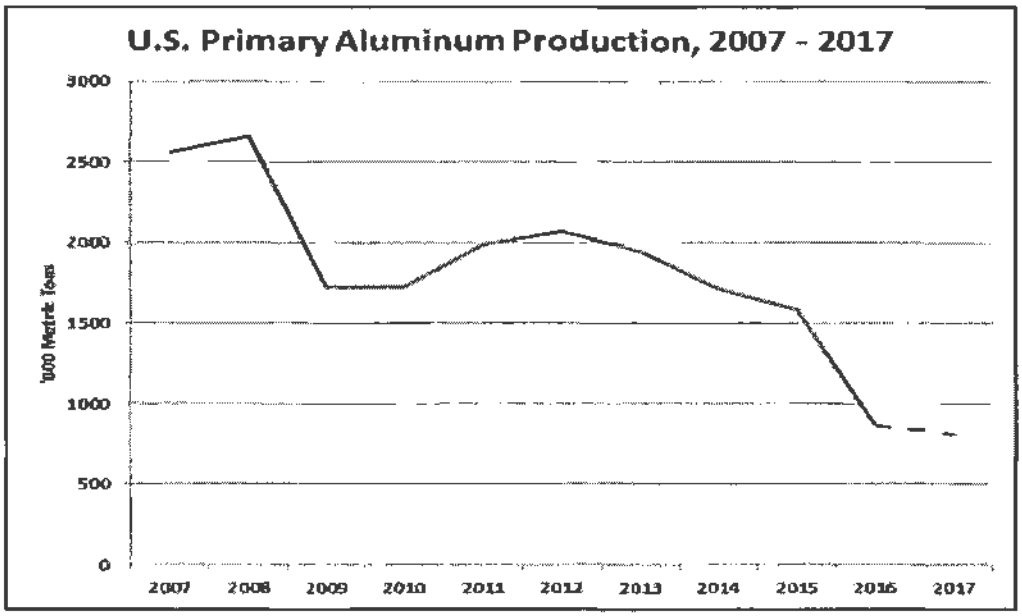

If this collapse were to happen in steel, it would compromise the entire U.S. steel industry. U.S. national security depends on the steel industry's ability to manufacture steel from start to finish in the United States. Nucor has invested in operations throughout the production chain, including melting and pouring semi-finished products, to maintain and expand its ability to supply inputs in the commercial market to downstream producers of vital steel products. Nucor could be investing even more in its production of semi-finished steel, but low-priced imports have overwhelmed this market and have precluded a reasonable expectation for return on investment. Action in response to this investigation should therefore encourage further development of U.S. hot-end capabilities and should prevent imports of semi-finished products from undermining the viability of investment in the hot end of production.

3. *Imports Threaten the U.S. Steel Industry's Ability to Sustain Production for National Defense and Critical Infrastructure*

U.S. steel producers have thus been injured throughout the production chain by surging steel imports, which continue to flood the market in a growing number of product lines. These surges involve imports from a variety of countries across Asia, the Middle East, Europe, and North America, demonstrating the global scale of the current crisis.

Notably, this deterioration of the U.S. steel industry has occurred during a period of broader economic recovery in the wake of the financial crisis and, as a result, growth in demand for steel. The steel industry is cyclical, and the state of the industry generally tracks the economy. According to the World Steel Association, U.S. apparent consumption of steel increased from just over 69 million

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metric tons in 2009 to more than 100 million metric tons in 2015.[46] As a result, this should have been a period of reasonable returns and profit for the U.S. steel industry. Instead, imports captured much of the growth in demand during this recovery period, and the U.S. industry has continued to deteriorate. Steelmakers must be able to earn reasonable returns during upswings in demand if they are to survive the next downturn. Indeed, if the steel industry cannot be profitable during periods of demand growth, then its prospects for long-term health and viability are significantly diminished.

Especially in the case of mill closures and layoffs that occur during periods of growth, losses in steelmaking capacity are long-term or even permanent, and they have trickle-down effects on local communities and governments. Steel is a capital-intensive, high-fixed-cost industry, so losses such as these are frequently irreparable. For the mills that remain in operation, the prospect of continuing to lose market share to imports prevents investments in upgraded equipment and new product development. Steel producers must be able to economically justify large-scale investments with foreseeable returns. As U.S. Steel's decision to postpone installation of an EAF in Fairfield, Alabama demonstrates, when market forecasts do not support capital expenditures, they simply do not happen.

In many cases, Nucor has been forced to limit investment in its operations, and [ ]. Furthermore, the viability of these investments depends on Nucor's ability to sell a complete range of products at competitive prices throughout the market to earn justifiable returns. Nucor cannot sustain these facilities based solely on sales for national defense applications, which make up a small share of the total capacity of its mills. With respect to the armor plate that Nucor is able to produce after substantial upgrades to its Hertford mill, Nucor expects to sell approximately [ ], or [ ]. This level of utilization would not justify the [ ] investment in equipment, product development, and certification required to produce armor plate.[47]

The same equipment is used to produce standard grades of plate products for the commercial market. These products make up the bulk of Nucor's plate sales and are vital to ensuring a commercially sustainable return on investment in the new equipment. If imports continue to capture growing shares of the broader market, depressing the U.S. industry's capacity utilization rates and profit margins, the economic viability of the entire line will be compromised, including Nucor's ability to continue producing armor plate. The same economic logic applies throughout the industry, across every product segment. If steel mills do not have a vibrant domestic market and healthy commercial sales to achieve sustainable

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[46] Steel Statistical Yearbook (2016) at 80 (Table 39) excerpts attached as **Exhibit 28.**

[47] Nucor anticipates sales of approximately [ ] tons of armor plate this year, a tiny fraction of Nucor's 2.8 million tons of plate production capacity.

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returns on investment, they must stop investing and producing entirely, including products for national defense and critical infrastructure.

With respect to employment, many of the workers who have lost their jobs because of imports are highly skilled employees with years of training and experience, and they are not easily replaced if and when market conditions improve. This is at the heart of Nucor's no-layoff practice. The expertise of Nucor's teammates is vital to its success in the long run. Likewise, the industry as a whole depends on its ability to retain a skilled, experienced workforce, from the metallurgists that develop advanced alloys to the workers that operate the rolling mills. The industry cannot do this, however, if it does not have a healthy market to support its investments in hiring, training, and retaining its workforce.

The negative impact on the steel industry, moreover, has ripple effects throughout the U.S. economy. A recent study of the economic impact of the steel industry made the following findings:[48]

- For every $1 increase in sales by iron and steel mills, total U.S. economic output increases by $2.66. In other words, for every dollar in sales captured by imports, the U.S. economy loses nearly $3 in output.

- Every job in the U.S. steel industry supports seven other jobs throughout the supply chain. For the 14,000 steel industry jobs lost in 2015 and 2016, therefore, approximately 98,000 were lost in other sectors that rely on steel industry output.

- Every $1 million of gross output in the steel sector generates approximately $150,000 in federal tax revenue and $100,000 of state and local tax revenues. Even if this represents a relatively small share of federal tax revenue, it can be devastating for local communities that rely on steel mills directly and indirectly for a large share of their tax base.

- The U.S. steel industry is a significant customer for suppliers of inputs and services in the energy, machinery, transportation, and other sectors. If the steel industry continues to erode, these sectors will erode as well.

It is thus not only the steel industry and the national defense and critical infrastructure sectors that are at risk from the global steel overcapacity crisis. This crisis also threatens the viability of downstream sectors that rely on steel output, upstream sectors that rely on the steel industry as a major customer, and local governments that rely on the steel industry for tax revenues.

In sum, under the broad statutory definition of "national security," considering all relevant economic effects, it is clear that steel imports threaten to

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[48] Timothy J. Considine, *Economic Impacts of the American Steel Industry* – Key Findings, attached as **Exhibit 29**.

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impair U.S. national security. Foreign governments continue to support massive steel industry expansions in flagrant disregard of market forces. This has driven a sustained surge in U.S. steel imports in all major product categories from all regions of the world. These imports are eroding the U.S. steel industry's market share, its financial performance, and its ability to invest in new technologies and product development. If this erosion continues, it will force large-scale closures and consolidations throughout the industry, including the ability to produce and supply products for national defense and critical infrastructure.

B. Steel Imports Threaten to Leave the United States Excessively Dependent on Imports from Unreliable or Unsafe Sources

If imports are allowed to continue eroding the U.S. industry's market share, the inevitable result will be large-scale consolidation and liquidation of domestic production capacity, along with irrevocable disruptions in domestic supply. In the event of a domestic supply disruption, the United States would depend on imports from a relatively small number of sources. In 2016, the top ten U.S. import sources accounted for more than 80 percent of total U.S. imports.[49] Several of these top ten sources cannot be considered friendly and reliable sources of the full range of products required for national security and critical infrastructure. The top ten import sources include Brazil, South Korea, Turkey, Japan, Russia, Taiwan, and Vietnam. Turkey, Russia, and Vietnam are not aligned with the United States on a number of fundamental geopolitical and national security issues. South Korea, Japan, and Taiwan are located in Asia and would not be able to deliver steel in the event of a crisis that compromised global shipping lanes. These imports, moreover, are dominated by trading companies that seek the highest global prices and that have no other interest in or commitment to supplying the U.S. market.

The composition of imports from these countries also demonstrates that the United States could not rely on them in a time of crisis. U.S. imports of certain products tend to be dominated by a limited number of foreign sources, which could lead to severe supply disruptions for specific products in the event that a single country stops exporting to the United States. Brazil and Russia, for example, account for a substantial majority of imports of semi-finished products. Korea accounts for a substantial share of flat product and pipe and tube imports. Turkey accounts for a significant share of long product imports.[50] In other words, in the event of a domestic supply disruption, the United States would actually rely on a limited number of countries to supply certain products. Supply of these products could easily be disrupted if shipments from the dominant import source were to become unavailable.

Even otherwise "friendly" countries may not be reliable sources of vital inputs in the event of an unforeseeable crisis or shift in geopolitical considerations.

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49 Global Steel Trade Monitor at 3, attached as **Exhibit 13**.

50 *Id.* at 4.

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One study of foreign dependencies for national security technologies provides a cautionary tale:

> The controversy over foreign dependencies became more acute when a Swiss company, at the beginning of the Iraq War, refused to provide critical parts for Joint Direct Attack Munitions (JDAM) because it disagreed with the U.S. decision to invade Iraq. The Swiss company's president blocked shipment of parts to Honeywell, which manufactures guidance system components as a subcontractor to Boeing. JDAM was the core of U.S. precision strike capability and one of the absolutely essential weapons in the coalition arsenal. Boeing was eventually able to find an alternative U.S. source for the parts at twice the cost of the Swiss made parts.[51]

IV. THE PRESIDENT SHOULD TAKE BROAD ACTION TO ENSURE THE LONG-TERM ECONOMIC VIABILITY OF THE U.S. STEEL INDUSTRY

The Administration's response should be designed to fully address the impact of imports on the ability of the domestic steel industry to produce the products needed for national security, from start to finish, in the United States. To do so effectively, action must be comprehensive and broad-based. It should cover imports of all steel products, including both semi-finished and finished products, from most if not all sources. This is the only way to ensure that the U.S. steel industry, and its customer and supplier base, are strong and viable in the long-term and are able to meet the future national security and critical infrastructure needs of the United States.

As discussed above, the composition of U.S. steel imports is such that there is no single product or single import source that is driving the erosion of the U.S. industry's capabilities. Rather, high import volumes are chronic throughout the industry, across all major product segments, and every segment of the U.S. industry is affected. The primary import sources, moreover, vary from product to product and over time. There is, therefore, simply no way to narrowly tailor any adjustment of imports that would ensure the long-term viability of the U.S. industry. This is an industry-wide crisis with global causes, and it requires an industry-wide solution with global coverage.

If there are too many exceptions with respect to either product or geographic scope, then the response will not be effective. First, foreign steel producers and steel importers have learned how to circumvent U.S. duties by taking advantage of any and all available gaps in coverage. This includes the use of shell companies, fraudulent import documents, transshipment through third countries, and the performance of limited third-country processing or assembly operations that allow

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[51] Christopher S. Robinson, *Beyond the 'Buy America' Debate: Sustaining America's Industrial and Technological Edge Amid the Challenges of Globalization* (July 2007) at 7, excerpts attached as **Exhibit 30**.

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them to claim a new country of origin. Such exceptions, moreover, are unnecessary. As noted above, the U.S. industry is operating at low capacity utilization rates and could easily ramp up production to satisfy U.S. demand.

Action to adjust imports must also be broad enough to ensure the viability of the entire steel production chain in the United States. With respect to the steel industry, national security begins at the hot end, where chemistries are developed and the steel is melted and poured. U.S. imports of semi-finished products are dominated by only two sources: Brazil and Russia. If the U.S. steel industry were to lose its hot end capabilities, and imports from either of these countries were to become unavailable, it would prevent steel manufacturing throughout the entire U.S. industry. There is no need for imports of semi-finished steel, even as blast furnaces like AK Steel's Ashland facility and U.S. Steel's Granite City facility remain idled because of unfairly priced imports. Unfortunately, unfairly traded imports of semi-finished steel are difficult if not impossible to address using the antidumping and countervailing duty laws. The Department should therefore recommend including imports of semi-finished steel in any action taken pursuant to this investigation.

Action to adjust imports should be simple to administer, sufficiently comprehensive to safeguard the U.S. industry's sustainability, and should be designed to encourage our trading partners to take action in good faith to address the global overcapacity problem that is at the heart of the crisis. The recommended measures should last long enough to allow the domestic industry to profit from recent investments, to make necessary new investments, and to discourage the creation of unnecessary new capacity in other countries. This would require a term of three years or longer. One option that would achieve these objectives is imposing a tariff on all steel imports, including at a minimum those in Chapters 72 and 73 of the Harmonized Tariff Schedule of the United States. The Administration should also consider whether it would be appropriate to take action to cover the steel content of major downstream products, especially fabricated products, which could become vehicles for circumvention of the action. Covering these downstream products could be the most effective means of addressing Chinese steel content, discouraging offshoring of downstream production, and encouraging a shift in supply chains to domestic sources.[52] Measures taken pursuant to this investigation should not affect the U.S. steel industry's ability to use the antidumping and countervailing duty laws for relief against unfair trade practices.

There should be few, if any, exceptions.[53] Nucor understands that there may be a very limited number of products that are not manufactured domestically in sufficient quantities to satisfy U.S. demand. In these limited cases, the lack of

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[52] *See, e.g.*, Testimony of David Zalesne, Vice Chairman, American Institute of Steel Construction.

[53] As explained in greater detail in Appendix 3, the U.S. steel industry is capable of producing virtually all steel products, and would do so if market conditions allow for returns on investment.

sufficient U.S. production is in fact a sign that imports have either eliminated U.S. production or prevented its development and expansion. In these cases, one potential means of adjusting imports would be to use a tariff rate quota that phases out over time (*e.g.*, through periodic reductions in the level of the quota). This would ensure that the United States has access to import sources, while encouraging domestic producers to expand their production capabilities so that they can satisfy U.S. demand in the future.[54]

The ultimate objective, in any event, should be to safeguard the U.S. national security interest in a healthy domestic steel industry until the underlying cause of this crisis – global overcapacity and excess production created by government intervention in the steel industry – has been resolved. Only a sufficiently comprehensive response will both safeguard vital U.S. national security interests and create the leverage necessary to reach a solution in cooperation with our trading partners.

V. CONCLUSION

For the reasons discussed above, the Department should find that steel imports threaten to impair the national security of the United States. To ensure that the U.S. steel industry is able to supply the full range of steel products that are vital to national defense, critical infrastructure, and critical industries, the Department should recommend comprehensive action to adjust imports of all steel products from all sources.

Should you have any questions regarding this submission, please do not hesitate to contact the undersigned.

Sincerely,

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Counsel to Nucor Corporation

[54] *See* Appendix 3 for a more detailed discussion of the U.S. industry's ability to supply these products.

APPENDIX 1

USE OF NUCOR STEEL PRODUCTS IN CRITICAL INFRASTRUCTURE

Page Not Capable of Public Summary

APPENDIX 2

SUMMARY OF RECENT ITC INVESTIGATIONS

Flat Products. In 2016 and 2017, the ITC conducted final phase investigations into the injurious effects of imports of hot-rolled steel, cold-rolled steel, corrosion resistant flat products, and cut-to-length plate. The ITC found that imports of hot-rolled steel from Australia, Brazil, Japan, Korea, the Netherlands, Turkey, and the United Kingdom injured U.S. hot-rolled steel producers. Imports from these countries more than doubled from 1.75 million tons to 3.59 million tons between 2013 and 2015, even as U.S. demand fell by 7.2 percent. The market share of these imports also more than doubled, from 6 percent in 2013 to more than 13 percent in 2015. Over the same period, the U.S. industry's production fell from 61.8 million tons to 54.7 million tons with concurrent declines in capacity utilization, from an already-low 76.8 percent to an abysmal 68 percent. This resulted in sharp declines in the U.S. industry's gross profit, net income, operating income, and capital expenditures. With its financial performance deteriorating because of surging import volumes, the U.S. industry was forced to make substantial cuts to its workforce by the first quarter of 2016.[1]

Similarly, the ITC found that imports of cold-rolled steel from China, Brazil, India, Japan, Korea, and the United Kingdom injured U.S. cold-rolled steel producers. Cold-rolled steel imports from these countries also more than doubled from less than 600,000 tons in 2013 to approximately 1.3 million tons in 2015, while their market share increased from 4.7 percent in 2013 to 10.7 percent in 2015. Over the same period, the U.S. industry lost 8.9 percentage points of market share as its production, shipments, and capacity utilization all declined. U.S. production fell by nearly 1 million tons, capacity utilization fell to 65.3 percent, and sales revenue fell by more than $2 million. All of this occurred despite a nearly 2 percent increase in U.S. demand from 2013 to 2015.[2]

With respect to corrosion-resistant flat products, the ITC determined that imports from China, India, Italy, Korea, and Taiwan injured U.S. producers. Imports from these countries increased by 73 percent between 2013 and 2015, from 1.5 million tons to 2.6 million tons. This surge was far greater than growth in U.S. demand, which increased by only 7.5 percent over the same period. As a result, these imports gained nearly five percentage points of market share, while U.S. producers lost market share. As with other flat products, the U.S. industry's performance deteriorated as imports flooded the market. Sales revenues fell by more than $1 billion, and net income fell by nearly $300 million.[3]

Finally, the ITC found that the U.S. industry was injured by imports of cut-to-length plate from Austria, Belgium, Brazil, China, France, Germany, Italy, Japan, Korea, South Africa, Taiwan, and Turkey. Imports from these countries more than doubled from 2013 to 2015, while U.S. demand actually fell by 6 percent over the same period. As result, these imports gained

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[1] *See generally, Certain Hot-Rolled Steel Flat Products from Australia, Brazil, Japan, Korea, the Netherlands, and the United Kingdom*, Inv. Nos. 701-TA-545-547 and 731-TA-1291-1297 (Final), USITC Pub. 4639 (Sept. 2016).

[2] *See generally, Cold-Rolled Steel Flat Products from China and Japan*, Inv. Nos. 701-TA-541 and 731-TA-1284 and 1286 (Final), USITC Pub. 4619 (July 2016) "(USITC Pub. 4619"); *Cold-Rolled Steel Flat Products from Brazil, India, Korea, Russia, and the United Kingdom*, Inv. Nos. 701-TA-540, 543-544 and 731-TA-1283, 1285, 1287, and 1289-1290 (Final), USITC Pub. 4637 (Sept. 2016).

[3] *See generally, Certain Corrosion-Resistant Steel Products from China, India, Italy, Korea, and Taiwan*, Inv. Nos. 701-TA-534-537 and 731-TA-1274-1278 (Final), USITC Pub. 4620 (July 2016)

market share at the U.S. industry's expense. As imports surged, the U.S. industry's production fell by approximately 1.1 million tons from 2013 to 2015, while capacity utilization fell by more than 6 percentage points to 60.3 percent in 2015. With unsustainably low utilization rates, the U.S. industry was forced to shut down 3.6 million tons of production capacity. Regardless, utilization rates continued falling in 2016, reaching 59.3 percent by the third quarter. As a result of growing import penetration, the U.S. industry's gross profits, operating income, and net income all fell sharply in 2015 and the first nine months of 2016.[4]

Bar Products. In November 2016, the ITC preliminarily determined that imports of concrete reinforcing bar from Japan, Taiwan, and Turkey injured the domestic steel industry. The ITC is currently conducting its final phase investigation.[5] The data for the final phase show that imports from these countries increased by approximately 77 percent between 2014 and 2016, to nearly 2 million tons. This import surge far outpaced demand, which grew by only 7.3 percent over the same period. As a result, the market share of imports from these countries increased by 8.5 percentage points, while U.S. producers lost 6.6 percentage points. U.S. rebar production fell by approximately 400,000 tons from 2014-2016, with capacity utilization falling by 4.5 percentage points to 71.4 percent.[6]

The ITC also recently determined that a surge in imports of steel wire rod from China injured the U.S. steel industry. This investigation provides a stunning example of the speed with which foreign steel producers flood the U.S. market. In 2011, there were 144 short tons of Chinese wire rod imports. By 2013, Chinese wire rod import volumes had exploded to nearly 620,000 tons, increasing their market share to 11.7 percent at the expense of domestic producers. Over the same period, the U.S. industry's production fell by approximately 250,000 tons, production capacity fell by approximately 100,000 tons, and capacity utilization fell to just over 72 percent. Despite increasing demand, the U.S. industry's sales revenue decreased by approximately $400 million.[7]

Tubular Products. The ITC has also determined that imports of steel pipe and tube products for both energy and non-energy applications have injured the U.S. steel industry. In December 2016, the ITC found that imports of standard pipe for structural and non-energy transmission applications injured U.S. producers. Standard pipe imports from Oman, Pakistan, the UAE, and Vietnam increased significantly in terms of both volume and market share, while

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[4] *See generally, Carbon and Alloy Steel Cut-to-Length Plate from Brazil, South Africa, and Turkey*, Inv. Nos. 731-TA-1319, 1326, and 1328 (Final), USITC Pub. 4664 (Jan. 2017); *Carbon and Alloy Steel Cut-to-Length Plate from China*, Inv. Nos. 701-TA-560 and 731-TA-1320 (Final), USITC Pub. 4675 (Mar. 2017).

[5] *Steel Concrete Reinforcing Bar from Japan, Taiwan, and Turkey*, Inv. Nos. 701-TA-564 and 731-TA-1338-1340 (Prelim.), USITC Pub. 4648 (Nov. 2016).

[6] *See generally, Steel Concrete Reinforcing Bar from Japan, Taiwan, and Turkey*, Inv. Nos. 701-TA-564 and 731-TA-1338-1340 (Final), Prehearing Report (May 4, 2017).

[7] *See generally, Carbon and Certain Alloy Steel Wire Rod from China*, Inv. Nos. 701-TA-512 and 731-TA-1248 (Final), USITC Pub. 4509 (Jan. 2015).

the U.S. industry's market share fell by more than ten percentage points. Over the same period, U.S. production fell, and capacity utilization plummeted to less than 50 percent.[8]

With respect to energy tubular products, the ITC recently found that imports of both oil country tubular goods ("OCTG") and welded line pipe injured the U.S. industry. Some of the largest sources of U.S. imports, including Korea and Turkey, have little to no domestic demand for these products. Instead, they produce almost exclusively for export, and primarily export to the United States, as another means of unloading excess production of upstream products like hot-rolled sheet and plate. Surging imports of these downstream products have ripple effects throughout the entire steel industry because U.S. pipe and tube producers source inputs like API grade hot-rolled coil from U.S. suppliers, including Nucor.

In 2015, the ITC determined that imports of welded line pipe from Korea and Turkey injured U.S. line pipe producers. Imports from these countries increased significantly between 2012 and 2014, despite decreasing U.S. demand over the same period. As a result, their market share increased to nearly 34 percent in 2014. As a result, the U.S. industry's shipments fell by approximately 350,000 tons, and all measures of profitability declined, until the industry was operating at a loss in the first half of 2015. The U.S. industry's production fell by more than 300,000 tons, and it shut down more than 30,000 tons of capacity between 2012 and 2014. Capacity utilization plummeted from an already-low 71 percent to 57 percent over the same period.[9]

With respect to OCTG, the ITC found in 2014 that imports from India, Korea, Taiwan, Turkey, Ukraine, and Vietnam injured the U.S. industry. As with other products discussed above, growth in import volumes from these countries outstripped growth in U.S. demand, resulting in substantial increases in market share. By the end of the ITC's period of investigation, imports accounted for nearly half of the U.S. OCTG market, with U.S. producers accounting for only 53 percent. U.S. OCTG producers' operating income plummeted by more than $300 million over the course of three years, despite vibrant growth in U.S. demand. The industry's capital expenditures fell by a similar amount, when they should have been investing to take advantage of the U.S. energy boom.[10]

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[8] *See generally, Circular Welded Carbon Quality Steel Pipe from Oman, Pakistan, the United Arab Emirates, and Vietnam*, Inv. Nos. 701-TA-549 and 731-TA-1299, 1300, 1302, and 1303 (Final), USITC Pub. 4651 (Dec. 2016).

[9] *See generally, Certain Welded Line Pipe from Korea and Turkey*, Inv. Nos. 701-TA-525 and 731-TA-1260-1261 (Final), USITC Pub. 4580 (Nov. 2015).

[10] *See generally, Certain Oil Country Tubular Goods from India, Korea, the Philippines, Taiwan, Thailand, Turkey, Ukraine, and Vietnam*, Inv. Nos. 701-TA-499-500 and 731-TA-1215-1217 and 1219-1223 (Final), USITC Pub. 4489 (Sept. 2014).

APPENDIX 3

WHETHER TO EXCLUDE CERTAIN PRODUCTS

I. THE DEPARTMENT SHOULD DENY THE REQUESTED PRODUCT EXCLUSIONS

At the Department's Section 232 hearing, several witnesses requested that the Department exclude certain steel products from the investigation, including black plate, tin plate, tire cord wire rod, Japanese wire rod, light-gauge corrosion resistant steel ("CORE") for use in the heating, ventilation, and air conditioning ("HVAC") industry, and hot-rolled coil imported by Steelscape LLC ("Steelscape").[1] The witnesses' primary arguments focused on an apparent lack of U.S. production capabilities for the various steel products.[2] Given these repeated arguments, the Department specifically asked whether the U.S. steel industry could actually produce the steel products for which the witnesses requested exclusions. The answer is an unequivocal yes.

The U.S. steel industry currently produces or has the capability of producing all of the products mentioned above. In fact, in several recent antidumping and countervailing duty investigations, the U.S. International Trade Commission ("USITC") found that the domestic industry produces and competes with the same imported steel products for which the witnesses have requested exclusions. In many cases, the witnesses requesting exclusions simply want to maintain their access to unfairly traded steel imports, which continue to harm the U.S. steel industry and ultimately the national security interests of the United States. As discussed below, the Department should not exclude any of these products from its Section 232 investigation. To the extent that the Department concludes that certain products are not produced in the United states in sufficient quantities, it should tailor its action to encourage domestic producers to expand their production capabilities so that they can satisfy U.S. demand in the future.

A. The Department Should Deny the Exclusion Request for Light Gauge CORE for the HVAC Industry

The Air Distribution Institute ("ADI") argued that light gauge CORE for the HVAC industry should be excluded from any proposed relief pursuant to the Section 232 national security proceedings.[3] According to ADI, the domestic industry does not produce light gauge CORE for HVAC units in Grade A653 CS Type B G-30.[4] During the hearing, ADI claimed that the domestic industry has "forgotten" the light gauge CORE industry.[5] ADI claims are false and the Department should reject ADI's exclusion request.

Contrary to ADI's arguments, light gauge CORE is produced throughout the United States and readily available from U.S. producers, such as Nucor. As indicated in its product brochure, Nucor produces light gauge CORE at a number of its steel mills around the country

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1 *See* Testimony of Suzi Agar, President, Air Distribution Institute; Testimony of Tim Johns, Vice President of Manufacturing, NSCI; Testimony of Tracey Norberg, Senior VP and General Counsel, U.S. Tire Manufacturers Association; *See* Testimony of Jim Tennant, CEO, Ohio Coatings Company; Testimony of Robert Budway, President, Can Manufacturers Institute.

2 *Id.*

3 *See* Testimony of Suzi Agar, President, Air Distribution Institute.

4 *Id.*

5 *Id.*

that could supply ADI's members.[6] Specifically, Nucor produces 0.012-inch light-gauge CORE at its steel mills in Berkeley, South Carolina and Hickman, Arizona, which can supply all regions in the United States.[7] Several other U.S. producers supply CORE for the HVAC industry. As the President of ADI admitted, "pricing was a part of" the reason its members imported nearly three times as much light-gauge CORE than they purchased domestically in 2016.[8] In other words, ADI members want to be able to purchase light-gauge CORE at unfairly traded prices. Thus, the Department should reject ADI's exclusion request for light-gauge CORE for the HVAC industry.

B. The Department Should Deny the Exclusion Request for Japanese Wire Rod

The Department should deny Nippon Steel and Sumikin Cold Heading Wire Indiana's ("NSCI") request to exclude Japanese wire rod from the Section 232 investigation. As an initial matter, NSCI failed to specifically identify the wire rod products to be excluded.[9] Instead of clearly identifying particular steel wire rod specifications, NSCI argued for the broad exclusion of Japanese wire rod used to "produce fasteners and other safety critical applications."[10] While cold-heading quality ("CHQ") wire rod is typically used to produce fasteners, NSCI failed to describe the products that should be excluded because of their use in "other safety critical applications."[11] Given that conventional low-, medium-, and high-carbon wire rod could be used in "safety critical applications," NSCI's exclusion request could potentially cover all wire rod imported from Japan. Because NSCI's exclusion request is overbroad, the Department should reject NSCI's request.

Further, NSCI's arguments regarding the exclusion of Japanese wire rod are without merit. At the hearing, NSCI merely asserted that Japanese wire rod has good quality and was "not available from anywhere else."[12] NSCI argued that Japanese wire rod is unique because the rod is lightweight and durable since Japanese producers control for surface defects, inclusions, and size tolerances.[13]

The U.S. wire rod industry produces CHQ wire rod as well as wire rod for critical applications. In fact, Nucor produces CHQ wire rod and wire rod for critical applications at its four wire rod facilities in Connecticut, Arizona, Nebraska, and South Carolina.[14] Indeed, "the basic equipment, machinery, facilities, and production personnel...remain the same for the production of industrial quality, tire cord quality, welding quality, and cold heading quality

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6 *See e.g.*, Nucor's Product Reference Guide and Product Capabilities, attached at **Exhibit 31**.

7 *Id.*

8 *See* Testimony of Suzi Agar, President, Air Distribution Institute.

9 *See* Testimony of Tim Johns, Vice President of Manufacturing, NSCI.

10 *Id.*

11 *Id.*

12 *Id.*

13 *Id.*

14 *See* Nucor's Product Reference Guide and Product Capabilities, attached at **Exhibit 31**

...wire rod."[15] As the USITC recently found, the domestic wire rod industry has ample capacity to meet demand for wire rod in the U.S. market and it produces the entire product line of wire rod.[16] U.S. producers are ready, willing, and able to supply wire rod to NSCI and the Department should not grant NSCI an exclusion to import Japanese wire rod from its parent company.

In addition, there are no quality differences between domestically produced wire rod and Japanese wire rod. Wire rod is generally interchangeable regardless of source.[17] The vast majority of wire rod produced in the United States meets the surface defects, inclusions, and size tolerances for the application it was intended. Wire rod that matches the metallurgical properties of a certain specification will also satisfy the surface defect, inclusions, and size tolerances standards for that specification. As a result, U.S.-produced wire rod contains the same lightweight and durable physical characteristics as Japanese wire rod produced to the same specifications. The fact remains that Nucor produces and sells a wide range of wire rod for "fasteners and other critical safety applications" in the United States. From that same wire rod, Nucor also produces fasteners in its facility in St. Joe, Indiana.[18] Given that NSCI has failed to identify the specific grades of wire rod that are produced in Japan that allegedly cannot be produced in the United States, or produced any evidence in support of its allegations, the Department should deny NSCI's request to exclude Japanese wire rod for fasteners and critical safety applications from the Section 232 investigation.

C. The Department Should Deny Steelscape's Exclusion Request for Imported Hot-Rolled Coil

Steelscape, a U.S. producer of metallic-coated and pre-painted steel that is jointly owned by BlueScope Steel Ltd. and Nippon Steel and Sumitomo Metals Corporation ("NSSMC"), requested that the Department exclude its imports of hot-rolled steel.[19] Steelscape argued that these imports do not compete with the U.S. steel products, and therefore cannot injure the domestic hot-rolled industry or harm national security interests. Steelscape rested on the assertion that U.S. producers are unable or unwilling to supply its company with hot-rolled steel. Steelscape also claimed that it must import steel from its corporate parents because the company is not structured to receive hot-rolled steel by rail from elsewhere in the United States. These same arguments were recently rejected by the USITC and should be rejected by the Department in this investigation.

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[15] *See Carbon and Certain Alloy Steel Wire Rod from Belarus, Italy, Korea, Russia, South Africa, Spain, Turkey, Ukraine, United Arab Emirates, and the United Kingdom*, USITC Pub 4693, Inv. Nos. 701-TA-573-574 and 731-TA-1349-1358 (Preliminary) (May 2017) at I-16.

[16] *See id.* at 29, table C-1 (showing that the U.S. industry's capacity utilization in 2016 was 77.3 percent).

[17] *See id.* at 29

[18] *See* Nucor Website Excepts, attached at **Exhibit 32** ("All of our products are made from steel that is 100% melted and rolled in the United States. With sister division Nucor Nebraska as our dedicated steel source, our fasteners are backed by the Nucor name from start to finish.").

[19] Hearing Transcript, *Certain Hot-Roled Steel Flat Products from Australia, Brazil, Korea, the Netherlands, Turkey, and the United Kingdom*, Inv. Nos. 701-TA-545-547 and 731-TA-1291-1297 (Preliminary) (Sept. 1, 2015) ("Conf. Tr.") at 172-73 (Mr. Cross), attached at **Exhibit 33**.

Contrary to its claims, U.S. producers have supplied Steelscape, and continue to attempt to sell additional volume to the company. The USITC recently found that Steelscape's claims regarding the availability of hot-rolled steel were completely contradicted by record evidence. Before the USITC, Steel Dynamics Industries ("SDI") stated that it has supplied Steelscape in the past, and "is ready to supply them again."[20] Further, the USITC found that "the domestic producers on the West Coast had substantial unused capacity."[21] In fact, "the U.S. producers on the West Coast, CSI and EVRAZ, had capacity utilization levels in 2015... which were lower than those of the domestic industry as a whole."[22] With substantial capacity to supply Steelscape, the only reason the company has requested an exclusion for its imports is to maintain access to unfairly priced imports of hot-rolled coil. To the extent that Steelscape actually believes that there is a long-term supply issue with obtaining hot-rolled steel on the West Coast, the company should consider installing a hot end to melt and pour steel in the western United States.

Furthermore, Steelscape's claims that it must import steel from its corporate parents because it is not structured to receive hot-rolled steel by rail from elsewhere in the United States are unavailing. This assertion is directly contradicted by Steelscape's own website, which explicitly states that "Steelscape's facilities . . . are strategically located near major truck, ship and rail routes to best serve the U.S. market."[23] Steelscape itself reported that it uses 250 railcars per month to ship processed cold-rolled from its facility. These same railcars could be used to transport hot-rolled to the facility. Furthermore, in a document from April 2015, Steelscape itself identified Nucor in Indiana and North Star BlueScope in Ohio as domestic suppliers from whom it purchases hot-rolled steel.[24] Steelscape's perceived issues concerning its ability to receive hot-rolled steel from U.S. producers could be rectified by making relatively minor investments in additional handling equipment at its facilities.

Finally, Steelscape has not alleged that there are any physical impediments to U.S. producers increasing their sales to Steelscape. Nor are there issues involving quality or specialty products. Indeed, counsel for Steelscape's parent company, Bluescape, has stated before the USITC that the steel it supplies Steelscape "is not a unique specialized product."[25] Rather, the real reason Steelscape prefers imports from Australia, Japan and other countries to U.S. product is, quite simply, price. Thus, the Department should deny Steelscape's request to exclude its imports from the agency's Section 232 investigation.

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20 Conf. Tr. at 88 (Mr. Schagrin), attached at **Exhibit 33.**

21 *Certain Hot-Rolled Steel Flat Products from Australia, Brazil, Japan, Korea, the Netherlands, Turkey, and the United Kingdom*, ITC Pub. 4638, Inv. Nos. 701-TA-545 and 731 TA 1291-1297 (Final) (Sept. 2016) at 34., n.176.

22 *Certain Hot-Rolled Steel Flat Products from Australia, Brazil, Japan, Korea, the Netherlands, Turkey, and the United Kingdom*, ITC Pub. 4638, Inv. Nos. 701-TA-545 and 731 TA 1291-1297 (Final) (Sept. 2016) at 34., n.176.

23 *See* Nucor's Post-Conference Brief at Exhibit 7, attached at **Exhibit 34**.

24 *Id.* at Exhibit 7.

25 *Id.*

D. The Department Should Deny the Exclusion Request for Tire Cord Wire Rod

The U.S. Tire Manufacturers Association ("TMA") argued that the Department should exclude tire cord wire rod.[26] Specifically, the TMA argued that the domestic steel industry does not produce grade 1080 tire cord quality wire rod and cannot meet the high quality standards of tire manufacturers.[27] According to the TMA, the domestic producers' exclusion of tire cord wire rod from the 2002 investigation on *Wire Rod from Brazil, Indonesia, Mexico, Moldova, Trinidad & Tobago, and Ukraine* somehow confirms that domestic producers do not have the capability of producing tire cord wire rod.[28] These arguments are without merit.

The U.S. wire rod industry has the capability of producing tire cord quality wire rod. In fact, the USITC recently found that "the domestic industry produced and shipped appreciable quantities of tire cord and tire bead wire rod ... during the period of investigation."[29] At the USITC Staff Conference in *Wire Rod from Belarus, Italy, Korea, Russia, South Africa, Spain, Turkey, Ukraine, United Arab Emirates, and the United Kingdom*, domestic producers testified that they can and do make wire rod products for rubber reinforcement.[30] For example, Steve Ashby, of Keystone Steel, testified that Keystone makes tire bead "on a production basis."[31] Moreover, EVRAZ, a domestic producer of wire rod, makes 1080 tire cord, the same product for which TMA requests exclusion.[32] Thus, contrary to the TMA's claims, the domestic industry produces or has the capability to produce tire cord quality wire rod. As the TMA acknowledged, tire cord wire rod is critically important to the national security of the United States.[33] Tire cord wire rod is used to reinforce the tires of automobiles, including military vehicles used in national defense.[34] As a result, the Department must ensure that the United States has sufficient domestic capability to protect its national security interests. While TMA and several respondents at the USITC Staff Conference placed great emphasis on the domestic industry's inability to meet the demanding specifications of tire cord wire rod, the domestic industry does produce this product and could produce more if market conditions warranted.[35] Several witnesses for the domestic

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26 *See* Testimony of Tracey Norberg, Senior VP and General Counsel, U.S. Tire Manufacturers Association. Although the Ms. Norberg mentioned "bead wire" or tire bead quality wire rod in her testimony, TMA's exclusion request was limited to "tire cord wire rod." *Id.*

27 *Id.*

28 *Id.*

29 *See Carbon and Certain Alloy Steel Wire Rod from Belarus, Italy, Korea, Russia, South Africa, Spain, Turkey, Ukraine, United Arab Emirates, and the United Kingdom*, USITC Pub 4693, Inv. Nos. 701-TA-573-574 and 731-TA-1349-1358 (Preliminary) (May 2017) at 20.

30 *See* Transcript of Staff Conference, Inv. Nos. 701-TA-573-574 and 731-TA-1349-1358 (Preliminary), United States International Trade Commission, dated April 18, 2017, at 154-155) ("ITC Transcript"), attached at **Exhibit 35**.

31 *Id.*

32 *Id.*; *see also* Evraz Website Excerpts, attached at **Exhibit 36**.

33 *See* Testimony of Tracey Norberg, Senior VP and General Counsel, U.S. Tire Manufacturers Association.

34 *Id.*

35 *Id.*

industry testified at the USITC Staff Conference that due to unfair imports, their ability to compete in the tire cord market has been limited.[36] Indeed, in 2015, the domestic wire rod industry's capability to produce tire cord wire rod was diminished because unfairly traded imports resulted in the closure of ArcelorMittal USA's Georgetown, South Carolina wire rod plant, which produced tire bead and tire cord wire rod. An exclusion for tire cord wire rod would only erode further the U.S. wire rod industry's ability to produce this grade of wire rod.

To the extent that the TMA believes that there are any weaknesses in the domestic industry's ability to supply tire cord wire rod in the United States, any action recommended by the Department should encourage the redevelopment of U.S. producers' full capabilities to produce this grade of wire rod. In addition, given that the qualification process to supply tire cord wire rod can be lengthy, any Department action should encourage the qualification of domestic sources. Carefully structuring action to adjust imports and promote additional domestic manufacturing of tire cord products would be consistent with national security interests.

Finally, the fact that tire cord wire rod was excluded from the 2002 wire rod case has no bearing on whether tire cord wire rod should be excluded from the Section 232 investigation. First, the domestic industry opted to exclude certain 1080 grade tire cord and tire bead quality wire rod in the 2002 investigation to accommodate certain customers with the expectation that doing so would re-shore some percentage of the tire industry's requirements for that type of wire rod. Those orders, however, failed to materialize in the manner that the domestic industry had anticipated.[37] Second, TMA simply ignored the intervening 2014 case on *Carbon and Certain Alloy Steel Wire Rod from China*.[38] In that case, the domestic industry included tire cord and tire bead quality wire rod within the scope of the investigation. The ITC treated all wire rod as a single domestic like product and the Department treated all wire rod as a single class or kind of merchandise. The Department, therefore, should reject the unsupported argument that the exclusion in the 2002 case has any bearing on whether tire cord wire rod should be excluded from this investigation. The Department should also reject the TMA's request to exclude tire cord wire rod from the Section 232 investigation.

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[36] *Id.* at 155-160.

[37] *See*, ITC Transcript at 160-161, attached at **Exhibit 35**.

[38] *Carbon and Certain Alloy Steel CASWR from China*, Inv. Nos. 701-TA-512 and 731-TA-1248 (Final), USITC Pub. No. 4509 at 5-6. All forms of grade 1080 and higher tire cord and tire bead quality CASWR were included in the Department's 2014 investigation as well, which comprised a single class or kind of merchandise. *Carbon and Certain Alloy Steel CASWR; Preliminary Determination of Sales at Less Than Fair Value and Preliminary Determination of Critical Circumstances, in Part*, 79 Fed. Reg. 54,678 (Sept. 12, 2014) and accompanying Issues and Decision Memorandum, Aug. 29, 2014 at 3-4.

E. The Department Should Deny Ohio Coatings Company's Exclusion Request for Black Plate

At the hearing, Ohio Coatings Company's ("OCC") CEO requested that the Department exclude "specialty" black plate from the Department's Section 232 investigation.[39] The company uses black plate as the substrate to produce its downstream tin mill products.[40] OCC argued that because it does not maintain a captive supply of black plate, the company is required to source black plate from foreign suppliers.[41] While OCC admitted that it currently purchases black plate from U.S. steel producer, ArcelorMittal USA, LLC ("AMUSA"), OCC asserted that the U.S. steel industry could not fully supply the company with its raw material requirements.[42] These arguments are without merit and should be rejected by the Department.

In 2016, OCC presented similar arguments before the USITC in the context of the agency's domestic like product analysis and the USITC rejected these claims.[43] In fact, the USITC has consistently found that black plate and cold-rolled steel are a single domestic like product and that black plate does not warrant a separate injury analysis.[44] Contrary to OCC's assertions that black plate is a "specialty" product, the USITC found that black plate is simply a thin light gauge, cold-rolled steel product used to produce multiple products including tin mill products, construction products, oil filters and other automotive applications, toys, serving trays, and household goods.[45] Furthermore, the USITC found that black plate and cold-rolled steel share the similar physical characteristics, uses, price, and some interchangeability.[46] Black plate

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39 *See* Testimony of Jim Tennant, CEO, Ohio Coatings Company.

40 *See id.*

41 *See id.*

42 *See id.*

43 *See Cold-Rolled Steel Flat Products from China and Japan*, USITC Pub. 4619, Inv. Nos. 701-TA-541 and 731-TA-1284 and 1286 (Final) (July 2016) at 8-10 (finding that the black plate is not a separate like product from cold-rolled steel). The USITC "has rejected the argument that black plate should be defined as a separate domestic like product from other types of cold-rolled steel. *See Certain Cold-Rolled Steel Products from Argentina, Brazil, China, Indonesia, Japan, Russia, Slovakia, South Africa, Taiwan, Thailand, Turkey, and Venezuela*, Inv. Nos. 701-TA-393-396 and 731-TA-829-840 (Preliminary), USITC Pub. 3214 (July 1999) at 7-8; *Certain Flat-Rolled Carbon Steel Products from Argentina, Australia, Austria, Belgium, Brazil, Canada, Finland, France, Germany, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Poland, Romania, Spain, Sweden, and the United Kingdom*, Inv. Nos. 701-TA-319-332, 334, 336-342, 344, and 347-353 and 731-TA-573-579, 581-592, 594-597, 599-609, and 612-619 (Final), USITC Pub. 2664 (August 1993) at 87-89.

44 *See id.* at 10, n.30 ("While prior like product determinations are not precedential, we note that in previous cold-rolled steel investigations, the Commission The USITC "has rejected the argument that black plate should be defined as a separate domestic like product from other types of cold-rolled steel") *citing Certain Cold-Rolled Steel Products from Argentina, Brazil, China, Indonesia, Japan, Russia, Slovakia, South Africa, Taiwan, Thailand, Turkey, and Venezuela*, Inv. Nos. 701-TA-393-396 and 731-TA-829-840 (Preliminary), USITC Pub. 3214 (July 1999) at 7-8; *Certain Flat-Rolled Carbon Steel Products from Argentina, Australia, Austria, Belgium, Brazil, Canada, Finland, France, Germany, Italy, Japan, Korea, Mexico, the Netherlands, New Zealand, Poland, Romania, Spain, Sweden, and the United Kingdom*, Inv. Nos. 701-TA-319-332, 334, 336-342, 344, and 347-353 and 731-TA-573-579, 581-592, 594-597, 599-609, and 612-619 (Final), USITC Pub. 2664 (August 1993) at 87-89.

45 *See Cold-Rolled Steel Flat Products from China and Japan*, USITC Pub. 4619, Inv. Nos. 701-TA-541 and 731-TA-1284 and 1286 (Final) (July 2016) at 9, 10, n.28.

46 *Id.*

and cold-rolled steel share similar manufacturing process, and are made in the same facilities by the same employees.[47] As imports of cold-rolled steel continue to harm national security interests, so too do imports of black plate.

Further, OCC itself recognized, there are at least three U.S. steel producers that could supply OCC with black plate.[48] OCC already sources approximately 40 percent of its black plate from AMUSA.[49] While OCC could presumably purchase additional black plate from U.S. producers such as UPI, the company simply chooses to purchase only a limited portion of its black plate from U.S. producers. Indeed, the record of the USITC investigation in *Cold-Rolled Steel from China and Japan* demonstrates that "Ohio Coatings reduced its purchases from ArcelorMittal and increased its purchases of black plate from Japan and Korea over the POI."[50] OCC's decision to use an import supply model, which directly undermines the U.S. manufacturing sector, is not a justification to be granted an exclusion in this investigation. Thus, the Department should deny OCC's request to exclude black plate from the Department's Section 232 investigation.

F. The Department Should Deny the Exclusion Request for Tin Plate

The Can Manufacturers Institute ("CMI") argued that tin plate should be excluded from the Department's investigation.[51] Tin plate is a tin-coated flat-rolled steel product that is manufactured from black plate, which is the basic material for the production of tin mill products.[52] According to CMI, the Department and the USITC have found that tin plate products are separate categories from other coated steel sheet products.[53] CMI also argued that the domestic industry does not have the capacity to satisfy domestic demand for tin plate and U.S. producers frequently experience shipment delays.[54] The Department should deny CMI's exclusion request.

Several U.S. steel producers have the capability and capacity of supplying tin plate to the domestic market.[55] Indeed, U.S. Steel Corporation, AMUSA, UPI, and OCC currently produce tin plate in the United States.[56] In 2011, the USITC reported in its sunset review of *Tin-and*

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47 *Id.*

48 *See* Testimony of Jim Tennant, CEO, Ohio Coatings Company (identifying ArcelorMittal, United States Steel Corporation, and USS-POSCO Industries ("UPI") as domestic producers of black plate).

49 *Id.*

50 *See Cold-Rolled Steel Flat Products from China and Japan*, USITC Pub. 4619, Inv. Nos. 701-TA-541 and 731-TA-1284 and 1286 (Final) (July 2016) at 17, n. 66.

51 *See* Testimony of Robert Budway, President, Can Manufacturers Institute.

52 *See Tin-and Chromium-Coated Steel Sheet from Japan*, USITC Pub 4325, Inv. No. 731-TA-860 (Second Review) (May 2012).

53 *See* Testimony of Robert Budway, President, Can Manufacturers Institute.

54 *Id.*

55 *See Tin-and Chromium-Coated Steel Sheet from Japan*, USITC Pub 4325, Inv. No. 731-TA-860 (Second Review) (May 2012) at 5.

56 *See id.*

Chromium-Coated Steel Sheet from Japan, that the U.S. tin plate industry maintained over 3.5 million tons of capacity.[57] While the domestic industry has lost some production capacity to produce tin plate through the idling of RG Steel in 2012, RG Steel's operators indicated that "the effect of low-priced imports on the U.S. market" were a cause of the plant's failure to restart and eventually shut down.[58] Furthermore, although tin plate was excluded from the scope of the corrosion resistant steel products ("CORE") investigations, U.S. steel companies producing tin plate have petitioned for relief from unfairly traded imports.[59] Given that the United States has lost some production capabilities of tin plate due to "low-priced imports," yet maintain the capability to produce this product, the Department should deny CMI's request to exclude tin plate.

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[57] *See Tin-and Chromium-Coated Steel Sheet from Japan*, USITC Pub 4325, Inv. No. 731-TA-860 (Second Review) (May 2012) at 5.

[58] *USW Not Confident on Yorkville Plant Restart*, the Intelligencer, Wheeling News Register, attached at **Exhibit 37**.

[59] *See Tin-and Chromium-Coated Steel Sheet from Japan*, USITC Pub 4325, Inv. No. 731-TA-860 (Second Review) (May 2012) at 5.

EXHIBIT 1

STEEL

AND THE

NATIONAL DEFENSE

PREPARED:
JANUARY 2007

American Iron and Steel Institute

SPECIALTY STEEL INDUSTRY OF NORTH AMERICA

STEEL MANUFACTURERS ASSOCIATION · SMA

UNITED STEELWORKERS USW

U.S. STEEL INDUSTRY ANALYSIS:

IMPORTANCE OF DOMESTICALLY-PRODUCED STEEL TO OVERALL NATIONAL DEFENSE OBJECTIVES AND ECONOMIC AND MILITARY SECURITY

January 2007

Introduction

This analysis presented by the U.S. steel industry addresses the importance of domestically-produced steel to our nation's overall national defense objectives and the increased need for steel to bolster our economic and military security. The President and other U.S. government leaders have recognized repeatedly the critical interdependence of steel and national security. The American steel industry and the thousands of skilled men and women who comprise its workforce produce high quality, cost-competitive steel products for military use in applications ranging from aircraft carriers and nuclear submarines to Patriot and Stinger missiles, armor plate for tanks and field artillery pieces, as well as every major military aircraft in production today. These critical applications require consistent, high quality on-shore supply sources.

While leading-edge defense applications represent only a small portion of overall domestic sales of steel products, defense-related materials are produced on the same equipment, using some of the same technology, and are developed by the same engineers who support the larger commercial businesses of steel companies in the U.S. Thus, the companies are not typical defense contractors who derive the majority of their sales and profits from their defense business. It is the overall financial health of U.S. steel producers, and not simply the profitability of their defense business, that is essential to their ability to be reliable defense suppliers.

The domestic steel industry also believes that, over an extended period of time, the United States could lose much of its steel-related manufacturing base if U.S. steel consumers continue to move production offshore due to market-distorting foreign government incentives and due to unsound economic policies at home. If we continue to lose our manufacturing base due to market-distorting foreign competition or U.S. economic policies that are hostile to domestic investment and U.S.-based manufacturing, it could become impossible to produce here; the U.S. military would lose its principal source of strategic metals; and we as a nation would become dangerously dependent upon unreliable foreign sources of supply.

The U.S. steel industry, consisting of all carbon and alloy steel producers and specialty metal producers, employs more than 160,000 highly skilled workers who produce over $60 billion of high quality steel and high-technology specialty alloy products annually. The industry includes state-of-the-art, large and small electric arc furnace producers (or "mini mills") that make steel from recycled scrap, and highly efficient large "integrated" steel producers who make steel from virgin materials and recycled steel.

Steel is produced in many forms, including flat-rolled and long products, carbon pipe and tube products, wire and other fabricated products. Carbon and alloy steel is used in all major end-use markets, including construction, automotive, machinery, appliance and containers. Specialty steels are high technology, high value materials, produced by small and medium-sized companies. These specialty metals are used in extreme environments that demand exceptional hardness, toughness, strength and resistance to heat, corrosion and abrasion, such as in the aerospace and chemical processing industries. All segments of the domestic steel industry contribute directly or indirectly to the defense industrial base.

Criticality of the Steel Industry to the National Defense and the Defense Infrastructure

The U.S. carbon/alloy and specialty steel industries are vital partners to American defense contractors and to the DOD. Domestic and specialty metals are found in virtually every military platform. Whether it is missiles, jet aircraft, submarines, helicopters, Humvees® or munitions, American-made steels and specialty metals are crucial components of U.S. military strength. A few examples follow:

1. The Joint Strike fighter F135 engine, the gears, bearings, and the body itself, will use high performance specialty steels and superalloys produced by U.S. specialty steel companies.

2. Land based vehicles such as the Bradley Fighting Vehicle, Abrams Tank, and the family of Light Armored Vehicles use significant tonnage of steel plate per vehicle.

3. Steel plate is used in the bodies and propulsion systems of the naval fleet.

4. The control cables on virtually all military aircraft, including fighter jets and military transport planes, are produced from steel wire rope.

Numerous additional examples illustrating how steel and specialty metals directly support the U.S. defense industrial base are provided in Appendices 1 and 2. These materials are an integral part of many diversified military applications and, as such, are in a continuing state of technological development.

Steel's importance to the military must also be looked at in a broader context to include both direct and indirect steel shipments to the military infrastructure that are needed to support our defense efforts, both at home and overseas -- e.g., all of the steel that goes into the rails, rail cars, ground vehicles, tanks, ships, military barracks, fences and bases, which are not classified as shipments to ordinance, aircraft, shipbuilding or other military uses.

The September 11 attacks on the United States made it clear that (1) steel will be needed to "harden" existing U.S. infrastructure and installations and (2) a strong and viable domestic steel industry will be needed to provide immediate steel deliveries when and where required. Consider the potential difficulties the U.S. would face in defending, maintaining and rebuilding infrastructure in an environment where our nation is largely dependent upon foreign steel. By

APPENDIX 1

U.S. Domestic Steel Shipments for Application in Defense and Weapons Systems, 2002-2006

Steel Product Description	Application/Project/Program	Additional Comments/Information
Cold Finished Steel Bars	Hydra 70 missile & Zuni nozzle body	
Cold Finished Steel Bars	Medium caliber ammunition	
Hot Rolled Carbon Bands	Shell casings	Defense priority rating DO-A5
Hot Rolled Carbon Bars	155mm M107 projectile	High volume ordnance program
Hot Rolled Carbon Bars	120mm mortar	
Hot Rolled Round Bar, SAE 1030, EFM	25mm cartridge cases	
Hot Rolled Round Bar, SAE 1144, EFM	Munitions - live	
Hot Rolled Round Bar, SAE 1215, EFM	Munitions - practice	
Hot Rolled Round Bar, SAE 5160H, EFM	Bradley track pins	
Hot Rolled Round Bar, SAE 8650H, EFM	Bradley track pins	
Plates-Carbon, HSLA and 4140 Alloy, 3/8-3"X72-120"X120-1,000"	Unknown - Shipped through SSCs	
Plates	Stryker Vehicle	
Plates - Carbon, HSLA, Military Alloy	Naval Shipbuilding and Repair	
Plates	M1 Tanks, Bradley Fighting Vehicles	refurbishment, rebuilding, upgrading
Plates	Future Combat System (FCS) Vehicles	weight reduction program
Plates	Long Term Armoring Strategy (LTAS) Trucks	weight reduction program
Special Bar Quality - Grade 8650HD 1 5/16" Rounds	Tank track pins	
Steel wire	Tow missiles	

AISI/SMA February 2006 Survey of Member Companies

EXHIBIT 2

U.S. Department of Transportation
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News

FHWA 04-17
Tuesday, February 21, 2017
Contact: Doug Hecox
Tel.: (202) 366-0660

3.2 Trillion Miles Driven On U.S. Roads In 2016

New Federal Data Show Drivers Set Historic New Record

WASHINGTON – New estimates released today by the Federal Highway Administration (FHWA) show that U.S. driving topped 3.2 trillion miles last year. It is the fifth straight year of increased mileage on public roads throughout the nation, and underscores the demands facing America's roads and bridges, and reaffirms calls for greater investment in surface transportation infrastructure.

The new data, published in FHWA's latest "Traffic Volume Trends" report – a monthly estimate of U.S. road travel – show that more than 263.6 billion miles were driven in December 2016 alone, which is a .5 percent increase over the previous December.

The December 2016 report also includes seasonally-adjusted data, which is conducted by USDOT's Bureau of Transportation Statistics as a way to even out seasonal variation in travel and enable vehicle miles travelled (VMT) comparisons with any other month in any year. The seasonally-adjusted VMT for December 2016 were 269.3 billion miles. Compared with seasonally adjusted November 2016 data, December 2016 VMT fell slightly by .6 percent but rose 0.6 percent from December 2015. The estimates include passenger vehicle, bus and truck travel.

At 2.9 percent, traffic in the West – a 13-state region stretching from California to Montana, and including Hawaii and Alaska – led the nation with the largest percentage increase in

unadjusted VMT, and continued an uninterrupted series of monthly increases that began in October 2013. Mileage fell slightly in the Northeast and North Central states.

At 33.9 billion VMT, California accounted for more miles driven in December 2016 than the combined 33.8 billion miles of 22 states – Alaska, Arkansas, Connecticut, Delaware, Hawaii, Idaho, Iowa, Kansas, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Rhode Island, South Dakota, Utah, Vermont, West Virginia, Wyoming – and Washington, D.C.

At 5.8 percent, Louisiana led the nation with the largest unadjusted single-state traffic percent increase compared to the same month a year earlier, followed by Utah at 5.2 percent and Nevada at 5.1 percent. At 6.2 percent, for the tenth month in a row, North Dakota led the nation with the largest unadjusted traffic decrease for the month.

To review the VMT data in FHWA's "Traffic Volume Trends" reports, which are based on information collected from more than 5,000 continuous count stations nationwide, visit https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm.

# # #

FHWA Press Releases

Page posted on February 21, 2017.

EXHIBIT 3

Bridges & Structures

Download NBI ASCII files 2016

Note: A status considering the "10 Year Rule" and a status not considering the "10 Year Rule" is now contained in the data files available for download. Record layout describes the positioning of the data items. Further discussion of deficiency status can be found at https://www.fhwa.dot.gov/bridge/britab.cfm.

Delimited Files

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- Download Highway Bridges for all States (individual state files) as a zip file (51 mb).
- Download Highway Bridges for all States (all states in a single file) as a zip file (51 mb).
- Download all records. Includes non highway and routes under bridges zip file (56 mb).

No Delimiters

State	No. Highway Bridges
Alabama	16,098
Alaska	1,488
Arizona	8,154
Arkansas	12,871
California	25,431
Colorado	8,682
Connecticut	4,214
Delaware	877
District of Columbia	245
Florida	12,313
Georgia	14,835
Hawaii	1,132
Idaho	4,445
Illinois	26,704
Indiana	19,245
Iowa	24,184
Kansas	25,013
Kentucky	14,265
Louisiana	12,915

State	No. Highway Bridges
Maine	2,450
Maryland	5,321
Massachusetts	5,171
Michigan	11,156
Minnesota	13,355
Mississippi	17,068
Missouri	24,468
Montana	5,276
Nebraska	15,334
Nevada	1,933
New Hampshire	2,486
New Jersey	6,730
New Mexico	3,973
New York	17,462
North Carolina	18,099
North Dakota	4,400
Ohio	28,284
Oklahoma	23,053
Oregon	8,118
Pennsylvania	22,791
Puerto Rico	2,308
Rhode Island	772
South Carolina	9,358
South Dakota	5,849
Tennessee	20,123
Texas	53,488
Utah	3,039
Vermont	2,766
Virginia	13,892
Washington	8,178
West Virginia	7,217
Wisconsin	14,230
Wyoming	3,128
Totals	614,387

Delimited files

files are comma separated and the single quote is the text qualifier.

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- Download all records. Includes non highway and routes under bridges zip file (55 mb).

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State	No. Highway Bridges
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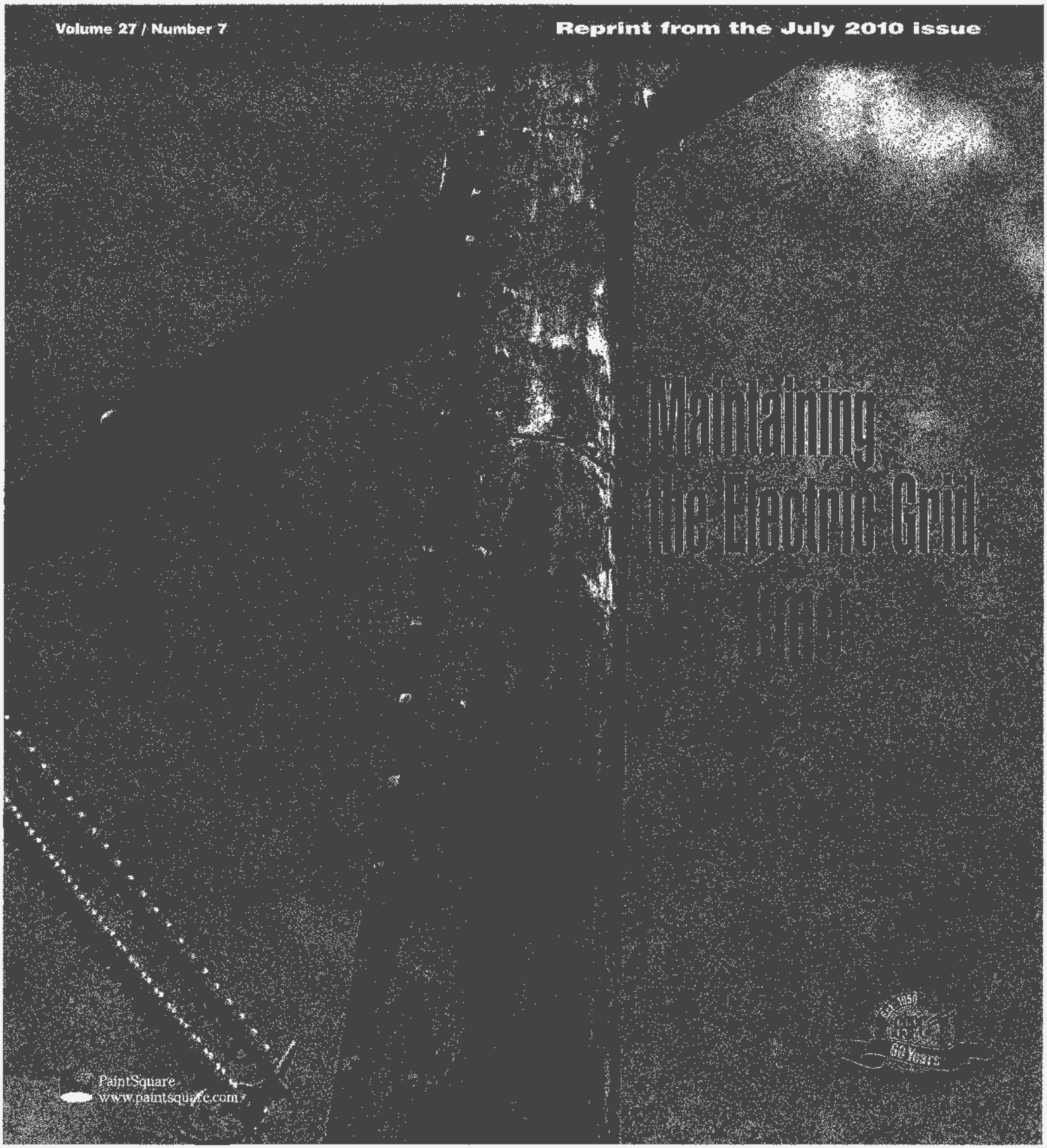
EXHIBIT 4

JPCL
JOURNAL OF PROTECTIVE COATINGS & LININGS

Volume 27 / Number 7

Reprint from the July 2010 issue



Maintaining the Electric Grid: Live

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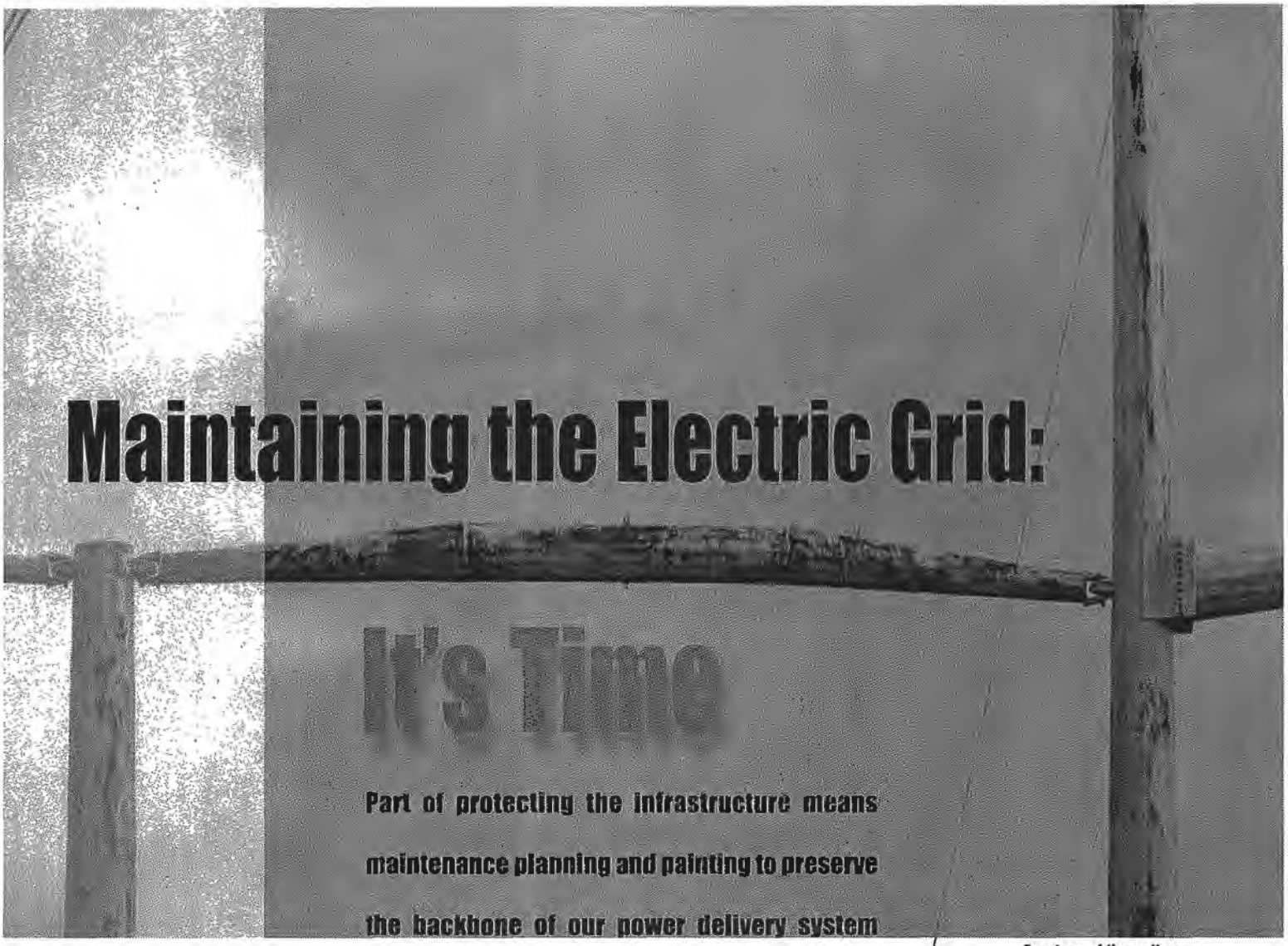


Maintaining the Electric Grid:

It's Time

Part of protecting the infrastructure means maintenance planning and painting to preserve the backbone of our power delivery system

Courtesy of the author

By Curt Hickcox, Public Utilities Maintenance Inc.

The high voltage steel structure electric transmission system, also known as the electric grid, crisscrosses virtually all of North America, as well as most other regions of the world. It provides the line or circuits by which electricity is delivered from the generation plants to the substations and ultimately to homes and businesses. The system is the backbone of the power delivery system, connecting and interconnecting each utility company and each customer.

The worldwide electric transmission system has been called one of the greatest feats of engineering in history. When you consider the design and construction requirements and obstacles that have been overcome, the system is truly a marvel. But on the fast-approaching horizon is a large obstacle to the system's reliability—that of its aging infrastructure. As with most things, age brings its own set of issues. The issues are significant and, if left un-addressed, can have a far reaching and dangerous impact.

A Brief History of the Construction of the Electric Grid

Since the early 1900s through World War II, many materials have been used to construct transmission and distribution structures throughout North America. In the early years, wood was the predominant structural material due to its availability and the strength requirements of

structures to hold the lines. Steel (black iron) was also used to construct select transmission line structures and most substation frames. The designs were basic in nature and were small in comparison to today's standards. Some utilities even ordered steel windmill structures from Sears Roebuck catalogues and made design changes to accommodate the transmission conductors. Many utilities still have some of these older structures in service today. These are what I will refer to as the first generation structures.

After the war, as the economy rapidly expanded, the demand for electricity grew in proportion. Power plants were built, and the transmission infrastructure had to keep up. The number of new line support structures exploded, and construction continued nearly unabated for the next 3 decades. Utilities were moving to higher voltage transmission line voltages with larger and heavier conductors to transport the electricity to meet this growth in demand. The need for a stronger structure to support these heavier conductors, an increased conductor spacing for higher voltages, and longer span lengths dictated the need for a material that could easily obtain height and strength requirements. This translated to erecting tens of thousands of steel structures throughout North America in a relatively short period. This period saw the largest number of steel structures installed on the transmission line system. These are the second generation structures and the second part of the equation.

The electric utility industry generates nearly 4,000 billion kilowatt hours of electricity from 2,100 power plants in the U.S. and Canada alone, delivering power through more than 300,000 miles of high voltage transmission line. If we assume an average of eight structures per mile on transmission lines alone, that would translate into approximately 2.5 million structures, conservatively speaking. Even with many transmission structures made of wood or concrete, it is reasonable to estimate that there would be hundreds of thousands of steel transmission structures and supports (such as stub poles) in just the U.S. and Canada.

In reality, transmission line failures are on the horizon unless we take action and take it soon. The electric utilities must have inspections that identify potential issues before they happen, allowing time for corrective repairs to be made prior to a facility failure. There are several contributing factors:

- Aging Infrastructure
- Past Design Practices
- Environmental Conditions
- Understanding
- Inspection and Maintenance Practices
- Maintenance Budgets

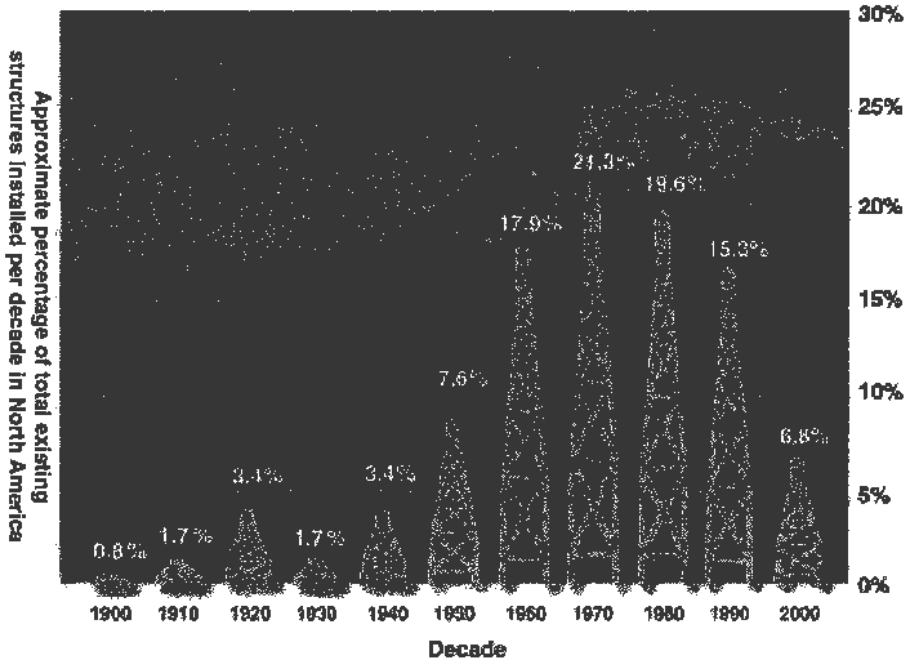
Aging Infrastructure

The aging infrastructure and the assumption that steel structures will last forever must be addressed. In reality, there are periodic maintenance requirements for these structures, carbon or galvanized steel. Utilities have been performing maintenance on their lines, but mostly on the first generation structures, those built in the first half of the 1900s. The bigger ticket items are usually 20 to 30 years into the life of the structure. Based on the grid's construction time line since the 1900s, an enormous number of structures are now 30 to 40 years of age (Fig. 1).

The majority of North American transmission lines were built from the 1960s thru the 1990s. Many utilities report a larger number of transmission structures erected during 4 decades than in the other 70 years since 1900 combined, with construction concentrated in the '60s through '80s. These second generation lines, due to their current age and large number of structures, will significantly increase the overall maintenance work required to keep the transmission system safe and reliable, as many structures will require attention all at once.

When discussing the maintenance of steel transmission structures, there are two major areas of concern: the above grade or atmospheric exposure portion of the structure and the below grade surfaces, commonly referred to as footings

Fig. 1: Construction timeline of the electric grid throughout the 20th century.



or foundations (Fig. 2). It is important to address both areas as part of a maintenance program. Protecting the above grade section of a structure does no good if it topples over due to failure from corrosion at the groundline, just as maintaining the footings does not succeed if the arms fall off from rust-through. A comprehensive program involving inspection, repair, and maintenance of both structure sections is imperative. NACE International and IEEE (Institute of Electronic and Electrical Engineers) have recognized this and have formed two joint committees to author standards on corrosion control of existing structures addressing both areas of concern. These standards are well on their way to publication.

Fig. 2: The below grade surface, often called the footing or foundation, is a major area of maintenance concern. Figs. 1-5 courtesy of the author.

Past Design Practices

Many of the electric ntility design practices did not take into consideration potential issues associated with maintaining steel structure components. Many of the earlier steel structures were designed with the steel footing in direct contact with the earth (Fig. 3). In many cases, depending on the chemical make-up of the soil, the steel footing in the earth may not be a big issue, but with the simple addition of a copper ground field, the structure becomes exposed to galvanic reaction, which may cause the steel components to be compromised.

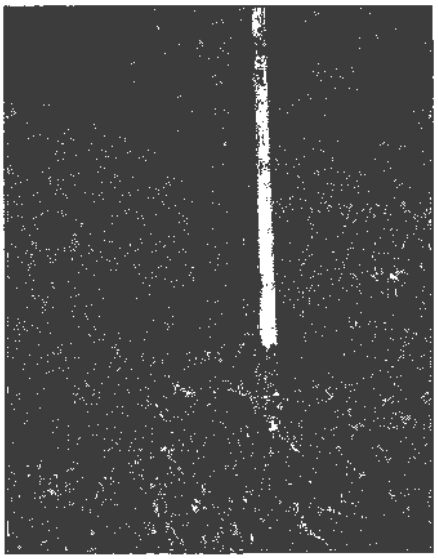


Fig. 3: On some older steel structures, the steel footing is in direct contact with the ground.

On other designs, with foundation, the specification was to have the reveal (portion of concrete footing above ground) 6 inches to 1 foot above the ground. With all of the activities along the utility line right-of-ways, combined with natural erosion, many foundations became covered by soil, thus allowing corrosion to begin.

Fig. 4: Steel latticework can trap moisture, causing accelerated corrosion.

Other aspects of structure design also often did not account for maintenance issues. Tight steel latticework was used many times, causing accelerated corrosion because of moisture trapped in the latticework, which itself is exceptionally difficult to properly clean and coat (Fig. 4). Ladder clips, arm attachments, and other design factors also contributed to maintenance difficulties and costs.

Environmental Conditions

In the early 1900s environmental conditions were not a major focus or concern. After WWII and the rapid economic growth, many factories were built and the economy was flourishing. Families that had traveled by foot and horse-drawn carriages were now buying automobiles. Large plants of all types were being built, and towns and cities were bursting as people moved in to fill the job market. From this time forward, the air quality would be an issue for steel structures, although its significance was not known originally. But the effects of atmospheric emissions from the rapid growth can be seen on many older steel structures.

Agricultural practices were continuing to change in an effort to grow more vegetables per acre of land. This effort introduced products to help speed up growth, but now we know that some of the chemicals used can also cause or accelerate corrosion of the structure, especially the critical groundline portion of steel structures.

Understanding

It is understandable that in an effort to keep up with the demand for new products, the North American economy was, and is, operating at full speed. With the increased demand for manufacturing also came the increased demand for electric power to run the factories. With the accelerated growth of computer and other electronic technology, we are even more energy hungry today. Thanks to extensive and continuing research, we

better understand how to design and maintain the steel components of the electric system. We now have a better understanding of what to look for prior to selecting a groundline coating for a new structure and what type of footing for the steel structure will require the least maintenance while giving the utilities a more reliable and safe system. We have a better understanding of how stray currents can affect the steel structures and other design considerations that will ultimately result in longer structure service life, improved reliability, and significantly reduced maintenance costs.

Inspection and Maintenance Practices

With the large, second generation steel structures aging to the point at which many maintenance issues will become more noticeable, utilities must develop innovative inspection and maintenance practices that will save time as well as keep the system both safe and reliable. Many electrical utilities are spending research dollars to develop new inspection and maintenance tools and procedures. This research is helping to improve the way the industry identifies and evaluates age-related issues.

The costs associated with the maintenance of these second generation lines will be significant because of their large numbers, but with good inspection processes, tools, and innovation, along with thorough, long-lasting maintenance programs, the costs can be minimized. Because of the growing system needs, some of the older lines will be rebuilt to a higher standard than their original standard and others will have major maintenance projects performed on them. Crews will have to be trained to understand what to look for when performing inspection as well as to understand the critical aspects of a steel structure. Steel structures coating programs will have to be utilized more to decrease future maintenance expenditures and prevent premature failures of the system. A continued focus must be on the inspection and maintenance of the critical groundline termination of the structure.

New tools and technologies will be required to improve inspection and maintenance practices and many are currently being tested. The industry standards under development will help the industry understand key issues in maintaining the steel structure above and below ground. These standards will also provide best practices for the proper atmospheric and below ground coatings applications to better maintain and support the reliability of utility steel structures.

Purpose and Methods of Corrosion Control

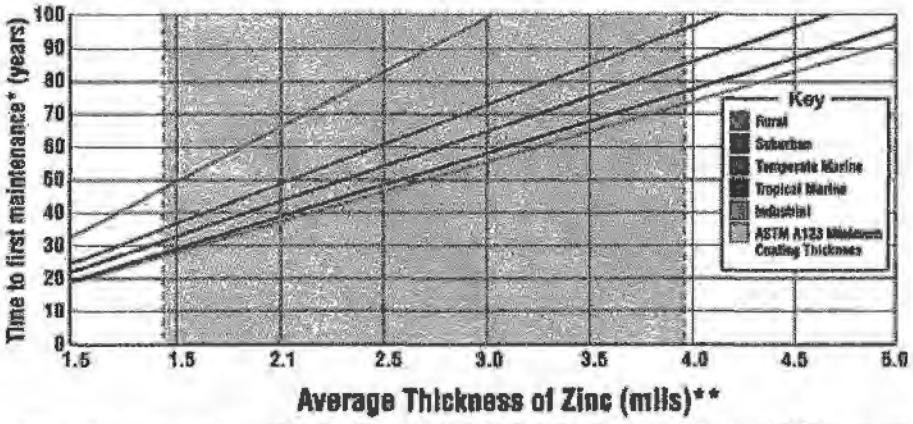
First and foremost, electrical utilities must keep the steel structures standing to deliver the electricity to the customer. One of the main tools to accomplish the task is corrosion protection. Most often, corrosion protection of electrical transmission structures involves the application of a protective coating over weathered and/or previously painted galvanized steel. Although many transmission structures, mainly tubular poles, are painted carbon steel, most structures, especially lattice-type towers, are galvanized and are either unpainted and weathered or previously painted.

The history of painting galvanized structures over the past 60 years and the evolution as well as usage of different paint systems play an important role in the selection of present day coating systems. Cost evaluation of different generic paint types is necessary, as is the application characteristics of each, because painting these structures is labor intensive. The ultimate goal is to minimize overall cost over the life span of the structure by applying coatings that will provide the lowest applied cost per year protection.

Galvanizing and paint serve the same function: the protection of the carbon steel substrate from corrosion attack. Each protective material works as a barrier to separate the components of the electrolytic cell that causes corrosion. When properly specified, manufactured, and applied, this barrier of paint or zinc iron alloy will keep the moisture (electrolyte) from contacting the anode and cathode (steel and its impurities—corroding surface). When this is successfully accomplished, corrosion cannot occur and the substrate will not be detrimentally affected.

Over time, both galvanizing and paint will degrade to a point at which they will not adequately protect the steel substrate. The rates of degradation will vary widely. Exposure conditions have the

Fig. 5: Time to First Maintenance of Galvanized (Zinc) Coating.



*Time to first maintenance is defined as the time to 5% rusting of the steel surface. 1 mil = 25.4μ = 0.58oz/ft²
**Chart developed using the Zinc Coating Life Predictor Model developed by Dr. Gregory Zhang of Teck Caminco.
Courtesy of the American Galvanizers Association

greatest effect on the longevity of protection, but the quality of product and its application are other critical factors (Fig. 5).

When the galvanizing or paint film can no longer adequately protect the substrate, a new barrier must be applied to fend off the costly ramifications associated with corrosion. The most practical and cost-effective method of "re-protecting" the structure is the application of a paint or coating specifically intended for this use. When properly formulated, specified, manufactured, and applied, certain coatings can protect a transmission structure for 25 years or more.

Surface Preparation and Repainting to Reduce Corrosion

The surface preparation methods recommended for weathered galvanized or previously painted structures normally entail hand tool cleaning (wire brushing or scraping) in accordance with SSPC-SP 2. Some structures may require more advanced methods, but because surface preparation is the slowest, hardest, and most costly aspect of painting a transmission structure, the primary objective is to paint with a coating designed for minimal surface preparation. The goal is to paint BEFORE the galvanizing or the existing coatings have deteriorated to the point where involved surface preparation and multiple coat paint systems are required. The most cost effective time to paint a transmission structure is when spot scraping or wire brushing is all that is required. This practice is one sure way of reducing system life cycle costs.

To further complicate the situation, the original coatings on transmission structures may contain lead. If the specification requires the removal of old paint from the structure, it is essential to determine whether or not there is lead present in the old coating. If present, procedures in accordance with the OSHA and other applicable regulations must be implemented to protect workers from overexposure to lead. A job-specific lead compliance program is a required submittal on today's transmission structure painting projects.

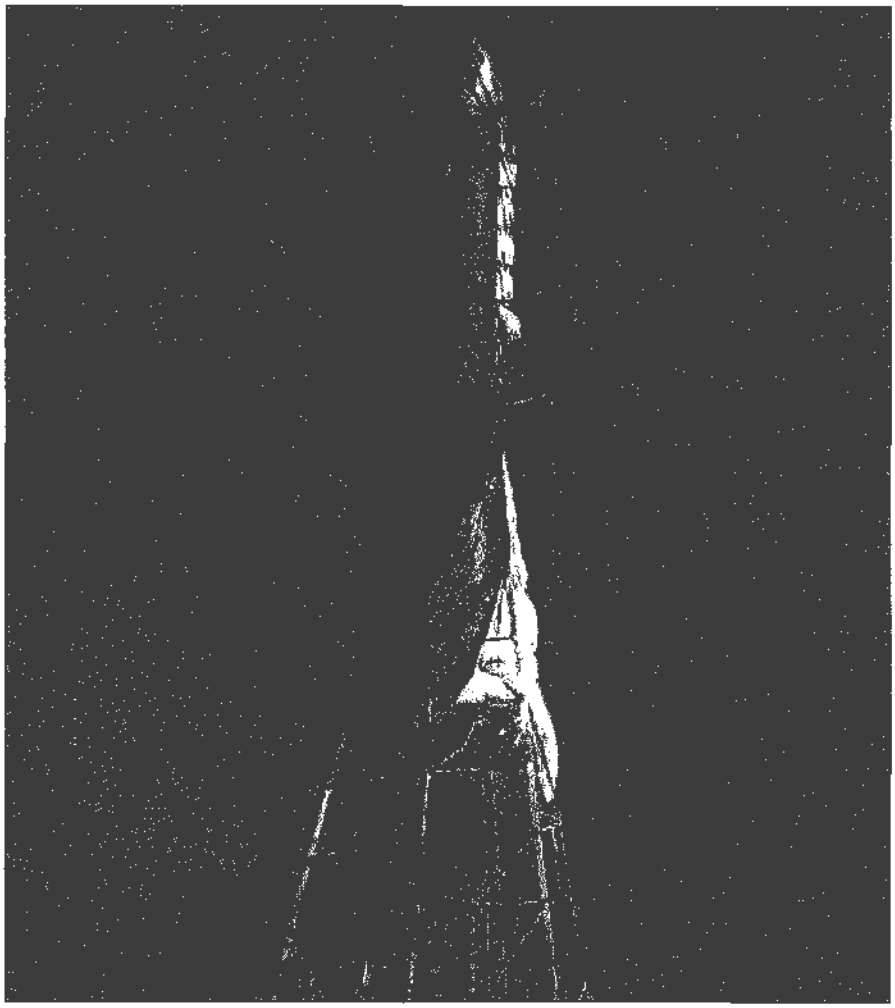


Fig. 6: State and Federal laws require containment of lead paint to protect workers, residential areas, and the environment.
Courtesy of Savannah River Crossing, Georgia Power Company

State and Federal environmental laws also require the contractor to take necessary steps—with an appropriate method of containing the lead paint, usually through an acceptable containment system—to prevent lead paint from polluting the environment (Fig. 6). On a complex structure such as a transmission tower or pole, this is extremely costly, not to mention the costs and ramifications due to required outages. For structures located in a residential area this issue becomes even more sensitive. The old paint, which is contained and collected, must be tested for its level of toxicity, and the waste must be handled in compliance with EPA requirements.

Furthermore, if lead is involved, total removal might be specified. More extensive surface preparation will result in much higher concentrations of airborne lead that put workers and the environment at risk. Protecting workers and the environment will require much more elaborate and expensive procedures. Again, costly circuit outages will also be required due to the use of power tools and

other required equipment. Thus, total job costs will rise exponentially if significant surface preparation procedures are required.

The application of paint to a transmission structure is more complicated than it might seem. This type of painting involves climbing lattice type towers or tubular poles that vary in size and configuration depending on voltage. Most often, these structures are painted while energized when appropriate phase to structure distance, or the Minimum Approach Distance (the safe distance specified by OSHA or the utility that a worker must stay away from the energized conductor—varies depending on circuit voltage) can be satisfied. Painting a lattice-type structure is a team effort. For example, a crew of 3 or 4 painters will paint a standard 100 ft lattice tower in 2-3 hours.

For the most part, application is accomplished using a paint mitt. Brushes or rollers are used on certain structure components. Experience is an important factor in using either method of application as it very important that the specified film dimension is achieved and a smooth consistent film is obtained.

Protection of workers and the environment is paramount. Safety associated with the coating application to a structure involves, among other things, proper procedures and equipment for climbing elevated complex structures and working around energized lines. Additional safety and environmental protection measures must be taken because contact with potentially hazardous materials is possible during surface preparation as well.

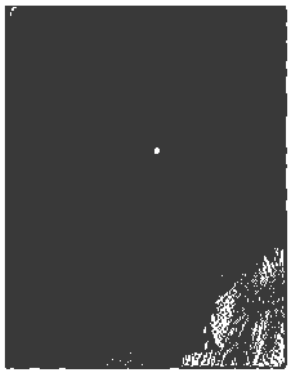
Years ago, climbing and painting was accomplished generally without the aid of rigging and most of the time without safety belts. Each year, OSHA and/or power company safety regulations have become more stringent. Today, safety belts, hard hats, and safety glasses are mandatory, as are written safety programs, fall protection plans, hazard communication plans, and lead compliance plans. Workers must be thoroughly trained in the hazards associated with this work, especially the dangers of working around high electric voltages. Documented experience in performing this work should be required of any worker, especially when the painting of energized structures is involved.

Maintenance Budgets

Maintaining the system takes money. Maintenance budgets were developed based on expected maintenance needs. These budgets, for the most part, were developed based on past practice. Budgets must continue to grow to keep up with the massive expansion of steel structures from WWII to now. Utilities will have to be both forward and backward looking. Utilities must be backward looking from the standpoint that they need to see the large numbers of second-generation steel structures, many now over 40 years old and with little maintenance performed since construction, and the maintenance that is now required because of their age. This is where the utilities will need to be forward looking to develop maintenance budgets to address maintenance problems in a timely fashion. If performed correctly, these maintenance functions will save money for the utility owners by reducing outages and costly emergency repairs. It is always more cost effective to be proactive rather than reactive. The government has also begun to take notice of the need for maintenance to prevent and control corrosion, from both an economic perspective and a security standpoint. Talk of potential government mandates for structure corrosion control increases as the importance of the reliability of the electric grid is better understood.

The Good News

The reality of a transmission system comprising aging structures is here and that is just a natural process of time. Line failures can be prevented by a proactive approach that includes correct inspections and proper maintenance. The good news is there are proven methods of ensuring the long-term, cost-effective protection of these structures. Experience has proven the viability and benefits of formal atmospheric and groundline maintenance coatings programs for steel transmission structures.

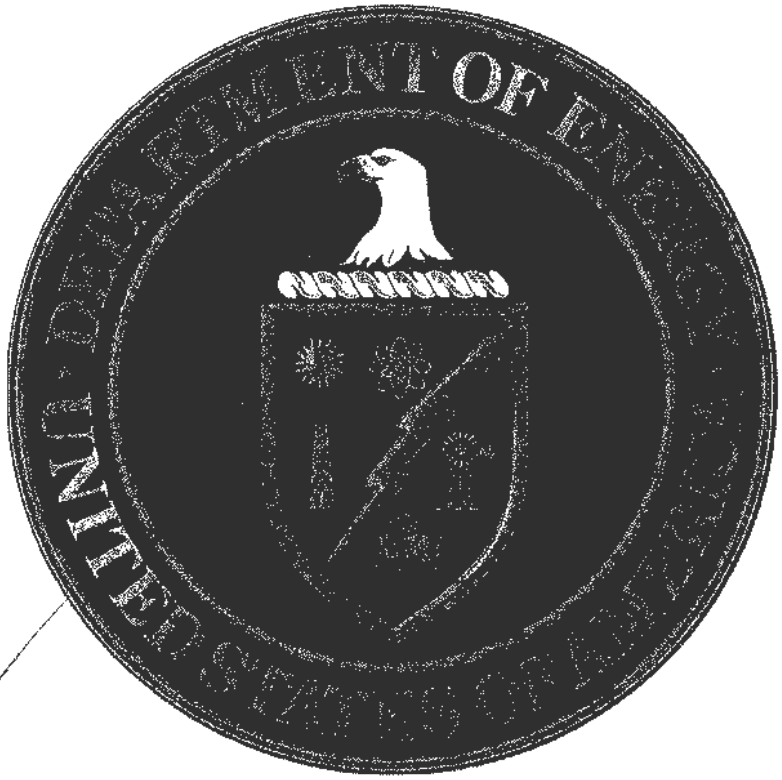


Curt Hickcox is vice president, Business Development, for Public Utilities Maintenance, Inc., and an SSPC-QP 1- and QP 2-certified contractor specializing in the preparation and painting of electric transmission structures, substation structures and equipment, power plants, and other industrial facilities. He began his career in 1982 with Keeler & Long, a paint manufacturing company, where he served in several technical and sales roles including technical service manager and national sales manager. He joined Public Utilities Maintenance in 2007. A member of SSPC, NACE, and IEEE, he has presented papers and published articles on transmission structure coatings and procedures as well as power plant coating systems. Currently, he is the vice chair of the NACE/IEEE joint task groups responsible for coatings standards for corrosion control of existing electric transmission, distribution, and substation structures by coating systems. He can be reached at curthickcox@puminc.com. JPCL

EXHIBIT 5

July 2015

United States Electricity Industry Primer



Office of Electricity Delivery and Energy Reliability
U.S. Department of Energy
DOE/OE-0017

ACKNOWLEDGMENTS

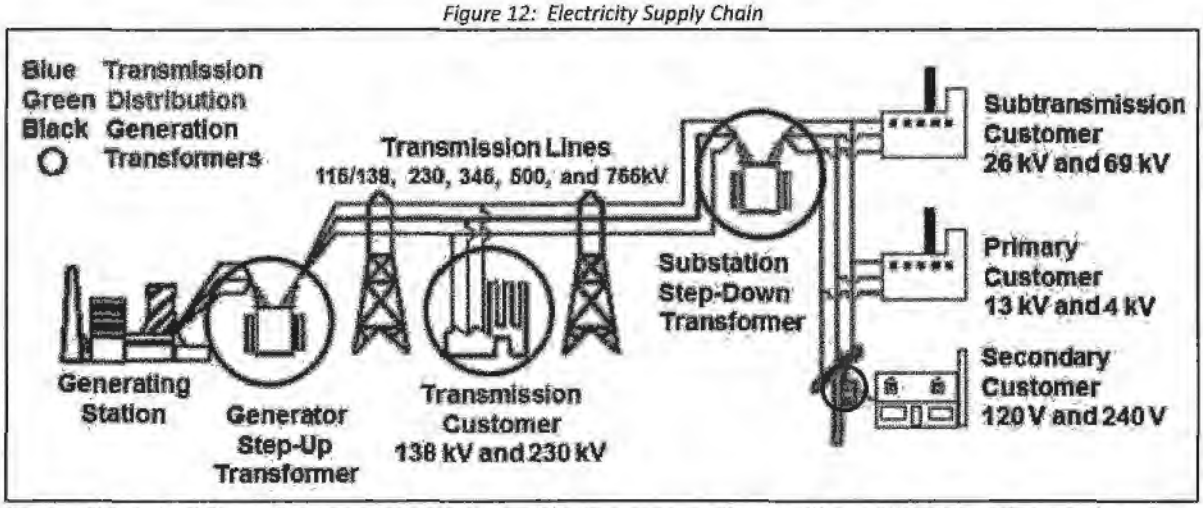
This report was prepared by the Office of Electricity Delivery and Energy Reliability under the direction of Patricia Hoffman, Assistant Secretary, and Devon Streit, Deputy Assistant Secretary.

Specific questions about information in this report may be directed to Jamie Clark, Infrastructure Systems Analyst (Jamie.Clark@hq.doe.gov).

Contributors include Matthew Gilstrap, Shravan Amin, and Kevin DeCorla-Souza.

At a constant power rate, voltage and current are also proportional, meaning that an increase in voltage results from a reduction in current flow; thus, power plants utilize "step-up" transformers to drastically increase power generation voltage to the transmission system level. Transformers play several key roles in the supply chain, and are very technically complex. Facilities that house the equipment and conversion infrastructure are referred to as substations. The functionality and variations of substations and transformers will be addressed in more depth in subsequent sections.

Figure 12: Electricity Supply Chain



Source: U.S. Federal Energy Regulatory Commission and U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability

Transmission

Figure 13: High Voltage Transmission Towers

Source: U.S. Department of Energy

The United States' bulk electric system consists of more than 360,000 miles of transmission lines, including approximately 180,000 miles of high-voltage lines, connecting to about 7,000 power plants[2]. Power transmission lines facilitate the bulk transfer of electricity from a generating station to a local distribution network. These networks are designed to transport energy over long distances with minimal power losses which is made possible by boosting voltages at specific points along the electricity supply chain. The components of transmission lines consist of structural frames, conductor lines, cables, transformers, circuit breakers, switches, and substations. Transmission systems are generally administered on a regional basis by a regional transmission organization (RTO) or an independent system operator (ISO) which will be discussed in the Markets and Ownership Structures section.

[2] Source: North American Electric Reliability Corporation Electricity Supply & Demand Database, http://www.nerc.com/page.php?cid=4|38

EXHIBIT 6

Table 1-10: U.S. Oil and Gas Pipeline Mileage

	1950	1955	1970	1975	1980	1985	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Oil pipeline, total[a]	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Crude lines	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Product lines	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Gas pipeline[b], total	**630,000**	**767,500**	**913,300**	**979,300**	**1,051,800**	**1,110,785**	**1,270,295**	**1,217,451**	**1,216,081**	**1,276,303**	**1,335,530**	**1,331,788**	**1,290,163**	**1,331,606**	**1,372,639**	**1,264,281**	**1,377,320**
Distribution mains	391,400	494,500	594,800	648,200	701,800	784,852	945,964	890,876	891,984	950,984	1,002,669	1,003,910	976,945	1,002,829	1,040,765	1,035,946	1,050,802
Transmission pipelines	183,700	211,300	252,200	262,600	266,500	290,464	291,925	293,862	291,468	293,263	301,545	296,947	284,672	294,370	302,709	296,059	298,957
Gathering lines[c]	55,800	61,700	66,300	68,500	83,500	35,469	32,406	32,713	32,629	32,056	31,316	30,931	28,546	34,407	29,165	32,276	27,561

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Oil pipeline, total[a]	**154,877**	**149,619**	**139,901**	**142,200**	**131,334**	**140,487**	**147,235**	**146,822**	**148,622**	**147,524**	**149,571**	**151,912**	**152,016**	**160,521**	**U**
Crude lines	52,386	52,654	50,149	50,749	46,234	47,617	46,658	50,214	49,585	50,198	50,004	51,349	49,974	56,375	U
Product lines	85,214	80,551	75,565	76,258	71,310	81,103	85,666	84,914	87,788	86,889	86,699	86,486	87,452	89,663	U
Gas pipeline[b], total	**1,412,876**	**(R) 1,462,214**	**(R) 1,432,045**	**1,470,290**	**1,489,242**	**(R) 1,509,307**	**(R) 1,524,438**	**(R) 1,533,676**	**(R) 1,545,475**	**(R) 1,554,270**	**(R) 1,563,512**	**(R) 1,567,310**	**(R) 1,575,536**	**(R) 1,585,672**	**1,596,214**
Distribution mains	1,101,485	1,136,473	1,107,553	1,142,297	1,165,020	(R) 1,188,085	(R) 1,203,330	(R) 1,210,032	(R) 1,220,539	(R) 1,229,844	(R) 1,239,178	(R) 1,247,437	(R) 1,255,340	(R) 1,266,359	1,277,290
Transmission pipelines	289,994	302,999	301,493	303,001	300,468	300,324	301,066	303,181	(R) 304,560	304,805	(R) 305,057	303,341	(R) 302,827	(R) 301,804	301,177
Gathering lines[c]	21,397	22,742	22,999	24,992	23,754	20,898	20,042	20,663	(R) 20,376	(R) 19,621	(R) 19,277	16,532	17,369	(R) 17,509	17,747

KEY: R = revised; U = data are not available.

[a] Beginning in 2001, data include information for Federal Energy Regulatory Commission-regulated oil pipeline companies only. For years 2001 and after, total miles of pipeline include both trunk and *Gathering lines*, whereas the individual components, namely, crude and product lines, include the mileages of trunk lines only. Thus, details do not add to the total for this period.

[b] Excludes service pipeline. Data are not adjusted to common diameter equivalent. Mileage as of the end of each year.

[c] Before 1985, data include field line mileage.

NOTES

Mileage data reported in *Gas Facts*, prior to 1985, is taken from the American Gas Association's member survey, the Uniform Statistical Report, supplemented with estimates for companies that did not participate.

SOURCES

Oil pipeline:

2001-14: PennWell Corporation, *Oil and Gas Journal: Transportation Economics* (Houston, TX), Oil Pipelines.

Gas pipeline:

1960-75: American Gas Association, *Gas Facts, 1979* (Arlington, VA: 1980), table 44. 1980: Ibid., *Gas Facts* (Washington, DC: Annual issue), tables 5-1 and 5-3.

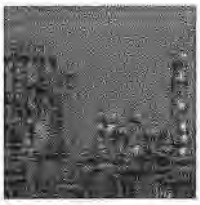
1985-2015: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety, *Natural Gas Transmission, Gas Distribution, and Hazardous Liquid Pipeline Annual Mileage*, available at http://phmsa.dot.gov/pipeline/library/data-stats as of Mar. 28, 2017.

EXHIBIT 7

Critical Infrastructure Sectors

There are 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. Presidential Policy Directive 21 (PPD-21): Critical Infrastructure Security and Resilience (http://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil) advances a national policy to strengthen and maintain secure, functioning, and resilient critical infrastructure. This directive supersedes Homeland Security Presidential Directive 7 (/homeland-security-presidential-directive-7).

PPD-21 identifies 16 critical infrastructure sectors:



(/chemical-sector)

Chemical Sector (/chemical-sector)

(/commercial-facilities-sector)

Commercial Facilities Sector (/commercial-

The Department of Homeland Security is designated as the Sector-Specific Agency for the Chemical Sector.

(/commercial-facilities-sector)

Commercial Facilities Sector

The Department of Homeland Security is designated as the Sector-Specific Agency for the Commercial Facilities Sector.

(/communications-sector)

Communications Sector

(/communications-sector)

The Communications Sector is an integral component of the U.S. economy, underlying the operations of all businesses, public safety organizations, and government. The Department of Homeland Security is the Sector-Specific Agency for the Communications Sector.

communications sector.

(/critical-manufacturing-sector)

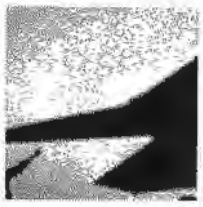
Critical Manufacturing Sector (/critical-manufacturing-sector)

The Department of Homeland Security is designated as the Sector-Specific Agency for the Critical Manufacturing Sector.

(/dams-sector)

Dams Sector (/dams-sector)

The Department of Homeland Security is designated as the



(/defense-industrial-base-sector)

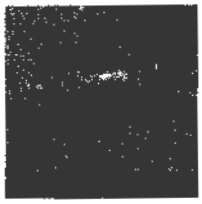
Defense Industrial Base Sector (/defense-industrial-

Sector-Specific Agency for the Dams Sector. The Dams Sector comprises dam projects, navigation locks, levees, hurricane barriers, mine tailings impoundments, and other similar water retention and/or control facilities.

base-sector)

The U.S. Department of Defense is the Sector-Specific Agency for the Defense Industrial Base Sector. The Defense Industrial Base Sector enables research, development, design, production, delivery, and

maintenance of military weapons systems, subsystems, and components or parts to meet U.S. military requirements.



(/emergency-services-sector)

Emergency Services Sector (/emergency-

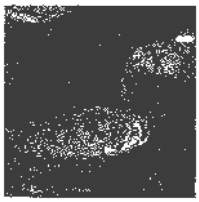
(/energy-sector)

Energy Sector (/energy-sector)

services-sector)

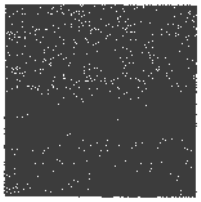
The Department of Homeland Security is designated as the Sector-Specific Agency for the Emergency Services Sector. The sector provides a wide range of prevention, preparedness, response, and recovery services during both day-to-day operations and incident response.

The U.S. energy infrastructure fuels the economy of the 21st century. The Department of Energy is the Sector-Specific Agency for the Energy Sector.



(/financial-services-sector)

Financial Services Sector (/financial-services-sector)

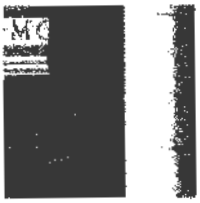


(/food-and-agriculture-sector)

Food and Agriculture Sector (/food-and-agriculture-sector)

The Department of the Treasury is designated as the Sector-Specific Agency for the Financial Services Sector.

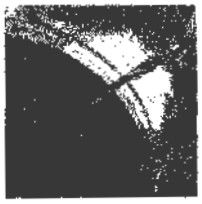
The Department of Agriculture and the Department of Health and Human Services are designated as the co-Sector-Specific Agencies for the Food and Agriculture Sector.



(/government-facilities-sector)

Government Facilities Sector (/government-facilities-sector)

The Department of Homeland Security and the General Services Administration are designated as the Co-Sector-Specific Agencies for the Government Facilities Sector.



(/healthcare-public-health-sector)

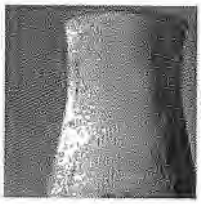
Healthcare and Public Health Sector (/healthcare-public-health-sector)

The Department of Health and Human Services is designated as the Sector-Specific Agency for the Healthcare and Public Health Sector.

(/information-technology-sector)

Information Technology Sector (/information-technology-sector)

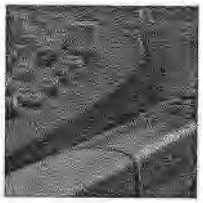
The Department of Homeland Security is designated as the Sector-Specific Agency for the Information Technology Sector.



(/nuclear-reactors-materials-and-waste-sector)

Nuclear Reactors, Materials, and Waste Sector (/nuclear-reactors-materials-and-waste-sector)

The Department of Homeland Security is designated as the Sector-Specific Agency for the Nuclear Reactors, Materials, and Waste Sector.



(/transportation-systems-sector)

Transportation Systems Sector

(/transportation-systems-sector)

The Department of Homeland Security and the Department of Transportation are designated as the Co-Sector-Specific Agencies for the Transportation Systems Sector.

(/water-and-wastewater-systems-sector)

Water and Wastewater Systems Sector

(/water-and-wastewater-systems-sector)

The Environmental

Environmental Protection Agency is designated as the Sector-Specific Agency for the Water and Wastewater Systems Sector.

Last Published Date: December 30, 2016

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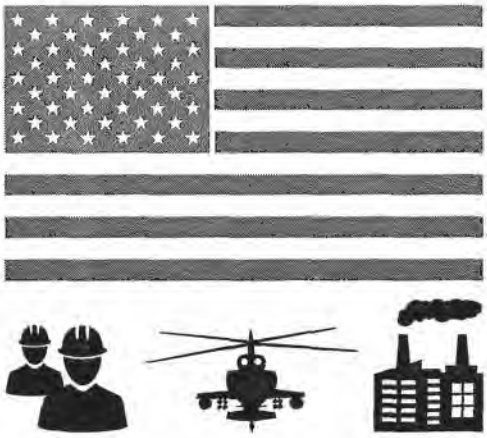
EXHIBIT 8

May 2013

REMAKING AMERICAN SECURITY



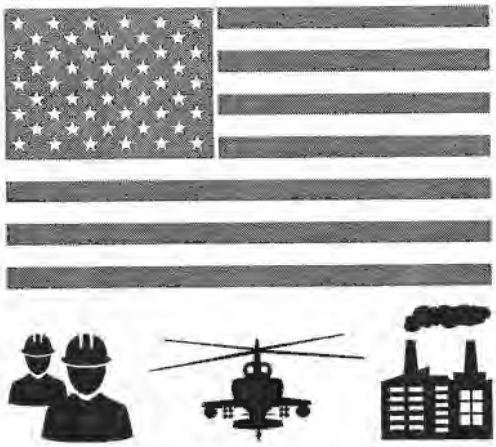
SUPPLY CHAIN VULNERABILITIES & NATIONAL SECURITY RISKS ACROSS THE U.S. DEFENSE INDUSTRIAL BASE

BRIGADIER GENERAL JOHN ADAMS, U.S. ARMY (RETIRED)

ALLIANCE FOR american manufacturing

A Report Prepared for AAM by GUARDIAN SIX Research . Analysis . Strategy

REMAKING AMERICAN SECURITY



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BRIGADIER GENERAL JOHN ADAMS, U.S. ARMY (RETIRED)

ALLIANCE FOR
american
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A Report Prepared for AAM by

GUARDIAN SIX
Research . Analysis . Strategy

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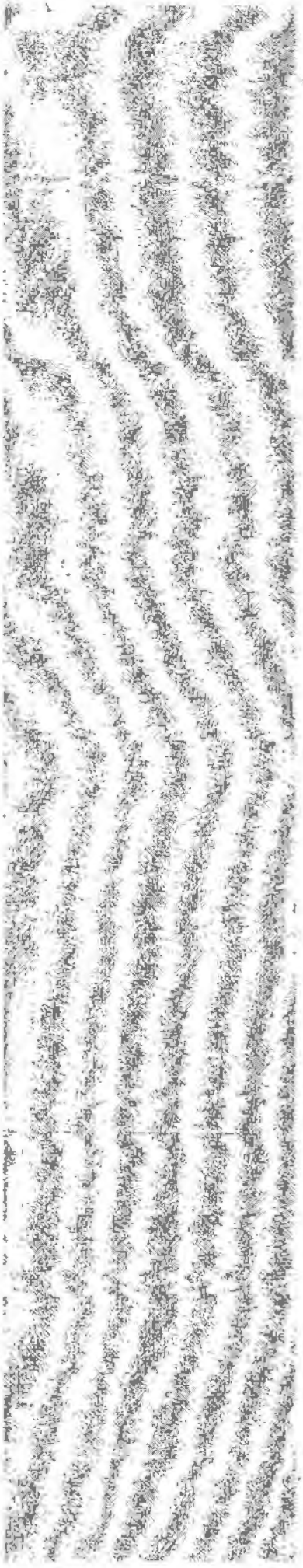
First published May 2013 by the Alliance for American Manufacturing

ISBN 978-0-9892574-0-4 (paperback)

Printed in the United States of America.



CHAPTER 2 • STEEL ARMOR PLATE

EXECUTIVE SUMMARY

Steel armor plate is a critical structural component of nearly all advanced armored ground vehicles and the hulls of most U.S. naval vessels. The U.S. steel industry manufactures steel armor plate to precise military chemical and physical specifications. The continued ability of the U.S. defense industrial base to produce steel armor plate for U.S. combat platforms is important for the country's national security.

Its importance was seen recently in the response to the improvised explosive device (IED) threat. Beginning in 2006, this threat prompted the rapid development and deployment of the Mine-Resistant Ambush-Protected (MRAP) vehicle, which required the swift production of large quantities of steel armor plate. The U.S. defense industrial base was able to respond quickly and flexibly, assisting in the deployment of a platform that then-Secretary of Defense Robert Gates said saved thousands of lives.

Today, the main risk to steel armor plate production capacity, aside from the broader defense drawdown, comes from attempts to weaken the Specialty Metals Clause (SMC). The SMC mandates that all steel armor plate used by the U.S. military must come from domestic sources—although there are numerous exceptions to the statute. Until 2008 the SMC had been understood to require that the melting phase—the most capital-intensive phase of steel armor plate production—must be carried out within the United States. However, the Department of Defense (DoD), driven by concerns about a lack of capacity in the U.S. defense industrial base, has explored whether a redefinition of the SMC is warranted to allow steel armor plate melted abroad but heat-treated in the United States to count as having been "produced" domestically.

Given that current U.S. capacity is sufficient to meet demand from DoD, and that DoD has preexisting authority to temporarily waive SMC restrictions if domestic capacity is at some point insufficient, a permanent redefinition of the SMC is unnecessary. The permanent redefinition of the SMC could undercut the U.S. defense industrial base's ability to carry out all phases of steel armor plate production and provide protection to the U.S. warfighter.

STEEL ARMOR PLATE

PROTECTING U.S. FORCES

MANUFACTURING SECURITY

Steel armor plate is essential for U.S. combat platforms

U.S. GROUND FORCES + U.S. NAVAL FORCES

PROTECTING WARFIGHTERS

Steel armor plate protects Mine-Resistant Ambush-Protected (MRAP) vehicles

MRAPS HAVE HELPED SAVE "THOUSANDS OF LIVES"

Armored platforms have shielded U.S. forces in Iraq and Afghanistan

IRAQ + AFGHANISTAN

SPECIALTY METALS CLAUSE

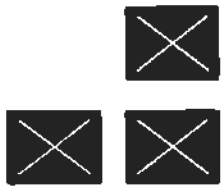
The SMC should not be weakened to allow foreign-melted steel armor plate

FOREIGN PRODUCTION + UNSECURE SUPPLY = DIMINISHED U.S. CAPACITY

PRODUCTION ☒ = 1%

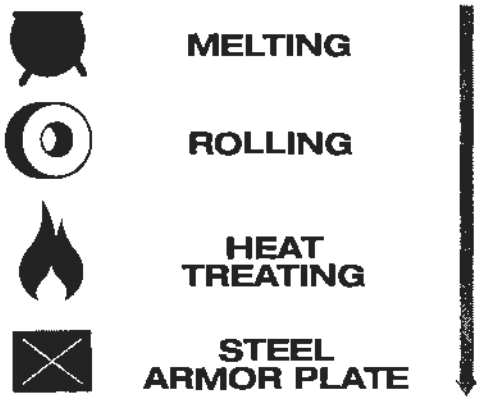
U.S. steel production manufactured for homeland security and national security applications

3% OF U.S. STEEL PRODUCTION



MANUFACTURING PROCESS

The U.S. should be able to perform all phases of steel armor production necessary for U.S. defense products



MITIGATING RISKS

Avoiding uncertainty in U.S. armor plate supply

STRONG LEGAL FRAMEWORK | UNDERSTANDING SUPPLY CHAINS | PARTNERSHIP BETWEEN DOD & INDUSTRY

MILITARY EQUIPMENT CHART
SELECTED DEFENSE USES OF STEEL ARMOR PLATE

DEPARTMENT	PLATFORMS
ARMY	A wide range of Army platforms including: ■ Mine-Resistant Ambush-Protected (MRAP) vehicle ■ M1A2 Abrams main battle tank ■ Stryker fighting vehicle
MARINE CORPS	A wide range of Marine Corps platforms including: ■ Mine-Resistant Ambush-Protected (MRAP) vehicle ■ M1A2 Abrams main battle tank ■ Stryker fighting vehicle
NAVY	A wide range of Navy platforms including: ■ Freedom-class Littoral Combat Ship (LCS) ■ SSN-774 Virginia-class nuclear-powered attack submarine ■ Nimitz-class nuclear-powered aircraft carrier

INTRODUCTION

American military dominance requires global force protection and the ability to sustain military operations in hostile and volatile environments. The U.S. military has excellent long-range and precision strike capabilities. However, certain kinds of missions, such as the ongoing conflict in Afghanistan, also require American forces to engage with adversaries at close range.

Steel armor plate, a product of the U.S steel industry, has many force protection applications and is used in many U.S. ground combat platforms. In Iraq and Afghanistan, American ground troops have been equipped with Mine-Resistant Ambush-Protected (MRAP) vehicles that use steel armor plate to increase resistance against enemy mines and improvised explosive devices (IEDs).[1]

Steel armor plate also protects American naval vessels, from large naval platforms such as Nimitz-class aircraft carriers, to smaller, more nimble platforms such as the Littoral Combat Ship (LCS). While the U.S. Navy does not face an immediate or near-term threat from peer competitors, it must nevertheless be prepared for asymmetric and future threats and challenges by having its ships fitted with appropriate armor.[2]

Sturdy, armored naval platforms are especially vital in the context of the current U.S. rebalancing to Asia, which places an emphasis on naval deployments to bolster allies and partners and assure U.S. access and influence.[3]

Naval vessels protected with steel armor plate are also essential in U.S. plans for ballistic missile defense (BMD) under the phased adaptive approaches currently being implemented in collaboration with North Atlantic Treaty Organization (NATO) and other allies. The Aegis air and missile defense system with the Standard Missile

PROTECTING U.S. TROOPS (a notional though realistic situation)

A Mine-Resistant Ambush-Protected (MRAP) vehicle with seven U.S. troops inside was on a routine patrol outside of Baghdad, Iraq in February 2008. MRAPs are protected by steel armor plate. The MRAP had been deployed to Iraq only two months earlier. As the vehicle turned a corner, a member of a local insurgent group remotely detonated a roadside improvised explosive device. The low explosion violently shook the vehicle and its passengers; however, the vehicle's v-shaped hull and steel armor protected against the blast, and all inside survived. Without the protection provided by the MRAP, that attack would almost certainly have been fatal.

3 (SM-3) interceptor is deployed on U.S. Navy cruisers and destroyers, which are protected by steel armor plate. Under the strategy envisioned in the U.S. Ballistic Missile Defense Review (BMDR) these assets will be deployed in various theaters as part of a flexible response to evolving missile threats.[4]

As the United States struggles to deal with deficits and debt, the U.S. military faces increasingly constrained and uncertain resources. In such a fiscal environment the U.S. military will have to make tough choices about its acquisition and modernization programs, including the ones that use steel armor plate. This chapter argues that the imperative to cut budgets should not drive the U.S. to weaken an important part of the defense industrial base, which, once lost, will be difficult and expensive to reconstitute.

Key themes discussed in this chapter are:

- Steel armor plate is a vital force protection tool for U.S. ground- and sea-based combat platforms.
- The U.S. steel industry has the proven capacity and flexibility to rapidly respond to complex military requirements. This capacity and ability cannot be taken for granted.
- It is unnecessary and counterproductive to permanently weaken U.S. domestic sourcing requirements and allow steel melted abroad to be used for U.S. combat applications.

A NOTE ON CRITICALITY

Steel armor plate is an important component for armored ground vehicles, including personnel carriers and tanks and the armored hulls of nearly all U.S. Navy vessels. The inability to utilize domestically produced steel plate would *incapacitate* U.S. military capabilities, rendering the United States unable to construct and repair many military platforms used by the U.S. Army, U.S. Marine Corps, and U.S. Navy.

While a shortage of steel armor plate would be damaging to U.S. military capabilities, challenges facing the sector of the defense industrial base that produces steel armor plate constitute a *moderate* risk. Despite an increased military demand for steel armor plate throughout the latter part of the last decade, in light of the recent economic downturn and foreign competition, the U.S. steel industry has struggled with reduced commercial demand.

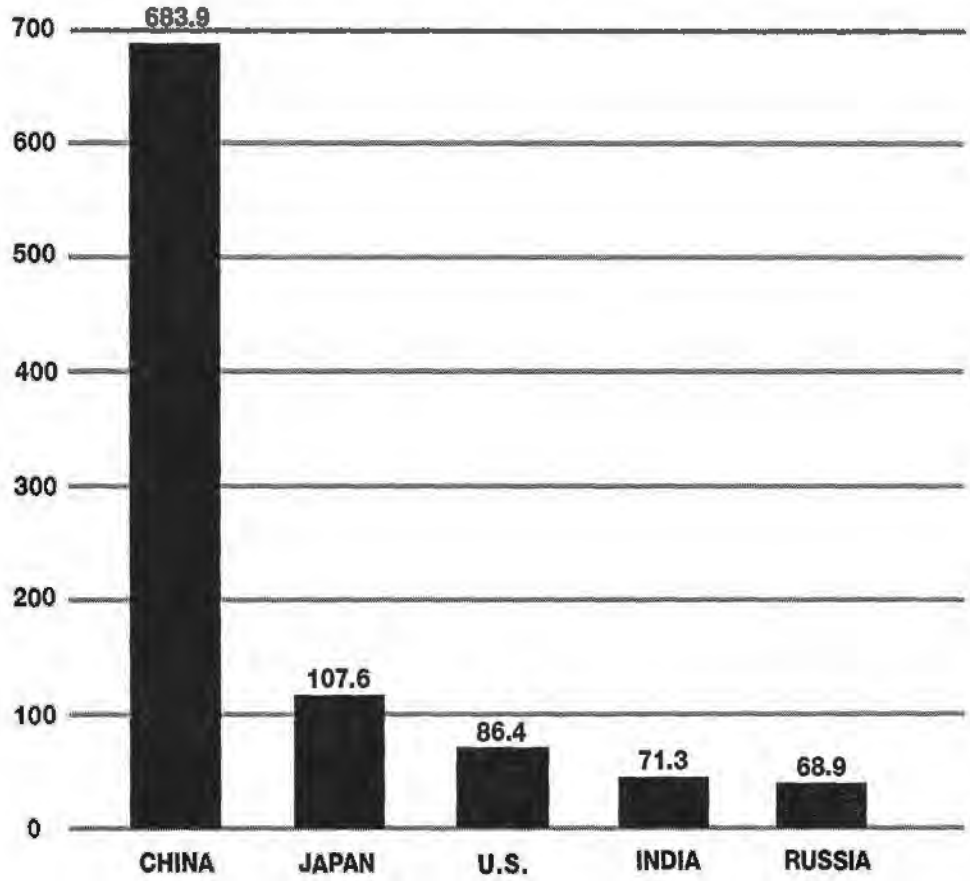
BACKGROUND

Steel armor plate differs from other plate steels that are used for applications such as bridge-building. Its special chemical and physical properties allow it to withstand explosions and gunshots, and it is manufactured using specialized equipment and precise manufacturing processes.

Steel armor plate is a critical input to the supply chains that produce and maintain certain wheeled and tracked ground combat vehicles. It is also an input into the shipyards that produce U.S. Navy surface ships and submarines. Without steel armor plate, U.S. vehicle manufacturers and shipyards could not produce platforms such as the MRAP in compliance with U.S. military requirements. As then-Secretary of Defense Robert Gates told *USA Today* in 2011, MRAPs have saved "thousands and thousands of lives."[5]

Steel armor plate represents a small portion of total U.S. steel industry output; the

Figure 1: Top Five Steel Producers
(in million metric tons)



Source: World Steel Association, World Steel in Figures 2011. http://www.worldsteel.org /dms/internetDocumentList/bookshop/ WSIF_2011/document/ World%20Steel%20in%20Figures%202011.pdf

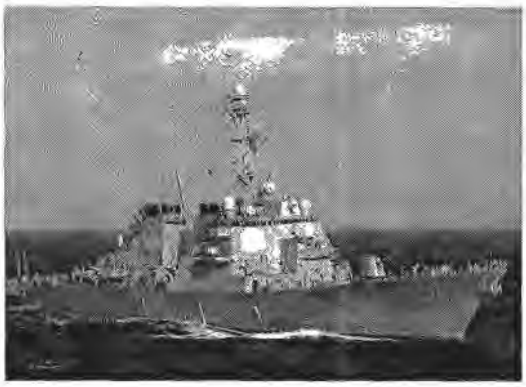
majority of steel produced in the United States is for commercial applications.[6] The United States is the third largest producer of steel in the world, behind Japan and, the largest, China (see Figure 1).[7] Despite its high production, China exports a relatively a small percentage of its total steel output. In 2009 China exported 4.2 percent of its total production, compared to 15.9 percent by the United States and 38.1 percent by Japan.[8] In part, China's exports to the United States have been constrained by U.S. trade laws—vital measures that have limited imports into the U.S. of unfairly traded steel.

China has increased its production capacity for steel at a rate that far exceeds its domestic consumption patterns, thereby putting pressure on non-Chinese international steel producers. Many of these producers, such as those in the United States, do not benefit from government subsidies.

Given that steel armor plate is a relatively small portion of the total output for any particular manufacturer in the United States, commercial sales make up a majority of orders. Therefore, a high level of commercial demand is necessary to keep the specialized facilities used to manufacture steel armor plate economically viable. Out of total U.S. steel shipments in 2010, only three percent were for defense and homeland security applications. The two main uses for U.S. steel were construction (42 percent) and the automotive industry (24 percent).[9]

STEEL ARMOR PLATE AND U.S. DEFENSE CAPABILITIES

Steel armor plate is a vital defense product with a proven record of saving lives. Steel armor plate, when used as a component of U.S. ships and ground-based platforms, enhances the durability of these platforms and increases the likelihood of survival for the U.S. service members they protect. The U.S. military requires certain grades of steel plate for particular U.S. platforms, and their testing ensures that the armor plate meets protection requirements. Each piece of steel armor plate must be precisely the correct height, width, gauge, and flatness in order to be properly integrated into the final product.



The ability to quickly and flexibly produce steel armor plate was critical to the success of the MRAP program, which required large quantities of steel armor plate in a short time span. The U.S. defense industrial base was able to meet this need because of the specialized equipment, capacity, and knowledge possessed by U.S. steel plate producers. The ability of the U.S. steel industry to respond rapidly to the demand generated by the MRAP program does not mean that it automatically will be able to respond to future crises or surges in demand. It also cannot be taken for granted.

The United States does not currently maintain a significant inventory of steel armor plate, due in part to the sheer variety of steel plates needed for U.S. platforms.

Steel armor plate, when used as a component on U.S. ships and ground-based platforms, enhances the durability of these platforms and increases the likelihood of survival for the U.S. service members they protect.

STEEL ARMOR PLATE PRODUCTION

Various facilities in the United States and Canada complete the multiple, complicated, and capital-intensive steps required to produce steel armor plate for the U.S. military. (Canada is treated like the 51st state by U.S. laws that govern armor plate production.) Currently ArcelorMittal USA, a division of Luxembourg-based ArcelorMittal, is the largest supplier of steel armor plate to the U.S. military.[10] ArcelorMittal USA carries out all phases of steel armor plate production, including melting, rolling, and heat treating. Other companies also produce steel armor plate in the United States, including Nucor, which entered the armor plate production business to help increase the production of MRAPs needed for the Iraq War, and Allegheny Technologies Incorporated (ATI). Gaining the capability to carry out each phase of production requires specialized equipment and significant capital investment, especially for the melting phase.

The melting stage is the first phase of steel armor plate production and the part in the process when the most significant percentage of the capital is expended. This steel scrap comes from a variety of sources including demolished automobiles and buildings. Steel scrap prices fluctuate according to various factors including automotive sector trends and foreign demand.[11] Almost all scrap used for U.S. steel armor plate production is acquired domestically.

The molten scrap metal is refined and purified in a furnace, and nickel, chromium, and molybdenum are added in precise amounts to create an alloy with the desired chemical properties. Specialized equipment removes impurities from the molten steel, and the chemistry of the metal is adjusted if necessary. At the end of this phase, the molten metal is either cast as slabs or poured into ingot molds for thicker plates. Although described simply and briefly here, the melting phase of the steel armor plate production process is highly technical, complex, and costly.

In the next phase of the steel armor plate production process, the slabs or ingots are heated to a specific temperature for rolling. The rolling process, aided by sophisticated computer programs, achieves the precise plate thickness and flatness.

Once the steel plate has been rolled, it is ready to be heat treated. Heat treatment is necessary for higher-grade steels, because it alters the physical properties to achieve the physical characteristics necessary to protect U.S. troops. The steel is heated and held at a high temperature, adding strength, and is then quenched (cooled rapidly) to make the steel even harder. The next step is tempering, a process that reheats the steel slightly to reduce brittleness.

The manufacturer tests the plates in-house to ensure that they meet military chemical and physical specifications. U.S. government facilities conduct ballistic testing of each lot before accepting the final product.

ALTERNATIVES TO STEEL ARMOR PLATE

Due to its low cost, durability, ability to withstand multiple hits, and effectiveness against a broad spectrum of threats, steel armor plate has been, and will likely remain, the default material for most land- and sea-based platform armor needs.[12] The main drawback of steel armor plate is its high weight relative to other materials, which can limit mobility. Weight is especially restrictive in the transport and deployment of heavy ground vehicles such as the M1 Abrams tank, which weighs approximately 70 tons and often must be air-transported one at a time. Weight is also becoming more relevant for naval vessels due to the growing need to operate in littoral zones (sea-based areas close to the shore).

Ceramic or composite armors are lighter weight alternatives to steel armor plate. Ceramic materials are non-metal, inorganic materials often formed through advanced heating and cooling processes. Advanced ceramics are engineered through a multi-phased process, culminating in their exposure to extreme heat that causes molecular changes to the ceramic, including the elimination of pores that result in a denser and more resilient product. Most advanced ceramics are produced through a technique called hot pressing, which involves heating ceramic powders at temperatures exceeding 2,000 °C (3,673 °F) while squeezing the materials together at high levels of pressure.[13]

Ceramic armor has advantages and disadvantages compared to steel armor plate. With a backing of advanced synthetic fabrics such as Kevlar and Spectra,[14] which absorb the force of a projectile,[15] ceramic armor possesses stopping power comparable to that of steel plate. In contrast to steel armor, which has a general density of 7 to 8g/cm, ceramic armor has a general density of only about 4g/cm. Replacing metal armor with ceramic plate can in some cases significantly reduce vehicle weight, which is important when considering aerial transportation, fuel efficiency, and payload capacity concerns.[16]

Ceramic armor is also more fragile than steel and may fracture if dropped or mishandled. Unlike steel armor plate, which can withstand multiple attacks, ceramic armor tends to weaken with each progressive attack, especially if hit in rapid succession.

However, ceramic armor has certain drawbacks, and it is generally less robust than steel plate. Unlike steel armor plate, ceramics are not suitable to bear large weights, and they cannot be incorporated directly into the structure of a given platform.[17] Ceramic armor is also more fragile than steel and may fracture if dropped or mishandled. Unlike steel armor plate, which can withstand multiple attacks, ceramic armor tends to weaken with each progressive attack, especially if hit in rapid succession.[18]

Concerns over durability and cost mean that ceramic armor is unlikely to replace steel plate in many military applications. However, ceramic armor can be used in conjunction with steel plate armor to augment resilience and survivability and decrease weight.

RECENT DEVELOPMENTS

The most recent surge in armor plate production coincided with the decision to rapidly field the MRAP.[19] MRAPs were deployed in large numbers to counter enemy IEDs, which killed and wounded significant numbers of U.S. and coalition troops in Iraq.[20]

In response to the landmine and IED threat, the U.S. Marine Corps began acquiring the Cougar, an MRAP-type vehicle, between 2004 and 2006.[21] As the IED threat increased, the Marine Corps established the Office of the Program Manager, MRAP, in 2006. That year the Marine Corps solicited and received proposals from industry for ways to meet MRAP requirements. Source selection took place on an accelerated basis. In May 2007, then-Secretary of Defense Robert Gates deemed the MRAP program the highest priority DoD program.[22] From June 2007 to December 2007, monthly MRAP production increased from 82 vehicles per month to 1,300 per month.[23] The MRAP production line was closed in October 2012.[24]

In 2007, DoD conducted an assessment of U.S. industrial capacity to produce steel armor plate, and supply concerns motivated the department to reevaluate domestic sourcing requirements.[25] DoD proposed a new rule modifying the definition of specialty steel "produced" in the United States in 2008.[26] The proposed rule was part of DoD's larger effort to implement the FY2007 National Defense Authorization Act (NDAA). That law had separated specialty metals such as armor-grade steel from the purview of the Berry Amendment, which requires that DoD acquire goods such as food and textiles from completely domestic sources.

Domestic sourcing requirements for certain key metals were recodified under the Specialty Metals Clause (SMC), part of the U.S. code.[27] The statute states that specialty metals procured by DoD must be "melted or produced" in the United States. The word "produce" is not defined in the statute, opening the door for DoD's 2008 proposed rule.

Under the new definition, steel armor plate would be considered as having been "produced" in the United States as long as "certain significant production processes" such as heat treating, quenching, and tempering occurred domestically. This definition allows the U.S. military to use steel melted and rolled anywhere in the world, as long as it undergoes finishing processes in the United States. The U.S. steel industry took issue with DoD's assessment of domestic armor plate production capacity, and they argued that DoD had the option to temporarily waive domestic sourcing requirements in the case of domestic non-availability of sufficient quantities, rather than permanently altering the rules.[28] Furthermore, certain "qualifying countries" with whom the U.S. maintains defense cooperative agreements may supply specialty metals, notwithstanding the domestic sourcing requirement. The U.S. steel industry continues to argue that DoD should retain the original meaning of "produced." Indeed, expanding the terms for eligibility may very well undermine domestic production capabilities by making potential demand more uncertain.

Many Members of Congress and the key jurisdictional committees with responsibility for the law have taken an interest in DoD's definition of the term "produced" as it applies to steel armor plate. In February 2012, Sen. Sherrod Brown (D-OH), Sen. Amy Klobuchar (D-MN), Sen. Al Franken (D-MN), Sen. Kirsten Gillibrand (D-NY),

Sen. Chuck Schumer (D-NY), Sen. Robert Casey (D-PA), and Sen. Kay Hagan (D-NC) introduced the "United States Steel and Security Act of 2012," which would require military steel to be "100 percent made in America."[29] The bill was referred to committee and was never voted on.

The issue of the definition of "produced" has been raised during hearings of the Congressional Steel Caucus, chaired by Rep. Tim Murphy (R-PA), including during the 2012 "State of Steel" hearing. At the hearing, Murphy said that he hopes to "ensure the Pentagon follows the law—and uses steel armor plate that is truly made and melted in America."[30]

The FY2011 NDAA mandated a review and, if necessary, revision of the regulation to ensure the definition of the term "produced" was consistent with Congressional intent. Subsequently, in July 2012, DoD proposed amending the definition of "produce" to encompass all stages of armor plate production, including melting.[31] The final rule was published March 28, 2013 restoring the original definition of "produce" and bringing DoD practice in line with the original intention of domestic sourcing restrictions for steel armor plate.[32]

In the FY2013 defense budget submitted in February 2012, the Pentagon proposed a cut in procurement spending of approximately 5.5 percent compared to FY2012 (10 percent when Overseas Contingency Operation spending is considered.) The U.S. Army, the most significant user of armored ground combat vehicles, had already received the most significant cut as a part of FY2012 spending, and received over 50 percent of total proposed cuts in 2013.[33]

Across the board the Army and the other services face significant further cuts under sequestration, which took effect on March 1, 2013. Sequestration imposes mandatory cuts to defense and domestic discretionary spending under the 2011 Budget Control Act. These cuts will continue unless Congress finds an alternative method to reduce the deficit by $1.2 trillion over ten years, or change the law, which has not happened as of this writing. The politics of sequestration create an environment of substantial uncertainty for DoD and the defense industrial base that complicates long-term military planning.

Defense cuts and persistent budgetary uncertainty mean that the Army and the other services will be unlikely to procure large numbers of armored platforms in the near term, as illustrated in a recent debate about whether to idle production at the armored vehicle plants in Lima, Ohio, and York, Pennsylvania.[34]

ISSUES AFFECTING STEEL ARMOR PLATE AVAILABILITY

U.S. government policies have a significant effect on U.S. armor plate production capacity. Armor plate and other defense applications represent approximately three percent of U.S. steel shipments.

The military's demand for steel armor plate is too small, in relative terms, to make a significant difference to the overall health of the U.S. steel industry. However, U.S. government policies that influence the industry such as taxation, support for investment in infrastructure, and trade policies can have an important effect on armor plate production capacity.

The U.S. government maintains policies that specifically govern steel armor plate acquisition, especially domestic sourcing requirements. Federal restrictions on acquisition of steel armor to protect domestic sources have been in place since 1973, initially to ensure the availability of domestic materials during the Vietnam War.[35]

The Specialty Metals Clause (SMC):

The SMC mandates domestic procurement of military-grade steel as well as other key metals such as titanium (see Chapter 4 for this report's discussion of titanium).[36] As noted above, the domestic sourcing restriction for specialty metals was originally contained in the Berry Amendment.

The SMC, under Title 10, section 2533b of the U.S. Code, prohibits DoD from acquiring aircraft, missile and space systems, ships, tanks and automotive items, weapons systems, or ammunition "containing a specialty metal not melted or produced in the United States." DoD can obtain an exemption to this restriction if the proper metals "cannot be procured as and when needed."[37]

DoD has explored weakening the domestic sourcing requirement under the SMC through a redefinition of what it means for steel to be "produced" in the United States. The new proposed definition would allow steel melted outside the United States to be purchased by DOD, as long as late stage processes such as heat treating and testing were carried out in the United States.

The U.S. steel industry has generally opposed this redefinition, arguing that it violates the SMC's original intent. The United Steelworkers, the largest North American industrial labor union, stated in a September 2011 letter that DoD's definition of the term "produced" is "improper, flouts over 35 years of legal interpretation and administrative practice, and is contrary to Congressional intent." The letter goes on to argue that the definition "puts in jeopardy the health of the domestic armor plate industry and its workers" and "is likely to increase our reliance on imported metals and, as a result, threatens this nation's defense industrial base."[38] In July 2012, DoD proposed amending the "produced" definition to restore the original intent of the SMC and cover all stages of steel armor plate production. In a letter to former Secretary of Defense Panetta, Sen. Brown and other advocates for domestically produced steel armor plate applauded the move. "The revised definition will help ensure that steel armor plate is produced right here in the United States, to the benefit of the domestic armor plate industry, its workers, and this nation's national security," the senators wrote.[39]

Exports of U.S. defense platforms:

The U.S. steel industry does not export significant amounts of armor plate, although some exports have been made to allied countries such as Israel.[40] However, armor plate is an input for platform manufacturers. If these platforms are exported, it will generate additional business for U.S. armor plate manufacturers. Iraq, for example, has announced that it will purchase U.S. armored platforms.[41] Such exports could help compensate for shortfalls in DoD demand.

VULNERABILITIES IN STEEL ARMOR PLATE SUPPLY CHAINS

DoD does not purchase steel armor plate directly. Armor plate is a lower tier input to U.S. shipyards and vehicle manufacturers, and DoD does not consistently and actively monitor products that are lower tier inputs into the equipment that it eventually purchases. This is due in part to DoD's general preference for relying on the free market to supply inputs for defense products, and in part because of the sheer difficulty of monitoring a vast network of complex supply chains.

Weakening of the SMC: Domestic sourcing requirements for military grade steel armor plate have helped to sustain a stable legislative framework to guide steel producers. This framework in turn creates a predictable business and investment climate and incentivizes production and research and development (R&D) in the United States. The SMC is currently the main domestic sourcing requirement governing U.S. steel armor plate procurement.

As discussed above, there is a risk that the SMC will be weakened through a redefinition of what constitutes steel "produced" in the United States. Recent statements from DoD indicate that this harmful redefinition will be reversed, but sustained attention is necessary to ensure that strong domestic sourcing rules are sustained and enforced.

While changing the definition of "produced" could create some business for those U.S. firms that only perform the later stages of armor plate production, it would reduce the incentive for U.S. firms to invest in all phases of steel armor plate production, especially the rolling and melting phases. Currently, U.S. melting capacity is more than sufficient to meet U.S. military needs, but U.S. firms still need to attract investment to maintain, upgrade, and expand existing facilities. Permanently weaker domestic sourcing requirements for steel armor plate would make this maintenance and improvement more difficult. Diluting the law will also depress R&D in this area, as investment returns will become increasingly uncertain. Furthermore, this redefinition would diminish the ability of the United States to monitor and regulate all stages of armor plate production.

If the United States loses its capacity to melt steel for armor plate, the capital expenditures associated with rebuilding that capacity down the road will almost certainly be prohibitive. Doing so would also likely take several years—far too long to respond to any future surge in demand.

This delay would have implications for the United States' ability to quickly expand production in a time of crisis. DoD currently has the ability to issue "rated" orders under the Defense Production Act, which compel U.S. companies to prioritize DoD orders over orders from their other clients. Such orders were placed during the MRAP production surge, and U.S. steel firms fulfilled them at the expense of their commercial clients. Foreign firms will have little or no incentive to prioritize DoD armor plate orders, and DoD will not be able to compel them to do so.

In the event of a future need to rapidly surge production to protect U.S. troops, DoD should not have to wait in line.

It is in the national security interest of the United States to retain the capability to produce sophisticated and durable armored platforms to meet future security challenges around the world.

Unpredictable DoD demand: Planning investments and articulating requirements is difficult in a time of evolving threats and budgetary uncertainty. As a result, DoD demand for the defense platforms that require armor plate, especially in the future, is unpredictable. This uncertainty affects the companies that produce steel armor plate.

Questions remain about several key acquisition programs that require steel armor. The U.S. Army, for example, plans to acquire the armored Ground Combat Vehicle (GCV), which is intended to replace the armored Bradley Fighting Vehicle. However, GCV production has faced delays and questions over its affordability, and demand for armor associated with the program may materialize later or at a lower level than is currently anticipated.[42] Indeed, the technology development phase for the program was recently extended by six months.[43] Under sequestration, the future of this program would be even more uncertain.

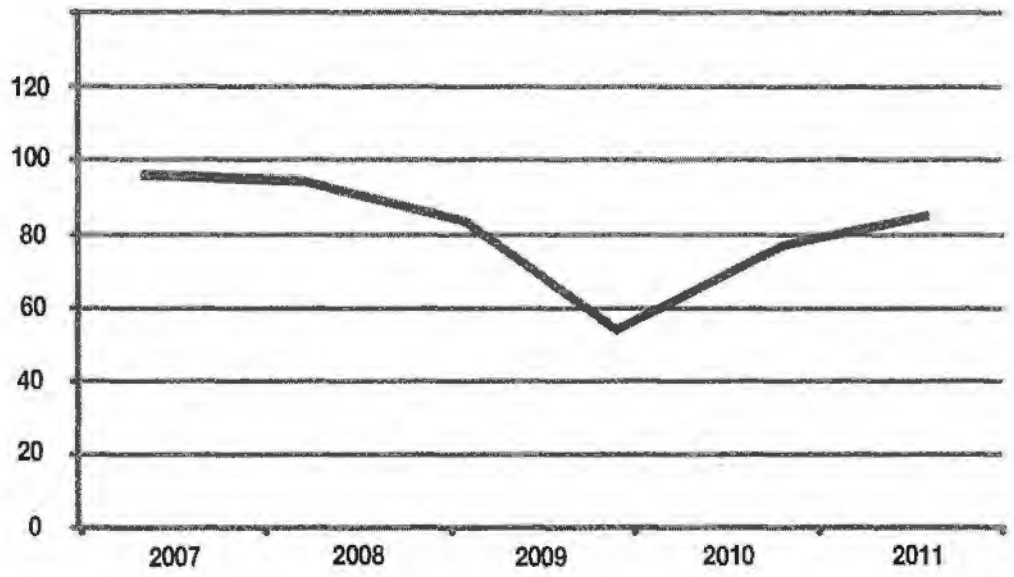
Negative trends in the U.S. steel industry: Given that a only about three percent of U.S. steel production as of 2010 was for "National Defense and Homeland Security" applications, the market for U.S. steel is therefore primarily affected by trends in the larger economy. Defense-related orders are insufficient to sustain the sector.[44] Furthermore, policies that affect demand for U.S. steel, such as decisions about infrastructure spending, can significantly affect the steel industry.[45] There is currently no mechanism for coordinating these decisions across DoD, much less across the government as a whole.

The recent economic downturn significantly hurt the U.S. steel industry. U.S. consumption of steel mill products went from approximately 9 megatonnes (million metric tons) in the first half of 2008 to a low of approximately 4 megatonnes in the middle of 2009. Consumption has recovered to approximately 8 megatonnes.[46] Qverall U.S. steel production followed a similar pattern, with a sharp decline until mid-2009 followed by a gradual recovery (see Figure 2).

At the end of 2012, the steel industry experienced a decrease in capacity utilization, a reversal of some of the post-recession gains. Capacity utilization was 71.7 percent in December 2012. In late 2008 and early 2009 capacity utilization hovered around 40 percent. By historical standards, capacity utilization in the U.S. steel industry remains low according to the U.S. Department of Commerce.[47]

By way of comparison, China's steel output is significantly higher than that of the United States. As of December 2012, China produced 47 percent of total global output; in contrast, the United States produced 6 percent.[48]

Figure 2: U.S. Crude Steel Production (2006-2011)
(in million metric tons)



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Even as the U.S. steel industry recovers from the recession-induced collapse in demand, it is clear that the industry, including its capacity to produce steel armor plate, is vulnerable to macro-economic shocks, especially in a time of increased global competition. The recent economic downturn happened to coincide with the MRAP-related surge in steel armor plate demand, which helped to sustain armor plate capacity. This may not be the case during a future downturn.

MITIGATING THE RISKS

The United States should make sure that the proper policies and frameworks are in place to ensure a robust and flexible capacity to domestically carry out all phases of steel armor plate production and ensure ongoing investments in R&D and surge capacity. It is in the national security interest of the United States to retain the capability to produce sophisticated and durable armored platforms to meet future security challenges around the world. The section below describes steps that can be taken to mitigate vulnerabilities to future U.S. armor plate manufacturing capacity.

Support and expand efforts to gain insight into the supply chains that support armored platform production. In keeping with its market-based approach to the defense industrial base, DoD does not currently gather comprehensive information on the supply chains that support most defense goods and weapons systems on an active basis. This list includes the supply chains that produce U.S. armored ships and ground vehicles.

Efforts are underway to address this lack of awareness. One of these is the Sector-by-Sector, Tier-by-Tier (S2T2) defense industrial base review. DoD undertook S2T2 with the intention of using survey data to map out the supply chains in several key defense industrial base sectors. Information collected under S2T2 is intended to enable "fact-based" analysis of globalization's role in the defense industry and other key issues. Among the sectors that S2T2 is investigating are shipbuilding and ground vehicles, two sectors for which steel armor plate is an input.

But S2T2 is insufficient on its own. It will not provide up-to-date information, and the collected information may not be useful for guiding policy without the proper context, which may or may not be available to DoD. S2T2 should be part of a broader DoD and U.S. government effort to gain greater awareness of supply chain issues and potential vulnerabilities as they appear.

Retain the original meaning of armor plate "produced" in the United States under the Specialty Metals Clause. The U.S. steel industry has sufficient capacity to supply DoD demand for the foreseeable future. Capacity has increased since the dramatic surge in demand for MRAPs. In the event of a sudden spike in demand, as was the case with the rapid acquisition of MRAPs during the Iraq War, current rules include mechanisms that allow for the temporary use of non-domestic steel armor plate.

The proposed redefinition of the SMC, which DoD has indicated will not be adopted, would encourage the offshoring of the melting phase of steel production and the deterioration of U.S. capacity. Retaining the original definition of "produced" will help maintain U.S. capabilities to carry out all phases of steel armor plate production. If the U.S. steel industry is unable to attract investment in this critical phase of production, the United States

risks a major degradation in its ability to respond flexibly to new challenges as they develop and in new technologies to address future threats. Foreign firms may lack the ability or inclination to work closely with DoD during a future crisis, especially if it coincides with a peak in global demand.

Build effective partnerships with U.S. armor plate producers. The ability of the U.S. defense industrial base to effectively produce steel armor plate to meet U.S. defense needs depends in large part on effective working relationships between DoD and industry. The U.S. steel industry possesses a wealth of knowledge about armor plate, based not only on a technical understanding of the plate itself, but also on years of experience working with DoD during past production surges. DoD will benefit by working more closely with industry to take advantage of this knowledge and experience. This collaboration will serve three main purposes:

- Give DoD ongoing feedback on the state of the industry and the challenges that it faces. Newer entrants into the field especially may face difficulties in communicating what they can offer, as well as their concerns, to DoD.
- Provide DoD with information and context with which to make decisions about the defense industrial base.
- Better acquaint steel firms with DoD requirements, priorities, and practices.

Strengthened partnerships should be accompanied by efforts to simplify the process of doing business with DoD. A series of House Armed Services Committee hearings last year addressed this very issue, culminating in a report that described a wide array of challenges faced by firms in the defense industrial base.[49] This issue is complicated and much discussed, and there is no single fix that will make the acquisition process accessible and transparent for all entrants.

Learn the lessons of MRAP in collaboration with industry. The multifaceted MRAP program responded to a complex strategic and operational challenge. The Government Accountability Office ultimately concluded that the "use of a tailored acquisition approach to rapidly acquire and field MRAP vehicles was successful."[50] A part of this approach was the rapid production, testing, and acquisition of many sizes and grades of steel armor plate. Even though this effort succeeded overall, it was preceded by concerns that the U.S defense industrial base lacked sufficient capacity to respond to DoD demand. Both DoD and industry should learn the lessons of this experience so that necessary relationships, practices, and understandings are already in place before the next unexpected production surge.

Take measures to reduce uncertainty in demand. The United States is in an uncertain and constrained fiscal environment, especially given the failure to prevent the mandatory cuts under sequestration. These changes will create new realities to which all participants in the defense industrial base will have to adjust. The nation also faces an uncertain international security environment. Nevertheless, DoD should still take steps to reduce uncertainty in demand for armor plate and ameliorate what Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy Brett Lambert has called the "peaks and troughs" in demand "that really impact the second and third tiers" of the defense industrial base.[51]

CONCLUSION

The United States cannot predict the future of combat. U.S. military planners in 2000 could not have anticipated the need to defend against IED threats during a protracted occupation of Iraq. However, it *is* clear that U.S. forces will need to be protected regardless of how threats evolve in coming years. Steel armor plate, manufactured by U.S. steel companies, will have an important part to play in providing that protection.

This chapter has outlined some of the potential vulnerabilities faced by the sector of the U.S. defense industrial base that supplies U.S. armored platform manufacturers with the range of grades, shapes, and sizes of steel plates required to meet U.S. military requirements. It has also provided recommendations for mitigating these vulnerabilities and preserving a vital capability to strengthen U.S. national security.

The short-term pressure to reduce U.S. defense spending in a time of fiscal austerity, especially in an era of declining U.S. military commitments in the Middle East and Central Asia, should not cause the United States to neglect the long-term maintenance of this important defense industrial base capability.

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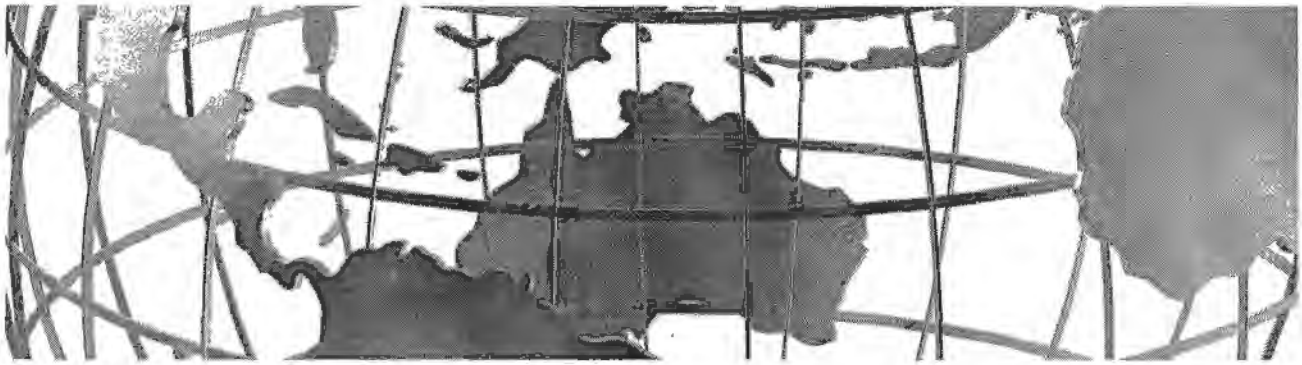
EXHIBIT 9

STEELWORKS
the online resource for steel

American Iron and Steel Institute



A more effective U.S. trade policy is needed to level the playing field as well as preserve and strengthen our nation's manufacturing base.

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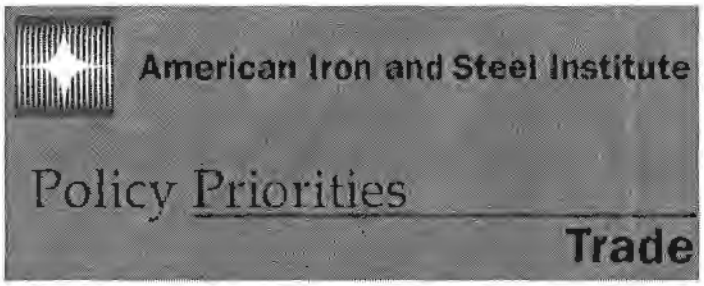

Foreign government subsidies and other market-distorting policies in the steel sector have resulted in massive global steel overcapacity – estimated by the OECD at more than 700 million metric tons, over seven times U.S. raw steel production. This overcapacity, combined with sluggish world demand and import barriers in other markets, has resulted in significant levels of steel imports entering into the U.S. market, capturing a historically-high percentage of U.S. market share and resulting in thousands of U.S. job losses and numerous plant closures throughout the steelmaking supply chain.

Of particular note, China's steel industry remains government-owned and controlled and heavily subsidized. China continues to protect and increase its exports by manipulating its currency, raw material markets and border measures for steel and steel-containing goods. Other major offshore steel producers also continue to use subsidies, tax and trade policies, and investment restrictions to protect their markets and expand their steel production and exports. The United States must take aggressive action to combat these unfair trade practices in order to preserve and strengthen our manufacturing base.

Industry Position: Foreign government subsidies and other market-distorting policies have resulted in massive global steel overcapacity and significant levels of steel imports, resulting in thousands of U.S. job losses and numerous plant closures. The United States must press China and other nations to eliminate their steel overcapacity and to end all subsidies and other market-distorting policies that promote steel overcapacity; enforce aggressively U.S. trade laws against dumping and subsidies; respond to foreign government currency manipulation; and defend aggressively our ability to apply non-market economy methodology to remedy injurious dumping by China. More »

Policy News and Issues

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DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INNOVATION
STEEL COMMITTEE

CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY

DSTI/SU/SC(2015)8/FINAL
Unclassified

English - Or. English

FOREWORD

OECD Steel Committee delegates discussed a draft of this report at the Steel Committee meeting on 30 November and 1 December 2015. Delegates agreed to declassify the report in February 2016. The report will be made available on the Steel Committee website: http:/oe.cd/steel.

CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY

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OECD Paris

ABSTRACT

Excess capacity is a pressing challenge facing the global steel sector today. In order to improve transparency and provide policymakers with the necessary data for pursuing policies in the area of steel, the Secretariat of the OECD Steel Committee has been monitoring steelmaking capacity developments closely and will continue to do so. This paper provides an overview of recent steelmaking capacity developments around the world, including projections until 2017, based on data available until December 2015. Despite the currently high level of global excess steelmaking capacity and weak market conditions, capacity is projected to grow further in 2015-2017. Capacity in the OECD area is expected to remain roughly unchanged, with a few new projects being offset by capacity closures. Much of the world's capacity growth is likely to occur in regions that are currently net importers of steel. As a result of numerous investment projects currently taking place around the world, global steelmaking capacity is projected to increase to 2.42 billion tonnes per year by 2017, with non-OECD economies accounting for approximately 72.4% of the total capacity in 2017.

Keywords: Steel; Capacity; Investment; Data

JEL Classification: L61; Y1

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ACKNOWLEDGEMENTS

The authors are extremely grateful to Nick Johnstone and Dirk Pilat for useful discussions and input, as well as Florence Hourtouat and Robin Cay for very valuable editorial support. Comments and suggestions on previous versions of this paper by national delegates to the OECD Steel Committee are also greatly appreciated.

CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY

I. Background

Excess capacity is a pressing challenge facing the global steel sector today. In order to improve transparency and provide policymakers with the necessary data for pursuing policies in the area of steel, the Secretariat of the OECD Steel Committee has been monitoring steelmaking capacity developments closely and will continue to do so. This monitoring work has involved two broad activities: *i)* steelmaking capacity developments in non-OECD economies; and *ii)* new investment projects in crude steelmaking capacity. The Secretariat is now making efforts to improve its data infrastructure by monitoring postponements/cancellations of new or proposed projects as well as plant closures. Box 1 explains these three broad monitoring activities in more detail.

This paper provides an overview of recent steelmaking capacity developments around the world, and provides projections of capacity until 2017. As explained in Box 1, in December 2015 the Secretariat completed its updates of the two-yearly study of capacity developments in non-OECD economies and its yearly update of the investment project database for OECD and non-OECD economies. It also started to take into account project postponements/cancellations as well as plant closures in the projections to 2017. Taken together, these three updates were employed to produce the capacity projections presented in this document. It should be noted that there are considerable uncertainties with respect to closure information (e.g., permanent versus temporary closures), and that capacity numbers are likely to evolve rapidly with incoming information. The figures presented in this document are based on data available until December 2015.

The next section of this report provides a global summary of capacity developments by region. The third section summarises postponements/cancellations of investment projects as well as recent information on closures. Section 4 presents the two-yearly report on steelmaking capacity of non-OECD economies, highlighting key investment projects by economy and accompanied by policy information in some cases.

Box 1. Capacity monitoring activities

The Secretariat has been monitoring steelmaking capacity developments for many years. Much of this work has been made possible through the generous support of the Japan Iron and Steel Federation, which has seconded staff to the OECD to help monitor capacity developments. The two main outputs have been the two-yearly publication *Developments in Steelmaking Capacity of Non-OECD Economies* and, more recently, a continuously updated database of new and proposed crude steelmaking investment projects taking place in both OECD and non-OECD economies. Greater efforts are now being made to gather information on postponements/cancellations of planned projects over time as well as information on the closure of steelmaking capacities.

- **Steelmaking capacity developments in non-OECD economies.** In the past, the Secretariat prepared a publication on steelmaking capacity developments in non-OECD economies every two years. The series includes a number of editions available online at: http://www.oecd-ilibrary.org/industry-and-services/developments-in-steelmaking-capacity-of-non-OECD-countries_19991606. In the past, this publication included detailed tables of existing and planned new steelmaking capacity facilities in hardcopy format. In light of developments taking place broadly at the OECD with the aim to increase transparency, strengthen the Organisation's statistical infrastructure and facilitate the access to statistical outputs, the database and the contents of the publication *Developments in Steelmaking Capacity of Non-OECD Economies* will now be provided on-line (on the OECD steelmaking capacity portal, available at: http://www.oecd.org/sti/ind/steelcapacity.htm) in a user-friendly format and more amenable for statistical analysis instead of in hardcopy format. The analytical content of the publication that summarises capacity developments and the economic context across non-OECD economies was updated in December 2015, and is provided in a specific section of this paper.
- **New investment projects in crude steelmaking capacity.** To better understand the evolution of global steelmaking capacity, in 2014 the Secretariat started to monitor steel investment projects taking place around the world. The first monitoring report, prepared in June 2014 (OECD, 2014), as well as the policy paper released in early 2015 (OECD, 2015) showed that, despite the currently high level of global excess steelmaking capacity and relatively weak demand conditions, investments continue to take place at a rapid pace and many new steel plants are likely to come on stream in many regions of the world over the next few years. This work stream complements the activity on steelmaking capacity developments in non-OECD economies insofar as it provides information on new crude steelmaking capacity additions that are planned or underway not only in non-OECD economies, but also in the OECD region. Accordingly, this report also provides a very brief update of steelmaking capacity developments taking place in the OECD region. The investment project database was updated in December 2015.
- **Changes in the status of investment projects and capacity closures.** At the last two sessions of the Steel Committee in December 2014 and May 2015, the OECD Secretariat was asked to improve the collection of data on new investments in crude steelmaking capacity by including new features, such as information on modifications to planned projects over time as well as information on the closure of capacities. Accordingly, the Secretariat has started collecting additional information regarding cancellations and postponements of new investment projects. In addition, the Secretariat is currently working with external experts to compile information on steelmaking capacity closures. This paper provides a very brief overview of the recent modifications (postponements and cancellations) to new crude steelmaking capacity investment projects and identifies some major closures.

II. Global summary of steelmaking capacity

Global steel demand has increased steadily over the past decade (at an average annual rate of 4.2% in crude steel equivalent terms), reaching a record high level of 1.66 billion tonnes in 2014. World steelmaking capacity (in nominal terms) expanded at a faster rate than demand, rising from 1.35 billion tonnes per year (tpy) in 2005 to 2.32 billion tpy in 2014, i.e. at an average annual rate of 6.2%. Most of the growth in steelmaking capacity has occurred in non-OECD economies, which accounted for 71.5% of global steelmaking capacity in 2014.

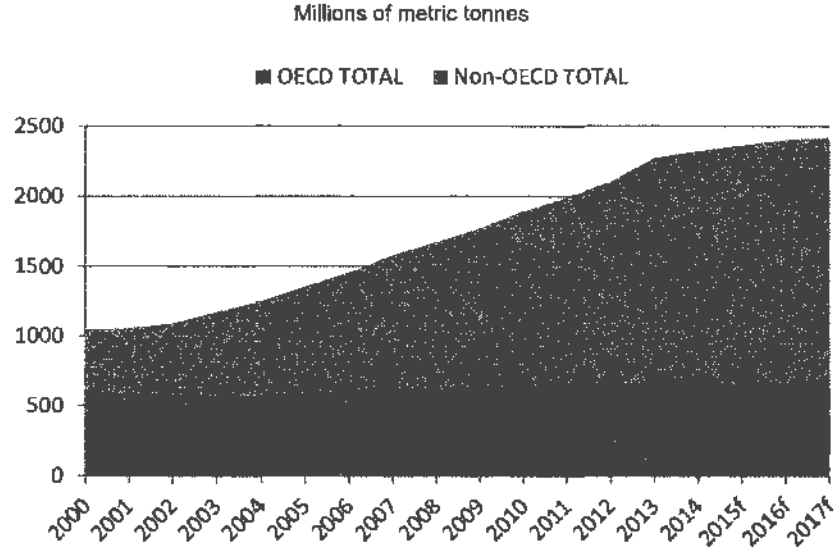
Despite the currently high level of global excess steelmaking capacity and weak market conditions, capacity is projected to grow further in 2015-2017, though developments will vary widely across regions. Capacity in the OECD area is expected to remain roughly unchanged, with a few new projects being offset by capacity closures. Much of the world's capacity growth is likely to occur particularly in regions that are currently net importers of steel. Many developing economies are aiming to increase their so-called "self-sufficiency rates" (domestic production as a share of national steel consumption) and to improve their steel trade balances. As a result of numerous investment projects currently taking place around the world, global steelmaking capacity is projected to increase to 2.42 billion tpy by 2017, with non-OECD economies accounting for approximately 72.4% of the total in 2017.[1]

An examination of regional trends suggests that Asia will account for the largest part of the non-OECD steelmaking capacity increase until 2017. Asian capacity is currently expected to increase by 71.5 million tpy in the period to 2017, accounting for 71.3% of the total 100.3 million tpy increase for all non-OECD economies. This is followed by the Middle East (with 18.1 million tpy capacity increase), Latin America (4.6 million tpy), the Commonwealth of Independent States (4.1 million tpy) and Africa (2.0 million tpy). In contrast, no capacity additions are being planned in non-OECD European countries.

Within the OECD area, a slight net increase in capacity in the North American Free Trade Agreement (NAFTA) region of 1 million tpy is expected in the period until 2017, the result of a 3.2 million tpy increase in Electric Arc Furnace (EAF) capacity being offset by closures amounting to 2.2 million tpy of Basic Oxygen Furnace (BOF) capacity. In OECD Asian countries, decisions have already been taken to reduce production capacity, which will more than offset some projected capacity increases. On net, OECD Asian capacity is expected to decline by 1.1 million tpy by 2017. Elsewhere in the OECD, capacity is expected to remain unchanged during the forecast horizon.

Combining these regional projections, Figure 1 below shows the development of global capacity, by OECD and non-OECD aggregates as of October 2015. Due to the challenging market conditions, the pace of new capacity additions in the world has been moderating since 2014, driven mostly by slower capacity growth in some non-OECD economies. The overall increase in steelmaking capacity in non-OECD economies between 2014 and 2017 will be around 6%, compared to the rapid capacity build-up of 25% experienced during the equivalent 3-year period between 2011 and 2014. As noted above, OECD capacity will remain more or less unchanged. All in all, world capacity is expected to increase to 2 422 million tpy in 2017, which is 61 million tpy more than what was estimated in early 2015 before the update of the investment project database. However, it should be pointed out that information about the status of investment projects as well as possible plant closures is evolving rapidly in the current period, implying a high degree of uncertainty in the projections.

Figure 1. World crude steelmaking capacity



Source: OECD Secretariat calculations.

III. Regional capacity developments

Non-OECD economies

Table 1 presents the capacity projections by non-OECD region/economy until 2017. Although the rate of growth of Chinese capacity is slowing significantly, supported by government policy measures aimed at constraining the industry's expansion, the construction of some very large integrated steel plants may keep the level of capacity on an upward path. Many Chinese mills are also looking to build steel plants in overseas markets, such as Southeast Asia and Africa, as the overcapacity challenge is making it difficult for companies to make a profit in the domestic market. As a result of several investment projects, steelmaking capacity in People's Republic of China (hereafter 'China') is expected to increase from 1.14 billion tpy to 1.17 billion tpy between 2014 and 2017, i.e. a lower rate of increase than that observed in recent years.

In India, significant amounts of new production capacity are scheduled to come on stream in the next few years to meet domestic demand. However, capacity expansions (particularly greenfield projects) have proceeded slowly in recent years due to obstacles associated with land acquisition and difficulties in obtaining the required environmental and forest clearances. The main contribution will come from brownfield expansions, which do not require dealing with prolonged land acquisition processes. Steelmaking capacity in India is expected to increase from 108.0 million tpy to 138.8 million tpy between 2014 and 2017.

Although the Association of Southeast Asian Nations (ASEAN) region has traditionally been a large net importer of steel, many greenfield integrated steel plant projects have been announced, possibly because steel demand growth was relatively strong over the last few years. Investment in new steelmaking capacity by Chinese steelmakers is also taking place in the region. Steelmaking capacity in ASEAN-6[2] is projected to increase from 44.9 million tpy in 2014 to 57.0 million tpy in 2017.

The Middle East has also traditionally been a substantial importer of steel products because it did not have much steelmaking capacity until the middle of the last decade. Many projects have been announced

recently in order to reduce import dependency. The Middle East might become the fastest-growing steel-producing region in the period until 2017. However, the oil market downturn and barriers such as insufficient power generation capacity as well as geopolitical tensions could hamper future growth in steelmaking capacity. Steelmaking capacity in the non-OECD Middle East region[3] is expected to increase from 57.6 million tpy in 2014 to 75.7 million tpy by 2017.

In the Commonwealth of Independent States (CIS) region, efforts to modernise steel production facilities continue to take place, with several mini-mill projects and the replacement of outdated open-hearth furnaces (OHF) with new BOF and EAF having been announced. Several long product mini-mill projects have been planned to meet steel demand from the growing construction sector in the region. CIS steelmaking capacity is projected to increase somewhat, from 146.7 million tpy in 2014 to 150.8 million tpy by 2017.

In Africa, various upstream projects are taking place, with a view to promoting industrialisation and economic development. However, technical and electricity/gas supply problems as well as political unrest have delayed the start-up of some projects. These projects are concentrated in northern Africa and have the objective of supplying steel for housing and infrastructure projects. Steelmaking capacity in Africa is forecast to increase from 33.9 million tpy in 2014 to 35.9 million tpy by 2017.

Table 1. Estimates for non-OECD steelmaking capacity until 2017

Unit: million tonnes

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes	
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	Volume (B)	% (A+B)/(A)
Non-OECD Europe	8.3	0.0	0.0	8.3	8.3	0.0	0.0
CIS	146.7	4.1	9.5	150.8	160.3	4.1	2.8
Russian Federation	89.0	4.1	7.0	93.1	100.1	4.1	4.6
Ukraine	42.5	0.0	1.5	42.5	44.0	0.0	0.0
Latin America	68.1	4.6	16.8	72.7	89.5	4.6	6.8
Brazil	48.0	2.0	12.8	50.0	62.8	2.0	4.2
Africa	33.9	2.0	14.6	35.9	50.5	2.0	5.9
Egypt	11.2	2.0	2.0	13.2	15.2	2.0	18.0
Middle East	57.6	18.1	34.0	75.7	109.7	18.1	31.4
Iran	27.0	11.8	22.9	38.8	61.7	11.8	43.7
Saudi Arabia	12.5	4.7	6.2	17.2	23.4	4.7	37.9
Asia	1337.6	71.5	256.4	1409.1	1665.5	71.5	5.3
China	1140.0	27.7	13.3	1167.7	1181.0	27.7	2.4
India	108.0	30.8	206.7	138.8	345.5	30.8	28.5
Other Asia	89.6	13.0	36.4	102.5	138.9	13.0	14.5
Non-OECD TOTAL	1652.1	100.3	331.3	1752.5	2083.8	100.3	6.1

Notes: CIS denotes the Commonwealth of Independent States. ASEAN-6 denotes the aggregate of Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam. Low refers to the capacity level resulting from all projects currently underway (A+B), while high refers to the level resulting from all projects currently underway and planned (A+B+C). Changes in capacity are estimated based on the capacity additions that are considered "underway" (B).

Source: OECD Secretariat calculations.

OECD economies

Table 2 displays the projected capacity development for OECD economies/regions. Among OECD countries, several projects are currently underway and expected to add 2.1 million tonnes of crude steelmaking capacity by 2017. However, a number of closures are expected to reduce steelmaking capacity by around 2.17 million tonnes, leading to a net decrease in total crude steelmaking capacity of 70 thousand tonnes in the period until 2017. For the OECD area as a whole, therefore, steelmaking capacity is expected to remain roughly unchanged in the period until 2017. A brief summary of new capacity additions and closures by OECD region is provided below.

- There are no capacity additions underway in European Union.
- There are no capacity additions underway in OECD Member countries located in "Other Europe", i.e. Norway, Switzerland, and Turkey.
- In the North American Free Trade Agreement (NAFTA) region, an addition of 1.2 million tpy of EAF-based steelmaking capacity is planned by 2017. Identified closures in the region amount to 0.18 million tpy of BOF steelmaking capacity, leading to a net steelmaking capacity increase of 1.02 million tpy.
- In Latin America, there are no capacity additions underway in Chile.
- In the Middle East region, there are no capacity additions underway in Israel.
- In Oceania, there are no capacity additions underway in Australia and New Zealand.
- In the Asian region, total crude steelmaking capacity additions currently underway in OECD Member countries (i.e., Japan and Korea) amount to 0.9 million tpy. Most of these projects involve EAF technology. However, as part of a rationalisation process and structural reform in the industry, decisions have already been taken to reduce production capacity. Total crude steelmaking capacity closures in the region amount to 1.99 million tpy. Overall, the net change in crude steelmaking capacity will be negative and amount to 1.09 million tpy by 2017.

Table 2. Estimates for OECD steelmaking capacity until 2017

OECD Economies

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	% (A+B)/(A)
OECD Europe	281.0	0.0	4.4	281.0	285.4	0.0
Other Europe	57.7	0.0	4.4	57.7	62.1	0.0
Turkey	49.4	0.0	4.4	49.4	53.8	0.0
NAFTA	160.4	1.0	10.3	161.4	171.7	0.6
Oceania	9.1	0.0	5.0	9.1	14.1	0.0
Australia	8.2	0.0	5.0	8.2	13.2	0.0
New Zealand	0.9	0.0	0.0	0.9	0.9	0.0
OECD Latin America	1.5	0.0	0.0	1.5	1.5	0.0
Chile	1.5	0.0	0.0	1.5	1.5	0.0
OECD Middle East	0.5	0.0	0.0	0.5	0.5	0.0
Israel	0.5	0.0	0.0	0.5	0.5	0.0
OECD Asia	217.0	-1.1	0.8	215.9	216.7	-0.5
Japan	131.1	-2.0	0.0	129.1	129.1	-1.5
Korea	85.9	0.9	0.8	86.8	87.6	1.0
OECD TOTAL*	669.5	-0.1	20.5	669.4	689.9	0.0

Source: OECD Secretariat calculations.

IV. Postponements, cancellations and closures of capacity

Postponements and cancellations

At the last session of the Steel Committee in May 2015, the OECD Secretariat was requested to provide additional information regarding cancellations and postponements of new investment projects. Since then, some cases of postpouement or cancellation of investment projects have been identified. These changes are reflected in the updated investment project database and a brief summary is provided below.

- In the Commonwealth of Independent States (CIS) region, planned or underway investment projects amounting to a total of 3.33 million tpy steelmaking capacity have been postponed (2.88 million tpy) or cancelled (0.45 million tpy). The majority of the investment projects concerned intend to deploy EAF-based facilities. Reasons cited for the postponement and cancellation are weak market conditions, shortages of funding, and difficulties in finding suitable sites for some mills.

- In Africa, an investment project that planned to commission EAF-based plants has been put on hold due to power connection issues. The production capacity of investments that were postponed is estimated at 2.05 million tpy.

- In the Middle East, investment projects which aim to add 2 million tpy of steelmaking capacity have been postponed because of power connection issues, and a lack of financing sources. In addition, a project with an estimated capacity of 0.24 million tpy has been cancelled. The total

amount of cancellations and postponements amounts to 2.24 million tpy. Most of these projects focus on the EAF production route, which is common in the region.

- In Asia, new investment projects which plan to add 1.57 million tpy of EAF steelmaking capacity in the region have been put on hold due to the current economic situation and market conditions. An additional project with planned EAF capacity of 0.6 million tpy has been cancelled, bring the total amount of cancellations and postponements to 2.17 million tpy.

- Within the OECD area, the status of several Turkish projects has changed, with some cancellations and postponements observed. For example, BOF and EAF projects amounting to 2.4 million tpy, slated to come on stream in 2014 and 2015, have been cancelled. Moreover, a 500 000 tonne EAF project that was underway for completion this year has been postponed.

Overall, new investments projects that were either planned or underway totalling 9.79 million tpy have been postponed or cancelled in different regions in the world, some due to market conditions and others as a result of technical difficulties encountered (e.g. location or funding). The OECD Secretariat will continue to monitor these developments and reflect any changes in the steelmaking capacity estimates. Delegates are encouraged to provide comments and corrections on the information disclosed to ensure maximum accuracy.

Closures

Closures are particularly challenging to incorporate in capacity forecasts, given difficulties in discerning permanent from temporary closures. Often, reference to a closure means that a company is selling assets and/or is restructuring, in which case the assets remain in place and possibly become operable under a new owner in the future. The so-called mothballing of a plant will stop production at the plant, but the capacity is preserved by the owner and may be restored if needed. Moreover, in some instances closures of a plant occur when the steel company is opening a more modern and usually bigger plant. These and many other factors suggest that there are difficult distinctions to be made about closures that are likely to reduce capacity permanently, capacity that is made latent and which can be put back into production at some point in the future and closures that are merely replaced by more modern equipment. Political decisions taken after the announced closure may also change the eventual nature and scope of the closure, adding to these uncertainties.

Incoming information about potential recent and future closures is still quite scattered. Most of the plants affected so far appear to be BOF-based plants, but this may reflect the fact that such facilities are larger than EAF plants and affect more workers, and thus they receive more media attention than EAF closures. Moreover, a serious caveat is the need to obtain information on the closure of Chinese steel plants. However, the Secretariat hopes to address these issues in the future through a joint project with the Development Research Center of China on industrial upgrading. A brief summary of potential closures are listed below and an explanation is provided on whether or not they were taken into account in the capacity forecasts.

- In the European Union, there appears to have been a total of around 6.7 mmt of closure in 2014, occurring in Belgium, Italy and Hungary. The age of the BOF plants ranged from 32 to 51 years. Including a 2.5 mmt closure in Belgium in 2013, the total amount of capacity closure in the EU since 2013 has been 9.2 mmt. These are taken into account, and reflected in the Secretariat's existing capacity for the EU in 2014. Very recently, there has been an announcement of a 3.9 mmt capacity closure in the UK. This has not yet been included in the capacity estimate for the EU.

- In the NAFTA region, closure information has emerged during 2015, with two potential BOF closures in Canada and one in the U.S. The combined capacity is 7.47 mmt. Because recent news suggested that the company in Canada was seeking an order to continue operations and obtain further relief, the Canadian closures have not yet been accounted for in the 2015 NAFTA capacity figure until there is further confirmation. The U.S. closure was included in the NAFTA capacity estimate, because the company involved made reference to a permanent shutdown of the blast furnace.

- In Asia, closures in Korea amounting to 2.68 mmt in 2014-2015 were referred to at previous sessions of the Steel Committee. In Japan, an EAF is closing a mill with a capacity of 400 000 tonnes in 2015. Another mini-mill decided to stop its last remaining electric-arc furnace and has started to dismantle it. Thus, a further 480 000 tonnes of EAF capacity will be closed in Japan by 2016. In addition, 1.4 mmt of Japanese blast furnace capacity will be shut down by 2017. These Korean and Japanese closures have been taken into account in the capacity estimates.

- Elsewhere, closures of 3 mmt of OHF capacity in India are planned, but given their uncertain nature, have not been taken into account in the capacity figures presented in this document. Reference to Russian closures amounting to approximately 3.8 mmt of capacity have also been referred to at recent sessions of the Steel Committee, but have not yet been taken into account due to uncertainties pertaining to the whether they are being replaced by other capacity. In the Middle East, closures in Qatar of 600 000 tonnes have also been announced, but are not confirmed.

- To summarise, a total of nearly 17 mmt of closures is reflected in the Secretariat's capacity figures. However, the current market downturn is likely to result in further closures over time of the financially weakest companies, and these figures may change rapidly. Moreover, there are a number of uncertainties surrounding closure estimates and further work will have to be done to improve the quality and comprehensiveness of the information. These issues will be discussed at the next session of the Steel Committee.

V. Developments in steelmaking capacity of Non-OECD economies: Two-yearly report

Recent developments

Trends in capacity, production and consumption

The total steelmaking capacity of non-OECD economies expanded rapidly over the past decade, rising from 760.8 million tpy in 2005 to 1.65 billion tpy in 2014. For the decade as a whole, growth in capacity amounted to 117.1%. The most significant increase occurred in China, where steelmaking capacity increased by 716.2 million tpy, accounting for 80.4% of the total 891.3 million tpy increase for all non-OECD economies during this decade (Table 3).

Table 3. Change in steelmaking capacity

Unit: million tonnes

	2005 (A)	2007	2009	2012	2014 (B)	Changes (B-A)	(B/A %)
Non-OECD Europe	7.6	7.6	7.6	8.3	8.3	0.8	9.9
CIS	125.2	134.7	141.5	144.4	146.7	21.5	17.2
Latin America	51.5	56.6	61.1	67.3	68.1	16.5	32.0
Africa	27.7	29.8	30.6	30.8	33.9	6.1	22.2
Middle East	19.7	22.2	28.8	42.7	57.6	38.0	193.1
Asia	529.1	707.6	860.0	1135.9	1337.6	808.4	152.8
China	423.8	588.5	718.0	959.9	1140.0	716.2	169.0
India	52.0	60.0	75.0	96.5	108.0	56.0	107.7
Other Asia	53.4	59.1	67.0	79.5	89.6	36.2	67.8
Non-OECD total	**760.8**	**958.4**	**1129.5**	**1429.4**	**1652.1**	**891.3**	**117.1**

Capacity utilisation and self-sufficiency

Of the total 1.65 billion tpy steelmaking capacity for the non-OECD economies at the end of 2014, 70.1% was being utilised, as indicated in Table 4. Capacity utilisation rates in non-OECD Europe, Asia and the CIS exceeded 70%, while utilisation rates in Latin America, Africa and the Middle East remained at low levels of 66.4%, 44.3% and 51.5% respectively.

Table 4. Capacity utilisation rate

Unit: million tonnes

	Capacity 2014 (A)	Crude steel production 2014 (B)	Utilisation rate (B/A %)
Non-OECD Europe	8.3	6.2	74.3
CIS	146.7	106.1	72.3
Latin America	68.1	45.2	66.4
Africa	33.9	15.0	44.3
Middle East	57.6	29.7	51.5
Asia	1337.6	956.3	71.5
China	1140.0	822.7	72.2
India	108.0	87.3	80.8
Other Asia	89.6	46.4	51.8
Non-OECD total	**1652.1**	**1158.5**	**70.1**

Note: CIS denotes the Commonwealth of Independent States.

Sources: OECD (for capacity) and the World Steel Association (for production).

In Asia, self-sufficiency rates in both China and India have been increasing, in line with their rapid capacity expansion (Table 5). In contrast, Africa and Other Asia, including ASEAN-6, have some of the lowest self-sufficiency rates, indicating a greater reliance on imported steel. In addition, Latin America's self-sufficiency rate has been on a decreasing trend over the past several years, as steel imports have increased strongly. Although the Middle East's self-sufficiency rate is still very low, it is on an upward trend, which is indicative of significant capital investment activity in the region. The CIS region has a high self-sufficiency rate of approximately 168%, reflecting the high degree of export orientation of steel producers in this region. Nevertheless, the CIS self-sufficiency rate has been declining since 2010.

Table 5. Self-sufficiency rate of crude steel

Unit: million tonnes

	Crude steel production (C)		Apparent consumption (D)		Self-sufficient rate (C/D %)	
	2010	2014	2010	2014	2010	2014
Non-OECD Europe	7.9	6.2	8.7	9.9	90.4	62.8
CIS	108.2	106.1	55.5	63.3	194.8	167.7
Latin America	44.1	45.2	47.6	51.0	92.7	88.7
Africa	16.6	15.0	30.2	40.0	55.0	37.6
Middle East	19.7	29.7	50.8	53.6	38.7	55.3
Asia	749.3	956.3	769.2	938.1	97.4	101.9
China	638.7	822.7	612.1	740.4	104.4	111.1
India	69.0	87.3	89.1	81.7	99.8	106.9
Other Asia	41.5	46.4	88.1	116.1	47.2	39.9
Non-OECD total	**945.7**	**1158.6**	**962.1**	**938.1**	**98.3**	**123.5**

Note: CIS denotes the Commonwealth of Independent States.

Source: OECD calculations based on data from the World Steel Association.

Outlook until 2017

Between 2014 and 2017, the total steelmaking capacity of non-OECD economies is expected to increase from 1.65 billion tpy to 1.75 billion tpy, or by 6.1 % during the period as a whole (Table 6). This corresponds to an average annual growth rate of 2.0%. In terms of volume, the largest expansion is expected to occur in India, which should account for 30.7% of the total capacity increase in non-OECD economies. This is followed by China (27.6%), Islamic Republic of Iran (hereafter 'Iran') (11.8%), Viet Nam (8.7%) and Saudi Arabia (4.7%).

Table 6. Estimates for steelmaking capacity in 2017

Unit: million tonnes

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes	
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	Volume (B)	% (A+B)/(A)
Non-OECD Europe	8.3	0.0	0.0	8.3	8.3	0.0	0.0
CIS	146.7	4.1	9.5	150.8	160.3	4.1	2.8
Russian Federation	89.0	4.1	7.0	93.1	100.1	4.1	4.6
Ukraine	42.5	0.0	1.5	42.5	44.0	0.0	0.0
Latin America	68.1	4.6	16.8	72.7	89.5	4.6	6.8
Brazil	48.0	2.0	12.8	50.0	62.8	2.0	4.2
Africa	33.9	2.0	14.6	35.9	50.5	2.0	5.9
Egypt	11.2	2.0	2.0	13.2	15.2	2.0	18.0
Middle East	57.6	18.1	34.0	75.7	109.7	18.1	31.4
Iran	27.0	11.8	22.9	38.8	61.7	11.8	43.7
Saudi Arabia	12.5	4.7	6.2	17.2	23.4	4.7	37.9
Asia	1337.6	71.5	256.4	1409.1	1665.5	71.5	5.3
China	1140.0	27.7	13.3	1167.7	1181.0	27.7	2.4
India	108.0	30.8	206.7	138.8	345.5	30.8	28.5
Other Asia	89.6	13.0	36.4	102.5	138.9	13.0	14.5
Non-OECD TOTAL	1652.1	100.3	331.3	1752.5	2083.8	100.3	6.1

Notes: CIS denotes the Commonwealth of Independent States. ASEAN-6 denotes the aggregate of Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam. Low refers to the capacity level resulting from all projects currently underway (A+B), while high refers to the level resulting from all projects currently underway and planned (A+B+C). Changes in capacity are estimated based on the capacity additions that are considered "underway" (B).

The capacity expansion in non-OECD economies over the next few years was supported by expectations of continued and stable growth in steel demand and the availability of raw materials. While China continues to lead this capacity expansion, other developing economies are accounting for a rising share of the capacity increase, as governments target growth, and in some cases self-sufficiency, in steel production. The Middle East, the CIS region, India, and other developing Asian economies are becoming increasingly important in this context. A summary of key investments by economy is presented below.

Key investments by economy

Non-OECD Europe

Few changes affecting steelmaking capacity are expected in this region. Currently, efforts are being made to modernise and restructure the steel industry.

The Commonwealth of Independent States (CIS)

Owing to plentiful raw material supplies, the CIS region produces more steel than it demands, and bas become the largest net exporting region in the world. With regard to steel demand, apparent crude steel consumption in the region grew by 13.9% to 63.3 mmt between 2010 and 2014. However, steel consumption is still below its 2013 level due to the Ukrainian crisis. Efforts to modernise steel production facilities continue to take place in the region, with several mini-mill projects and the replacement of outdated OHF furnaecs with new BOF and EAF furnaces having been announced. Between 2005 and 2014, the region's share of crude steel production via the energy-intensive OHF technology decreased from 26.8% to 7.1%, while the share of BOF and EAF production has risen to 67.0% and 25.9% respectively during this period.

To improve the **Russian** steel sector's technological level and competitiveness, in 2009 the Russian government announced a programme entitled "Strategy for Development of the Metallurgical Industry of Russia until 2020". The government is updating this strategy by focusing on the reduction of inefficient production capacity, improving the quality and sustainability of production, and reducing energy and raw material use in the steel industry. The Russian Federation is aiming to replace all of its OHF facilities by 2015. **Ukraine** expects to complete the replacement of its open hearth technology by 2018.

Several EAF projects have been planned, which may result in higher future scrap demand, although some projects have been delayed due to lack of funding. **Russian** electric arc furnace steelmaking is expanding and the government expects the share of EAF production to reach 39% by 2020. Nevertheless, the BOF process is likely to remain the main production process in the region. In the CIS region, steelmaking capacity is projected to increase from 146.7 million tpy in 2014 to 150.8 million tpy in 2017 (at an average annual rate of 0.9%). A brief summary of the major projects occurring in the region is provided below:

- *Tulachermet-Steel,* a pig iron producer in **Russia**, is building an integrated steelmaking and rolling plant at its Tulachermet pig iron plant. The first phase of the steelworks project will be completed hy 2016. The new plant will install a 160-mt BOF (2.0 million tpy) and the output will be sold domestically, particularly in the Central Federal District. Investments into the project are estimated at RUB 30 billion. In addition, the company is considering the possibility of the second phase of the project.

- *Stavropol Steel (StavStal)* in **Russia** commissioned its rebar rolling mill in July 2014. Construction of the second phase is underway. The second phase of the project involves the

construction of an electric steelmaking complex (500 000 tpy), comprising an EAF and a billet caster. The new steelmaking complex is expected to begin operations in 2015.

- *Tekhnopark-Tatelektromash* managing company in **Russia** is proceeding with the construction of the *Kamsky Metallurgical Plant TEM-PO* longs plant. The new plant comprises a 65-mt electric arc furnace, a three-strand continuous casting machine and a rolling mill. It has an installed capacity of 500 000 tpy of crude steel. The products will be sold mainly in domestic market. The plant is expected to begin operations in 2016.

Latin America

In Latin America, where competitively priced slab dominated global steel markets in the 1980s and 1990s, major steelmakers aimed at setting up slab-for-export works, especially in **Brazil**, to take advantage of low operational costs owing to one of the world's highest quality iron ore deposits. As a result, several greenfield slab-for-export projects have been announced since then. Between 2010 and 2014, apparent crude steel consumption of non-OECD economies in Latin America increased from 47.6 mmt to 51.0 mmt, in other words by 7.2% during the period. However, Latin America's self-sufficiency rate has been on a decreasing trend over the past several years, as steel imports have increased strongly. Indeed, the region has recently passed from being a net exporter to a net importer of finished steel.

Most of the capacity expansion projects in Latin America will occur in **Brazil**. Several greenfield slab projects have been planned by major mining groups or steelmakers because of the proximity to key raw materials such as iron ore, even though some projects have been postponed or cancelled due to reasons such as recent market weakness and logistical problems. For example, major steelmakers such as *Baosteel* and *ArcelorMittal* abandoned plans for slab-for-export works in the country. *The CSA Siderúrgica do Atlântico* project, which was commissioned by *ThyssenKrupp AG*, was based on the premise that slabs would be produced at low cost using high-quality Brazilian ore. On the other hand, several projects are starting in the long products segment in the country, to meet demand for construction steel. For instance, major Brazil steelmaker *Companhia Siderúrgica Nacional (CSN)* has commissioned its new longs plant to enter the Brazilian longs market. Elsewhere in Latin America, governments and state owned enterprises (SOEs) are playing a role in investment projects, in cooperation with Chinese companies. For example, **Plurinational State of Bolivia (hereinafter 'Bolivia')** and **Ecuador** aim to build their first integrated steel mills.

On the one hand, steel production via the BOF route is likely to remain the major steelmaking process in Latin America owing to many greenfield slab-for-export projects. On the other hand, several EAF projects are starting in the long products segment. As a consequence of several investment projects, the steelmaking capacity of non-OECD economies in Latin America is estimated to increase to 72.7 million tpy by 2017, from 68.1 million tpy in 2014 (at an average annual rate of 2.3%). Major projects occurring in the area are provided below:

- In **Brazil,** future slab maker *Companhia Siderúrgica do Pecém (CSP)* is a joint venture of Brazil mining group *Vale* (50%) and Korean steel producers *Dongkuk* (30%) and *POSCO* (20%). The slab-making project is expected to begin producing 3 million tpy of slabs by 2016. The USD 4.29 billion Phase I involves installation of a 3 800 cubic metre blast furnace and a 300-mt BOF (3 million tpy). After Phase II, steelmaking capacity will be doubled to 6 million tpy.

- State-owned company *Siderurgica Nacional (SN)* in **Bolivarian Republic of Venezuela (hereinafter 'Venezuela')** is constructing a new plant in Ciudad Piar, Bolivar. The USD 3.8 billion project will include installation of a 1.55 million tpy EAF complex, consisting of a 200-mt

electric-arc furnace, a continuous slab caster and a heavy-plate mill. The plant is projected to begin operations in 2015.

- **Brazil**'s *Gusa Nordeste* currently operates three blast furnaces (360 000 tpy in total). The company plans to complete installation of a 600 000 tpy BOF plant and a bar and rod mill with the same capacity in Acailandia in 2016. Investments are estimated at USD 500 million. The company plans to double its capacity to 1.2 million tpy upon the second phase.

Africa

Over the past few years, African steel demand has been affected by political turbulence and the so-called "Arab Spring" that began in late 2010. Nevertheless, Africa's apparent crude steel consumption has grown steadily (from 30.2 mmt to 40.0 mmt between 2010 and 2014), supported by state-funded construction projects. The automotive industry has also become an important steel-consuming market, with major carmakers announcing plans to build new plants in North Africa. Africa is still reliant on steel imports to meet demand, but the region is aiming to lower its dependence on imports. To increase its self-sufficiency and press forward with industrialisation, many upstream projects have been planned, notably in North Africa. These projects may have a significant impact on southern European exporters of long products.

Algeria is now the fastest growing steel-consuming market in Africa, supported by government plans to build new cities and due to housing as well as other infrastructure needs. In order to diversify its economy, which is focused on hydrocarbon exports, the government is aiming to continue increasing domestic steel production. Algeria and Qatar plan to strengthen their economic cooperation in various sectors, including mining, marine transport, oil and gas, and petrochemicals. The construction of the new plant *Algerian Qatari Solb Company* (4 million tpy in total) in Jijel province will be an example of the successful cooperation between the two countries and will promote regional industrial development. Although **Egypt** is the largest Direct-Reduced Iron (DRI) producer in Africa, the country is experiencing a shortage in natural gas distribution, which has delayed the launch of some plants. In addition, the government of Egypt has decided to remove the natural gas subsidies for the steel industry under an economic improvement strategy, which is likely to affect the mills that operate DRI/HBI-modules. In **South Africa**, *ArcelorMittal South Africa* has played a dominant role, but China's state-owned *Hebei Iron & Steel (Hegang)* has announced plans to build a 5 million tpy greenfield steelworks to be supplied by output from its iron ore mine in the country.

Although Africa is still reliant on steel imports to meet demand, some DRI-based mini-mill projects are expected to raise the region's self-sufficiency rate gradually. However, technical and electricity/gas supply problems as well as political unrest may delay the start-up of some projects. The EAF route is expected to remain the main steelmaking process. Steelmaking capacity in the region is forecast to increase from 33.9 million tpy in 2014 to 35.9 million tpy by 2017 (at an average annual rate of 1.9%). Several projects underway in the region include:

- In **Egypt**, *Beshay Steel* has installed a 1.76 million tpy DRI-module and started production at the 650 000 tpy steelmaking complex No.1 in 2014. Initially the melt shop was planned to be commissioned in 2011 but start-up was postponed due to the unstable political situation and electricity and gas supply interruptions. Currently, the construction of a melt shop No.2 (650 000 tpy of billets) is underway.

- Also in **Egypt**, *Egyptian Steel Group* is building two mini-mills in Beni Suef and Ain Al Sokhna, each with a designed capacity of 830 000 tpy of steel and 530 000 tpy of rebar. Consequently, the

group's production capacity will reach 1.66 million tpy of steel and 1.76 million tpy of long products. Investments are estimated at EGP 5 billion.

- *El Marakby for Steel* in **Egypt** is continuing to install EAF equipment (45-mt) with a capacity of 350 000 tpy. Total investments are estimated at USD 90 million.

Middle East

Despite the political turmoil, the Middle East is considered as an important market in terms of steel demand, supported by ongoing construction and infrastructure activity. However, the oil market downturn is now clouding demand developments. Between 2010 and 2014, apparent crude steel consumption in the non-OECD Middle East region grew by 5.5% to 53.6 mmt. Currently, oil exporters are aiming to diversify their economies and this could support steel demand from the manufacturing sector. Low energy and labour costs make the region one of the most competitive for producing DRI. Although the Middle East has traditionally been a substantial importer of steel products because it had little steelmaking capacity, many projects have recently been announced, which may reduce the region's dependency on steel imports.

The **Iranian** government has announced plans to increase national steelmaking capacity to 55 million tpy by 2025 and to be a net steel exporter after it achieves self-sufficiency. For instance, eight mini steelworks have been under construction by state-owned *IMIDRO* since 2006. Although, several projects were put on hold due to the economic sanctions and inability to import technologies, prospects of industrial development and the lifting of sanctions may attract investors who were waiting for the investment climate to improve. In **Saudi Arabia**, several infrastructure projects based on state oil revenues and many housing projects have given a significant boost to steel demand. This has led to an increase in the economy's steelmaking capacity. However, a shortage in natural gas allocation and electricity generation capacity has delayed the launch of a number of steelworks. As an economy that is highly dependent on oil exports, **Oman** is currently trying to diversify its economy. Growing steel demand (driven by construction activity) is encouraging domestic producers to increase their capacities and is attracting new investors to the steel industry. **Bahrain** launched its first crude steelmaking plant recently.

The Middle East might become the fastest growing steel-producing region in the period until 2017. DRI is generally expected to remain a major feedstock in EAF steelmaking, and the EAF process is expected to continue to play a dominant role in the region's steel production. However, insufficient power generation capacity and geopolitical tensions in the region could hamper future growth in steel production capacity. Steelmaking capacity in the non-OECD Middle East region is expected to increase from 57.6 million tpy to 75.7million tpy between 2014 and 2017 (at an average annual rate of 10.5%). Several important projects in the region include:

- In **Iran**, Middle East Mines Industries Development Holding Company (MIDHCO) is involved in three greenfield projects in the country: Butia Steel Company (BISCO), Sirjan Iranian Steel Company (SISCO) and Zarand Iron & Steel Company (ZISCO). The ZISCO project involves building a blast furnace and a BOF-based steel melt shop (1.7 million tpy), while DRI-based EAF steelmaking shops will be equipped at BISCO (1.5 million tpy) and SISCO (1.0 million tpy) plants.

- **Iran**'s *Kish South Kaveh Steel Co (SKS)* plans to begin the commissioning of a new steel melt shop (1.2 million tpy), equipped with a 170-mt EAF under Phase I of the expansion project by 2015, which was launched in 2009. After Phase II, the company's capacity will be doubled.

- In **Saudi Arabia**, Jordan's *Taybah Steel Group* commissioned an induction furnace-based plant (0.25 million tpy), under the name of *Watani Steel I* to produce rebar in 2015. In addition, the

construction of *Watani Steel II* has been launched. The new steelworks will be equipped with a 1.5 million tpy EAF.

China

China has been showing significant growth in recent years, with its apparent crude steel consumption increasing from 612.1 mmt in 2010 to an estimated 740.4 mmt in 2014, in other words by 21.0% during the period. However, the rate of increase in Chinese steel demand has been slowing: Chinese steel demand in 2014 saw negative growth for the first time since 1995 amid a property market slowdown. The role of fixed asset investment as a driver of steel demand should continue to decline, while the service sector's share in total output is expected to increase. In China, a decline in steel intensity would be expected over time as the country becomes more dependent on services as a source of growth. Although many analysts had previously predicted that steel demand/production in the country would peak around 2020 or 2025, now that point could be reached much sooner. After three decades of significant economic development, China is now said to be shifting to a lower but still rapid and likely more sustainable growth path, the so-called the "New Normal".

Over the past decade, China has displayed a sharp increase in steelmaking capacity, and has accounted for most of the world's capacity growth since the early 2000s. As a result of overly optimistic estimates of future steel demand, the country is facing a considerable excess capacity challenge. The Chinese steel industry has been suffering recently from declining profits and many Chinese mills have faced losses over the last few years. Currently, the Chinese government is making efforts to eliminate outdated steel capacity to mitigate overcapacity and air pollution. On 6 October 2013, the State Council issued the Guidelines for Resolving Overcapacity, targeting the closure of 80 million tpy of steel capacity by the end of 2017, in addition to addressing overcapacity problems in the cement, aluminium, plate glass and shipbuilding industries. Moreover, the Ministry of Industry and Information Technology (MIIT) has called for public feedback on a draft of the Policy for Restructuring of the Steel Industry, an update of the initial version of the Steel Industry Development Policy issued in 2005. Some key points are summarised as follows:

- By 2017, alleviate the degree of excess capacity and increase the capacity utilisation ratio to 80%;
- New projects should be accompanied by the closure of an equal or greater amount of the existing capacities by 2017;
- Remove restrictions on foreign investment in the Chinese steel industry;
- Aim to lift the share of China's top ten steel mills in total output above 60% and form three to five ultra-large steel conglomerates, both by 2025; and
- Promote scrap usage, lifting the proportion to no lower than 30% of the scrap feedstock by 2025.

The location of China's steelworks has important implications not only for the structure of steel supply, but also in terms of how raw materials are accessed. There appears to have been a shift in focus from the tradition of building mills in resource-rich inland regions to coastal areas, where it is convenient to import raw materials, because domestic supplies have become insufficient in meeting the requirements of mainland production. Despite this trend, several projects still have been announced in resource-rich regions such as Xinjiang. The commissioning of the Yingkou Bayuquan Project in 2008 (in Liaoning Province) and the Caofeidian Project in 2010 (in Hebei Province) are examples of the significant transformation that has occurred in China's steel industry towards coastal plants that are focused on the

production of flat steel products. Most coastal steelworks are designed to produce high value-added products to meet demand for flat products in the automotive and home appliance industries in China.

Although the growth rate of Chinese capacity is slowing down owing to government policy measures aimed at constraining the industry's expansion, the construction of some very large integrated steel plants may keep the level of capacity on an upward path. Many Chinese mills are also looking to build steel plants in overseas markets, such as in Southeast Asia and Africa, as the overcapacity challenge is making it difficult for them to make a profit in the domestic market.

The BOF production process will remain the dominant route in China in the years to come, while the EAF share may increase slowly along with increasing availability of domestic scrap. As a result of several investment projects, steelmaking capacity in China is expected to increase from 1.14 billion tpy to 1.17 billion tpy between 2014 and 2017 (at an average annual rate of 0.8%). The rate of increase in Chinese capacity is nevertheless slowing. Despite a slowdown in China's capacity growth rate compared to previous years, large steelworks that focus on the production of flat products are being built in the country, namely:

- *Baosteel*'s greenfield Zhanjiang steelworks project, which is approximately 200 km from *Wuhan*'s Fangchenggang plant, was launched in May 2012. *Baosteel* will install two 5 050 cubic metre blast furnaces (8.2 million tpy capacity in total) and three 350-mt BOFs (8.9 million tpy capacity in total) at the Zhanjiang works. The steelworks' location close to the port complex will facilitate imports of iron ore used as feedstock. The RMB 41.5 billion project is scheduled to be completed by 2016. Equipment commissioning will progress in stages: crude steel, slab and HRC production is expected to start in 2015, while CRC and HDG steel manufacturing is scheduled for 2016.

- *Wuhan Iron & Steel (Wugang)* launched the construction of its Fangchenggang steelworks project in May 2012. The RMB 63.99 billion project involves the installation of two 5 200 cubic metre blast furnaces (8.4 million tpy capacity in total), three 300-mt BOFs (9.2 million tpy in total), as well as plate mill, hot strip mill and a cold strip mill. The company has decided to commission its cold strip mill ahead of its iron, steel and hot strip mill, and started its first commercial production and rolled out the first coil from the pickling and cold rolling mill on 28 June 2015.

- *Shandong Iron and Steel Group* formally started construction of its Rizhao project in June 2013. The RMB 56.75 billion steel plant will have two 5 100 cubic metre blast furnaces (8.1 million tpy capacity) and two 200-mt and two 250-mt BOFs (8.5 million tpy in total) in order to produce high-end flat products for the home appliance, automotive, machinery, and offshore engineering sectors. The new Rizhao works will be located close to the privately-owned *Rizhao Iron & Steel* as well as Rizhao port, a major raw materials hub. Production is scheduled to start in 2016-2017.

India

India recently became the third largest steel producer in the world. As an economy with a large population and rich iron ore and coal resources, India has significant potential for steel consumption and production growth. Between 2010 and 2014, its apparent crude steel consumption increased from 69.1 mmt to 81.7 mmt, in other words by 18.2% during the period. Convergence of the country's very low per-capita consumption towards the higher levels found in more developed economies would result in significantly higher steel consumption. "Make in India", a program launched by the Government of India in 2014 to transform the country into a global manufacturing hub could contribute to the development of mining and metallurgical industries.

On 5 February 2013, the Indian government published a draft National Steel Policy in order to reflect changes in the domestic and global economic situation since the last Steel Policy of 2005. The current Steel Policy aims at transforming India's steel industry into a global leader, in terms of production, consumption, quality and efficiency while achieving environmental and social snstainability. Based on forecasts for steel consumption, India's authorities expect that steelmaking capacity may have to increase to 300 million tpy by 2025-26 in order to meet future demand. As a result of several investment projects, India may become the world's second largest steel manufacturer in the medium term. In fact, significant amounts of new production capacity are scheduled to come on stream in the next few years.

Although EAF is still the major steelmaking process in India, BOF's share is likely to increase gradually, supported by new investment projects tbat are iron ore/coking coal-intensive. However, capacity expansions (particularly greenfield projects) have proceeded slowly in recent years due to obstacles associated with land acquisition and difficulties in obtaining the required environmental and forest permits. The main contribution will come from brownfield expansions. Steelmaking capacity in India is expected to increase from 108.0 million tpy to 138.8million tpy between 2014 aud 2017 (at an average annual rate of 9.5%). The upstream (crude) projects that are underway in the country include:

- To hoost its steelmaking capacity, state-owned *Steel Authority of India Ltd (SAIL)* blew-in a new blast furnace (4 060 cubic metre) and installed a BOF (1.5 million tpy) in 2013-2014 at its Rourkela Steel Plant (RSP) in Odisha state. In addition, the company commissioned the largest blast furnace in India (4 160 cubic metres) and installed a BOF shop (2.5 million tpy) in 2014 at its IISCO Steel Plant in West Bengal state. Moreover, the company will install a new blast furnace (4 060 cubic metres) and a new BOF shop (4.0 million tpy) and decommission its OH furnaces at its Bhilai plant in Chhattisgarh state.

- *Jindal Steel & Power Ltd (JSPL)* will increase its crude steelmaking capacity through the following brownfield projects: the company will install two BOFs (3.8 million tpy in total) as part of the 6 million tpy build-up of its integrated steelworks at Angul plant in Odisha state. In addition, the company will install a 4 109 cubic metre blast furnace (2.7 million tpy) and a BOF shop (3.2 million tpy).

- *Tata Steel* began construction of the greenfield Kalinganagar works in Odisha state in January 2011 and expects to commission the first phase of its integrated mill by 2016 with a 4 330 cubic metre blast furnace and a BOF (3.0 million tpy). The cost of the Kalinganagar project is now estimated at INR 400 billion. In the second phase of the project, the company will increase its capacity at the Kalinganagar plant to 6 million tpy. The company also aims to further expand production capacity at its Jamshedpur works to nearly 11 million tpy from 9.7 million tpy currently.

The Association of Southeast Asian Nations (ASEAN)

The Association of Southeast Asian Nations (ASEAN) is now one of the fastest growing steel-consuming markets in the world. Over the last few years, there has been a major expansion of steel consumption, supported by a rapidly developing automotive sector, robust construction activity, and various infrastructure projects. Between 2010 and 2014, apparent crude steel consumption in ASEAN-6 increased from 57.1 mmt to 76.8 mmt, in other words by 34.5% during the period. The share of flat products in ASEAN consumption has been rising gradually in the past several years, suggesting that the industrial structure of ASEAN economies is becoming more sophisticated. The region's steel demand is likely to benefit from a rapidly growing working-age population, positive economic growth prospects and rising urbanisation.

In May 2011, **Indonesia** launched a 15-year economic development plan, called the Master Plan for Acceleration and Expansion of Indonesia's Economic Development. In the Plan, the Sumatra Economic Corridor will function as a "Centre for Production and Processing of Natural Resources and the Nation's Energy Reserves". *PT Krakatau POSCO* blew-in its 3 million tpy steelworks in December 2013 in the corridor, which was the first large-scale blast furnace in South East Asia. **Viet Nam**'s Master Plan aims at developing the domestic steel industry, ensuring stability and sustainability of industrial development, and minimising the imbalance in manufacturing between pig iron, steel billet and finished products, as well as between long and flat steel products. According to the Ministry of Industry and Trade, capacity is targeted to reach 40 million tpy of steel billets by 2025. The **Philippines**' Roadmap, which was launched in October 2013, has set a long-term target of increasing steel production to 20 mmt by 2030.

Strong steel demand growth has attracted many foreign investors to the ASEAN region. Although the ASEAN region has traditionally been a large net importer of steel, a steel mill construction boom has recently been taking place in the region. Investment in new steel plants by Chinese steelmakers is also taking place in the region. In ASEAN, DRI and scrap have been the major feedstock for steel production because production takes place primarily in EAF-based facilities. However, BOF's share in the region's steel production is expected to increase gradually due to many BF/BOF investment projects. Steelmaking capacity in ASEAN-6 is expected to increase from 44.9 million tpy to 57.0 million tpy between 2014 and 2017 (at an average annual rate of 8.3%). Below is a brief summary of the major projects taking place in ASEAN:

- Chinese Taipei's *Formosa Plastics Group* started its integrated steel mill project in Ha Tinh province, **Viet Nam** in December 2012. The invested amount for the Phase I is about USD 10 billion. *Formosa Ha Tinh Steel Corporation* project will be carried out in two stages. Under Phase I, the company will construct two 4 350 cubic metre blast furnaces (3.2 million tpy each) and three 300-mt BOFs (7 million tpy). The steel plant will be equipped with a hot strip mill (5.4 million tpy), which will be the first HR mill in Viet Nam. Between Phase I+1 and Phase II+2, the group plans to construct another four BFs, which will take its melting capacity to 21.85 million tpy.

- *Gunung Steel Group* will install a new 1.2 million tpy steelmaking plant at Gunung Raja Paksi in **Indonesia**. The meltshop will be equipped with a 120-mt EAF and a slab caster. The project is aimed at substituting slab imports to feed the company's HRC production.

- *POSCO SS-Vina*, the Korean steelmaker's long products subsidiary in **Viet Nam** commissioned a 1 million tpy long steel plant in the Phu My 2 industrial zone in southern Ba Ria-Vung Tau province in 2015. The new plant is equipped with a 120-mt electric arc furnace, a caster to produce beam blanks and billets, and two rolling mills.

Table 7. Non-OECD crude steelmaking capacity

In million tonnes

	2005	2007	2010	2012	2014	2017	Annual growth rate (% per annum) 2012/10	2014/12	2017/14
Non-OECD Europe	**7.6**	**7.6**	**8.3**	**8.3**	**8.3**	**8.3**	**0.0**	**0.0**	**0.0**
Bulgaria	3.2	3.2	3.2	3.2	3.2	3.2	0.0	0.0	0.0
Romania	8.4	9.0	9.0	8.2	8.2	8.2	-15.6	0.0	0.0
CIS	**125.2**	**134.7**	**144.5**	**144.4**	**146.7**	**150.8**	**-0.1**	**0.8**	**0.9**
Russia	71.0	77.0	83.5	84.2	86.0	88.1	0.4	2.9	1.5
Ukraine	44.0	45.5	47.5	45.5	42.5	42.5	-2.1	-3.3	0.0
Kazakhstan	5.0	6.0	7.0	8.2	8.2	8.2	8.2	0.0	0.0
Latin America	**51.5**	**56.6**	**64.3**	**67.3**	**68.1**	**72.7**	**2.3**	**0.5**	**2.3**
Argentina	5.4	6.1	6.7	6.7	6.7	7.3	0.0	0.0	3.3
Brazil	36.4	39.0	45.0	47.5	48.0	50.0	2.6	0.5	1.4
Colombia	1.1	1.6	2.2	2.2	2.2	2.2	0.0	0.0	0.0
Peru	1.0	1.1	1.3	1.5	1.5	1.5	8.0	0.0	0.0
Venezuela	5.0	6.1	6.1	6.2	6.2	7.8	0.8	0.0	8.3
Africa	**27.7**	**29.8**	**31.3**	**30.8**	**33.9**	**35.9**	**-0.8**	**5.0**	**2.0**
Algeria	1.0	1.8	1.8	1.8	3.0	3.0	0.0	30.3	0.0
Egypt	6.0	6.0	9.3	9.3	11.2	13.2	0.0	9.9	6.0
Libya	1.3	1.6	1.6	1.6	1.6	1.6	0.0	0.0	0.0
Nigeria	2.7	2.7	2.9	2.9	2.9	2.9	0.0	0.0	0.0
South Africa	12.1	13.0	12.0	10.3	10.3	10.3	-7.1	0.0	0.0
Middle East	**19.7**	**22.2**	**32.8**	**42.7**	**57.6**	**75.7**	**15.1**	**17.5**	**10.5**
Iran	12.0	12.0	17.0	23.0	27.0	38.6	17.6	8.7	14.6
Oman	0.0	0.0	0.5	0.5	3.1	4.3	0.0	255.0	13.1
Qatar	1.5	1.5	2.0	2.0	3.1	2.5	0.0	27.5	-6.5
Saudi Arabia	5.0	7.4	7.6	8.6	12.5	17.2	6.6	22.8	12.6
United Arab Emirates	0.2	0.2	2.0	3.0	3.7	3.7	24.5	11.8	0.0
Asia	**529.1**	**707.8**	**952.6**	**1,135.9**	**1,337.6**	**1,409.1**	**9.6**	**8.9**	**1.8**
China	423.8	588.5	800.3	959.9	1,140.0	1,167.7	10.0	9.4	0.8
Other Asia	105.4	119.1	152.3	176.0	197.6	241.3	7.8	6.1	7.4
Chinese Taipei	20.0	20.0	26.5	26.5	28.5	28.5	0.0	3.8	0.0
India	52.0	60.0	78.0	96.5	106.0	138.6	11.9	5.0	9.5
Indonesia	5.9	5.9	6.7	6.7	9.7	11.4	0.0	22.6	5.9
Malaysia	9.0	9.0	9.4	10.0	10.7	10.7	2.9	3.5	0.0
Pakistan	2.0	4.0	5.5	5.5	5.6	5.9	0.0	1.1	1.7
Philippines	1.6	1.6	2.0	2.0	2.0	3.4	0.0	0.0	23.3
Thailand	6.5	6.5	8.4	9.4	9.9	9.9	6.0	2.8	0.0
Vietnam	1.0	2.0	5.8	9.4	12.0	20.7	31.0	13.8	24.4
Non-OECD TOTAL	**760.8**	**958.4**	**1,233.8**	**1,429.4**	**1,652.1**	**1,752.5**	**7.9**	**7.8**	**2.0**

Notes: CIS denotes the Commonwealth of Independent States.

NOTES

[1] Only projects in the investment project database that are "underway" are used to generate the point estimates of future capacity presented here. Projects that are "planned", but not underway yet, are not included in the forecasts, but are used to generate the "high" capacity scenarios shown in the tables throughout this report.

[2] ASEAN-6 in this document refers to Indonesia, Malaysia, the Philippines, Thailand, Singapore and Viet Nam.

[3] Israel is excluded from the non-OECD Middle East aggregate due to its status as a Member of the OECD.

EXHIBIT 11

钢铁工业调整升级规划（2016-2020 年）

钢铁工业是国民经济的重要基础产业，是国之基石。长期以来，钢铁工业为国家建设提供了重要的原材料保障，有力支撑了相关产业发展，推动了我国工业化、现代化进程，促进了民生改善和社会发展。“十三五”时期是我国全面建成小康社会的决胜阶段，是“三步走”建设制造强国的开局阶段，也是钢铁工业结构性改革的关键阶段，制定并落实好钢铁工业调整升级规划（2016-2020 年），对实现钢铁工业转型升级，建成世界钢铁强国，建设制造强国具有重要意义。

钢铁工业调整升级规划（2016-2020 年）依据《中华人民共和国国民经济和社会发展第十三个五年规划纲要》、《中国制造 2025》和《国务院关于钢铁行业化解过剩产能实现脱困发展的意见》编制，作为未来五年我国钢铁工业发展的指导性文件。

一、行业现状

“十二五”时期，我国已建成全球产业链最完整的钢铁工业体系，提供了国民经济发展所需的绝大部分钢铁材料，产品实物质量日趋稳定，有效支撑了下游用钢行业和国民经济的平稳较快发展。与此同时，我国钢铁工业也面临着产能过剩矛盾愈发突出，创新发展能力不足，环境能源约束不断增强，企业经营持续困难等问题。

（一）“十二五”发展成就

1.支撑经济快速发展。“十二五”期间，在需求的带动下 ,我国粗钢产量由 2010 年的 6.3 亿吨增加到 2015 年的 8 亿吨,年均增长 5% ,并在 2014 年达到 8.2 亿吨的历史峰值。钢材国内市场占有率超过 99% ,基本满足了我国国民经济和社会发展对钢材的需求。2015 年，钢铁工业实现主营业务收入 7.3 万亿元，利税 2416 亿元，为国民经济快速稳定增长提供了重要保障。

2.品种丰富质量提升。“十二五”期间，关键钢材品种生产取得突破，以百万千瓦级核电用钢、超超临界火电机组用钢、高磁感取向硅钢、第三代高强汽车板、高性能海洋平

台用钢等为代表的高端装备用钢实现产业化。量大面广的建筑用钢实现升级换代，重点大中型钢铁企业 400 兆帕(Ⅲ级)及以上高强钢筋生产比例高达 99.6%，达到“十二五”规划“80%以上”的目标。钢材质量大幅提升，达到国外先进实物质量水平的钢材产品 497 项,产量占全部品种的 40%。

3.技术装备水平大幅提升。我国钢铁企业主体装备总体达到国际先进水平，已拥有一批 3000 立方米以上高炉、5 米级宽厚板轧机、2 米级热连轧机和冷连轧机等世界最先进的现代化冶金装备；重点大中型钢铁企业 1000 立方米及以上高炉占炼铁总产能 72%，100 吨及以上转炉（电炉）占炼钢总产能 65%。高效低成本冶炼技术、新一代控轧控冷技术、一贯制生产管理技术等一批关键共性技术广泛应用，新一代可循环钢铁流程在新建成企业中得到应用。

4.节能减排成效显著。“十二五”期间，共淘汰炼铁产能 9089 万吨、炼钢产能 9486 万吨。以干熄焦、干法除尘、烧结脱硫、能源管控中心为代表的节能减排技术在行业广泛应用。重点大中型企业吨钢综合能耗（折合标准煤）由 605 千克下降到 572 千克，吨钢二氧化硫排放量由 1.63 千克下

降到 0.85 千克，吨钢烟粉尘排放量由 1.19 千克下降到 0.81 千克，吨钢耗新水量由 4.10 吨下降到 3.25 吨，达到“十二五”规划目标。钢铁能源消耗总量呈下降态势。

5.产业布局日趋完善。在“一带一路”、京津冀协同发展、长江经济带三大战略和全国主体功能区规划引导下，我国钢铁工业布局日趋完善，宝钢湛江一期、武钢防城港等重大沿海基地项目建成投产和启动实施，从根本上改变了我国钢铁“北重南轻”的总体布局。青钢、芜湖新兴铸管、广钢已完成搬迁和转产，石钢、贵钢、杭钢等城市钢厂搬迁改造或转型发展正在实施。

6.两化融合水平明显提升。“十二五”期间，信息化技术在生产制造、企业管理、物流配送、产品销售等方面应用不断深化，关键工艺流程数控化率超过 65%，企业资源计划（ERP）装备率超过 70%。开展了以宝钢热连轧智能车间、鞍钢冶金数字矿山为示范的智能制造工厂试点,涌现了南钢船板分段定制准时配送（JIT）为代表的个性化、柔性化产品定制新模式。钢铁交易新业态不断涌现，形成了一批钢铁电商交易平台。

7.资源保障取得新进展。国内铁矿石价格指数、现货交易平台、期货交易的联动作用和国际影响力不断增强，铁矿石成交价格更加公开透明。利用境外铁矿资源的能力不断提升，已投产的权益矿产能累计 1.2 亿吨，较“十一五”末增长 114%。国内铁矿勘探力度不断加大，新增查明铁矿石资源量 133 亿吨。废钢资源利用不断推进，“十二五”期间累计利用废钢 4.4 亿吨，较“十一五”增长 14%。

（二）主要问题

1.产能过剩矛盾加剧。“十二五”期间，我国钢铁产能达到 11.3 亿吨左右，重点大中型企业负债率超过 70%，粗钢产能利用率由 2010 年的 79%下降到 2015 年的 70%左右，钢铁产能已由区域性、结构性过剩逐步演变为绝对过剩。产业集中度不升反降，前十家钢铁企业产业集中度由 2010 年的 49%降至 2015 年的 34% 没有达到“十二五”规划“60%”的目标。全行业长期在低盈利状态运行，2015 年亏损严重。

2.自主创新水平不高。我国钢铁行业自主创新投入长期不足，企业研发投入占主营业务收入比重仅有 1%左右，没有达到“十二五”规划“1.5%以上”的目标，远低于发达国

家 2.5%以上的水平，创新引领发展能力不强，尚未跨越消化吸收、模仿创新老模式。创新载体分散，资金、设备、人才等创新资源重复配置，产学研用协同创新不足，部分关键高端钢材品种还需依赖进口。

3.资源环境约束增强。我国钢铁行业装备水平参差不齐，节能环保投入历史欠账较多，不少企业还没有做到污染物全面稳定达标排放，节能环保设施有待进一步升级改造。吨钢能源消耗、污染物排放量虽逐年下降，但抵消不了因钢铁产量增长导致的能源消耗和污染物总量增加。特别是京津冀、长三角等钢铁产能集聚区，环境承载能力已达到极限，绿色可持续发展刻不容缓。

4.企业经营亟需规范。我国钢铁企业良莠不齐，违反环保、质量、安全、土地法规的违法违规产能仍然存在，严重扰乱市场秩序。监管处罚及落后产能退出机制不健全，低效产能和僵尸企业难以市场化退出，行业自律性差，市场竞争无序，加剧了市场恶性竞争。

二、面临的形势

“十三五”期间，我国经济发展步入速度变化、结构优

化、动力转换的新常态，进入全面推进供给侧结构性改革的攻坚阶段。钢铁工业既面临深化改革、扩大开放、结构调整和需求升级等方面的重大机遇，也面临需求下降、产能过剩及有效供给不足等方面的严峻挑战。

（一）总体形势

新一轮科技革命和产业变革蓄势待发，发展中国家加快谋划和布局，积极承接产业及资本转移，“一带一路”战略实施，为我国钢铁行业广泛参与国际合作提供了市场机遇。我国物质基础雄厚、人力资本丰富、市场空间广阔、发展潜力巨大，经济发展方式加快转变，新的增长动力正在孕育形成，经济发展长期向好的基本面没有变，经济韧性好、潜力足、回旋余地大的基本特征没有变，经济持续增长的良好支撑基础和条件没有变。消费升级、四化同步发展、基础设施建设拓展了钢材需求空间。制造业强国、创新型国家建设正处于关键阶段，对钢铁品种、质量和服务需求不断升级。政府职能转变，逐步减少政府对微观经济的干预，将充分发挥市场对资源配置的决定性作用，激发市场活力，为我国钢铁工业提供新的发展空间。

与此同时，世界经济在深度调整中曲折复苏，国际金融危机深层次影响在相当长时期依然存在，全球粗钢需求增长乏力与钢铁产能过剩矛盾加剧了各种形式的贸易保护主义抬头，国际竞争更加激烈复杂。全球铁矿石等原燃料供应及价格大幅波动对钢铁工业运行不确定性增大。我国经济正从靠投资驱动和规模扩张的发展模式向以质量、效益提高和结构优化、产业升级方向转化。今后几年，总需求低迷和产能过剩并存的格局难以出现根本改变，经济增长不可能像以前那样，一旦回升就会持续上行并接连实现几年高增长，产能过剩已不可能通过历史上持续、高速的经济增长来消化。经济发展面临的突出矛盾和问题是结构性的，不是周期性的，是长期积累的深层次矛盾、是环境资源等发展条件的变化决定的，不可能通过短期刺激实现 V 型或 U 型反弹，将经历一个 L 型发展阶段。产业迈向中高端水平对钢铁工业有效供给水平提高将提出迫切需求，社会发展与生态文明建设对钢铁工业节能减排、提升质量将提出更新要求，企业对完善公平竞争、优胜劣汰的市场环境和机制提出了更多期盼。全力推进钢铁工业供给侧结构性改革，着力化解过剩产能、实现钢

铁行业脱困发展已是当务之急。

（二）需求预测

根据《中华人民共和国国民经济和社会发展第十三个五年规划纲要》确定的国内生产总值年均增速大于 6.5%的预期目标，并考虑了经济发展速度区间、下游产业需求变化、区域发展平衡和钢材进出口等因素，结合钢铁工业发展面临的总体形势，规划综合采用钢材消费系数法、地区消费平衡法、行业消费调研法等方法，对粗钢需求和产量进行了预测。

从国际看，预测 2020 年粗钢消费量和产量基本维持在 16 亿吨左右水平。从中长期看，随着全球经济逐步摆脱危机影响，发展中国家在工业化、城镇化发展带动下，粗钢消费将呈稳定和小幅增长态势。

从国内看，“十三五”我国钢材消费强度和消费总量将呈双下降走势，生产消费将步入峰值弧顶下行期，呈波动缓降趋势。国内粗钢消费量在 2013 年达到 7.6 亿吨峰值基础上，预计 2020 年将下降至 6.5 亿-7 亿吨，粗钢产量 7.5 亿-8 亿吨。

三、指导思想、基本原则和目标

（一）指导思想

全面贯彻落实党的十八大和十八届三中、四中、五中全会精神，坚持创新、协调、绿色、开放、共享发展理念，积极适应、把握、引领经济发展新常态，充分发挥市场配置资源的决定性作用和更好发挥政府作用，着力推动钢铁工业供给侧结构性改革。以全面提高钢铁工业综合竞争力为目标，以化解过剩产能为主攻方向，促进创新发展，坚持绿色发展，推动智能制造，提高我国钢铁工业的发展质量和效益。

（二）基本原则

1.坚持结构调整。以化解过剩产能为核心，积极稳妥实施去产能，以智能制造为重点，推进产业转型升级，以兼并重组为手段，深化区域布局协调发展。

2.坚持创新驱动。强化企业创新主体地位，完善产学研用协同创新体系，激发创新活力和创造力，以破解钢铁材料研发难题为突破点，全面引领行业转型升级。

3.坚持绿色发展。以降低能源消耗、减少污染物排放为目标，全面实施节能减排升级改造，不断优化原燃料结构，

大力发展循环经济，积极研发、推广全生命周期绿色钢材，构建钢铁制造与社会和谐发展新格局。

4.坚持质量为先。强化企业质量主体责任，以提高产品实物质量稳定性、可靠性和耐久性为核心，加强质量提升管理技术应用，加大品牌培育力度，实现质量效益型转变。

5.坚持开放发展。以开放促改革、促发展、促创新，充分利用国内外两个市场和两种资源，坚持“优进优出”，积极引进境外投资和先进技术，全面推动国际钢铁产能合作。

（三）目标

到 2020 年，钢铁工业供给侧结构性改革取得重大进展，实现全行业根本性脱困。产能过剩矛盾得到有效缓解，粗钢产能净减少 1 亿—1.5 亿吨；创新驱动能力明显增强，建成国家级行业创新平台和一批国际领先的创新领军企业；能源消耗和污染物排放全面稳定达标，总量双下降；培育形成一批钢铁智能制造工厂和智能矿山；产品质量稳定性和可靠性水平大幅提高，实现一批关键钢材品种有效供给。力争到 2025 年，钢铁工业供给侧结构性改革取得显著成效，自主创新水平明显提高，有效供给水平显著提升，形成组织结构

优化、区域分布合理、技术先进、质量品牌突出、经济效益好、竞争力强的发展态势，实现我国钢铁工业由大到强的历史性跨越。

专栏1 “十三五”时期钢铁工业调整升级主要指标				
序号	指标	2015年	2020年	“十三五”累计增加
1	工业增加值增速（%）	5.4	6.0左右（年均增速）	/
2	粗钢产能（亿吨）	11.3	10以下	减少1-1.5
3	产能利用率（%）	70	80	10个百分点
4	产业集中度（前10家）（%）	34.2	60	25个百分点以上
5	钢铁智能制造示范试点（家）	2	10	8
6	主业劳动生产率（吨钢/人·年）	514	1000以上	486以上
7	能源消耗总量	/	/	下降10%以上
8	吨钢综合能耗（千克标煤）	572	≤560	降低12以上
9	吨钢耗新水量（立方米）	3.25	≤3.2	降低0.05以上
10	污染物排放总量	/	/	下降15%以上

11	吨钢二氧化硫排放量（千克）		0.85	≤0.68	降低 0.17 以上
12	钢铁冶炼渣综合利用率（%）		79	90 以上	11 个百分点以上
13	研发投入占主营业务收入比重（%）		1.0	≥1.5	0.5 个百分点以上
14	钢结构用钢占建筑用钢比例（%）		10	≥25	15 个百分点以上
15	两化融合关键指标	综合集成大型企业比例（%）	33	≥44	11 个百分点以上
		管控集成大型企业比例（%）	29	≥42	13 个百分点以上
		产供销集成大型企业比例（%）	43	≥50	7 个百分点以上

四、重点任务

（一）积极稳妥去产能去杠杆

坚持市场倒逼、企业主体、地方组织、中央支持的原则，突出重点、依法依规，综合运用市场机制、经济手段和法治办法，积极稳妥化解过剩产能，处置僵尸企业，降低企业资产负债率。

严禁新增钢铁产能。停止建设扩大钢铁产能规模的所有投资项目，将投资重点放在创新能力、绿色发展、智能制造、质量品牌、品种开发、延伸服务和产能合作等方面。各地一律不得净增钢铁冶炼能力，结构调整及改造项目必须严格执行产能减量置换，已经国家核准和地方备案的拟建、在建钢铁项目也要实行减量置换。京津冀、长三角、珠三角等环境敏感地区按不低于 1:1.25 的比例实施减量置换。2015 年（含）以前已淘汰产能、落后产能、列入压减任务的产能、享受奖补资金和政策支持的退出产能不得用于产能置换，列入产能置换方案的企业和装备必须在各地政府网站进行公示，接受社会监督。

依法依规去产能。严格执行环保、能耗、质量、安全、技术等法律法规和产业政策，对达不到标准要求的，要依法依规关停退出。2016 年全面关停并拆除 400 立方米及以下炼铁高炉（符合《铸造生铁用企业认定规范条件》的铸造高炉除外），30 吨及以下炼钢转炉、30 吨及以下电炉（高合金钢电炉除外）等落后生产设备。全面取缔生产“地条钢”的中频炉、工频炉产能。充分发挥社会监督举报作用，积极

利用卫星监测等技术手段，全面开展联合执法检查、违法违规建设项目清理等专项行动，重点排查未列入钢铁行业规范管理的钢铁生产企业和项目。

推动僵尸企业应退尽退。将连年亏损、资不抵债、扭亏无望，靠银行续贷等方式生存的企业实施整体退出作为化解过剩产能的“牛鼻子”。各地要结合自身实际确定僵尸企业和低效产能，停止财政补贴，停止银行贷款，妥善安置职工，促其退出市场。支持地方和企业通过主动压减、兼并重组、转型转产等途径，退出低效产能。发挥专项奖补资金等激励政策作用，鼓励产能规模较大的地区主动压减钢铁产能。

降低企业资产负债率。行业和企业应立足于质量效益为先，通过各种手段大幅降低资产负债率。资产负债率较高的企业，要把降低负债作为重要任务。已经核准和备案的拟建、在建结构调整、城市钢厂搬迁项目，要结合当前形势，在减量发展基础上重新评估建设可行性，经济效益差、资本金比例低于40%的要坚决停下来，防止产生新的高负债企业。资不抵债、债务违约的企业要通过破产重整、债务重组、破产清算等多种方式加快处置，要严厉打击企业逃废银行债务行

为，依法保护债权人合法权益。要坚持市场化、法治化债转股，由市场主体自主选择，严禁僵尸企业作为债转股对象。

专栏 2　化解过剩产能专项行动

1　联合执法检查专项行动

（1）环保执法专项行动

组织开展钢铁行业环保情况全面调查，开展环保专项执法检查，逐一进行梳理排查，依法查处环境违法行为。对于超标超总量排污的钢铁企业，要依法处罚、按日连续处罚，并责令其采取限制生产、停产整治等措施。对于被责令停产整治后拒不停产或者擅自恢复生产的，以及停产整治决定解除后，又实施同一违法行为等情节严重的，应依法报请有批准权的人民政府责令停业、关闭。

（2）质量执法专项行动

严格执行产品质量法，对在质量技术监督部门组织的监督抽查、监督检查中被依法判为不合格产品的生产企业，由当地质量技术监督部门依法责令企业限期整改，在 6 个月内未整治或整改复查不合格的，按规定程序吊销或撤销其生产许可证。依法严肃查处“地条钢”生产企业，包括采用中频炉、工频炉进行炼钢的企业，及时报告当地政府并通报相关部门，依法采取断电、停水、停止贷款等措施，坚决予以取缔。

（3）能耗执法专项行动

开展能耗执法专项行动，严格执行节约能源法，对达不到《粗钢生产主要工序单位产品能源消耗限额》等强制性标准的产能，需限期整改，逾期未整改或整改不达标的，依法关停退出。

（4）安全执法专项行动

组织对钢铁企业进行全面梳理排查，摸清企业安全生产状况。严格执行安全生产法，对未达到安全生产标准化三级及以上等级、安全生产条件达不到《炼铁安全规程》、《炼钢安全规程》、《工业企业煤气安全规程》等标准要求的企业，要立即下达停产整改指令，在6个月内未整改或整改后仍不合格的，由各地县级及以上安全监管部门提请本级人民政府依法依规按程序予以关停退出。

2　违法违规建设项目清理专项行动

通过专项集中检查、重点抽查、暗访等形式，检查冶炼项目是否履行核准、备案手续，是否按规定进行了产能置换并公告，禁止以任何名义、任何方式备案新增产能的钢铁项目。根据检查情况，对违法违规建成项目停产整改；在建项目立即停止，并在全国范围内进行通报，视情节轻重追究有关企业和人员的责任，在融资授信、债券发行、铁路运量等方面实施联合惩戒。

3　淘汰落后生产设备专项行动

按照《产业结构调整指导目录（2011 年本）（修正）》等有关规定，通过摸底排查、组织实施、检查验收、检查考核等一系列重点工作，全面关停并拆除400立方米及以下炼铁高炉，30吨及以下炼钢转炉、电炉（高合金钢电炉除外）等落后生产设备。

（二）完善钢铁布局调整格局

统筹考虑市场需求、交通运输、环境容量和资源能源支撑条件，结合化解过剩产能，深化区域布局减量调整。沿海地区要转变将区域内钢厂一味转移到沿海建设的思路，不再布局新的沿海基地，立足现有沿海基地实施组团发展、提质

增效；内陆地区要以区域市场容量和资源能源支撑为双底限，坚决退出缺乏竞争力的企业，立足现有龙头企业实施整合脱困发展。

京津冀及周边地区、长三角地区：在已有沿海沿江布局基础上，着眼减轻区域环境压力，依托优势企业，通过减量重组，优化调整内陆企业，大幅化解过剩钢铁产能。位于河北境内首都经济圈内的重点产钢地区，要立足现有沿海钢铁基地，研究城市钢厂整体退出置换，实现区域内减量发展。**中西部地区、东北老工业基地：**依托区域内相对优势企业，实施区域整合，减少企业家数，压减过剩钢铁产能。**东南沿海地区：**以调整全国“北重南轻”钢铁布局为着力点，建好一流水平的湛江、防城港等沿海钢铁精品基地。

城市钢厂：对于中心城市中的现有钢厂要服从和服务于城市发展的需要，综合平衡所在城市整体定位、环境容量、土地资源价值、税收占比等因素，确定关停转产、搬迁转移、与城市协调发展等多种选择。对不符合所在城市发展要求，改造难度大、竞争力较弱的城市钢厂，实施转型转产，退出钢铁行业；符合所在城市发展规划的城市钢厂实施“绿色发

展、产城共融”战略；正在实施的城市钢厂搬迁项目必须实施减量搬迁，要坚决落实减量置换产能，并在政府网站上向社会公示。

（三）提高自主创新能力

围绕低能耗冶炼技术，节能高效轧制技术，全流程质量检测、预报和诊断技术、钢铁流程智能控制技术、高端装备用钢等升级需求，支持现有科技资源充分整合，发挥企业的创新主体作用、设计单位的桥梁和推广作用、大学和科研院所的基础先导作用，实施产学研用相结合的创新模式，通过市场化运作机制和多元化合作模式，在钢铁领域建设国家级行业创新平台，提高原始创新、自主集成创新能力，开展行业基础和关键共性技术产业化创新工作，每年取得标志性创新成果。推动建设国家技术创新示范钢铁企业，支持以钢铁为主导产业的国家新型工业化产业示范基地建设。鼓励优势钢铁企业与科研院校、设计单位和下游用户的协同创新，加大创新投入，实现创新引领发展新局面。

专栏 3　　关键技术发展重点

1　生产工艺关键技术

复杂难选矿综合选用技术，低能耗高炉冶炼技术，高效绿色电炉冶炼技术，高效低成本洁净钢冶炼技术，铸坯直接轧制技术，超快速冷却技术，节能高效轧制及后续处理技术。

2　产品质量关键技术

全连续自动跟踪产品表面质量缺陷检测技术，连铸坯大尺寸截面洁净度检测技术，产品组织性能在线检测与精确预报技术，全流程工艺质量数据集成和质量在线综合评价技术，产品工艺质量参数采集与存储、追溯分析技术，产品质量交互分析与异常诊断技术。

3　智能制造关键技术

关键工艺装备智能控制专家系统，智能机器人应用技术，生产制造流程多目标实时优化在线运行技术，关键工艺装备智能故障诊断与维护大数据系统，钢铁产业供应链智能优化技术，协作制造企业信息集成技术。

（四）提升钢铁有效供给水平

推动服务型制造。全面确立以用户为中心的产品理念和服务意识，推进钢铁企业由制造商向服务商转变。鼓励钢铁企业与下游用钢企业主动对接，围绕用户需求，结合先期研发介入、后期持续跟踪改进（EVI）模式，创新技术支持和售后服务，完善物流配送体系，提供材料推荐、后续加工使

用方案等一系列延伸服务，创造和引领高端需求。支持企业重点推进高技术船舶、海洋工程装备、先进轨道交通、电力、航空航天、机械等领域重大技术装备所需高端钢材品种的研发和产业化，力争每年突破 3-4 个关键品种，持续增加有效供给。

专栏 4　　关键品种重大工程

1　海洋工程装备及高技术船舶领域

大线能量焊接钢，高止裂性能厚板，极寒与超低温环境船舶用钢，高锰耐蚀钢，LNG 船用殷瓦钢，海洋平台桩腿结构用钢及配套焊材。

2　先进轨道交通装备领域

高铁轮对用钢，高速重载高强度钢轨，车辆车体用耐候耐蚀钢。

3　节能与新能源汽车领域

新一代超高强汽车钢，热冲压用镀层板，超高强帘线钢等。

4　电力装备领域

超超临界火电机组用耐热钢，汽轮机和发电机用大锻件与大叶片用钢，核电机组压水堆内构件用钢，水电机组用大轴锻件钢与蜗壳用钢。

5　关键基础零部件领域

先进制造业用高性能轴承钢、齿轮钢、弹簧钢，传动轴用超高强度钢，高强韧非调质钢，12.9 级以上高强度紧固件用钢等。

6　其他高品质特殊钢

高品质冷墩钢，机床滚珠丝杠专用钢，复杂刀具用易切削工具钢，特种装

备用超高强度不锈钢，节能环保装备与化工装备用耐蚀钢，高效率、低损耗及特殊用途硅钢，大截面、高均匀、高性能模具钢，高性能冷轧辊用钢，高温合金，轧制复合板等。

提升质量水平。树立以稳定为核心的质量意识。支持企业采用洁净钢生产、精准轧制、产品质量管理一贯制等质量提升技术，利用信息化、智能化手段和装备，减少人为因素对质量控制的影响，提高钢铁产品实物质量稳定性、可靠性和耐久性。

加强品牌建设。建立以质量为中心的品牌体系。支持钢铁企业制定品牌管理体系，围绕研发创新、生产制造、质量管理和营销服务全过程，提升内在素质，夯实品牌发展基础。开展质量标杆活动，以冶金产品实物质量认定活动为平台，每年向社会公告达到国际同类产品实物质量水平的优质产品和特优质量名牌产品，加大品牌培育力度。

（五）发展智能制造

夯实智能制造基础。加快推进钢铁制造信息化、数字化与制造技术融合发展，把智能制造作为两化深度融合的主攻方向。支持钢铁企业完善基础自动化、生产过程控制、制造

执行、企业管理四级信息化系统建设。支持有条件的钢铁企业建立大数据平台，在全制造工序推广知识积累的数字化、网络化。支持钢铁企业在环境恶劣、安全风险大、操作一致性高等岗位实施机器人替代工程。全面开展钢铁企业两化融合管理体系贯标和评定工作，推进钢铁智能制造标准化工作。

全面推进智能制造。在全行业推进智能制造新模式行动，总结可推广、可复制经验。重点培育流程型智能制造、网络协同制造、大规模个性化定制、远程运维 4 种智能制造新模式的试点示范，提升企业品种高效研发、稳定产品质量、柔性化生产组织、成本综合控制等能力。充分利用“互联网+”，鼓励优势企业探索搭建钢铁工业互联网平台，汇聚钢铁生产企业、下游用户、物流配送商、贸易商、科研院校、金融机构等各类资源，共同经营，提升效率。支持有条件的钢铁企业在汽车、船舶、家电等重点行业，以互联网订单为基础，满足客户多品种、小批量的个性化需求。鼓励优势钢铁企业建设关键装备智能检测体系，开展故障预测、自动诊断系统等远程运维新服务。总结试点示范经验和模式，提出

钢铁智能制造路线图。

（六）推进绿色制造

实施绿色改造升级。加快推广应用和全面普及先进适用以及成熟可靠的节能环保工艺技术装备。全面完成烧结脱硫、干熄焦、高炉余压回收等改造，淘汰高炉煤气湿法除尘、转炉一次烟气传统湿法除尘等高耗水工艺装备。全面建成企业厂区主要污染物排放的环保在线监控体系。研发推广先进节能环保技术，开展焦炉和烧结烟气脱硫脱硝、综合污水回用深度脱盐等节能环保难点技术示范专项活动。在环境影响敏感区、环境承载力薄弱的钢铁产能集中区，加快实施封闭式环保原料场、烧结烟气深度净化等清洁生产技术改造。在钢铁产业集聚区，积极探索和实施物流集中铁路运输方案，系统优化物流体系，减少物流过程中无组织排放。

专栏 5　　绿色改造升级发展重点
1　全面推广的节能减排技术 烧结系统高效除尘，出铁场无组织烟气综合治理，转炉煤气干法（半干法）除尘或新型湿法除尘，转炉（电炉）二次、三次除尘、烧结矿余热回收、能源管控中心、钢渣高效处理及深度综合利用、综合污水再生回用等。 **2　重点推广的节能减排技术**

原料场棚化、仓化，烧结烟气循环，烧结烟气多种污染物协同治理，高温高压干熄焦，超高压煤气锅炉发电，中低温烟气余热回收与利用，能源优化调控技术，城市中水再生回用，含铁含锌尘泥综合利用等。

3　示范推广的节能减排技术

焦炉烟道气脱硫脱硝，烧结、电炉二噁英防治技术，焦化（冷轧）废水处理回用与“零排放”，竖炉式烧结矿显热回收利用技术，浓盐水的减量处理与消纳，焦炉煤气初冷系统余热高效利用，可再生能源和清洁能源利用等。

4　前沿储备的节能减排技术

炉渣余热回收和资源化利用，复合铁焦新技术，钢铁厂物质流、能源流和信息流（大数据）协同优化技术，二氧化碳捕集、利用和储存技术等。

加快发展循环经济。推进资源综合利用产业规范化、规模化发展，大力发展循环经济。随着我国废钢资源的积累增加，按照绿色可循环理念，注重以废钢为原料的短流程电炉炼钢的发展机遇。鼓励产业耦合，建设绿色工业园区，推进钢铁与建材、电力、化工等产业及城市间的耦合发展，实现钢铁制造、能源转换和废弃物消纳三大功能。加快钢铁行业资源能源回收利用产业发展，加强冶金渣、尘泥等固体废弃物的综合利用，加快废钢加工配送体系建设，推广城市中水和钢铁工业废水联合再生回用集成技术。

引导绿色消费。加快钢结构建筑推广应用，支持钢铁企业主动参与钢结构示范产业基地建设，研发生产与钢结构建筑构件需求相适应的定制化、个性化钢铁产品，推广 390 兆帕及以上高强钢结构用钢，研发防火、防腐高性能钢结构用钢，探索生产标准化程度高的钢结构构配件，建立钢结构构配件统一配送中心，力争钢结构用钢量由目前的 5000 万吨增加到 1 亿吨以上。继续深入推进高强钢筋应用，全面普及应用 400 兆帕(Ⅲ级)高强钢筋，推广 500 兆帕及以上高强钢筋，探索建立钢筋加工配送中心。结合汽车轻量化发展、高技术船舶建造、超高效电机推广等工作，鼓励钢铁企业主动加强与下游产业协同，研发生产高强度、耐腐蚀、长寿命等高品质钢材。

专栏 6　　绿色改造升级重大工程
1　原料场棚化、仓化改造
实施原料场棚化、仓化改造，解决原料场扬尘问题，企业环境空气中颗粒物排放浓度小于 1 毫克/立方米。
2　烟气脱硫脱硝改造
实施焦炉烟道气脱硫脱硝改造工程，二氧化硫、氮氧化物、颗粒物的排放

浓度分别达到≤30 毫克/立方米、≤150 毫克/立方米、≤15 毫克/立方米。

3　烟气多种污染物协同治理

实施烧结（球团）烟气多种污染物协同治理工程，烟气脱硫效率达 98%以上、脱硝效率达到 60%以上，二氧化硫、氮氧化物、二噁英的排放浓度分别≤180 毫克/立方米、≤300 毫克/立方米、≤0.5 纳克-毒性当量/立方米；建立脱硫副产物综合利用生产线，实现副产物全部综合利用。

4　钢渣高效处理及深度综合利用

建立从钢渣处理、磁选筛分、尾渣应用等全流程的钢渣处理线，有效提取钢渣中含铁物质，降低尾渣中金属铁含量，基本实现全部利用。

5　能源管控中心（升级版）

实施能源管控中心升级改造，具备电力、煤气、蒸汽、氧气等能源介质的短期预测、预报、预警功能，实现能源介质智能调控和企业能效综合评估。

（七）促进兼并重组

按照市场化运作、企业主体、政府引导的原则，结合化解过剩产能和深化区域布局调整，进一步深化混合所有制改革，深化国有企业改革力度，推动行业龙头企业实施跨行业、跨地区、跨所有制兼并重组，形成若干家世界级一流超大型钢铁企业集团；在不锈钢、特殊钢、无缝钢管等领域形成若干家世界级专业化骨干企业，避免高端产品同质化恶性竞争。支持产钢大省的优势企业以资产为纽带，推进区域内钢

铁企业兼并重组，形成若干家特大型钢铁企业集团，改变“小散乱”局面，提高区域产业集中度和市场影响力。兼并重组要实施减量化，避免“拉郎配”。

（八）深化对外开放

推动国际产能合作。发挥我国钢铁工业比较优势，顺应国际产业分工调整趋势，推动钢铁企业深化国际产能合作。以“一带一路”沿线资源条件好、配套能力强、市场潜力大的国家为重点，不断完善与相关国家投资合作机制，加强协调，发挥好企业的积极性和创造性，有力有序推动优势产能走出去，防止一哄而上、无序竞争。以高铁、电力等大型成套设备走出去为牵引，鼓励优势钢铁企业到海外建设钢铁生产基地和加工配送中心，带动先进装备、技术、管理对外输出。

提升国际化经营水平。加大对外开放力度，提高吸引外资的水平和档次、推进贸易优化升级。鼓励境外优势企业通过参股、控股等方式，参与我国钢铁企业兼并重组、布局调整等合资合作，推动科技创新、管理创新，提升企业运营效率。支持国内企业通过境外并购、股权投资等方式，建立全

球营销研发服务体系。鼓励国内企业与境外企业合作，发挥互补优势，共同探索开发第三方市场。按照满足内需为主，积极参与国际竞争的原则，营造和维护公平、有序的钢材出口秩序。

（九）增强铁矿资源保障能力

按照公平、公开与共赢的市场化原则，利用国内外两种资源，构建铁矿石供给保障新格局。充分发挥我国铁矿石价格指数、现货交易和铁矿期货的作用，推进客观反映供求关系、符合各方利益的铁矿石市场价格形成机制。支持有条件的企业集团或联合体采用独资、合资等多种方式，稳步推进优质、低成本的矿产资源境外生产基地建设和海外优质矿山资源股权投资。持续推进国内重点成矿区带勘探工作，进一步摸清我国铁矿资源家底。支持一批竞争力强的现有国内铁矿企业，通过规模化、集约化开发，提高矿山管理水平和生态环境，强化国内矿产资源的基础保障作用。鼓励不具竞争力的国内铁矿企业停产退出。

（十）营造公平竞争环境

强化事中事后监管。严格环保执法，统一执法标准，重

点打击伪造数据、偷排偷放、严重污染环境等违法行为。严格质量执法，持续打击以次充好、假冒伪劣等违法行为。严格能效管理，加强节能监察，贯彻强制性能耗限额标准和产品能效标准。严格安全执法，坚决对吊运钢水铁水与液态渣的起重机等不符合相关要求、人员聚集场所设置在高温熔融金属吊运影响区域内、煤气柜与周边建筑物的防火间距不符合规范标准要求等行为，实行停产整改。严厉打击不开具增值税发票销售等逃避缴纳税款行为。将钢铁行业规范管理与环保、质量、能耗和安全执法紧密结合，对存在问题的企业撤销其规范公告资格，对未纳入规范的钢铁企业列为各地整改和去产能的重点，在行业内形成诚信守法的公平竞争环境。

推进行业有效自律。发挥行业组织作用，着眼共同利益，维护行业间的公平竞争。鼓励行业组织及成员发挥监督举报作用，督促钢铁企业自觉遵守法律法规要求。推进行业协会在电工钢、镀锡板、汽车板等重点产品，加强预警预测信息服务，引导企业理性安排生产经营活动。企业要严格遵守《反不正当竞争法》，加强协商自律，避免无序低价恶性竞争。

鼓励钢铁企业建立产品和服务标准自我声明公开和监督制度，推进企业诚信体系建设，提供优质规范服务。

五、保障措施

（一）落实好去产能重大政策

全面落实《国务院关于钢铁行业化解过剩产能实现脱困发展的意见》，发挥好工业企业结构调整专项奖补资金的引导作用，结合地方去产能完成情况、财政困难程度、职工安置人数等因素，对地方进行梯级奖补。落实去产能的职工安置、债务和不良资产处置等配套政策，通过内部分流、转岗就业创业、内部退养、公益性岗位托底帮扶等方式，做好职工安置工作，运用市场化手段妥善处置企业债务和金融机构不良资产。对不符合行业规范要求和改造未达标的企业，引导金融机构严格信贷审查、严控新增授信。对违法违规新增产能，未按规定落实产能置换的，要严肃问责。

（二）完善财税金融政策

充分利用现有资金渠道，鼓励地方探索多种方式配套措施，引导金融机构、社会资本等，支持规划的重点任务。对有市场、有效益的企业，银行要继续保持合理信贷需求。推

进铁矿山税费改革，清费立税，研究推动降低矿山税费负担。落实公平税赋政策，推动取消加工贸易项下进口钢材保税政策。适时调整重大技术装备所需钢材进口税收减免政策。

（三）加强行业管理工作

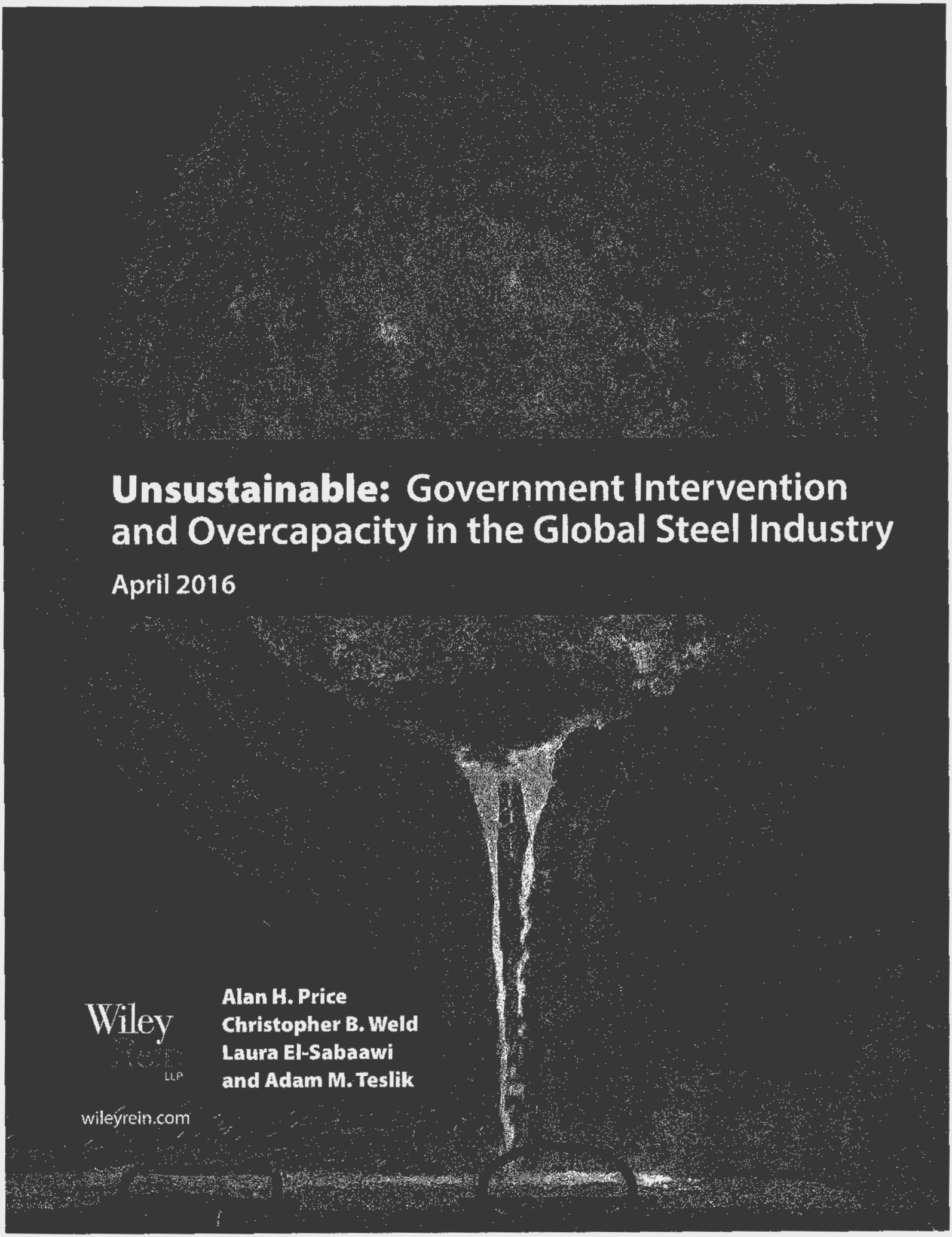
实施钢铁行业规范经营动态管理，持续督促企业规范化生产经营，逐步探索规范企业分级分类管理，更好发挥产业政策靶向作用。发挥标准的指导和规范作用，注重钢铁标准与用户使用标准、规范衔接，抓紧制修订一批行业急需的现有标准和新产品标准，推进优势标准国际化。加强知识产权保护，构建公平公正、开放透明的知识产权环境和氛围，有效促进知识产权运用。

（四）健全规划实施机制

工业主管部门依据本规划开展钢铁行业管理工作，加强与相关部门的统筹协调，强化事中事后监管。各地区行业主管部门要将本地区钢铁工业调整升级与本规划结合起来，联系本地区发展实际和特点，落实规划提出的任务和政策措施。有关企业要根据自身情况制定与本规划相衔接的规划方案，做好与本规划主要目标和重点任务的衔接。中国钢铁工

业协会等行业组织要发挥桥梁和纽带作用，及时反映钢铁行业贯彻落实规划的新情况、新问题，提出政策建议。

EXHIBIT 12



Unsustainable: Government Intervention and Overcapacity in the Global Steel Industry

April 2016

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I. INTRODUCTION[1]

The global steel industry is confronted with an unprecedented level of overcapacity,[2] which is severely distorting the world market and threatening the viability of many steel producers worldwide. Since the first edition of this paper was released in July 2013,[3] excess capacity has continued to grow. This update is necessary, almost three years later, because the overcapacity crisis has reached alarming new heights. In the United States, the effects of this crisis are being felt most acutely in the form of record import levels, which are having severely injurious effects on the health of the U.S. steel industry. By the end of 2015, U.S. steel producers were utilizing less than 65 percent of their capacity, and they have been forced to lay off 12,000 workers over the past year. The U.S. steel industry cannot withstand these market conditions much longer. Immediate action is required to reduce capacity, particularly in China, and to stem the significant adverse effects on steel producers around the world.

The 2013 version of *Government Intervention and Overcapacity* discussed at length the structural imbalance in the global steel industry during the 1997-2001 import crisis, when enormous steel capacity around the world contributed to a flood of low-priced imports into the United States. "The outlook today is even worse than during [that period], when unfairly traded imports and other factors produced a wave of bankruptcies and layoffs among American steel companies."[4] Indeed, despite the clear lessons from that period, many in the global steel industry failed to address the underlying problems and added capacity without regard to actual levels of demand, resulting in the current massive levels of excess capacity in the industry – estimated at about 700 million metric tons[5] worldwide and growing. Much of this huge capacity growth has not been driven by market forces, as it far exceeds levels of demand growth, and has not been supported by profitability, as the least profitable producers in the world are leading the growth in steelmaking capacity.

Rather, the overcapacity largely results from increasing levels of government ownership and intervention in the steel industry, especially in China, which is home to nearly two-thirds of world steel overcapacity. And despite its disproportionate contribution to the crisis, China appears unlikely to deliver on its recent, inadequate promises to eliminate 100 to 150 million tons of steelmaking capacity. As they have in the past, China's various government plans and policies, while purportedly intended to reduce capacity, in fact encourage and even subsidize upgrades and continued growth. The continuation of these policies is more likely to result in the maintenance and further expansion of Chinese steel capacity and production.

Excess steel production capacity must be shut down, and soon. The only question is where that restructuring will occur. Will the countries that are causing the crisis – most notably China – finally and

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1 The views expressed in this paper are those of the authors and should not be attributed to Wiley Rein LLP or any of its clients.

2 In this paper, "overcapacity" refers to the difference between capacity and production. Overcapacity may also be defined as the difference between capacity and demand; however, in the steel industry production and demand tend to be very close, meaning that there typically are not substantial differences between the two measures.

3 Alan H. Price, Christopher B. Weld and Laura El-Sabaawi, *Government Intervention and Overcapacity: Causes and Consequences for the Global Steel Industry* (July 2013) (*Government Intervention and Overcapacity* 2013), available at http://www.wileyrein.com/newsroom-articles-2771.html.

4 Thomas J. Gibson and Chuck Schmitt, *Crisis Level*, Recycling Today (Mar. 2016).

5 All references to "tons" in this paper are to metric tons, unless otherwise stated.

permanently shutter their vast excess capacity, or will responsible, market-oriented steel producers in the United States and around the world be forced to close facilities, make additional layoffs, or even enter bankruptcy as a result of this crisis?

To effectively address this mounting overcapacity crisis, the world's steel producing countries must take steps to reduce or eliminate the non-market-based factors that serve to increase and/or maintain inefficient capacity. In the case of China, where government support created much of the excess capacity, the Chinese government must take an active role to undo the excesses it created. Unless action is taken now to address these issues on a global basis, especially in China, unfair trade practices and the resulting trade friction will persist and likely worsen, and the very viability of many steel producers – particularly market-oriented steel producers that operate based on commercial considerations – will be threatened.

II. THE EXTENT OF THE CRISIS

A. Continued Growth in Steel Overcapacity

The period since 2000, and even since *Government Intervention and Overcapacity* was first released, has been characterized by unprecedented expansion of steel production capacity. Since 2000, the global steel industry has added more than 1.2 billion tons of crude steel capacity, for an estimated total of more than 2.3 billion tons of capacity worldwide as of 2015.[6] This capacity growth surpassed demand growth during the same period by nearly 500 million tons,[7] resulting in the current excess capacity crisis.

These increases in global capacity have been led by the explosive growth of China's steel industry over the past 15 years. China alone, which accounted for about half of the world's steel output last year,[8] added a massive 990 million tons of steelmaking capacity from 2000 to 2015 (making it responsible for more than three-fourths of the total global increase in capacity during that period).[9] In Turkey, where huge capacity growth also occurred extremely quickly, steelmaking capacity rose by more than 150 percent from 2000 to 2014.[10] Capacity has also grown substantially in India, increasing by more than 76 million tons from 2000 to 2015.[11] Korea, the Middle East, Latin America and the Commonwealth of

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[6] OECD, *World Crude Steelmaking Capacity* (Mar. 2015), available at http://www.oecd.org/sti/ind/steelcapacity.htm.

[7] Global steel consumption in 2000 was just over 840 million tons. World Steel Association, *Steel Statistical Yearbook 2010* at 90. A recent estimate of global consumption in 2015 was 1.54 billion tons. *Steel Market Forecast 2015-2025: Future Opportunities for Leading Companies* (Feb. 16, 2016). Thus, from 2000 to 2015, global consumption grew by about 700 million tons.

[8] World Steel Association, *Crude steel production 2015-2014*, available at https://www.worldsteel.org/statistics/crude-steel-production.html.

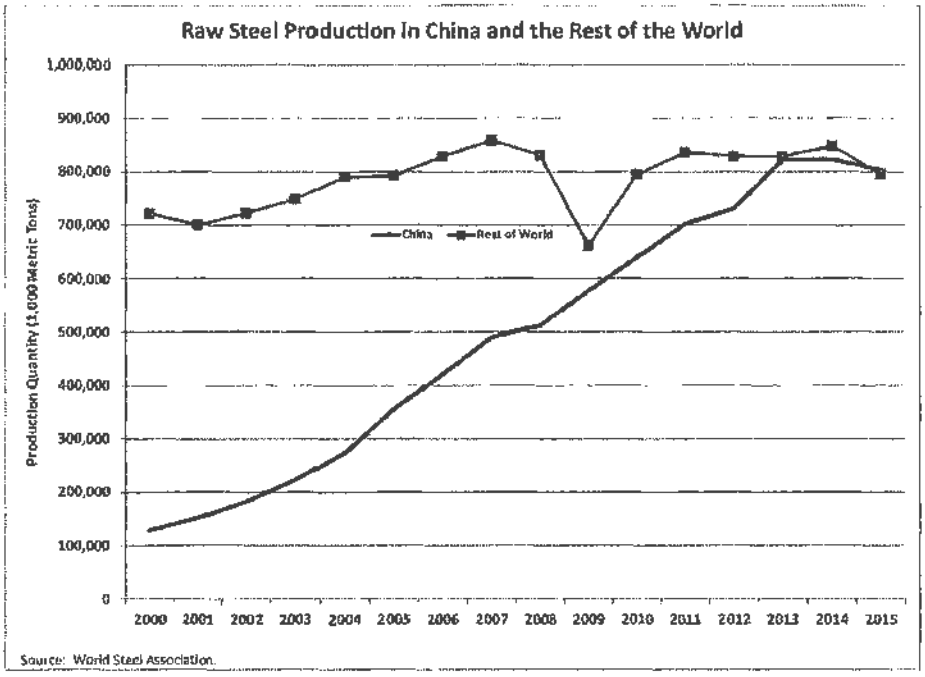
[9] OECD, *Developments in world steelmaking capacity*, DSTI/SU/SC(2010)14 (Dec. 2010) at 2; Gabriel Wildau, *Losses mount in China's overcrowded steel sector*, Financial Times (Dec. 4, 2015); European Chamber of Commerce in China, *Overcapacity in China: An Impediment to the Party's Reform Agenda* (2016) (European Chamber of Commerce 2016 Report) at 1, 16.

[10] *The Land of Steel*, The Turkish Perspective (Nov. 2, 2015); Turkish Steel Exporters' Association, *Turkish Steel Trade Delegation Dubai* (2015) at 10; Yasin Öcal, Planning Expert, Ministry of Development, Republic of Turkey, *Innovation in the steel sector: Turkish Steel Industry* (Dec. 5, 2015) at 3.

[11] OECD, *Regional Capacity*, DSTI/SU/SC(2011)14 (Dec. 5-6, 2011) at 2; Megha Mandavia, *India's ambitious steel production plan thwarted by slow consumption*, The Economic Times (Dec. 17, 2015).

Independent States countries have also seen rapid capacity growth in recent years, with less substantial increases in Africa and the NAFTA member countries.[12]

The growth in steel capacity since 2000 is reflected in increased production, most notably in China, as shown in the chart below. Chinese capacity and production grew steadily even during the global recession. In fact, "from 2004 to 2014, global steel production increased by 57 percent – China contributed a staggering 91 percent to this increase," leading the European Chamber of Commerce in China to recently conclude that Chinese "steel production has become completely untethered from real market demand."[13]



While global steel production declined slightly in 2015, the brunt of this decrease fell on producers in the United States and other NAFTA countries. According to the Organisation for Economic Co-operation and Development (OECD), "North American production... declined the most [in 2015], in relative terms, reflecting a sharp 8.8% steel output decline in the United States as several mills reduced output or idled furnaces in response to the market downturn."[14]

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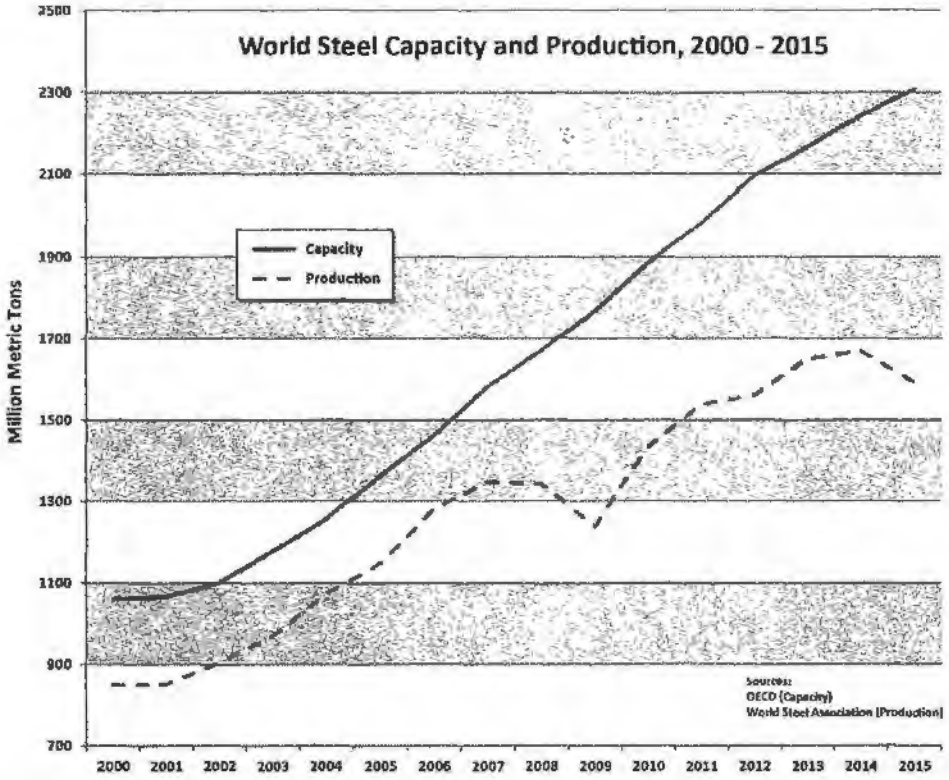
12 From 2000 to 2013, steel capacity increased by 32 million tons in the Middle East, 24 million tons in Latin America, 21 million tons in CIS countries, 7.8 million tons in Africa, and 3.9 million tons in NAFTA countries, while, according to recent OECD figures, capacity in the EU countries declined by about 7.8 million tons. OECD Regional Capacity Report at 2; OECD, *Excess Capacity in the Global Steel Industry and the Implications of New Investment Projects* (2015) (OECD 2015 Excess Capacity and New Projects Report) at 10-11.

13 European Chamber of Commerce 2016 Report at 1, 16.

14 OECD, *Steel Market Developments: Q4 2015* (2016) at 12.

The capacity increases described above, well in excess of demand, have led to enormous levels of overcapacity,[15] which have continued to grow in recent years. The OECD estimated that there were 542 million tons of excess capacity in the global steel industry in 2012;[16] more recently, the OECD has estimated that there are 700 million tons of global excess capacity.[17] In other words, global overcapacity grew by more than 150 million tons in only four years.



China leads the world not just in capacity increases, but in excess capacity levels, which have continued to grow year after year. While estimates of Chinese overcapacity in 2013 and 2014 ranged from 200 to 300 million tons,[18] more recent estimates put China's steel overcapacity at a staggering 425 million tons,[19] accounting for nearly two-thirds of global excess capacity. Other global regions also retain

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15 "[T]he supply-demand imbalance has led to a level of overcapacity that will be extremely challenging to remedy." *Global Steel: Steeling for Oversupply*, Morgan Stanley Blue Paper (May 22, 2013) (Morgan Stanley Global Steel Report) at 4.

16 OECD Directorate for Science, Technology and Industry, Steel Committee, *Excess Capacity in the Steel Industry: An Examination of the Global and Regional Extent of the Challenge*, DSTI/SU/SC(2012)15 (Nov. 13, 2012) at 2.

17 *See* OECD, *The Capacity Outlook for the Global Steel Industry: Preliminary OECD Estimates*, Madrid (Sept. 9, 2015); Thomas J. Gibson & Chuck Schmitt, *The crisis facing the U.S. steel industry*, CNN (Mar. 23, 2016)

18 Morgan Stanley Global Steel Report at 6; European Chamber of Commerce 2016 Report at 16.

19 Rafael Rubio, *The Latin American Steel Market in 2015: The New Normal*, OECD Steel Committee Meeting - Paris (May 2015) at 10; Richard A. McCormack, *Steel Industry Issues Stern Warning Over China's Desire To Be A 'Market' Economy*, Manufacturing & Technology News, Vol. 22, No. 13 (Nov. 23, 2015). The China Iron and Steel Association recently estimated its country's steel surplus at more than 420 million tons. Ernest & Young LLP, *Globalize or customize: finding the right balance: Global steel 2015–2016* (2015) at 13.

significant levels of overcapacity, including Europe, the Commonwealth of Independent States countries, Latin America, Korea and Japan.[20]

B. The Effects of Overcapacity on Steel Industries Worldwide

The OECD has concluded that "[t]he growing gap between global steelmaking capacity and demand has led to deterioration in the financial situation of steelmakers, and has raised concerns about the longer-term economic viability and efficiency of the industry."[21] For example, between 2013 and 2015, global capacity utilization dropped from 78 percent to less than 70 percent.[22] Globally, the steel industry's financial situation is weaker than it has been in years, and the industry is faring even worse than during the last steel crisis of the late 1990s.[23]

The U.S. steel industry in particular has been drastically affected by the global excess capacity crisis, which has led to record levels of steel imports into the U.S. market.[24] According to the U.S. Census Bureau, imports of steel products into the United States increased by 61 percent from 2010 to 2015, from 21.7 million tons to 35.1 million tons.[25] Over the same period, imports' market share rose from 21 percent to a record 29 percent.[26] In the NAFTA countries, while steel production in 2015 dipped below 2010 levels, steel imports increased 93 percent from 2010.[27]

In addition to capturing sales volumes, increased import levels and overcapacity generally have caused prices to collapse. As reported by the *Financial Times*, steel prices late last year were "cheaper than at any time in the past decade," due largely to the supply glut created by Chinese overcapacity.[28] Capacity utilization dropped as well, from just under 80 percent in the NAFTA countries in 2013 to less than 68 percent in 2015.[29] In the United States in particular, capacity utilization dropped to an alarming 62.1 percent by the end of last year.[30]

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20 *See, e.g.*, World Steel Association, *Steel Statistical Yearbook 2015* (Steel Statistical Yearbook 2015) at 1; OECD 2015 Excess Capacity and New Projects Report at 11.

21 OECD 2015 Excess Capacity and New Projects Report at 6.

22 World Steel Association, *World crude steel output increoses by 3.5% in 2013* (Jan. 23, 2014); World Steel Association, *World crude steel output decreases by -2.8% in 2015* (Jan. 25, 2016). By the end of last year, global steel capacity utilization had dropped to 66.6 percent. Scotia Howard Weil, *Coal Weekly* (Apr. 6, 2016) at 10.

23 OECD, *Evaluating the Financial Health of the Steel Industry*, DSTI/SU/SC(2015)12/FINAL (2016) at 3.

24 *See, e.g., id.* at 25 ("At the global level, the effects of excess capacity are transmitted through trade; excess capacity can lead to export surges, leading to price declines and market share losses for import-competing domestic producers").

25 *Preliminary: U.S. Imports for Consumption of Steel Products January 2011*, U.S. Census Bureau News (Feb. 23, 2011) at 1; *Preliminary: U.S. Imports for Consumption of Steel Products January 2016*, U.S. Census Bureau News (Feb. 24, 2016) at 1.

26 Joseph S. Pete, *Steel imports grabbed record 29 percent of market in 2015*, www.nwi.com (Jan. 29, 2016).

27 As calculated by the American Iron and Steel Institute (AISI), using data from the U.S. Census Bureau, Statistics Canada and Canacero.

28 Michael Pooler, *Global steelmakers face cocktail of challenges*, Financial Times (Oct. 27, 2015). *See also* Yuan Yang, *China's role in the global steel downturn*, Financial Times (Apr. 6, 2016) ("steel prices worldwide [have] slump[ed] to a 10-year low").

29 As calculated by AISI, using data from Statistics Canada and Canacero.

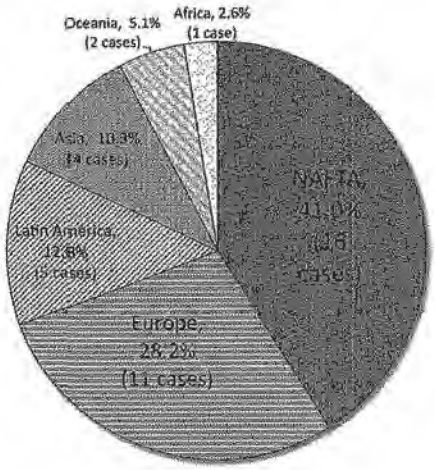
30 Department of Commerce, *Steel Industry Executive Summary: March 2016* at 12.

As a result of the overcapacity crisis, the resulting import surge, and its effects on the U.S. steel market, more than 12,000 American steel jobs were lost in the past year.[31] Downstream industries also have been affected by steel overcapacity, magnifying the U.S. job losses and wreaking havoc throughout the supply chain. The OECD recently described how excess capacity in countries like China is affecting steel producers worldwide:

> Given the global nature of the industry, excess capacity in some regions can displace production in other regions, and create bankruptcies and localised job losses in parts of the industry. Today, an increasing number of workers and communities are feeling the impacts of the unwinding of excess capacity. Over the past six months, the industry has announced a number of temporary and permanent plant closures, cutbacks in production, and layoffs of steel workers, as shown in the figure below. Many of these announcements have occurred in North America and Europe, but they are affecting many other regions as well.[32]

In fact, the impacts have been especially acute in the NAFTA countries. From September 2015 through February 2016, a full 41 percent of announced closures, production cutbacks and layoffs in the global steel industry occurred in the NAFTA countries, with another 28 percent in Europe.[33] As shown in the chart below, only 10 percent of closures, cutbacks and layoffs occurred in Asia which, due to China, has the vast majority of the world's steel capacity.[34]

Announcements of closures, cutbacks and layoffs: September 2015 - February 2016[35]



In other words, those most responsible for the overcapacity glut are exporting its adverse effects, to the detriment of market-based producers globally.

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31 Thomas J. Gibson & Chuck Schmitt, *The crisis facing the U.S. steel industry*, CNN (Mar. 23, 2016).

32 OECD, *Background Note No. 2: Capacity Developments in the World Steel Industry*, High-Level Symposium: Excess Capacity and Structural Adjustment in the Steel Sector (Apr. 18, 2016) (OECD Symposium Background Note) at 5-6.

33 *Id.*

34 *Id.*

35 This chart has been reproduced from the OECD Symposium Background Note at 6.

If, as discussed below, the global steel overcapacity crisis continues to worsen, steel producers worldwide, and particularly in North America, will face substantial additional challenges and, very likely, even more closures and layoffs. If the current imbalance between steel supply and demand is not addressed quickly, "[t]he immediate reaction will likely be further downward pressure on steel prices,"[36] which would be unsustainable for many producers.

C. Given Current Trends, Overcapacity Will Only Worsen

Despite the significant excess capacity currently overhanging the steel industry worldwide, many steelmakers plan additional capacity increases in the coming years. As a result, global steel capacity is projected to expand even further. With ongoing and planned capacity increases, capacity will grow by about 103 million tons worldwide from 2016 to 2018.[37] Capacity growth will continue to outpace demand,[38] which declined in 2015 and is expected to increase by only 0.7 percent this year.[39]

Once again, China leads in terms of planned capacity increases. While the Chinese government recently announced plans to reduce the country's steel capacity by 100 to 150 million tons,[40] this reduction would be inadequate, and there is significant doubt as to whether such capacity closures will even be accomplished. According to Reuters, the China Iron and Steel Association predicts that Chinese steel capacity will increase yet again this year.[41] This is unsurprising, as Beijing's past efforts to force capacity reductions have largely failed.[42] For example, when the Chinese government announced a plan in 2013 to cut production by 80 million tons by 2017, there was limited action to implement that plan. In fact, quite the opposite occurred. "Even as the central government called for the industry to slim down, China added at least 58 new steel furnaces in 2013..., adding 80 million tonnes of additional annual capacity."[43]

The limited attempts that were made to reduce capacity in accordance with the 2013 plan were largely ineffectual. For example, in late 2013, China's Hebei province staged an event during which demolition squads blew up blast furnaces owned by 15 mills, all on Chinese state television. According to the *Wall Street Journal*, however, "[a]ll of the furnaces targeted for destruction turned out to be so outmoded that the companies that owned them didn't consider them spare capacity, steel-industry officials [said], meaning they didn't help reduce the province's extra volume."[44] In part due to the lack of

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[36] OECD, *Steel Market Developments: Q4 2015* (2016) at 20.

[37] OECD Symposium Background Note at 4.

[38] *See* OECD, *World Crude Steelmaking Capacity* (Mar. 2015), available at http://www.oecd.org/sti/ind/steelcapacity.htm.

[39] *Worldsteel Short Range Outlook 2015-2016*, World Steel Association (Oct. 12, 2015).

[40] *RPT-China to cut crude steel production by 100-150 mln tonnes –cabinet*, Reuters (Jan. 24, 2016); *China Steel Plan Seen Spurring 400,000 Job Cuts, Instability*, Bloomberg (Jan. 25, 2016).

[41] David Stanway and Ruby Lian, *Baosteel sees higher 2016 output as world reels from China's glut*, Reuters (Mar. 31, 2016).

[42] Gabriel Wildau, *Losses mount in China's overcrowded steel sector*, Financial Times (Dec. 4, 2015).

[43] Gwynn Guilford, *South Korea consumes more steel per capita than both China and Japan. A lot more*, Quartz (May 28, 2014).

[44] Lingling Wei and Bob Davis, *In China, Beijing Fights Losing Battle to Rein In Factory Production*, Wall Street Journal (July 16, 2014). *See also* Jefferies Franchise Note, *Metals & Mining* (Jan. 13, 2016) at 36 ("we fear that much of the capacity that is being targeted for closure is 'zombie' capacity that does not in reality operate at present").

progress closing capacity in Hebei, "there is no reason to assume that [the government's 80-million ton closure] target will be met,"[45] let alone the larger level of capacity closure envisioned by China's newly announced plan.

Despite such government plans, and expected declines in domestic demand, including a four percent drop this year,[46] many Chinese steel producers continue to plan substantial capacity additions. Much of this will be added by large, state-owned or -supported producers.[47] For example, China's second-largest steel company, state-owned Baosteel, recently announced that it will increase its steel production by 20 percent this year, as a result of its recent completion of production lines at its new Zhanjiang mill.[48] State-owned Shandong Iron & Steel group will launch a "new, high-quality steel production plant" in Shandong Province in June 2017, with an annual production capacity of more than 8 million tons.[49] And Guangxi Steel Group Co. is currently in the process of bringing into operation its new plant in the southern coastal region of China, which will have more than ten million tons of annual capacity.[50]

Even if China were to in fact shutter 100 to 150 million tons of capacity, such closures would be inadequate to stem the adverse effects of the overcapacity crisis. Chinese industry executives acknowledge as much, admitting that "[s]ignificant overcapacity will remain in China's steel sector even after planned restructuring."[51] For example, the "capacity creep" effect recognizes that steel producers generally increase their effective capacity by an average of 1.5 to 2 percent per year,[52] through process improvements, de-bottlenecking and similar measures that do not involve expansion of nameplate capacity. As a result of capacity creep alone – not to mention substantial planned capacity expansions by Chinese producers – China will add roughly 93 to 138 million tons of effective capacity over the next five years. This would largely offset China's announced capacity reductions.

Other steel industries worldwide are also planning major capacity increases in the near future. Steel producers in Russia plan to add more than nine million tons of crude steel capacity in the coming years,[53] despite a "deep recession" in the Russian economy, including a considerable depression in steel

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45 European Chamber of Commerce 2016 Report at 18. Despite announcing the capacity closure plan in 2013, Chinese steel production increased in 2014. Steel Statistical Yearbook 2015 at 1.

46 Jing Zhang, *Chinese consumption to fall 4% in 2016: CISA*.

47 *See, e.g.*, OECD 2015 Excess Capacity and New Projects Report at 15 and Annex.

48 David Stanway and Ruby Lian, *Baosteel sees higher 2016 output as world reels from China's glut*, Reuters (Mar. 31, 2016); Andrew Soergel, *Chinese Steelmaker Revs Up Despite Promised Production Cuts*, U.S. News & World Report (Mar. 31, 2016). *See also* OECD 2015 Excess Capacity and New Projects Report at 32.

49 Primetals Technologies, *Shandong Iron & Steel orders two continuous slab casters from Primetals Technologies* (Jan. 12, 2016); OECD 2015 Excess Capacity and New Projects Report at Annex.

50 *First hot coil on the continuous annealing line built by Fives at Guangxi Steel*, Fives (Mar. 22, 2016); OECD 2015 Excess Capacity and New Projects Report at 32.

51 Tom Mitchell and Christian Shepherd, *China says its steel overcapacity will remain*, Financial Times (Apr. 10, 2016).

52 *See, e.g.*, Credit Suisse, *Global Steel Equities* (Sept. 6, 2012) at 9; Steel Business Briefing, *Global Market Outlook* (Mar. 2016).

53 *See* OECD, *Capacity Data: Commonwealth of Independent States* (Feb. 2015), available at http://www.oecd.org/sti/ind/2.1.4CIS.xlsx (counting capacity increases planned for 2016 and beyond).

demand,[54] and even though the Russian steel industry was only operating at about a 61 percent capacity utilization rate in 2015.[55]

Despite 7 and 17 percent declines in steel consumption in 2014 and 2015, respectively,[56] Brazilian steelmakers are also planning significant capacity increases in the near future.[57] This includes a new blast furnace mill with three million tons of annual capacity, which is expected to fire up in the second quarter of this year.[58] The mill, to be operated by a joint venture between Vale, Dongkuk and POSCO, will be located in the state special export zone of Ceará, where it reportedly will benefit from "advantages on shipments abroad."[59]

In India, which does not currently have high levels of excess capacity, the steel industry is expected to add approximately 60 million tons of new capacity between 2011 and 2017.[60] These increases will occur despite falling capacity utilization rates in the Indian industry.[61] And the Indian government recently introduced a new policy that would increase steel capacity to 300 million tons by 2025[62] – an increase of nearly 200 million tons from 2015 levels. If these planned capacity expansions occur, India could become the second largest steel producing country in the world.[63] Despite growing demand in India, massive increases in Indian steel capacity will exacerbate the global oversupply situation, in part by lessening India's availability as an export market.

Unless major changes are made to address the long-term distortions in the global steel industry, excess capacity will only continue to rise, putting increasing downward pressure on steel prices and profitability around the world and causing further harm to the global industry.

III. MUCH OF GLOBAL STEEL CAPACITY GROWTH IS NOT MARKET-BASED

The overcapacity crisis plaguing the global steel industry is largely a result of non-market forces. As the Department of Commerce found in 2000, while legitimate, market-based barriers to exit from the steel industry do exist, "government practices and policies that forestall adjustments mandated by the

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54 OECD, *Steel Market Developments: Q4 2015* (2016) at 11.

55 *Russia Capacity Utilization*, Trading Economics (Mar 18, 2016).

56 *World Steel in Figures 2015*, World Steel Association (May 29, 2015) at 16; Alacero, *Latin America: In 2015, annual production of finished steel decreased 5% and consumption contracted 4%* (Feb. 26, 2016). Brazilian steel producers were only operating at 69 percent capacity utilization in 2014, prior to this substantial drop in demand. Brazil Steel Institute, *Figures*, available at http://www.acobrasil.org.br/site2015/eng/dados.asp.

57 *See* OECD, *Capacity Data: Latin America* (Feb. 2015), available at http://www.oecd.org/sti/ind/2.1.6LatinAmerica.xlsx.

58 *Dongkuk Steel's mammoth steel plant project in Brazil delayed*, Pulse (Nov. 5, 2015).

59 *See* OECD, *Capacity Data: Latin America* (Feb. 2015), available at http://www.oecd.org/sti/ind/2.1.6LatinAmerica.xlsx.

60 Ernst & Young, *Global Steel 2013: A New World, A New Strategy* (Jan. 1, 2013) at 30. *See also* OECD Regional Capacity Report at 4.

61 *See* Megha Mandavia, *India's ambitious steel production plan thwarted by slow consumption*, The Economic Times (Dec. 17, 2015).

62 Ernst & Young LLP, *Indian steel: Strategy to ambition* (2014) at 9.

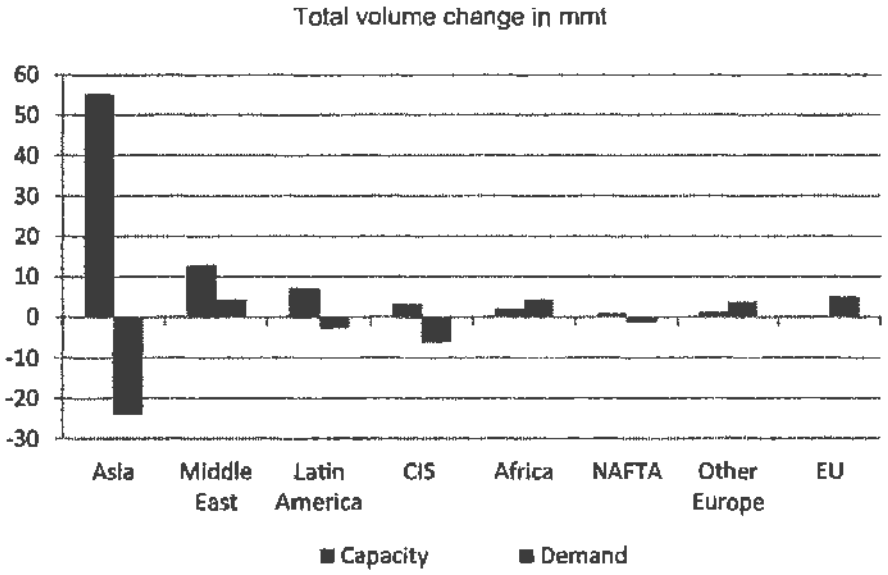
63 *See World Steel in Figures 2015*, World Steel Association (May 29, 2015) at 9.

market" are a major cause of excess capacity in the steel industry.[64] This remains true today, as many governments continue to subsidize the start-up of additional, unnecessary capacity and prevent obsolete capacity from closure.

A. Steel Capacity Growth Largely Is Not Driven by Demand

As was the case when the 2013 paper was released, growth in global steel capacity has not tracked demand in the market, resulting in the overcapacity crisis facing the industry today. The first decade of this century saw global steel demand grow by approximately five percent per year.[65] By contrast, the rate of growth in global demand, has slowed significantly over the past few years. Apparent steel usage grew by less than one percent in 2014, actually declined last year, and is expected to grow only 0.7 percent this year.[66] "In a competitive industry, production and ultimately capacity should respond to market signals,"[67] such as this marked slowing of demand growth. However, the continued expansion of the steel industry in certain countries and regions, as shown in the chart below, demonstrates just how government intervention can "hinder adjustments that would normally occur in competitive markets."[68]

Steelmaking capacity and steel consumption changes by region in 2015 and 2016[69]



Source: OECD calculations.

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64 *See* U.S. Department of Commerce, International Trade Administration, *Report to the President, Global Steel Trade: Structural Problems and Future Solutions* (July 2000) (Commerce Global Steel Trade Report) at 4.

65 *Morgan Stanley Global Steel Report* at 1.

66 *Worldsteel Short Range Outlook 2015-2016*, World Steel Association (Oct. 12, 2015).

67 *Id.*

68 OECD 2015 Excess Capacity and New Projects Report at 6.

69 This chart has been reproduced from the OECD, *Steel Market Developments: Q4 2015* (2016) at 12.

Much of China's steel capacity growth, reflected in the chart above, cannot be explained by reference to development cycles associated with market forces. While China's steel demand did increase over the past decade, Chinese steel capacity far surpassed the needs of its market. As with aluminum, where China built the largest industry in the world without any comparative production advantage (indeed, despite a lack of access to inexpensive, clean energy sources typically required for large-scale aluminum production),[70] China's steel industry was intentionally built up as a result of a series of distortive government policies.

As reflected by the declining capacity utilization rates of Chinese steel producers, rates of demand growth in China have slowed considerably, while capacity continues to increase rapidly. Chinese steel demand peaked in 2013 before dropping by eight percent over the next two years.[71] Because Chinese steel capacity did not decrease accordingly, capacity utilization in China dropped from nearly 77 percent in 2013 to only 71 percent last year.[72]

Demand in China is expected to decline by another four percent this year, with similar declines expected "at least until 2020."[73] These substantial decreases in demand stand in stark contrast to the capacity increases occurring in China, which will far outpace demand in coming years, including any foreseeable demand growth.

As noted above, in Russia, steel producers continue to increase their capacity,[74] and Russian steel output is expected to increase steadily through 2019.[75] At the same time, Russian steel consumption is dropping substantially. Steel demand in Russia declined by 11 percent in 2015 and is expected to undergo at least a similar decline this year,[76] meaning that the already oversupplied Russian market will suffer from additional excess capacity, which may lead to increased exports.

The European steel market suffered substantial declines in recent years, and as of 2014, Europe's apparent steel use remained 27 percent below pre-crisis levels.[77] The EU market appears to have

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70 Because primary aluminum production is extremely energy intensive, most production is located in countries with inexpensive and less polluting sources of energy (*e.g.*, hydro, geothermal, nuclear and natural gas-based electricity). *See* U.S. Energy Information Administration, *Energy needed to produce aluminum* (Aug. 16, 2012). From both a cost and environmental standpoint, the coal-based electricity that is predominantly used in China is one of the least attractive fuel sources. Despite this global pattern and the lack of a development cycle requiring greatly expanded capacity in China, China has built the largest primary aluminum industry in the world, accounting for more than 50 percent of global production, as a direct result of government support policies, like those in the steel sector. *See* William Pentland, *Lessons From The Aluminum Industry: The Hidden Cost Of China's Cheap Solar*, Forbes (Mar. 29, 2016).

71 Shiv Mehta, *China Steelmakers: Iron Ore Rally Is a Fake (BHP, RIO)*, Investopedia (Mar. 9, 2016); *China's annual steel consumption drops for first time in three decades*, Reuters (Jan. 22, 2015). *See also China steel firms suffered $8 bln in losses in Jan-Nov 2015 –assn*, Reuters (Jan. 17, 2016).

72 OECD, *Steel Market Developments: Q4 2015* (2016) at 12; European Chamber of Commerce 2016 Report at 3, 16.

73 Fan Ruohong, Lu Xiaoxi, Huang Kaixi and Yu Ning, *China cuts push coal, steel sectors into corner*, Asia Times (Mar. 17, 2016).

74 *See, e.g., NLMK increases its galvanized steel capacity* (Feb. 8, 2016); OECD 2015 Excess Capacity and New Projects Report at 24-25.

75 BMI Research, *Europe Steel: Poland and Russia to Defy Regional Slowdown* (Aug. 12, 2015).

76 Adrian Leek, *A Summary of the Current State of the Global Steel Industry*, Corewire (Feb. 1, 2016); Deloitte, *Iron and Steel Industry Report* (Sept. 2015) at 13-14.

77 *See* Steel Statistical Yearbook 2015 at 79.

stabilized somewhat, growing by approximately two percent in 2015, with a similar small uptick expected in 2016.[78] While European steel mills have adjusted their capacity somewhat in response to these market contractions, the capacity adjustments have thus far been insufficient to eliminate the region's substantial overcapacity.

The North American steel market has generally fared better than the European market. For NAFTA as a whole, apparent steel use grew by approximately 13 percent in 2014.[79] While U.S. steel demand declined by about ten percent in 2015,[80] it is expected to increase by approximately two percent this year.[81] The U.S. steel industry also took approximately nine million tons of capacity out of production in 2014 and 2015. Thus, as demand in many steel markets around the world declines or stagnates, and global capacity continues to climb far in excess of demand, the United States will remain an extremely attractive target for world steel exports, further threatening the U.S. steel industry.

B. Steel Capacity Growth Is Not Supported by Profitability

The relatively low profits earned by many steel producers worldwide further demonstrate the disconnect between steel capacity growth and market forces. The Chinese steel industry exemplifies this, as China's dramatic increase in steel capacity has occurred despite financial returns in the Chinese industry that are well below those achieved by other steel industries,[82] and even other industries in China. "China's steel industry has one of the lowest operating margins compared not only to the steel industries of many other economies but also relative to other domestic industries. China's steel industry is ranked 85th out of 94 Chinese service and manufacturing sectors, but is last amongst all domestic manufacturing industries."[83] As one example, Sinosteel, China's largest state-owned steel trader, defaulted on a bond repayment in October 2015.[84] The country's major steel firms reportedly lost more than RMB 100 billion (US $15.5 billion) last year alone,[85] and the actual figures are believed to be much greater. One recent report estimates that the debt ratio of China's major steel mills rose 1.6 percentage points in 2015 to 70.1 percent, bringing the total debt of only the country's "big mills" to RMB 3.27 trillion (US $499 billion),[86] while another estimates that "the Chinese steel industry has roughly [US] $520 [billion] in total debt held largely by Chinese [state-owned] banks."[87]

Indeed, much of Chinese excess steel capacity is connected to a broader problem in China – the country's massive, growing and unsustainable debt bubble. Often at the direction of the Chinese government, debt is continually refinanced, expanded and ultimately swept off the books and into "asset

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78 EUROFER, *Economic and Steel Market Outlook 2016-2017* (Jan. 27, 2016) at 6.

79 *See* Steel Statistical Yearbook 2015 at 80.

80 Data obtained from AISI.

81 Arcelor Mittal USA, *Steel Market Outlook: Federal Reserve Bank Economic Outlook Symposium* (Dec. 4, 2015) at 16.

82 *Id.* at 24 ("With their profitability remaining the lowest globally, it is possible that Chinese companies will continue to operate even after posting losses, flooding the steel export markets with low-cost steel.").

83 OECD, *Steel Market Developments: Q4 2015* (2016) at 17.

84 Gabriel Wildau, *Losses mount in China's overcrowded steel sector*, Financial Times (Dec. 4, 2015).

85 *Steeling for a struggle: China workers face turmoil*, Breitbart (Apr. 10, 2016).

86 *Debts rise at China's big steel mills, consumption falls*, Business Insider (Mar. 2, 2016).

87 Jefferies Franchise Note, *Metals & Mining* (Jan. 13, 2016) at 4.

management companies" or other state-created financial firms designed exclusively to absorb bad corporate debts and cover losses in Chinese enterprises.[88] It is essential that steps be implemented in China to promote the exit of capacity and to deflate the country's debt bubble, before the world economy becomes even more vulnerable to a massive Chinese debt crisis.

Chinese overcapacity and resulting massive exports have already tanked the world steel market, severely hindering the ability of steel producers around the world to operate profitably. While it may be unnecessary for Chinese producers, earning profits and a decent return on capital is essential for market-oriented steel producers that make decisions based on commercial considerations.

In short, the overwhelming majority of global capacity increases since 2000 have occurred in what has become the least profitable steel industry in the world, highlighting the disconnect between profitability and growing capacity. Despite increasingly nonexistent profits, Chinese steel producers continue to boost production and add capacity largely as a result of governmental control over and intervention in the industry.

C. Current Steel Overcapacity Is Largely the Result of Government Intervention

Rather than market-based growth, capacity continues to grow largely as a result of intervention by governments, many of which have significantly subsidized their steel industries, including through low-interest loans, grants and the provision of low-priced inputs. Such intervention has resulted in enormous capacity increases over short periods of time in many countries, causing oversupply globally and otherwise distorting the world market. Political intervention has also acted as a key barrier to permanent capacity closures in the industry, as governments prevent mill closures for other non-commercial purposes.[89] While in a purely market-based system "the power of the market alleviates excess capacity, by forcing inefficient producers that incur profit losses to eventually exit the market,"[90] government intervention artificially prevents the market from self-correcting. Thus, in the steel industry, government impediments to capacity closure, combined with barriers to exit associated with long-lived assets, have led to the accumulation of persistent and growing excess capacity.

1. Massive Government Intervention in China's Steel Industry

China provides the most striking example of government intervention in the steel industry. The unprecedented growth in Chinese capacity is largely a result of massive government ownership and control, which has come at the expense of market-oriented steel producers around the globe.[91] The

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88 *See, e.g.*, Lingling Wei and Bob Davis, *In China, Beijing Fights Losing Battle to Rein In Factory Production*, Wall Street Journal (July 16, 2014) ("[Steel] companies stay afloat by borrowing, adding to China's rapidly-growing debt levels"); Fayen Wong, *Steel industry on subsidy life-support as China economy slows*, Reuters (Sept. 18, 2014).

89 *See Morgan Stanley Global Steel Report* at 15.

90 OECD Excess Capacity Report at 2. *See, e.g.*, Bruce Vail, *An Ominous Quiet Descends On RG Steel's Troubled Mills*, inthesetimes.com (June 7, 2012).

91 *See, e.g.*, European Chamber of Commerce 2016 Report at 16 ("China's steel industry now accounts for more than half of global output, or more than twice the combined output of the next four biggest steel makers: Japan, India, the US and Russia. It enjoys this massive capacity largely thanks to supportive industrial policies spanning decades whose sole aim was to help this 'strategic' industry flourish"); *Perverse advantage: A new book lays out the scale of China's industrial subsidies*, The Economist (Apr. 27, 2013) ("On their conservative calculations, China spent over $300 billion, in nominal terms, on the biggest SOEs between 1985 and 2005. This help often came in the form of cheap capital and underpriced

Chinese government has ownership interests in nine of the ten largest steel producers in China – the top two of which alone produced more steel in 2014 than the entire U.S. steel industry shipped that year.[92] In addition to owning majority shares in most of its major steel producers, the Chinese government maintains a high degree of decision-making authority over the industry and continues to intervene extensively in the operations of individual steel companies. For example, recent reports indicate that local governments in China have instructed steel mills in their localities to increase their exports and foreign exchange earnings.[93]

The Chinese government's significant involvement in its steel industry has both contributed to the enormous increases in new capacity and prevented the closure of inefficient capacity. Through various laws, policies and industrial plans, the Chinese government for decades has directly subsidized its steel producers with grants, preferential loans, debt-for-equity swaps, tax refunds and other preferential policies, as well as various forms of indirect support, such as restrictions on foreign investment.[94] Using such policies, as well as its significant ownership stakes, the Chinese government has created the world's largest steel industry.

Even Chinese government policies purportedly intended to decrease China's excess steel capacity have had the opposite effect. Since as early as 2003, a series of top-down government plans claiming to address overcapacity and the extensive environmental degradation that it has caused have instead operated as disguised industrial subsidy programs.[95] Rather than encouraging inefficient, unprofitable and highly polluting capacity to exit the market permanently, these policies have encouraged the construction of massive industrial parks and the large-scale installation of new capacity under the auspices of

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inputs unavailable to international rivals ... Such distortions breed indiscipline and overcapacity... A similar problem looms in the steel industry").

92 China's two largest steel producers, Hebei Steel Group and Baosteel Group, are both state-owned and produced 47.1 and 43.3 million tons of steel in 2014, respectively, while the entire U.S. steel industry shipped in 89.1 million tons that year.

93 Della Fu, *No common export strategy for major Chinese mills in 2016*, Steel First (Mar. 24, 2016).

94 *See generally* Wiley Rein LLP, *Money for Metal: A Detailed Examination of Chinese Government Subsidies to the Steel Industry* (July 2007); Wiley Rein LLP, *The Reform Myth: How China Is Using State Power to Create the World's Dominant Steel Industry* (Oct. 2010); Fayen Wong, *Steel industry on subsidy life-support as China economy slows*, Reuters (Sept. 18, 2014) ("Subsidies accounted for four-fifths of the profits reported by Chinese steel companies in the first half of this year").

95 *See, e.g., Notice of the General Office of the State Council Issuing the Several Opinions of the National Development and Reform Commission and Other Agencies Regarding Checking Blind Investment in the Steel, Aluminum, and Cement Sectors* (国务院办公厅转发国家发展改革委员会等部门关于制止钢铁电解铝水泥行业盲目投资若干意见的通知), Guo Ban Fa [2003] No. 103 (Dec. 23, 2003); *Notice of the State Council Regarding Hastening and Promoting Structural Adjustment of Industries with Overcapacity* (国务院关于加快推进产能过剩行业结构调整的通知), Guo Fa [2006] No. 11 (Mar. 12, 2006); *Notice of the State Council Regarding Promulgating the Several Opinions of the NDRC and Other Departments Regarding Suppressing Overcapacity and Redundant Construction in Certain Sectors and Guiding Healthy Industrial Development* (国务院批转发展改革委等部门关于抑制部分行业产能过剩和重复建设引导产业健康发展若干意见的通知), Guo Fa [2009] No. 38 (Sept. 26, 2009); *Notice of the State Council Regarding Further Strengthening Work on Eliminating Outdated Capacity* (国务院关于进一步加强淘汰落后产能工作的通知), Guo Fa [2010] No. 7 (Feb. 6, 2010); *Guiding Opinion of the State Council Regarding Resolving the Contradiction of Serious Overcapacity* (国务院关于化解产能严重过剩矛盾的指导意见), Guo Fa [2013] No. 41 (Oct. 6, 2013).

"eliminating outdated capacity," developing a "circular economy,"[96] encouraging "comprehensive resource utilization" and other alleged environmental and capacity reduction initiatives. These policies have provided for government grants, the provision of land and inputs, and pervasive state intervention in the allocation of credit and financing, all in pursuit of upgrading, modernizing and even expanding, rather than reducing, steel capacity. As a result, steel producers that should have gone out of business have remained in the market and expanded and upgraded their facilities, further fueling China's capacity expansions.[97]

Indeed, the very plans and policies that the Chinese government claims, with much fanfare, will resolve the overcapacity crisis, are in fact primary drivers of the problem. Despite repeated failures to accomplish any net capacity reductions, each subsequent iteration of these plans relies on the same state-driven policy levers that are little more than massive industrial subsidy schemes. In 2003, for example, Chinese central authorities instituted one of the country's first alleged efforts to address overcapacity. The policy acknowledged that various levels of government "for many reasons have built new iron and steel smelting projects on a large scale, providing low-price and tax-free land use rights and giving enterprises all types of unreasonably preferential policies and tax breaks..."[98] A decade later, in 2013, China's State Council was still identifying the very same problem, noting that various levels of government "have too excessively pursued fast growth and have relied too heavily on investment as the driver. Through commercial recruiting methods like supplying discounted land, tax breaks, and low-price resource allocation, they have spurred redundant investment and capacity expansion."[99]

While repeatedly appearing to identify the problem, the Chinese government's various plans and policies, over nearly 15 years of their implementation, have failed to stop the extensive subsidization and state intervention at the heart of the issue. To the contrary, they have exacerbated the overcapacity problem. While they may create the appearance of serious action, the Chinese government's overcapacity plans actually permit and even encourage the same state intervention and subsidization that created the problem in the first place.

Specifically, Chinese government plans claim to rely on heightened environmental and industry entry standards, along with more stringent regulatory enforcement. To the extent that any capacity is actually eliminated pursuant to these plans, it is limited to a subset of state-selected "outdated capacity." For example, as noted above, when Hebei province destroyed some blast furnaces a few years ago, it was reported that "[a]ll of the furnaces targeted for destruction turned out to be so outmoded that the companies that owned them didn't consider them spare capacity..., meaning they didn't help reduce the province's extra volume."[100] This is consistent with a recent report's concern that "much of the capacity

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96 "Circular economy" is a term utilized by the Chinese government to refer to a policy of reducing per-unit emissions and resource consumption through means including technological upgrades, vertical and horizontal integration of related industries and enterprises, and creation of geographically concentrated, top-to-bottom industrial chains in pollution-heavy industries.

97 *See, e.g.*, European Chamber of Commerce Report at 17.

98 Guo Ban Fa [2003] No. 103 at 3.

99 Guo Fa [2013] No. 41 at 1.

100 Lingling Wei and Bob Davis, *In China, Beijing Fights Losing Battle to Rein In Factory Production*, Wall Street Journal (July 16, 2014).

that is being targeted for closure [by the Chinese government] is 'zombie' capacity that does not in reality operate at present."[101]

Moreover, under the various Chinese government policies issued over the past 15 years, any capacity actually eliminated is extremely outdated. And it is often replaced by new or upgraded, more efficient, and often larger capacity. As one report recently noted, "many [Chinese] steelmakers while closing high cost urban mills are replacing this capacity with new low cost and energy efficient mills located further from population centres."[102] These policies are therefore not only ineffective – they actually lead to increases in total capacity (and often total pollution).

Often, on their face, these plans and policies have purported environmental goals. Under the guise of environmental protection, China's overcapacity initiatives provide substantial subsidies for technological renovations that result in replacing outdated capacity with upgraded and expanded capacity – a net negative for the overcapacity crisis and the environment. For example, a 2005 Chinese government policy focused on developing the "circular economy," while couched in terms of environmental objectives, instructed authorities to provide a variety of state support that resulted in capacity increases. The 2005 policy sought to "strenuously develop high-technology industries, hasten the use of high technology and advanced application technologies to transform traditional industries; eliminate outdated industrial processes, technology, and equipment; [and] bring about the upgrading of traditional industries."[103]

In 2006, China's State Council launched a second major overcapacity initiative that has become the blueprint for China's overcapacity policies to date. The policy sought to "promote adjustment of the industrial structure in overcapacity industries" by (i) introducing higher environmental, safety and industrial standards,[104] and (ii) identifying and eliminating facilities that do not meet those standards.[105] Notably, the 2006 plan defined "outdated capacity" largely in terms of size and made clear that "eliminate" did not actually mean to remove from the market entirely. It explained that only blast furnaces smaller than 300 cubic meters and rotary and electric furnaces smaller than 20 tons should be eliminated.[106] It provided further that the government would "support the technological renovation projects of large enterprises that are consistent with industrial policy, technologically advanced, and significant to industrial upgrading."[107] In other words, the policy provided government support – subsidies – for large enterprises to upgrade and expand their facilities.

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101 Jefferies Franchise Note, *Metals & Mining* (Jan. 13, 2016) at 36

102 *Id.*

103 *Several Opinions of the State Council Regarding Hastening the Development of the Circular Economy* (国务院关于加快发展循环经济的若干意见), Guo Fa [2005] No. 22 (July 2, 2005) at 3

104 Guo Fa [2006] No. 11 at 3. The policy sought to "...increase entry barriers by drafting stricter standards such as environmental, safety, energy consumption, water consumption, comprehensive resource utilization, and quality, technology, and scale."

105 *Id.* The policy stated a goal to "...close a group of small enterprises that destroy resources, pollute the environment, and do not maintain safe production conditions. Eliminate a set of outdated production capacity in phases and groups. Undertake demolition procedures for outdated production facilities."

106 *Id.*

107 *Id.*

The plan called for strict implementation of the State Council's 2005 *Provisional Rules for Promoting Adjustment of the Industrial Structure*, which established an *Industrial Structure Adjustment Guiding Catalogue* that classified industrial projects as "encouraged," "restricted" or "eliminate."[108] Projects and technologies in the "encouraged" category, which were to receive continued state support, included 17 iron and steel items, such as "non-blast-furnace smelting technology"[109] (*e.g.*, the electric arc furnace technology used in the majority of steel production in the United States and a number of other countries[110]). Even capacity falling under the "restricted" category was allowed to "adopt measures to renovate and upgrade in a set period of time," with government support for doing so.[111] As a result, China's 2006 overcapacity plan did not lead to reduced capacity. Instead, in only the three years following its issuance, China's annual steel capacity increased by nearly 250 million tons.[112]

Subsequent iterations of Chinese government plans purporting to address industrial overcapacity in steel and other industries have retained this ineffectual structure of implementing heightened environmental and industrial standards targeted only at eliminating so-called "outdated capacity," while simultaneously encouraging state support for enterprises to upgrade in accordance with those standards. As another example, the Chinese State Council's 2010 *Notice Regarding Further Strengthening Work on Eliminating Outdated Capacity* explained that governments should:

- "Strengthen budgetary funding guidance... [U]tilize existing funding channels and generally support all localities in undertaking work of eliminating outdated capacity... All localities should also actively allocate funding to support enterprises in eliminating outdated capacity." [113]
- "Support enterprise upgrades and renovations. Fully realize the use of science and technology in supporting industrial upgrading... [A]llocate technology renovation funds, implement and perfect relevant preferential income tax and financing support policies. Support enterprises consistent with national industrial policy and planning in using high technology and advanced applications technology. Emphasizing product quality, energy conservation, environmental protection, equipment improvements, and safe production, undertake renovation of outdated capacity... Prioritize technology renovation funds, energy conservation and emissions reduction funds, project approvals, land development and utilization, and financing support for localities and enterprises with significant burdens and good records in eliminating outdated capacity."[114]

Most recently, in 2013, China's State Council issued the *Guiding Opinion of the State Council Regarding Resolving the Contradictions of Serious Overcapacity*. Once again, despite the policy's stated concern with overcapacity in steel and other industries, the central government reiterated its support for industrial upgrading in accordance with the very standards that it claimed should force excess capacity

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108 *Decision of the State Council Regarding Publication and Implementation of the Provisional Rules for Promoting Adjustment of the Industrial Structure* (国务院关于发布实施《促进产业结构调整暂行规定》的决定), Guo Fa [2005] No. 40 (Dec. 2, 2005) at Art. 12.

109 *Id.* at Art. 17; *Industrial Structure Adjustment Guiding Catalogue (2011 Edition)* (earlier editions are no longer available) at 11.

110 *See, e.g.*, *World Steel in Figures 2015*, World Steel Association (May 29, 2015) at 10.

111 Guo Fa [2005] No. 40 at Art. 18.

112 OECD, *Developments in Steelmaking Capacity of Non-OECD Economies 2013* (Aug. 13, 2014) at 8.

113 Guo Fa [2010] No. 7 at 4.

114 *Id.* (emphasis added).

from the market. The *Guiding Opinion* explained that "[t]he central budget should expand support for overcapacity sectors to implement structural adjustments and industrial upgrades, and each local budget should allocate special funds to provide support as practical."[115] It also directed financial institutions to "expand credit support for technological renovations."[116]

A steel-specific plan to implement the 2013 *Guiding Opinion* imposed minimum capacity requirements for Chinese steel producers, identifying for closure blast furnaces smaller than 400 cubic meters and rotary or electric furnaces smaller than 30 tons.[117] As the European Chamber of Commerce in China recently explained, such measures have "spurred a number of producers to expand their capacity above these thresholds in order to avoid closure," citing an example in which a Chinese steel producer received compensation for "dismantling four small blast furnaces [and] spent the funds it received on building a larger one."[118] In this way, such minimum capacity standards drive a "survival of the largest" approach in which, perversely, smaller steel mills are forced to expand capacity to comply with central industrial policies and are subsidized for doing so. It is more difficult for these super-sized facilities to adjust their output in accordance with market conditions, so their output remains high, even when smaller, more nimble producers could more easily cut production to align with actual demand.

China's 2013 *Guiding Opinion* introduced another particularly harmful approach to the country's domestic overcapacity crisis. It explicitly encourages the use of foreign markets as a release valve for China's excess steel capacity, through both exports of domestically produced steel and the state-supported relocation of Chinese mills to foreign countries. The *Guiding Opinion* calls for "implementing overseas investments and reorganizations to transfer excess domestic capacity" and directs financial institutions to "expand the level of support for enterprises 'going out' ...to support the transfer of capacity abroad."[119] The steel-specific implementation plan reiterates this policy by "encourag[ing] qualifying enterprises to link with 'One Belt, One Road' construction to transfer some capacity through international capacity cooperation and realize win-win and mutual benefit."[120] Such initiatives demonstrate the Chinese government's intention to maintain a China-centric approach that shifts the economic burdens of its own harmful domestic policies onto the markets of its trading partners.

In short, Chinese central government policies permit and in fact support the replacement of outdated capacity with state-of-the-art facilities, driving capacity expansions rather than promoting the exit of capacity from the market. As a result of these policy initiatives, even as some "outdated capacity" has been eliminated, it has been replaced by greater volumes of upgraded and expanded capacity. Under the latest plan, additional capacity is even being moved overseas, with generous state support and at the direction of central government initiatives.

In addition to actively promoting and subsidizing the upgrading and expansion of steel capacity, the Chinese government has continued to demonstrate that it will intervene directly to prevent capacity

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115 Guo [2013] No. 41 at 7-8.

116 *Id.*

117 *Opinion of the Stote Council Regarding Resolving Overcapacity in the Steel Industry and Realizing Development that Relieves Hardship* (国务院关于钢铁行业化解过剩产能实现脱困发展的意见), Guo Fa [2016] No. 6 (Feb 1, 2016).

118 European Chamber of Commerce 2016 Report at 17.

119 Guo Fa [2013] No. 41 at 7-8 (emphasis added).

120 Guo Fa [2016] No. 6 at 2.

closures that would otherwise occur. For example, four Chinese steelmaking companies that halted operations last year due to staggering financial losses, now plan to re-start production after major investments by a Chinese state-owned company, indicating that "the government is not ready for massive closures of steel mills."[121] And reports persist that "local governments simply [will not] allow steel mills to be closed down for the sake of local employment and fiscal income,"[122] despite recent promises for capacity closures. For example, despite 192 billion yuan of debt that Bohai Steel cannot repay, the Tianjin government, which owns Bohai, has reportedly "'asked banks to continue lending' to Bohai," promising that "the government will pay the interest."[123]

2. Government Intervention in Other Global Steel Industries

Turkey is another prime example of a steel industry built with government support. The Turkish steel industry has grown rapidly, jumping from the 17th largest crude steel-producing country in the world in 2000 to the 9th largest last year.[124] Such dramatic growth has been facilitated by significant subsidies from the Turkish government, including low-interest development bank loans,[125] export credits and insurance,[126] tax benefits,[127] and the provision of low-cost inputs to suppliers.[128] In addition, Turkish steel producers that generate power with their own coal-fired or natural gas power plants benefit from state-controlled pricing schemes, resulting in artificially low energy costs for such producers.[129]

Similarly, the Indian government has fostered the rapid expansion of its steel industry through intervention and subsidies. There, the government owns 86 percent of the Steel Authority of India Ltd. (SAIL), India's largest steel producer.[130] Outside of ownership, the Indian government has historically intervened in its steel market by promoting investments and propping up struggling enterprises with

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121 *China's big state-owned investor to help private loss-moking steel companies*, Metal Expert Daily News (Feb. 4, 2016).

122 Tracy Alloway, *Why China's Steel Mills Won't Cut Back Production*, Bloomberg (Nov. 24, 2015).

123 Wu Hongyuran and Yang Qiaoling, *Intense Jostling over an Indebted Steelmoker*, Caixin Online (Apr. 7, 2016).

124 Turkish Steel Exporters' Association, *Turkish Steel Trade Delegation Dubai* (2015) at 10; World Steel Association, *Crude steel production 2015-2014*, available at https://www.worldsteel.org/statistics/crude-steel-production.html.

125 *See, e.g.*, Kalkinma Development Bank of Turkey, *2014 Annuol Report*, http://english.kalkinma.com.tr/userfiles/pagefiles/annual-reports/annual_report_2014.pdf (last visited Apr. 8, 2016).

126 *See* Report by the Secretariat, *Trade Policy Review: Turkey*, WT/TPR/S/331 (Feb. 9, 2016) at 88 (noting that 19 percent of the short-term export credits granted by Turk Eximbank in 2014 were in the iron and steel sector); *New ond Full Notificotion Pursuant to Article XVI:1 of the GATT 1994 ond Article 25 of the Agreement on Subsidies and Countervailing Measures: Turkey*, G/SCM/N/284/TUR (Sept. 18, 2015) (Turkey 2015 WTO Subsidies Notification) at 9-23.

127 *See* Turkey 2015 WTO Subsidies Notification at 1-5.

128 Issues and Decision Memorandum accompanying *Welded Carbon Steel Stondard Pipe from Turkey*, 70 Fed. Reg. 62,097 (Dep't Commerce Oct. 28, 2005) (final results of expedited sunset review); Issues and Decision Memorandum accompanying *Heavy Walled Rectangular Welded Carbon Steel Pipes and Tubes From the Republic of Turkey*, 80 Fed. Reg. 80,749 (Dep't Commerce Dec. 28, 2015) (prelim. affirmative countervailing duty deter. and alignment of final deter. with final antidumping duty deter.).

129 *See* Report by the Secretariat, *Trade Policy Review: Turkey*, WT/TPR/S/259 (Jan. 17, 2012) at 91-92.

130 OECD 2015 Excess Capacity and New Projects Report at 36.

"cheap loans, tax incentives [and] subsidized land,"[131] in addition to imposing import duties, licensing requirements and raw material export restrictions to protect domestic producers.[132]

Governments in countries with smaller steel outputs are also learning from the Chinese example and intervening to protect and expand their steel industries. For example, state-owned steel companies in Indonesia, Iran, Libya, Nigeria, Qatar, South Africa, Tunisia, Venezuela and Vietnam each have recently expanded capacity or plan to do so in the near future,[133] which will contribute to the excess capacity plaguing the global steel industry. In addition to those discussed above, the following governments own significant shares of the large (if not the largest) steel companies in their countries, thereby playing a role in increased production in these countries: Pakistan (which recently delayed plans to privatize its Pakistan Steel Mills Corporation[134]), Saudi Arabia (which owns 70 percent of Saudi Basic Industries Corporation[135]), and the United Arab Emirates (whose Emirate Steel Industries PJSC is wholly owned by Senaat, the Abu Dhabi government's industrial investment holding company[136]).

Even in countries with historically market-based economies, governments are intervening in the steel sector. In Europe, there are several ongoing investigations of government interference to prevent capacity closures. For example, the European Commission recently concluded that a public authority controlled by the government in the Walloon region of Belgium "repeatedly granted support measures amounting to €211 million in state aid to companies of the Duferco group between 2006 and 2011," which "artificially boosted the companies' revenues and postponed the difficult yet necessary capacity adjustments in the Walloon steel industry."[137]

As discussed in the 2013 paper, the Italian government took steps in recent years to prevent the closure of steelmaker Ilva SpA's plant in Taranto, Italy, the largest steelmaking facility in Europe.[138] The European Commission is now investigating the consistency with European state aid rules of the Italian government's actions, which reportedly totaled approximately €2 billion and included "state guarantees on loans, a law exceptionally giving loans granted to Ilva an absolute payment priority in case of bankruptcy, including over debt to public entities, a law allowing Ilva access to funds seized during ongoing criminal proceedings against Ilva's shareholders and former management before those proceedings have established who owns these funds, and the settlement by payments to Ilva of a long standing dispute between State-owned Fintecna and Ilva."[139]

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131 Ernst & Young LLP, *Indian steel: Strategy to ambition* (2014) at 6.

132 *See, e.g.*, U.S. Trade Representative, *2015 National Trade Estimate Report on Foreign Trade Barriers* (Apr. 1, 2015) at 183.

133 OECD 2015 Excess Capacity Report at Annex.

134 Shahbaz Rana, *IMF agrees to delay PIA sell-off for six months*, The Express Tribune (Feb. 4, 2016).

135 Gulf Petrochemicals and Chemicals Association, *Saudi Basic Industries Corporation (SABIC)*, http://gpca.org.ae/congulf/blog/saudi-basic-industries-corporation-sabic/ (last visited Mar. 30, 2016).

136 *Emirates Steel*, http://www.senaat.co/emirates-steel (last visited Mar. 30, 2016).

137 European Commission, *Stote aid: Commission orders Belgium to recover €211 million from several steel companies within the Duferca group* (Jan. 20, 2016).

138 *Government Intervention and Overcapacity* 2013 at 19.

139 European Commission, *State aid: Commission opens in-depth investigation into Italian support for steel producer Ilva in Taranto, Italy* (Jan. 20, 2016).

Government interference in the global steel market has been exacerbated by the activities of multilateral development banks and national export promotion agencies. These organizations have loaned steelmakers around the world billions of dollars, often ostensibly to increase energy efficiency and to reduce pollution. In other cases, the goal is to promote the export of steelmaking machinery. In either case, the end result is the same – lending at below-market rates leads to the creation and maintenance of capacity that would not otherwise occur. For example, last year, the Brazilian National Development Bank (BNDES) announced that it would provide steel company Companhia Siderúrgica do Pecém (CSP) with up to USD 1 billion to build a plant at the Pecém Industrial Port Complex with a three million ton annual production capacity.[140] As CSP is partially owned by POSCO and Dongkuk Steel, the Korean Export-Import Bank is also reportedly lending significant support to the construction of the new mill.[141]

Even here in the United States, export banks have played a role in expanding steel capacity. New Arkansas steel producer Big River Steel received an $800 million loan from the German government-owned KfW IPEX Bank GmbH, with export credit insurance provided by Germany's export promotion agency Euler Hermes, in return for its purchase of German steelmaking equipment.[142] This loan accounts for a majority of the capital used to build Big River Steel. When completed this year, Big River Steel's mill will add about 1.6 million tons of capacity to the U.S. steel market.[143]

These examples demonstrate that, just as the Department of Commerce found in its 2000 report, growing overcapacity in the global steel market continues to be due in large part to government subsidies to and intervention in steel industries around the world, most notably in countries outside of North America.[144] Government subsidies continue to help create massive steel capacity worldwide and to prevent much-needed capacity closures and reductions in response to oversupply and weakening demand conditions.

IV. SOLUTIONS TO THE GLOBAL OVERCAPACITY CRISIS

Previous efforts to remedy global steel overcapacity – and to eliminate government intervention and other market-distorting practices contributing to overcapacity – have not achieved long-term results. Indeed, since the first issue of this paper was released, the excess capacity crisis has only worsened. Unless immediate action is taken to reduce global overcapacity, the very viability of many steel industries around the world will be threatened.

Notably, China must take action. Given China's overwhelming contribution to the overcapacity crisis, any real solution simply must include meaningful and effective action by the Chinese government to

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140 *Brazil: BNDES to grant Vale, Dongkuk and Posco USD 800 million to build steel mill,* Global Trade Alert (Oct. 2, 2015); White & Case, *White & Case Named Best Infrastructure Law Firm in Latin America by LatinFinance* (Oct. 8, 2015) (BNDES is involved in "a US$3.1 billion loan to Companhia Siderugica do Pecem (CSP). CSP is building a steel mill in the northeastern Brazilian State of Ceará and once operational will produce three million tons of steel products. CSP is owned by Vale (50 percent), Dongkuk Steel (30 percent) and Posco (20 percent). BNDES is providing US$1 billion in funding and KEXIM, K-Sure and certain commercial lenders have agreed to provide $2.1 billion in funding").

141 White & Case, *White & Case Nomed Best Infrastructure Law Firm in Latin Americo by LatinFinance* (Oct. 8, 2015).

142 Joe Nocera, *Corporate Welfore for the Kochs,* The New York Times (Oct. 10, 2015); Jonathan Bell, *KfW IPEX arranges major export finonce for Siemag equipment to US,* Trade & Export Finance (July 9, 2014).

143 *KfW and Euler fund huge US steel mill,* Global Trade Review (July 14, 2015).

144 Commerce Global Steel Trade Report at 4.

shutter a substantial portion of its massive, state-sponsored steel capacity. China's current plan to reduce steel capacity by 100 to 150 million tons is insufficient. To make an appreciable improvement in the global overcapacity crisis, Chinese steel producers must close 300 to 400 million tons of steelmaking capacity. Currently, it appears unlikely that even the planned 100 to 150 million tons of closures will occur, given China's track record and the plethora of existing plans and policies that may purport to lead to capacity closures but instead have consistently encouraged the upgrading and expanding of steel capacity, including with government support, as discussed above.

To achieve the much-needed, permanent closure of global capacity, government policy makers, particularly those in China, must reduce or eliminate the underlying market-distorting practices that serve to increase and/or maintain inefficient capacity. Governments may need to provide limited assistance to facilitate the permanent closure of excess steel capacity, as "policies that promote the efficient restructuring of the industry or provide assistance to workers who may be displaced by the closure of uneconomic mills can be useful tools to address the problem and promote greater stability in global steel markets."[145] Otherwise, countries should agree to remove government ownership and control over the industry, as well as any other government involvement, direct or indirect, in the industry. This includes:

- Eliminating government subsidies and other assistance to the steel industry, including assistance to prop up loss-making capacity. This assistance also includes loans and grants ostensibly for environmental and efficiency purposes, which in effect are highly distortive subsidies that maintain and increase net steel capacity worldwide;

- Eliminating government practices and policies that prevent or forestall adjustments mandated by the market. For example, companies must be permitted to lower production levels and cease production when demand, profitability or other market conditions warrant;
- Removing government industrial planning and decision-making from the steel industry, specifically including China's minimum standards, which act perversely to promote the creation of ever-larger steelmaking plants that, by their very nature, cannot easily respond to demand fluctuations;

- Imposing a strict prohibition on multilateral and export bank lending on steel projects, which has been a significant source of funding for unnecessary capacity survival and expansions;

- Removing export restrictions on critical raw materials and other government intervention in raw materials markets, so that raw materials trade is based on market principles; and

- Removing import tariffs and trade-distorting non-tariff barriers on steel products.

Governments must also recognize that a ton of excess steel capacity is equally harmful regardless of where it is produced, and agree that foreign markets should not be used as tools for relieving the harmful domestic impact of a country's own overcapacity, whether through encouraging exports or supporting the relocation of mills to third countries.

As always, vigorous enforcement of the antidumping and countervailing duty laws is necessary to ensure that imports compete on a fair basis. These World Trade Organization rules are pro-competition, as they address unfair trade practices. In particular, China must continue to be treated as a non-market

145 OECD 2015 Excess Capacity Report at 6.

economy for trade remedy purposes, given the Chinese government's continued, substantial and disruptive intervention in its steel industry and overall economy.

Major steel-producing countries should also remove other practices that cause market distortions and take measures to ensure a market-based, competitive home market. For example, countries should ensure the proper enforcement of antitrust and competition rules to prevent "cooperative systems" among domestic producers, and remove import barriers that insulate domestic producers from competition. As stated in *Government Intervention and Overcapacity* in 2013, there is simply no reason for countries that have developed steel industries, such as India, Brazil, Russia and Turkey, to maintain tariffs and other import barriers on steel products or to impose export restrictions on raw materials – yet these countries continue to do so. Each of these practices can artificially reduce costs and inflate the export competitiveness of domestic producers, leading to surplus capacity and trade distortions.

Moreover, industries that currently have significant excess capacity should commit to market-based restructuring and consolidation, with the goal of eliminating inefficient and uneconomic capacity. Given the severity of the current crisis, efforts to restructure and eliminate excess capacity can no longer be postponed. It is important to note, however, that consolidation and restructuring alone do not provide an adequate solution. Any such consolidation/ restructuring must be market-based, not driven by government policies intended to promote their domestic manufacturing bases. The primary aluminum industry, for example, is far more consolidated worldwide than the steel industry. Yet severe overcapacity persists, and market-based producers are struggling to compete with massive Chinese producers who can count on government support for their production, reinvestment and survival.[146] Consolidation of market-oriented producers will not enable them to compete against such companies, which can rely on subsidies instead of their own profits and do not have to generate a return on investments to expand, reinvest and survive.

To be effective, consolidation cannot simply be a cover for the government to transfer assets and provide subsidies to its failing enterprises. Instead, restructuring should enable companies to adjust production levels commensurate with demand and other market conditions, eliminating the need for companies to produce their way out of a downturn. The restructuring process should also include the implementation and utilization of viable, market-based bankruptcy procedures to ensure a well-functioning exit process. Such procedures will help ensure that uneconomic capacity is removed, keeping non-market based capacity expansion in check. As the Department of Commerce concluded in 2000, "[t]he longer that normal market restructuring is postponed, the more painful the process will be."[147]

If the long-term issues associated with overcapacity and other market-distortions are not addressed in a comprehensive manner, the adverse effects stemming from these imbalances, including unfair trade practices and the resulting trade friction, will persist and worsen. It has already taken far too long to address these problems facing the global steel industry. Action is critically needed now to address the long-term supply-demand imbalance plaguing the global steel industry and to ensure the continued viability of American steel producers.

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[146] In China, 75 percent of aluminum is produced by 14 major aluminum producers. Biman Mukherji, *Aluminum Rises as Chinese Producers Vow to Cut Production*, Wall Street Journal (Dec. 11, 2015).

[147] Commerce Global Steel Trade Report at 124.

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EXHIBIT 13

INTERNATIONAL TRADE ADMINISTRATION

Global Steel Trade Monitor

Steel Imports Report: **United States**

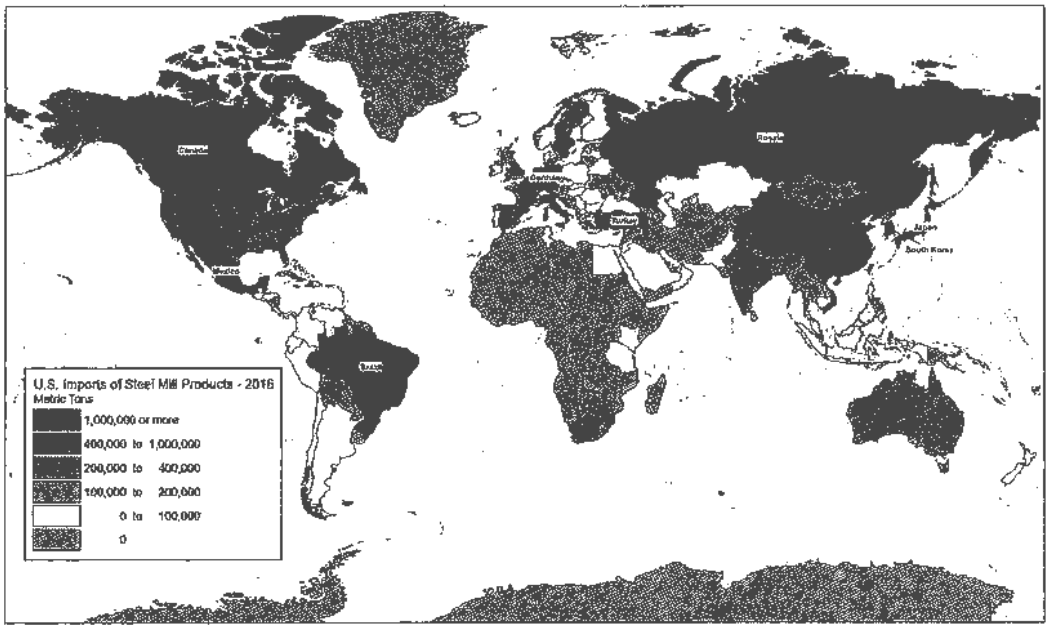
March 2017

Background

The United States is the world's largest steel importer. In 2016, the U.S. imported 30.1 million metric tons (mmt) of steel, a decline from 35.4 mmt in 2015 and the near-record high of 40.3 mmt in 2014. In 2015, U.S. imports represented about 19 percent of all steel imported globally, based on available data. The volume of U.S. steel imports in 2016 was more than 15 percent larger than that of the world's second- and third-largest importers, Germany and South Korea. In value terms, steel represented just 1 percent of the total goods imported into the United States in 2016.

The United States imports steel from over 110 countries and territories. The 8 countries labeled in the map below represent the top sources for U.S. imports of steel, with the U.S. receiving more than 1 million metric tons from each and together accounting for 75 percent of U.S. steel imports in 2016.

U.S. Imports of Steel Mill Products - 2016



Data Source: Global Trade Atlas; Copyright © IHS Global Inc. 2017. All rights reserved.

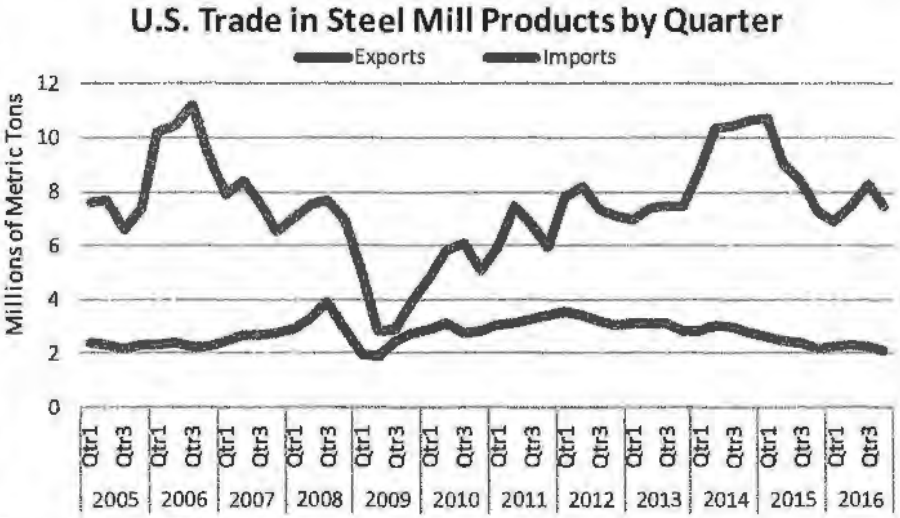
Quick Facts:

- World's largest steel importer: 30.1 million metric tons (2016)
- 104% steel import growth since 2009
- Year-on-year import volume down 15% while import value down 27%
- Import penetration up from 22.7% in 2009 to 30.1% in 2016
- Top three import sources: Canada, Brazil, South Korea
- Largest producers: Nucor, U.S. Steel, and ArcelorMittal USA
- 113 trade remedies in effect against imports of steel mill products

Steel Imports Report: **United States**

Steel Trade Balance

The United States has maintained a persistent trade deficit in steel products. Since 2009, imports have returned to the average levels seen prior to the 2008 global recession while exports have remained relatively flat in comparison, and the trade deficit has widened accordingly. Imports grew by 104% between 2009 and 2016, and the steel trade deficit grew by 269%.



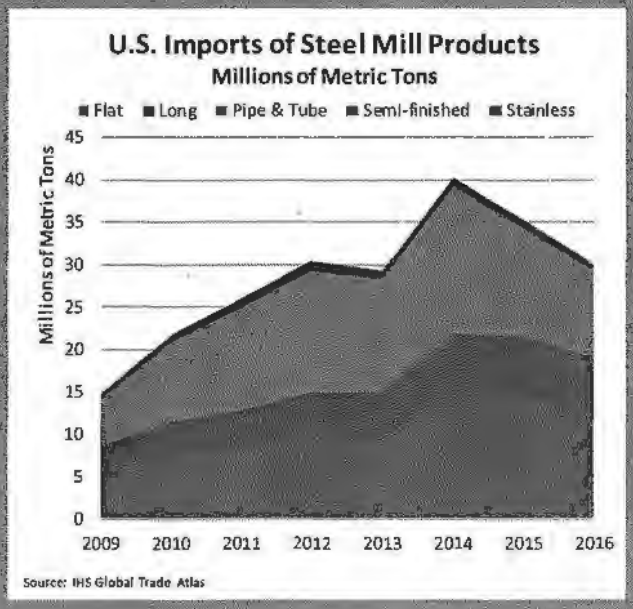
Source: IHS Global Trade Atlas

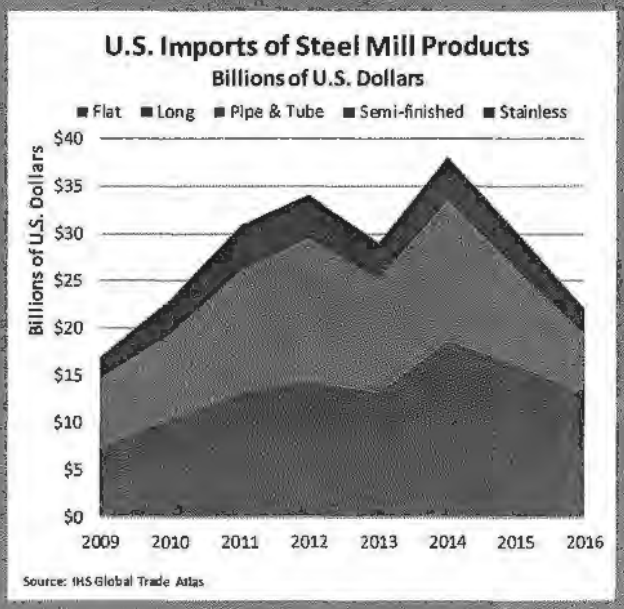
In 2016, the U.S. steel trade deficit amounted to -21.2 million metric tons.

Import Volume, Value, and Product

In 2014, U.S. imports of steel products reached a near-record high of 40.3 million metric tons, only topped by the 41.3 million metric tons imported in 2006. 2015 steel import levels decreased 12 percent from 2014, and in 2016, the volume of U.S. steel imports declined by 15 percent from 2015 to 30.1 million metric tons. The value of U.S. 2016 steel imports declined by a greater amount, down 27 percent to $22.1 billion from $30.3 billion in 2015, which can be attributed to a significant drop in global steel prices.

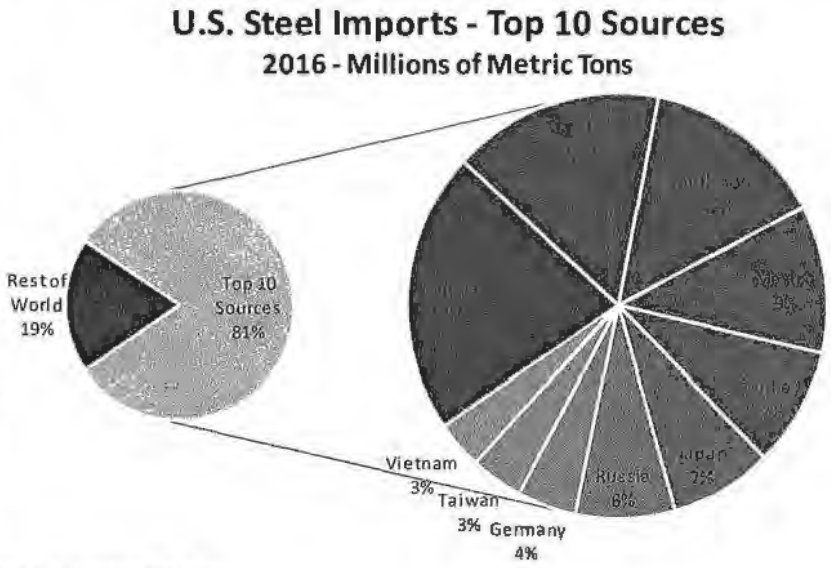
In 2016, flat products accounted for the largest share of U.S. steel imports at 41 percent, or 12.2 million metric tons. Long products accounted for 23 percent, or 6.9 million metric tons, of U.S. imports, followed by semi-finished (20% or 5.9 million metric tons), pipe and tube (14% or 4.1 million metric tons), and stainless products (3% or 882.1 thousand metric tons).





Imports by Top Source

The top 10 source countries for U.S. steel imports represented 81 percent of the total steel import volume in 2016 at 24.3 million metrics tons (mmt). Canada accounted for the largest share of U.S. imports by source country at 17 percent (5.2 mmt), followed by Brazil at 13 percent (3.9 mmt), South Korea at 12 percent (3.5 mmt), Mexico at 9 percent (2.7 mmt), and Turkey at 7 percent (2.2 mmt).



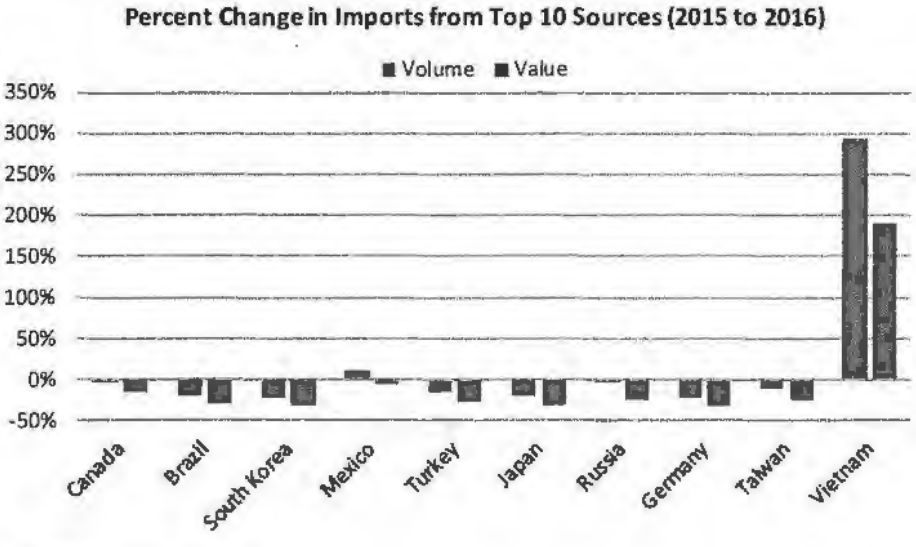
Source: IHS Global Trade Atlas

While the rankings of the top 10 source countries for U.S. imports has fluctuated over time, Canada has retained the top spot.

Trends in Imports from Top Sources

Between 2015 and 2016, imports from the U.S. top 10 source countries displayed significant trends in volume terms, with eight of the top ten seeing decreases. Imports from Germany showed the largest volume decrease, down 22 percent from 2015, followed by South Korea (down 21.3%) and Brazil (down 19.1%). The only increases in volume came from Vietnam (up 293.4%) and Mexico (up 10%).

Outside the top 10 sources, other notable volume changes included U.S. imports from 11th-ranked China (down 63%), 14th-ranked United Kingdom (down 57%), 16th-ranked India (down 58%), and 22nd-ranked Belgium (up 60%).



Source: IHS Global Trade Atlas

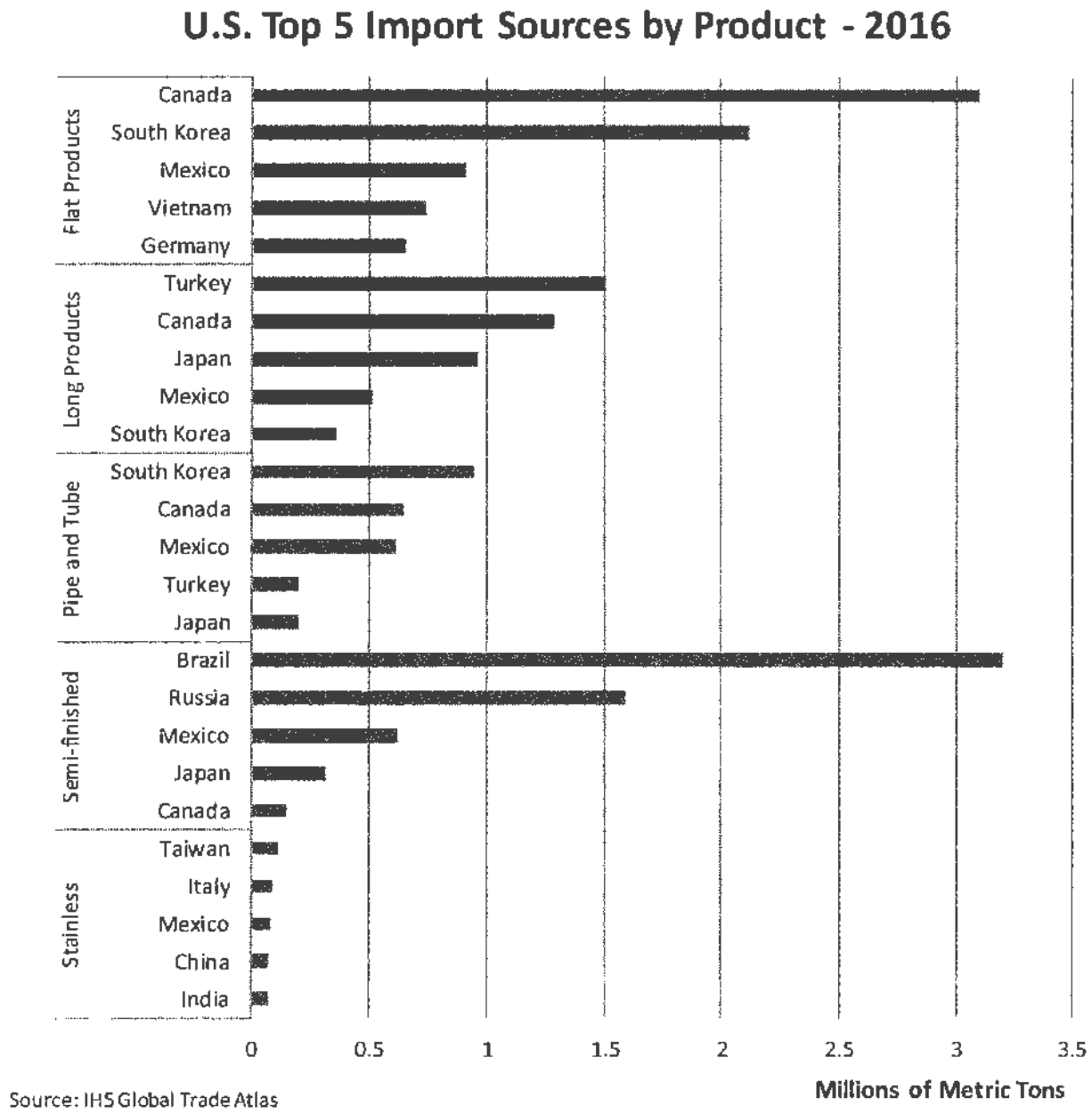
The overall value of U.S. imports decreased from nearly all of its top 10 sources, reflecting the decline in global steel prices. Imports from South Korea, Germany, and Japan showed the largest decreases in value in 2016, down 32.6, 31.4, and 30.7 percent, respectively. Only imports from Vietnam increased in value terms from 2015, up 190 percent.

Top Sources by Steel Product Category

The top source countries for U.S. imports by volume vary across types of steel products. Canada accounted for the largest share of U.S. imports of flat products in 2016 at 25 percent (3.1 million metric tons), followed by South Korea at 17 percent (2.1 million metric tons).

The U.S. received the largest share of its long product imports from Turkey in 2016 at 22 percent (1.5 million metric tons), received the largest share of pipe and tube imports from South Korea at 23 percent (945 thousand metric tons), and received the largest share, at 13 percent (111 thousand metric tons), of stainless products from Taiwan.

The U.S. imported over half of its semi-finished steel products (54 percent) from Brazil in 2016, a total of 3.2 million metric tons.



Source: IHS Global Trade Atlas

U.S. Export Market Share from Top Source Countries

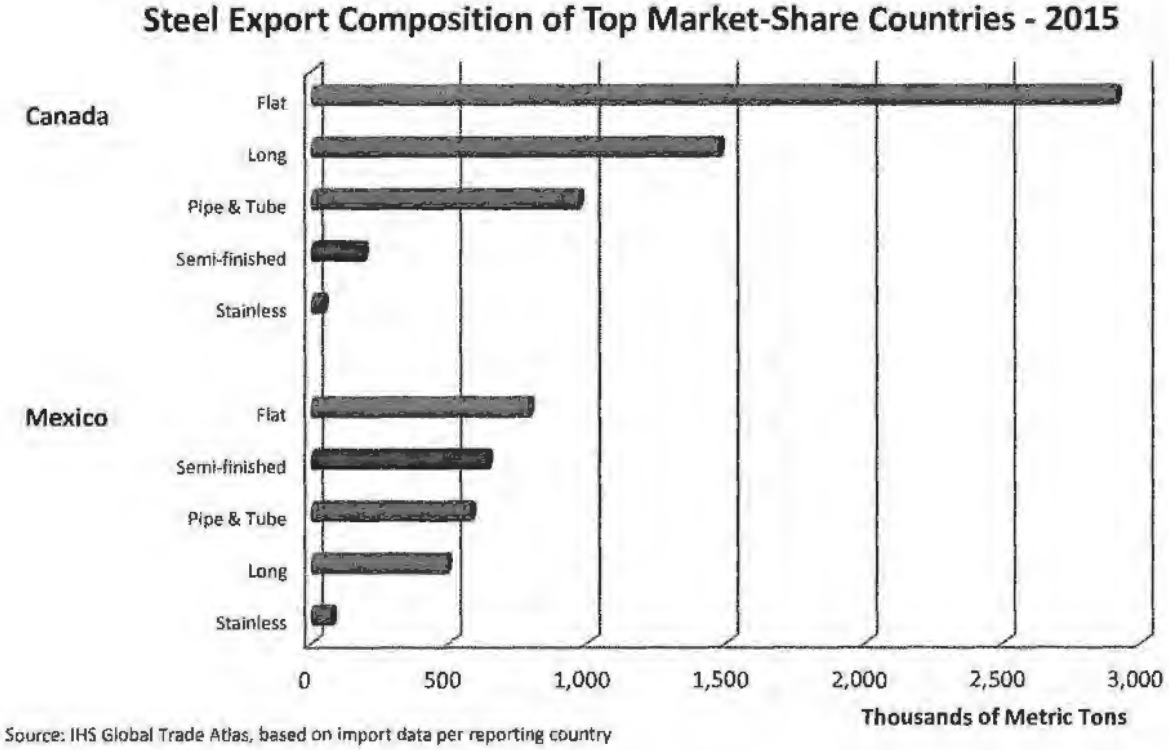
In 2015, the share of steel exports sent to the United States from its top import sources decreased in the majority of the U.S. top 10 sources. Brazil's share of exports to the U.S. showed the largest decline between 2014 and 2015, down 11.7 percentage points. Other notable decreases included South Korea's share of exports to the U.S. (down 5.3 percentage points from 2014), followed by Russia (down 4.5 percentage points) and China (down 1.4 percentage points). The share of exports to the U.S. in Japan and Taiwan both decreased by less than one percentage point.

Countries with notable increases in their share of steel exports to the U.S. included Canada (up 15.4 percentage points) and Mexico (up 2.1 percentage points).

U.S. Steel Export Market Share				
Top 10 Import Sources	Share of Exports to U.S. - 2014	U.S. Rank in 2014	Share of Exports to U.S. - 2015	U.S. Rank in 2015
Canada	46.1%	1	61.5%	1
Brazil	52.3%	1	40.6%	1
South Korea	17.8%	1	12.6%	1
Turkey	13.8%	1	15.6%	1
Mexico	65.8%	1	68.0%	1
Japan	6.0%	5	5.7%	7
China	3.3%	8	1.9%	19
Russia	6.9%	3	2.4%	10
Germany	5.0%	6	5.2%	7
Taiwan	9.9%	2	8.9%	4

Source: IHS Global Trade Atlas, based on import data per reporting country

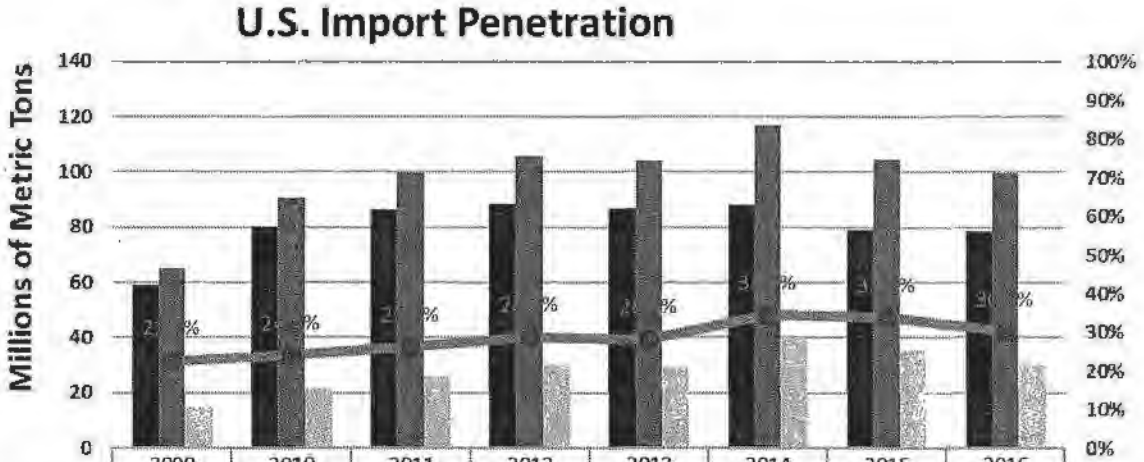
Among the U.S. top import sources, Canada and Mexico sent more than half of their total steel exports to the United States. In 2015, flat products accounted for the largest share of steel exports to the U.S. in both Canada and Mexico, at 52 percent (2.9 million metric tons) and 31 percent (786 thousand metric tons), respectively.



Source: IHS Global Trade Atlas, based on import data per reporting country

Steel Imports Report: **United States**

Overall Production and Import Penetration



	2009	2010	2011	2012	2013	2014	2015	2016
Production	59.4	80.5	86.4	88.7	86.9	88.2	78.8	78.6
Apparent Consumption	65.1	90.7	99.6	106.0	104.0	117.0	104.6	99.8
Imports	14.8	21.8	26.0	30.5	29.2	40.3	35.4	30.1
Import Penetration	22.7%	24.0%	26.1%	28.7%	28.1%	34.4%	33.8%	30.1%

Sources: World Steel Association; IHS Global Trade Atlas

U.S. crude steel production declined slightly to 78.6 million metric tons in 2016, a decrease of 0.3 percent from 2015's total of 78.6 million metric tons. Since 2009, apparent consumption (a measure of steel demand) has increasingly outpaced production. Between 2009 and 2016, crude steel production grew by 32 percent, while apparent consumption increased by 53 percent. As U.S. steel exports have decreased, imports have captured an increasing share of demand, as shown by the relatively high levels of import penetration in 2014, 2015, and 2016 at 34.4, 33.8, and 30.1 percent, respectively.

Top Producers

The top eight steel producers in the United States are a mix of foreign and domestically-owned companies. Based on available data, the top five domestically-owned producers, along with ArcelorMittal USA, accounted for 82 percent of total production in 2015.

United States Top Steel Producers in 2015

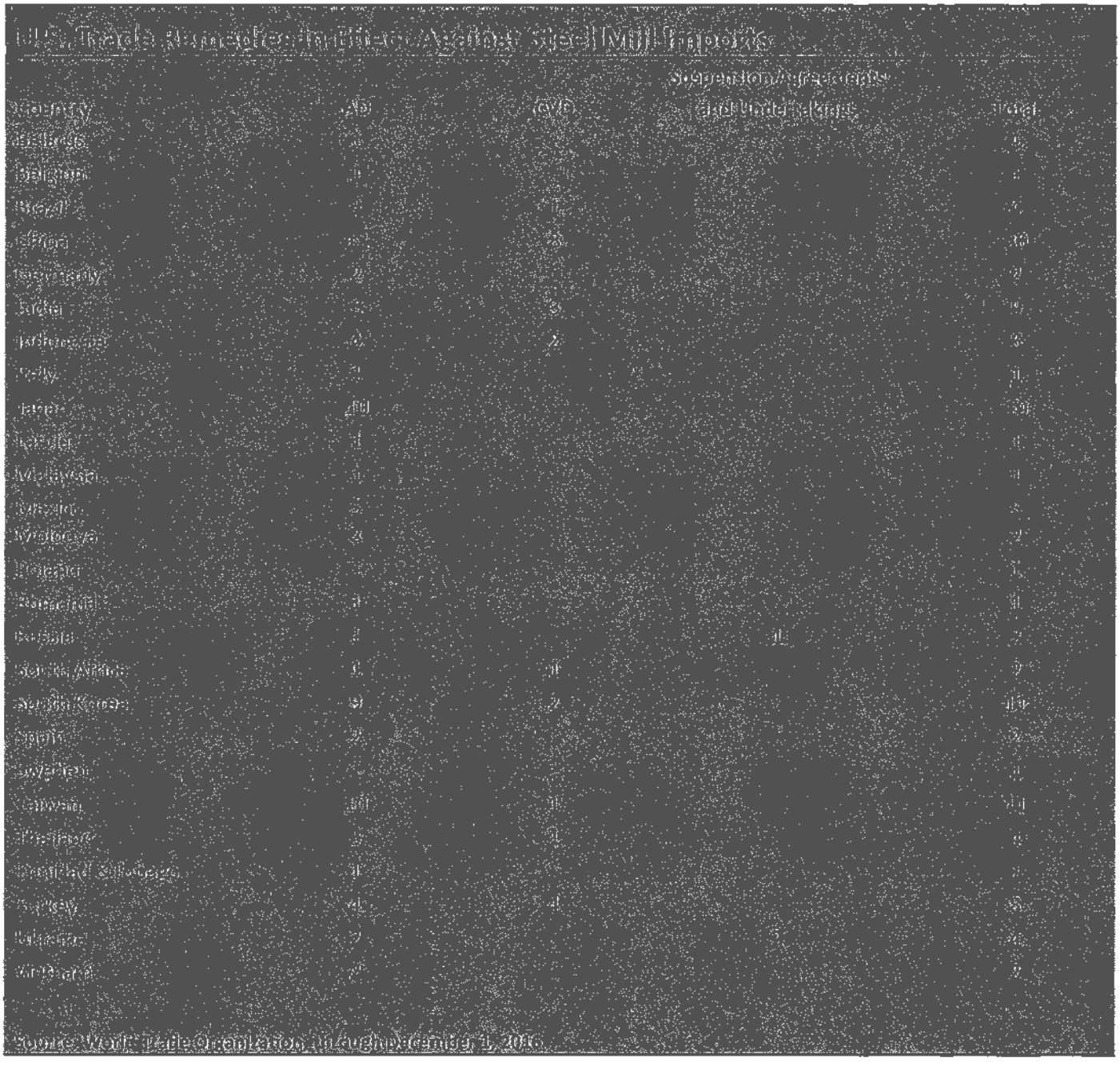
Rank	Company	Production (mmt)	Main Products
1	Nucor Corporation	19.6	Bars, beams, sheets, plate
2	United States Steel Corp.	14.5	Hot-rolled, hardware, fittings
3	ArcelorMittal USA*	13.9 (2015 estimate)	Flat products, long products, tubular products
4	Gerdau North America*	N/A	Beams, pilings, billets, rebar, wire rod
5	Steel Dynamics Inc.	7.4 (2014 shipments)	Sheets, bars, beams
6	AK Steel Corporation	6.2	Carbon, stainless, electrical
7	Severstal North America*☐	N/A	Hot-rolled, cold-rolled, galvanized
8	Commercial Metals Co.	3.4 (2013)	Long products, structural

Source: World Steel Association, Bloomberg, Company websites
*Denotes foreign-owned producer
☐Sold to AK Steel and Steel Dynamics

Steel Imports Report: **United States**

Trade Remedies in the Steel Sector

Antidumping duties (AD), countervailing duties (CVD), associated suspension agreements, and safeguards are often referred to collectively as trade remedies. These are internationally agreed upon mechanisms to address the market-distorting effects of unfair trade, or serious injury or threat of serious injury caused by a surge in imports. Unlike anti-dumping and countervailing measures, safeguards do not require a finding of an "unfair" practice. Before applying these duties or measures, countries investigate allegations and can remedy or provide relief for the injury caused to a domestic industry. The table below provides statistics on the current number of trade remedies the United States has against imports of steel mill products from various countries. The U.S. has no steel mill safeguards in effect.



Steel Imports Report: Glossary

Apparent Consumption: Domestic crude steel production plus steel imports minus steel exports. Shipment data are not available for all countries, therefore crude steel production is used as a proxy.

Export Market: Destination of a country's exports.

Flat Products: Produced by rolling semi-finished steel through varying sets of rolls. Includes sheets, strips, and plates. Used most often in the automotive, tubing, appliance, and machinery manufacturing sectors.

Import Penetration: Ratio of imports to apparent consumption.

Import Source: Source of a country's imports.

Long Products: Steel products that fall outside the flat products category. Includes bars, rails, rods, and beams. Used in many sectors but most commonly in construction.

Pipe and Tube Products: Either seamless or welded pipe and tube products. Used in many sectors but most commonly in construction and energy sectors.

Semi-finished Products: The initial, intermediate solid forms of molten steel, to be re-heated and further forged, rolled, shaped, or otherwise worked into finished steel products. Includes blooms, billets, slabs, ingots, and steel for castings.

Stainless Products: Steel products containing at minimum 10.5% chromium (Cr) offering better corrosion resistance than regular steel.

Steel Mill Products: Carbon, alloy, or stainless steel produced by either a basic oxygen furnace or an electric arc furnace. Includes semi-finished steel products and finished steel products. For trade data purposes, steel mill products are defined at the Harmonized System (HS) 6-digit level as: 720610 through 721650, 721699 through 730110, 730210, 730240 through 730290, and 730410 through 730690. The following discontinued HS codes have been included for purposes of reporting historical data (prior to 2007): 722520, 722693, 722694, 722910, 730410, 730421, 730610, 730620, and 730660.

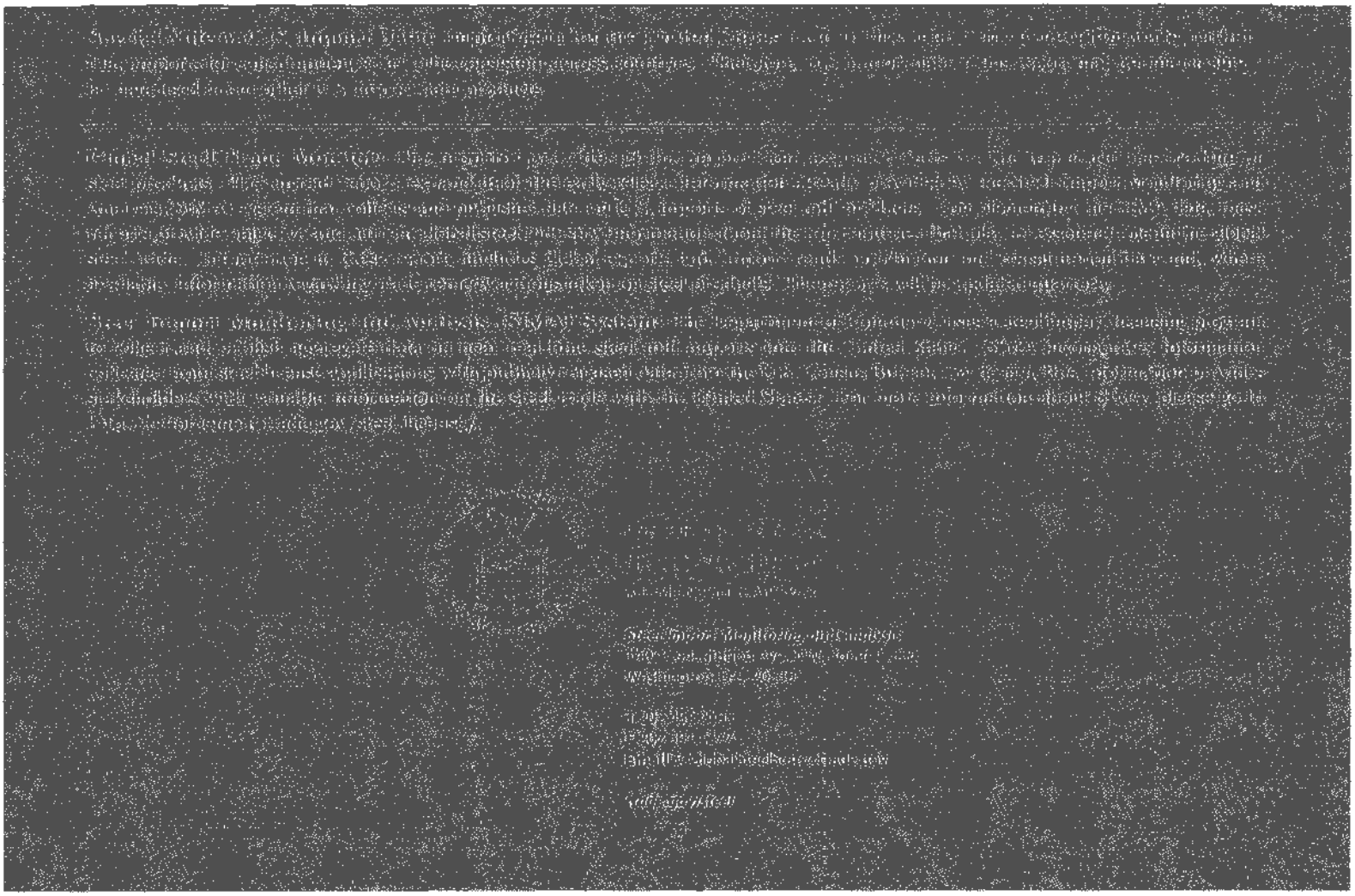


EXHIBIT 14

STEELWORKS
the online resource for steel

American Iron and Steel Institute

AISI Releases April SIMA Imports Data; Import Market Share 28 percent in April

American Iron and Steel Institute

For Immediate Release
May 3, 2017

Washington, D.C. – Based on the Commerce Department's most recent Steel Import Monitoring and Analysis (SIMA) data, the American Iron and Steel Institute (AISI) reported today that steel import permit applications for the month of April totaled 3,433,000 net tons (NT)*. This was a 2.0% decrease from the 3,504,000 permit tons recorded in March and a 1.1% increase from the March preliminary imports total of 3,396,000 NT. Import permit tonnage for finished steel in April was 2,657,000, up 5.6% from the preliminary imports total of 2,517,000 in March. For the first four months of 2017 (including April SIMA permits and March preliminary data), total and finished steel imports were 12,366,000 NT and 9,584,000 NT, up 23.6% and 13.2%, respectively, from the same period in 2016. The estimated finished steel import market share in April was 28% and is 26% year-to-date (YTD).

Finished steel imports with large increases in April permits vs. the March preliminary included steel piling (up 100%), oil country goods (up 31%), sheets and strip all other metallic coatings (up 29%), mechanical tubing (up 27%), sheets and strip hot dipped galvanized (up 21%), hot rolled bars (up 19%), heavy structural shapes (up 18%) and plates in coils (up 11%). Products with significant year-to-date (YTD) increases vs. the same period in 2016 include oil country goods (up 210%), sheets and strip all other metallic coated (up 43%), cold rolled sheets (up 42%), mechanical tubing (up 32%), tin plate (up 31%), standard pipe (up 30%), sheets and strip hot dipped galvanized (up 26%), reinforcing bars (up 18%) and line pipe (up 12%).

In April, the largest finished steel import permit applications for offshore countries were for South Korea (338,000 NT, up 7% from March preliminary), Turkey (284,000 NT, down 5%), Japan (126,000 NT, down 7%), Taiwan (123,000 NT, up 36%) and Germany (117,000 NT, up 27%). Through the first four months of 2017, the largest offshore suppliers were South Korea (1,227,000 NT, down 1% from the same period in 2016), Turkey (1,085,000 NT, up 27%) and Japan (506,000 NT, down 14%).

** Monthly permit numbers provided to date may be understated, as entry documentation with the required import license number may be submitted up to ten days after imports have entered U.S. commerce.*

Contact: Lisa Harrison
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Click here for a PDF of this release.

AISI serves as the voice of the North American steel industry in the public policy arena and advances the case for steel in the marketplace as the preferred material of choice. AISI also plays a lead role in the development and application of new steels and steelmaking technology. AISI is comprised of 18 member companies, including integrated and electric furnace steelmakers, and approximately 120 associate members who are suppliers to or customers of the steel industry. For more news about steel and its applications, view AISI's website at www.steel.org. Follow AISI on Facebook or Twitter (@AISISteel).

EXHIBIT 15

Page Not Capable of Public Summary

EXHIBIT 16

Quarterly Financial Report

for Manufacturing, Mining, Trade, and Selected Service Industries

2016 Quarter 4

Issued March 2017

QFR

United States Census Bureau

QFR/16-Q4

Table 19.1 -- Balance Sheet For Corporations in NAICS Manufacturing Industry Groups 3311 and 3312, All Total Asset Sizes, and Total Assets Under $25 Million

See the Survey Methodology section of the Introduction for information on survey design, estimation, and sampling error.

Item	Iron, Steel, and Ferroalloys All Total Asset Sizes [1]					Iron, Steel, and Ferroalloys Total Assets Under $25 Million [1]				
	4Q 2015	1Q 2016	2Q 2016	3Q 2016	4Q 2016	4Q 2015	1Q 2016	2Q 2016	3Q 2016	4Q 2016
ASSETS	(million dollars)					(million dollars)				
Cash and demand deposits in the U.S.	4,451	4,979	5,010	5,894	6,365	326	258	316	428	401
Time deposits in the U.S., including negotiable certificates of deposit	16	72	427	453	558	11	27	35	31	29
Total cash on hand and in U.S. banks	4,467	5,050	5,437	6,347	6,924	337	286	351	459	431
Other short-term financial investments, including marketable and government securities, commercial paper, etc.	1,329	1,004	1,396	1,926	1,296	96	140	39	30	51
Total cash, U.S. Government and other securities	5,796	6,054	6,833	8,273	8,220	433	426	389	490	482
Trade accounts and trade notes receivable (less allowance for doubtful accounts)	11,094	11,427	11,894	12,614	12,283	681	604	861	913	865
Inventories	16,614	15,234	15,459	15,976	15,954	638	665	746	687	622
All other current assets	2,005	1,829	1,875	1,841	1,993	98	101	127	177	188
Total current assets	35,509	34,544	36,061	38,704	38,450	1,850	1,796	2,124	2,266	2,157
Property, plant, and equipment	76,240	79,421	79,751	79,747	77,010	1,765	1,808	2,146	2,491	2,643
Land and mineral rights	1,829	1,829	2,174	2,184	2,131	38	51	65	60	40
Less: Accumulated depreciation, depletion, and amortization	43,003	43,811	44,381	45,354	45,922	1,109	1,227	1,403	1,604	1,716
Net property, plant, and equipment	35,066	37,439	37,544	36,577	33,219	694	631	808	946	967
All other noncurrent assets, including investment in nonconsolidated entities, long-term investments, intangibles, etc.	25,259	25,567	25,804	24,906	25,086	117	100	190	190	184
Total Assets	95,834	97,549	99,409	100,187	96,755	2,660	2,527	3,122	3,402	3,308
LIABILITIES AND STOCKHOLDERS' EQUITY										
Short-term debt, original maturity of 1 year or less:										
a. Loans from banks	1,052	962	877	1,381	1,379	161	153	220	207	175
b. Other short-term loans, including commercial paper	2,526	1,964	2,242	1,992	1,578	4	27	31	29	32
Trade accounts and trade notes payable	7,664	7,730	8,324	8,569	8,189	405	372	489	724	783
Income taxes accrued, prior and current years, net of payments	(11)	46	120	66	3	(25)	1	(2)	2	11
Current portion of long-term debt, due in 1 year or less:										
a. Loans from banks	201	315	315	223	1,028	102	92	74	109	87
b. Other long-term loans	1,155	1,566	1,263	981	964	10	37	16	17	15
All other current liabilities, including excise and sales taxes, and accrued expenses	3,951	3,895	4,319	4,687	4,314	106	177	213	279	271
Total current liabilities	16,538	16,478	17,461	17,899	17,455	763	859	1,041	1,367	1,373
Long-term debt, due in more than 1 year:										
a. Loans from banks	3,668	3,799	3,941	4,495	3,609	325	318	346	355	315
b. Other long-term loans	22,177	23,051	23,141	21,430	19,512	71	114	136	146	217
All other noncurrent liabilities, including deferred income taxes, capitalized leases, and minority stockholders' interest in consolidated domestic corporations	18,726	18,733	17,763	17,268	17,309	45	33	63	74	80
Total liabilities	61,109	62,061	62,306	61,092	57,885	1,205	1,325	1,586	1,941	1,985
Capital stock and other capital (less treasury stock)	24,980	27,099	28,472	30,215	29,590	(14)	202	425	229	266
Retained earnings	9,745	8,388	8,631	8,880	9,281	1,469	1,000	1,111	1,232	1,057
Stockholders' equity	34,725	35,488	37,102	39,095	38,871	1,455	1,203	1,536	1,461	1,323
Total Liabilities and Stockholders' Equity	95,834	97,549	99,409	100,187	96,755	2,660	2,527	3,122	3,402	3,308
NET WORKING CAPITAL										
Excess of total current assets over total current liabilities	18,971	18,066	18,600	20,805	20,995	1,086	937	1,083	899	784
SELECTED BALANCE SHEET RATIOS	(percent of total assets)					(percent of total assets)				
Total cash, U.S. Government and other securities	6.05	6.21	6.87	8.26	8.50	16.27	16.85	12.47	14.39	14.57
Trade accounts and trade notes receivable	11.58	11.71	11.96	12.59	12.69	25.59	23.91	27.59	26.82	26.15
Inventories	17.34	15.62	15.55	15.95	16.49	23.96	26.30	23.90	20.19	18.81
Total current assets	37.05	35.41	36.28	38.63	39.74	69.52	71.07	68.02	66.61	65.20
Net property, plant, and equipment	36.59	38.38	37.77	36.51	34.33	26.08	24.97	25.89	27.82	29.23
Short-term debt, including current portion of long-term debt	5.15	4.93	4.73	4.57	5.11	10.43	12.24	10.92	10.63	9.32
Total current liabilities	17.26	16.89	17.56	17.87	18.04	28.70	34.01	33.34	40.17	41.49
Long-term debt	26.97	27.52	27.24	25.88	23.90	14.91	17.09	15.45	14.72	16.08
Total liabilities	63.77	63.62	62.68	60.98	59.83	45.30	52.41	50.80	57.06	60.00
Stockholders' equity	36.23	36.38	37.32	39.02	40.17	54.70	47.59	49.20	42.94	40.00

[1] Included in Primary Metals.

EXHIBIT 17

AISI Comments on Administration Investigation into National Security Implications of Unfair Foreign Steel Imports

American Iron and Steel Institute

For Immediate Release

April 19, 2017

WASHINGTON, D.C. – Thomas J. Gibson, president and CEO of the American Iron and Steel Institute (AISI), applauded the executive memorandum signed by President Trump today which begins an investigation by the Department of Commerce into the implications of foreign steel imports on America's national security, called a "Section 232" investigation.

"Times of crisis call for extraordinary measures. Massive global steel overcapacity has resulted in record levels of dumped and subsidized foreign steel coming into the U.S. and the loss of nearly 14,000 steel jobs. The Administration launching this investigation is an impactful way to help address the serious threat posed by these unfair foreign trade practices, and we applaud this bold action," Gibson said. "The domestic steel industry is the backbone of our manufacturing sector, and our continued ability to meet our national security needs is dependent on the industry remaining competitive in the global marketplace. We stand ready to work with the Administration on this initiative."

-######-

Contact: Lisa Harrison
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Click here for a PDF version of this release.

AISI serves as the voice of the North American steel industry in the public policy arena and advances the case for steel in the marketplace as the preferred material of choice. AISI also plays a lead role in the development and application of new steels and steelmaking technology. AISI is comprised of 18 member companies, including integrated and electric furnace steelmakers, and approximately 120 associate members who are suppliers to or customers of the steel industry. For more news about steel and its applications, view AISI's website at www.steel.org. Follow AISI on Facebook or Twitter (@AISISteel).

EXHIBIT 18

Layoff status to remain in place at Ashland steel mill

dailyindependent.com/news/layoff-status-to-remain-in-place-at-ashland-steel-mill/article_884d8f24-c320-11e6-94dc-d3ab3b1d219a.html

Andrew Adkins | The Daily Independent 12/15/2016

ASHLAND AK Steel CEO Roger Newport and other executives met privately Thursday with the Ashland Alliance, local government officials and local union leaders to discuss the state of the Ashland Works mill during a routine quarterly visit.

The executives tour all of AK Steel's locations, including the Ashland mill, on a regular basis to discuss operations with local management and staff.

Newport and company didn't rule out reigniting the idled blast furnace, but said economic conditions have not improved to the point where they can make a decision, according to multiple sources at the meeting.

The layoff status imposed on workers last December will remain in place until a decision is reached.

"It's difficult because there's no end in sight, and their decision hinges on stability in the market," said Mike Howard, president of the United Steelworkers Local 1865 union. "But he (Newport) said they're not giving up on Ashland."

Howard said the union will remain optimistic as long as AK continues to "pour millions of dollars into keeping it in idle state, and keeping the stoves hot."

The idling of the blast furnace left 633 workers laid off, damaged the local economy and decreased the budgets of local governments. While some laid-off workers have sought employment elsewhere, most remain jobless in the area.

The laid-off workers have lost most of their benefits, such as sub-pay and insurance over the course of the year.

About 200 workers have enrolled in college courses at Ashland Community and Technical College through the Trade Adjustment Assistance, or TAA program.

Howard, local union Chairman Clint Poplin, State Sen. Robin Webb, D-Grayson, state Reps. Jill York, R-Grayson and Kevin Sinnette, D-Ashland, Mayor Chuck Charles and Mayor-elect Steve Gilmore were part of the Ashland area delegation at the meeting.

"It left me with the impression that they are fighting to stay viable in the global market," said Webb.

Charles said it was "a good conversation" and the executives "realize how tough this is on our community and the people who work here."

"They have not ruled out opening it (the blast furnace) back up. At this time, they just don't know," he said.

If AK Steel does decide to resume operations at the blast furnace, it would receive significant government aid.

An incentive bill championed by state officials from the northeastern Kentucky region that passed last spring eases the cost of starting up an idled blast furnace by making corporations eligible for funding through the Kentucky Industrial Revitalization Act program, among other incentives.

In a statement to The Daily Independent, AK Steel representatives said economic conditions have "not sufficiently improved to allow us to restart the blast furnace at this time," after "the dramatic increase in imported carbon steel and the associated declines in AK Steel's order intake rates and selling prices" that contributed to the blast furnace closure last year. During the meeting on Thursday, executives cited rising costs of raw materials from foreign countries as continuous damage to the company, Howard said.

Steel dumping, which is considered oversupplying the U.S. market with cheaper steel than U.S. manufacturers can produce, was one of the chief concerns voiced by AK in its decision to idle the blast furnace.

In May, the International Trade Administration (ITA) levied anti-steel dumping tariffs on imports from some Asian countries including China. The U.S. also slapped tariffs of over 500 percent on Chinese cold-rolled steel. China has called the tariffs "unfair," though the tariffs haven't stopped foreign nations from continuing the trade practice.

AK Steel reported gains in its third quarter findings released in October, including a net income of $50.9 million, or $0.21 per diluted share of common stock, for the third quarter of 2016, compared to net income of $6.7 million, or $0.04 per diluted share, for the third quarter of 2015.

The Ashland mill currently employs 198 workers.

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EXHIBIT 19

http://www.dailyindependent.com/news/boyd-county-takes-revenue-hit-introduces-new-budget/article_d509e0ac-3859-11e7-b918-5700798131d8.html

TOP STORY

Boyd county takes revenue hit, introduces new budget

Andrew Adkins | The Daily Independent May 14, 2017

CATLETTSBURG — The Boyd County Fiscal Court is factoring in a sharp drop in tax revenue from a landfill, a steel mill and an oil refinery as it prepares to trim its next budget by about $200,000.

The new fiscal year budget, which was approved on first reading, but needs a second and the OK from the state Department of Local Government, is about $19.4 million. The 2018 fiscal year begins on July 1.

Over the past two years, the county bas witnessed a decline in tax revenue flow to the tune of nearly $1 million.

Big Run Landfill, which ceased its rail operations last spring at the behest of local air quality activists and an agreed order, now sends about $600,000 less in taxes to the county, because the landfill receives far less taxable tonnage and cut its staff by about 50 workers, leading to less payroll tax revenue.

AK Steel Ashland Works, whose blast furnace idling and mass layoff status has been in effect since December of 2015, has supplied about $230,000 less in payroll tax revenue to the county over the past two years.

Catlettsburg Marathon Refining, LLC was restructured into a limited liability corporation, and as a result, filed a lower net profit in Boyd County, leading to a $275,000 decline in net profit tax revenue to the county, Deputy Judge-Executive Ed Radjnnas said.

An accounting mistake was also made by the previous county administration, in 2014, regarding the distribution of franchise tax revenue, which led to the county needing to give back about $292,000 to sheriff's office for disbursement this year.

Larger companies in the county pay an annual franchise tax fee, which is divvied out to all special taxing districts, including the volunteer fire departments aud schools. In 2014, the laudfill paid its franchise tax of $292,000. But when the then-county government received the check, it mistakenly placed the money into the general fund rather than give it to the Boyd Sheriff's Department, Radjunas said. The money wasn't misappropriated, but instead "carried over" as excess revenue in the county's budget, he said.

This year, the county had to pull the $292,000 out of the general fund and give it to the sheriff's office for disbursement, meaning most of that carryover reveuue is now off the county's books. Sheriff Bobby Jack Woods, who said he caught the mistake while examining finances, said the county's portion of that bill was only supposed to be about $40,000.

The county also spent about $80,000 on a special election over alcohol sales, which yielded a low turnout and no change in the county's alcohol sales status.

"I don't think it's a secret we have a much lower revenue. This fiscal year, we've really taken a lick," said Boyd Judge-Executive Steve Towler. "So, we are suggesting to do a few things, or we have to cut significantly."

Solutions

In an effort to recoup some of the lost revenue, the county plans to create a new, special taxing district for soil conservation, and levy a 4 percent "growth rate" on property taxes.

The latter measure is not an increase in the property tax rate, but instead a 4 percent overall increase in property tax revenue flowing to the county, based on annual property tax assessments.

The county would levy the 4 percent rate over the amount of revenue produced by the compensating tax rate, in order to produce more revenue from real property. Towler said by levying the 4 percent rate, most residents would potentially see their property tax rate increase by a "miniscule amount."

The 4 percent rate would provide an estimated $120,000 in additional revenues each year, according to the budget. The county has taken the option to levy a growth rate before, but not for at least 10 years, Towler said.

The county also plans to create a special taxing district for its soil conservation, saving an estimated $72,000 from the fiscal court's annual budget. The special tax district would levy its own rate of about $4 per $100,000 of property valuation, according to Radjunas.

The county had cut its budget by about $1 million from the 2016 fiscal year to this fiscal year.

Budget breakdown

The following is a list of the major planned expenditures in the 2018 fiscal year budget, with a summary of the larger expenses in some departments.

• Jail fund: $3.5 million

Jailer salary: $103,317.76

Deputy jailers salaries: $1 million

Administration costs: $1.3 million

• Sheriff's office total: $3.2 million

Sheriff salary: $99,266.04

Deputy salaries combined: $1.6 million

Gasoline, vehicle maintenance, travel, prisoner transports, etc: $305,800

• Road fund: $3.48 million

road workers combined Ssalaries: $1 million

Transportation: $1.14 million

Debt service: $659,176.68

• County Judge-Executive's office Total, Including Benefits: $388,014.25

Judge-Executive salary: $99,266.04

Deputy Judge-Executive salary: $35,875

Secretary $32,273.15

Human resources/Flood plain: $46,169

Training incentive: $4,052

Health insurance, retirement, social security: $90,675.06

Advertising, gasoline, office materials and equipment, registrations, training, postage: $79,704

• Office of County Attorney Ttotal: $580,399.92

County Attorney salary: $48,620.

Three Assistant County Attorneys combined salaries: $78,433.06

Two paraprofessionals combined Ssalaries: $79,205.40

Three secretaries combined salaries: 52,076.75

• Coroner's office total: $257,770.44

Coroner salary: $28,947

Combined Salaries for Four Deputy Coroners: $43,202

Secretary: $25,000

Ambulance service, county burials, maintenance, etc.: $82,937

n County Commissioners total: $106,228.32

Combined salary of three commissioners: $50,201.04

Fiscal court clerk: $3,600

Commissioners expense: $10,800

Registrations, trainings: $8,000

Training incentive: $11,500

• Economic development total: $84,510

Economic development director: $51,250

Travel: $3,200

Training: $1,500

Advertising: $3,000

Alcohol beverage control travel and training: $3,000

• Health care

The county plans to switch its health care plan, after receiving word the cost of sticking with United Healthcare would be about 30 percent more than last year, based on an increased number of claims made by county employees. The county would've had to pay over $2 million to the provider.

The county will likely choose Medova Healthcare for its employees at a cost of $1.7 million.

Receipts

The county anticipates revenues totaling $19.4 million, including about $7 million in property and payroll tax revenue, and some carryover from the current budget.

The next regular meeting of the fiscal court is set for 10 a.m. June 13 at the old courthouse.

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EXHIBIT 20

Signs of optimism at Granite City steel mill 1:02

METRO-EAST NEWS

DECEMBER 13, 2016 12:28 PM

Some Granite City steelworkers get good news from U.S. Steel

By Joseph Bustos
jbustos@bnd.com

GRANITE CITY — More than 200 jobs are set to return as part of the Granite City Works operation is scheduled to begin operating again in mid-February, U.S. Steel said in a news release.

The company plans to "adjust its hot strip mill operating configuration to support a previously announced asset revitalization process," U.S. Steel said.

U.S. Steel plans to begin processing slabs on the currently idled hot strip mill at Granite City Works in mid-February.

Erin Dipietro, the manager of External Communications for U.S. Steel, said about 220 jobs would be returning to Granite City Works.

About 200 of the jobs would be for union workers, Dipietro said.

In order to bring back the jobs, U.S. Steel plans to have periodic outages at Gary Works, Great Lakes Works and Mon Valley Works to improve the capabilities and reliability of the corporation's hot strip mills, Dipietro said. She could not give specifics on the timelines of the projects.

Dipietro said U.S. Steel is carrying out the projects to improve reliability and efficiency and to "invest in our facilities to ensure we are well positioned to provide the increasingly complex products that our customers will require in the future."

"The restart of the Granite City Works hot strip mill will help our North American Flat-Rolled customers by meeting their near-term needs, while improving our key assets," Dipietro said in an email to the BND. "We will be able to process slabs at Granite City to account for the outages planned at our otber hot strip mills in our North American Flat-Rolled segment."

"There are no layoffs planned for other facilities in relation to this project," Dipietro added.

Granite City Works' blast furnaces and steelmaking facilities were idled in December of last year and the hot strip mill was idled in January of this year in response to challenging global market conditions.

About 2,000 workers were laid off.

U.S. Steel said Granite City's blast furnaces and steelmaking facilities will remain idled.

The pickle line, cold mill and finishing lines at Granite City Works will continue to operate.

Bill Plantz works at the steel plant and wasn't laid off. He was hopeful after Tuesday's announcement.

"I hope it opens doors up and maybe step by step we could open the whole mill back up," Plantz said.

RELATED STORIES FROM THE BELLEVILLE NEWS-DEMOCRAT

State legislators give Granite City steel mill workers a boost

U.S. Steel CEO gives workers hope they soon will return to mills

US Steel, union reach tentative contract for 18,000 workers

New plant manager named at Granite City Works

Area officials push Congress to fight foreign steel-dumping

Bill to extend steel worker unemployment benefits passes house committee

Beiser and Babcock buck 'Chicago politicians' in race for House seat

Idled steelworkers get 500 turkey dinners donated

TorHoerman Law is doing its third year of turkey dinner giveaways Thursday in Granite City and Alton. The law firm has been collecting donations to provide 1,500 dinners. Of that, 500 were set aside for laid off U.S. Steel workers in Granite City.

Steve Nagy - snagy@bnd.com

Local politicians praised the U.S. Steel decision.

State Rep. Jay Hoffman, D-Belleville, who has worked to extend unemployment benefits for Granite City steelworkers to 52 weeks from 26 weeks, welcomed Tuesday's news.

"While it is not even close to everything we are working for, there has been some good news from the U.S. Steel plant," Hoffman said on his Facebook page.

U.S. Rep. Mike Bost, R-Murphysboro, also welcomed the news.

"However, more work must be done to ensure the resumption of full operations at the plant," Bost said. "I intend to work with the incoming administration and my colleagues in Congress to combat the unfair foreign trade practices that contributed to the idling of operations at Granite City Works to begin with."

Madison County Board Chairman Kurt Prenzler said the news was fitting for the holiday season.

"For the more than 200 employees it's an answer to prayers before Christmas," Prenzler said.

Sen. Dick Durbin talks mortgage relief for idled steelworkers

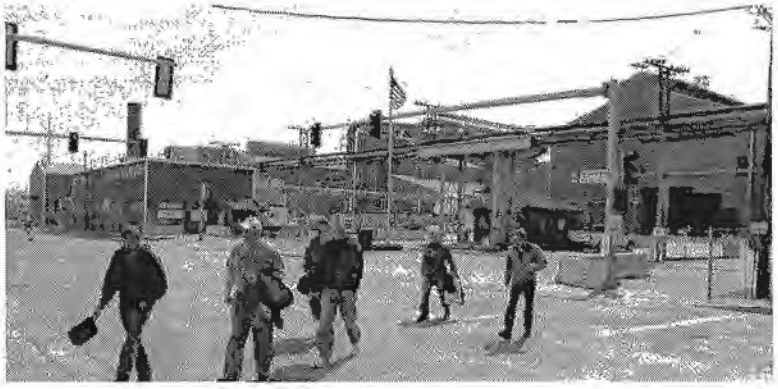
Illinois Senator Dick Durbin speaks about the Hardest Hit Fund, can help struggling homeowners pay their mortgages.
cbischel@bnd.com

Lawmakers push extending benefits for laid off Granite City Steel workers

Illinois House Rep. Jay Hoffman, D-Belleville, Rep. Dan Beiser, D-Alton, and the Edwardsville Democrat challenging Rep. Dwight Kay, Katie Stuart, were at the steelworkers' union hall Thursday morning to push for extending unemployment benefits for Granite City Steel's idled workers.
Tim Vizer - tvizer@bnd.com

Joseph Bustos: 618-239-2451, @JoeBReporter

Photographer Steve Nagy contributed to this report.



Some U.S. Steel workers in Granite City will be back at work soon, the company said in a press release. **Derik Holtmann** - dholtmann@bnd.com

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EXHIBIT 21

U.S. Steel permanently closing pipe mill at Lone Star plant idled in March

news-journal.com/news/2016/dec/29/us-steel-permanently-closing-pipe-mill-at-lone-sta/

Pittsburgh-based U.S. Steel will end 2016 by permanently closing a line at its tubular steel plant in Lone Star that it idled in March.

Citing market conditions, the company notified the United Steelworkers union Dec. 14 of its intent to close the No. 1 electric-weld mill at its Lone Star Tubular Operations and the No. 4 Seamless Pipe Mill in Lorain, Ohio. The closures are due to go into effect by Saturday in Lone Star and by March 16 in Lorain, which has been idled since April.

"These proposed actions are strategic decisions for the company after considering a number of factors, including challenging marketing conditions for tubular products, reduced rig counts, and unfairly traded imports," U.S. Steel spokeswoman Erin DiPietro said in a statement issued Thursday.

Union officials in Pittsburgh and district offices in Texas were unavailable for comment. Lone Star Mayor Karl Stoermer declined comment, saying, "We need to find out what is happening before we make any statement."

DiPietro said the decision would not affect the status of any employees on layoff since the lines were idled. Employee counts for those remaining on layoff from previous idling of the two operating lines total 70 in Lone Star and 50 in Lorain, all of whom are represented by the union.

The remainder of the Lone Star plant is "currently operating at reduced levels, in line with market conditions and our customers' needs," DePietro said. About 230 employees are active at the plant, and about 520 other employees are on layoff.

Matters relating to callbacks, transfers and the like will be the subject of further discussions with the union and other affected parties, she said.

U.S. Steel's announcement comes nine months after disclosing it was laying off 450 employees in Lone Star and idling the mill at that plant and another in Alabama. In April, company officials said they were open to selling off the tubular steel assets.

The electric-weld mill manufactured tubular products with outside diameters from 7 to 21 inches for use in the energy industry, according to DiPietro.

EXHIBIT 22

US Steel CEO gives update on postponed $277 million Fairfield project

The administrative office building sign of the U.S. Steel Fairfield Works in Fairfield, Ala., is shown Wednesday, Jan. 28, 2015. (Mark Almond/ malmond@al.com) *(MARK ALMOND)*

By **Kelly Poe | kpoe@al.com**
Email the author | **Follow on Twitter**
on May 19, 2016 at 12:05 PM, updated May 19, 2016 at 5:10 PM

Building the Electric Arc Furnace in Fairfield probably won't happen any time soon, US Steel President and CEO Mario Longhi said in a recent earnings call.

The Pittsburgh-based company was **granted incentives from the county** last year to build the $277.5 million project in Fairfield. Shortly after, it permanently shut down its blast furnace, which employed about 1,100 people.

The new project would have employed about 300 people, which wouldn't come close to making up for the various rounds of layoffs announced last year. But those last 300 jobs are now in limbo - **in December, US Steel announced it was postponing that project** until industry conditions improved.

In an earnings conference call on April 27, analyst Garret Nelson asked Longhi if US Steel's improved cash generation outlook would lead the company to circle back on the furnace project.

US STEEL

"That project is solely dependent upon the turnaround on the energy demand," Longhi said according a transcript published by **Seeking Alpha**. "And right now it's still very low."

Longhi said the equipment for the project has already arrived.

"We can certainly take it back on whenever the movement's right. And we just need to see what happens with that market," he said. "Right now, we're really looking into addressing the very small demand that we're seeing out of the operations and adequate in it to make sure that we address cash flows to the best of our ability."

US Steel currently employs about 400 people at Fairfield Tubular, though employment frequently changes according to market conditions.

Updated 5:10 p.m. with information about employment at Fairfield Tubular.

Unemployed Alabama US Steel workers could get more benefits

US Steel CEO gives update on postponed $277 million Fairfield project

Laid off and current US Steel workers could get more benefits

US Steel postpones construction of Alabama furnace

US Steel, union reach deal affecting Alabama workers

All Stories

EXHIBIT 23

Evraz will close Portland pipe mill in April, lay off 230

oregonlive.com/business/index.ssf/2016/02/evraz_will_close_portland_pipe.html

Evraz North America said Wednesday the company will close its steel pipe plant in North Portland on April 9, laying off 230 employees there indefinitely.

The facility makes most of the large-diameter pipe in the United States for the energy industry, which has been buffeted by falling energy prices. Evraz also blamed the closure on pipe manufactured in other countries and imported in the U.S., import duties on American pipe shipped to Mexico, and delays on regulatory approval for pipelines in the U.S. and Canada.

Evraz also has a steel plate facility on the same site in North Portland, which will continue operating. Layoffs could begin as soon as Saturday, according to the company, which said 400 will remain at the site after the pipe operation shuts down. Workers will receive at least 60 days of pay from the time they are notified their jobs will be eliminated.

Evraz's headquarters are in London but the company has historically operated primarily in Russia. It paid $2.35 billion in 2007 to buy Oregon Steel, which was founded in Portland in 1928. Four years later the company moved the headquarters for Evraz North America from Portland to Chicago.

The spiral pipe mill closed in July 2009 but Evraz announced plans to reopen it in 2011, when gas was selling for $4 a gallon. Prices are now edging under $2 a gallon in many locations.

Evraz last reported financial results in August, when the company posted $4.9 billion in revenue for the first half of 2015, down 28 percent from the prior year.

When the Obama administration denied approval for construction of the Keystone XL pipeline last fall, Evraz decried the decision and warned it would impact U.S. jobs. The company said its employees had already produced more than 550 miles of pipe for the project, which was to run from oil fields in Alberta, Canada, to the Gulf Coast in Texas.

With oil prices low, though, the business rationale for the project became dubious. It's relatively expensive to extract oil from the Canadian oil stands in Canada, and so long as oil prices remain low many energy economists felt the project was unlikely to move forward regardless of its regulatory status.

Oregon's economy is unusually strong this winter. In the state's quarterly revenue forecast, out Wednesday, Josh Lehner of the Oregon Office of Economic Analyst wrote that "Oregon continues to see full-throttle rates of growth." The state's average wage is now at its highest point since the closing of timber mills in the early 1980s.

The numbers are especially strong in Portland, where unemployment has dropped below 5 percent. The city is being buoyed by a strong national economy, a robust cluster of tech outposts and maturing startup companies, and by an influx of highly educated young migrants from outside the state.

However, areas of weakness remain in the city and across Oregon, undercut by the same forces roiling the global economy, financial turmoil in China and the soft energy market that's weighing on Evraz.

In November, for example, mining and drilling equipment manufacturer Esco Corp. announced it will close its main factory, eliminating 247 Portland jobs. Esco blamed weak demand for its products.

This article has been updated with additional context about Oregon's economy.

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EXHIBIT 24

ArcelorMittal to idle hot strip mill, displace 300 workers

nwitimes.com/business/steel/arcelormittal-to-idle-hot-strip-mill-displace-workers/article_b80add96-9ec8-5454-a9ac-5a41e1d511d9.html

Joseph S. Pete joseph.pete@nwi.com, (219) 933-3316 4/1/2016

ArcelorMittal has idled the 84-inch hot strip mill at Indiana Harbor East Chicago as it looks to take capacity off-line in the United States at a time when only 71.6 percent of America's steelmaking capacity is in use.

Production has ceased at the hot strip mill in East Chicago, where more than 300 employees will be displaced. ArcelorMittal currently only has 182 openings, plus 49 mechanical and electrical positions, that union members can bid for, but no one will be laid off, United Steelworkers District 7 Director Mike Millsap said.

"The hot strip mill has been shut down, but we're finding jobs for them," he said. "We're still bargaining over some of that stuff. No layoffs is the goal."

Millsap said it was part of ArcelorMittal's plans to restructure its U.S. operations by shutting down some finishing lines and investing in the remaining ones, so they operate more efficiently.

ArcelorMittal spokeswoman Mary Beth Holdford said the Luxembourg-based steelmaker, which lost $8 billion last year, is considering all options to "optimize its assets" in the United States.

"Action 2020 is a strategic roadmap that aims to achieve targeted financial improvements for the company by 2020," she said. "In the United States, efforts to support Action 2020 include asset and cost optimization as well as an improved portfolio of high added-value products. These products will ensure ArcelorMittal is uniquely positioned with a strong technical and product portfolio to serve customer requirements."

Though the company is shrinking its footprint in North America, it's not planning to lay people off, she said.

"ArcelorMittal expects to optimize our assets in the United States without layoffs by leveraging natural attrition," Holdford said.

The company closed a finishing line that had been under-used, and does not anticipate ever restarting it, Millsap said. The union is working to place the affected workers in East Chicago, Burns Harbor or Riverdale, and some may require retraining.

More finishing lines will likely be taken down as ArcelorMittal looks to address a persistent overcapacity problem that was made worse by China's 112 million tons of exports last year, Millsap said. The steelmaker recently shut down the No. 1 aluminizing line at ArcelorMittal Indiana Harbor West.

"There will be more of this," he said. "This was part of their overall capital plan before we started bargaining."

EXHIBIT 25

Company to shut down steel facility in Calvert City

wkyt.com/content/news/Company-to-shut-down-steel-facility-in-Calvert-City-390587151.html

By Associated Press

CALVERT CITY, Ky. (AP) - A steel production company has announced it will shut down its rolling mill steel facility in Calvert City.

The Paducah Sun reports that Gerdau North America announced Wednesday that the company would idle the plant by the end of November. The move will affect 130 workers.

Gerdau North America director of communications Kim Selph says the company decided to idle the plant because of a global overcapacity of steel, which Selph says had led to depressed prices and intense competition between producers.

Selph says the company is currently meeting with the United Steelworkers union to discuss the idling of the plant.

The company has operated the Calvert City mill since 2004.

EXHIBIT 26

Page Not Capable of Public Summary

EXHIBIT 27

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EXHIBIT 28

worldsteel
ASSOCIATION

STEEL STATISTICAL YEARBOOK 2016

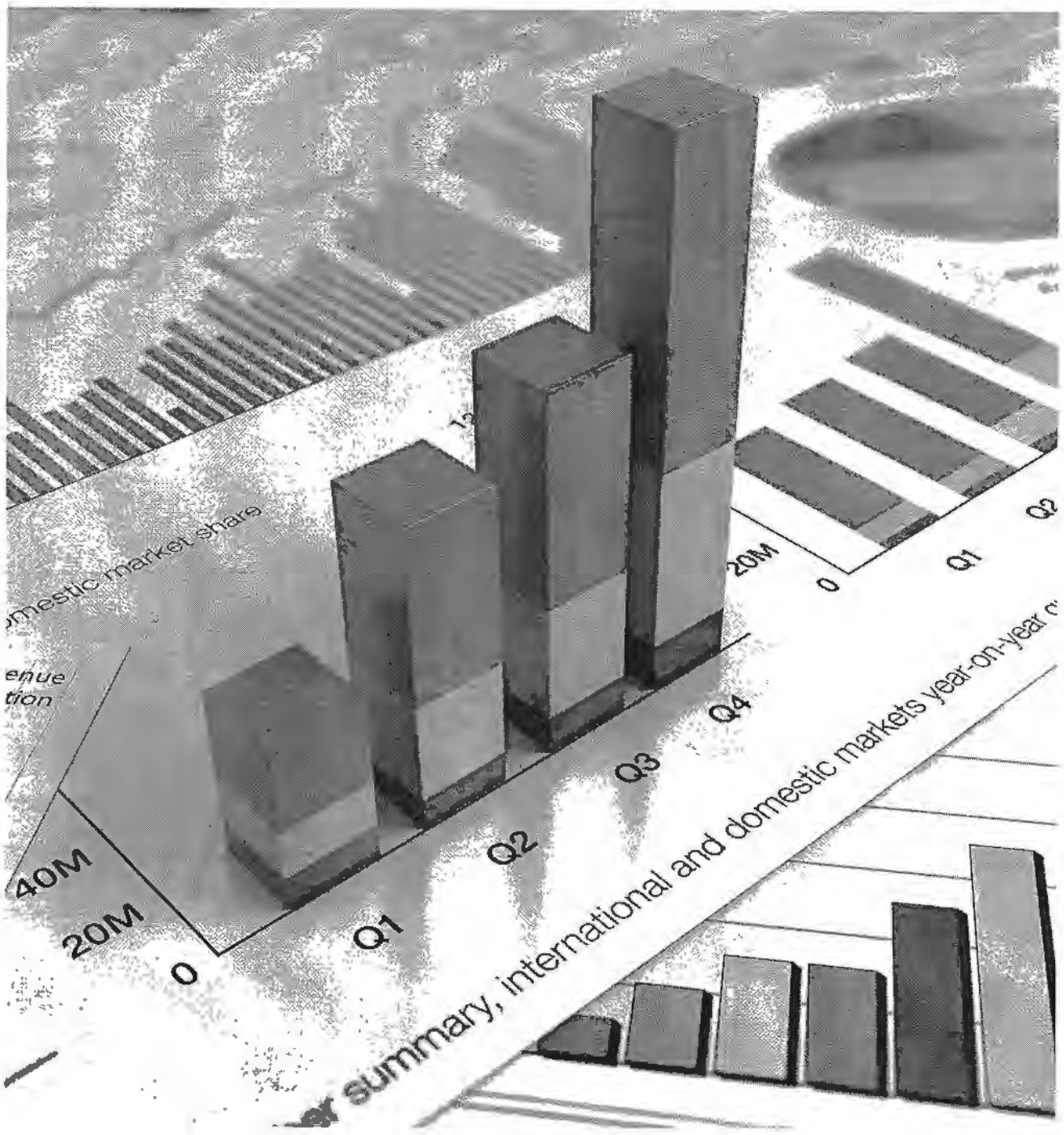


Table 37 (continued) **Exports of Tubular Products**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
South Africa	207	88	174	106	138	148	137	131	178	166
Other Africa	2	9	37	12	4	101	64	87	66	25
Africa	**209**	**97**	**210**	**118**	**142**	**249**	**201**	**219**	**244**	**191**
Iran	...	...	...	...	...	1	2	3	0	1
Qatar	...	...	...	...	...	9	2	0	0	0
Saudi Arabia	...	...	...	...	...	99	94	86	60	61
United Arab Emirates	...	...	...	...	...	132	101	111	143	185
Other Middle East	3	66	5	9	10	176	92	96	92	52
Middle East	**3**	**66**	**5**	**9**	**10**	**417**	**290**	**296**	**297**	**298**
China	6 535	7 304	7 210	6 299	7 271	9 401	9 931	10 061	10 504	10 286
Hong Kong	34	41	35	27	22	27	32	27	33	29
India	...	1 360	1 839	1 476	2 235	2 047	1 989	1 430	1 463	1 215
Indonesia	180	267	267	262	490	477	527	368	465	782
Japan	3 383	2 696	2 814	2 061	2 825	2 802	2 937	2 715	2 894	1 745
South Korea	1 481	973	1 224	1 220	2 122	2 617	3 070	3 085	3 975	2 352
Malaysia	1 458	748	545	970	476	702	817	717	1 163	812
Singapore	604	807	700	504	509	571	569	555	463	303
Taiwan, China	466	452	503	321	476	534	504	505	578	452
Thailand	262	262	346	217	295	277	362	297	276	255
Viet Nam	16	...	...	...	...	161	348	329	223	234
Other Asia	26	55	84	72	155	614	662	507	435	212
Asia	**14 444**	**14 965**	**15 566**	**13 428**	**16 878**	**20 230**	**21 748**	**20 597**	**22 472**	**18 677**
Australia	56	27	79	43	40	38	45	38	45	61
New Zealand	6	4	7	...	6	5	6	7	5	4
Other Oceania	...	...	...	...	...	0	0	0	0	0
Oceania	**64**	**32**	**86**	**43**	**46**	**43**	**51**	**45**	**50**	**66**
World	**39 654**	**38 636**	**40 783**	**33 002**	**38 732**	**48 031**	**46 830**	**43 156**	**46 179**	**39 206**

Table 38 **Imports of Tubular Products**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Austria	442	462	443	464	364	441	366	366	328	327
Belgium	763	924	883	553	580	630	531	502	492	476
Bulgaria	91	254	92	50	53	59	67	75	504	144
Cyprus	17	17	19	14	9	7	7	14	6	6
Czech Republic	390	445	428	286	367	490	394	419	483	533
Denmark	324	281	263	177	206	258	276	201	219	223
Estonia	96	102	77	37	62	71	68	62	69	60
Germany	2 159	2 320	2 351	1 595	1 989	2 333	2 022	1 903	2 026	2 026
Finland	190	222	234	233	504	412	147	139	146	141
France	1 262	1 341	1 244	943	1 146	1 270	1 186	1 153	1 111	1 088
Greece	90	135	139	79	46	35	43	59	82	72
Hungary	218	235	255	153	174	167	154	173	182	196
Ireland	108	120	128	53	64	62	59	57	76	86
Italy	997	1 376	1 194	636	699	863	728	742	802	780
Latvia	65	85	60	30	47	57	54	80	72	62
Lithuania	98	119	85	43	58	80	86	91	122	116
Luxembourg	12	8	11	7	6	9	7	8	6	8
Malta	4	4	3	2	3	2	2	3	3	7
Netherlands	816	873	838	636	550	782	742	649	681	592
Poland	531	597	616	372	471	564	616	591	621	634
Portugal	138	181	163	153	109	99	94	108	121	121
Romania	184	256	311	211	218	271	259	258	309	310
Slovak Republic	173	187	191	117	158	173	188	176	217	225
Slovenia	91	98	100	74	82	110	77	77	82	92
Spain	747	826	780	483	450	438	337	366	445	506
Sweden	408	452	437	610	761	1 134	681	287	328	287
United Kingdom	1 191	1 083	1 090	661	789	957	902	777	944	906
European Union (28)	**11 605**	**12 983**	**12 436**	**8 651**	**10 062**	**11 772**	**10 076**	**9 335**	**10 477**	**10 024**
Albania	...	...	...	...	...	22	19	22	29	17
Bosnia-Herzegovina	...	...	...	...	...	21	18	24	33	38
Croatia	...	...	101	...	...	83	68	81	81	92
Iceland	...	...	24	...	...	4	6	15	5	9
Macedonia	...	...	...	...	...	4	4	3	5	12
Montenegro	...	...	...	...	...	3	2	4	4	6
Norway	344	138	246	312	181	268	282	283	711	360
Serbia	...	98	86	48	70	79	92	75	78	77
Switzerland	182	137	189	147	157	167	167	178	183	197
Turkey	295	170	335	234	309	356	375	435	422	542
Other Europe	...	289	...	...	...	5	8	16	14	10
Other Europe	**820**	**812**	**981**	**741**	**717**	**992**	**1 041**	**1 135**	**1 565**	**1 359**
Armenia	...	...	...	...	...	3	11	4	6	14
Azerbaijan	...	...	...	...	...	219	278	275	218	261
Byelorussia	258	277	318	248	334	280	319	327	282	237
Georgia	...	...	...	...	...	56	70	83	89	71
Kazakhstan	619	670	1 162	1 201	366	334	509	609	701	271
Kyrgyzstan	...	...	...	...	...	33	43	47	50	58
Moldova	...	...	...	...	...	29	28	35	39	33
Russia	1 315	1 341	944	553	1 247	1 611	814	807	739	439
Tajikistan	...	...	...	...	...	10	9	13	23	20
Turkmenistan	...	...	...	...	...	277	534	238	363	244
Ukraine	93	90	110	41	65	85	85	98	60	49
Uzbekistan	...	...	...	...	...	104	177	335	209	95
C.I.S.	**2 283**	**2 378**	**2 531**	**2 042**	**2 011**	**3 041**	**2 872**	**2 850**	**2 776**	**1 602**

Table 38
(continued)

Imports of Tubular Products

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Canada	1 845	1 176	1 308	1 278	1 796	1 998	2 203	2 003	2 140	1 562
Costa Rica	15	15	12	15	21	24	21	30	28	41
Cuba	24	24	31	20	26	18	28	24	21	29
Dominican Republic	13	13	13	9	25	27	16	17	25	50
El Salvador	...	...	...	...	...	4	3	6	8	5
Guatemala	11	11	10	10	14	21	16	21	24	18
Honduras	...	...	...	...	..	5	4	5	11	7
Jamaica	9	9	10	4	5	8	6	4	8	6
Mexico	300	469	485	347	476	525	668	725	788	800
Nicaragua	...	...	...	...	...	3	3	7	5	11
Panama	23	23	35	36	48	52	33	107	86	65
Trinidad and Tobago	57	57	53	200	27	37	54	42	53	41
United States	7 131	4 679	5 574	4 367	5 408	6 734	8 349	7 488	8 493	6 952
Other North America	...	...	...	...	...	41	20	27	36	25
North America	**9 430**	**6 477**	**7 531**	**6 286**	**7 846**	**9 496**	**11 424**	**10 507**	**11 726**	**9 612**
Argentina	51	123	138	132	54	109	100	67	72	60
Bolivia	...	...	...	...	...	47	39	37	41	37
Brazil	105	117	194	183	245	304	314	319	221	168
Chile	140	105	229	103	129	161	234	169	157	160
Colombia	94	203	317	279	314	540	408	371	389	244
Ecuador	74	74	100	109	115	225	190	187	275	113
Paraguay	...	...	...	...	...	13	10	15	17	11
Peru	110	126	198	114	189	270	164	192	205	324
Uruguay	...	...	...	...	...	16	16	22	37	28
Venezuela	151	176	327	...	173	307	439	530	428	205
Other South America	...	...	...	..	...	17	18	14	20	23
South America	**725**	**924**	**1 503**	**920**	**1 219**	**2 011**	**1 933**	**1 923**	**1 860**	**1 372**
Algeria	629	629	885	1 313	711	279	289	387	323	413
Cameroon	30	30	25	55	34	34	52	72	49	24
Egypt	312	312	381	419	316	306	348	326	328	392
Ghana	23	23	37	42	32	70	90	59	80	139
Ivory Coast	6	6	17	12	9	5	10	14	20	12
Kenya	9	9	9	16	31	38	31	70	39	76
Libya	178	178	164	195	220	46	60	94	42	10
Morocco	23	23	35	38	29	64	50	57	81	64
Nigeria	213	213	145	200	198	243	184	331	324	222
Senegal	4	4	4	7	8	8	9	13	20	23
South Africa	89	88	110	96	108	140	149	193	134	127
Sudan	121	121	101	96	83	64	43	42	40	49
Tanzania	6	6	13	8	13	23	19	158	75	36
Tunisia	38	38	55	54	50	30	29	26	59	75
Other Africa	4	4	13	11	15	465	592	630	686	567
Africa	**1 685**	**1 685**	**1 992**	**2 563**	**1 858**	**1 814**	**1 954**	**2 453**	**2 278**	**2 230**
Bahrain	40	40	36	22	23	64	75	17	37	27
Iran	1 119	1 119	807	817	866	837	845	395	399	336
Iraq	85	85	259	376	716	595	1 051	1 093	670	778
Israel	74	74	97	67	100	192	115	108	165	134
Jordan	9	9	26	20	182	112	27	22	24	28
Kuwait	197	197	253	176	728	536	367	308	237	353
Lebanon	15	15	12	16	14	14	20	23	28	28
Oman	211	211	205	206	140	241	334	281	257	338
Qatar	317	317	211	195	70	105	151	87	106	89
Saudi Arabia	1 074	932	1 075	426	770	786	884	1 001	1 150	641
Syria	150	150	142	164	109	88	30	7	24	33
United Arab Emirates	1 040	1 040	1 581	904	1 126	1 001	1 258	1 362	1 448	1 298
Yemen	194	194	47	41	51	16	22	41	37	13
Other Middle East	0	0	...	...	0	0	0	2	2	0
Middle East	**4 526**	**4 384**	**4 751**	**3 430**	**4 896**	**4 590**	**5 179**	**4 748**	**4 585**	**4 096**

EXHIBIT 29

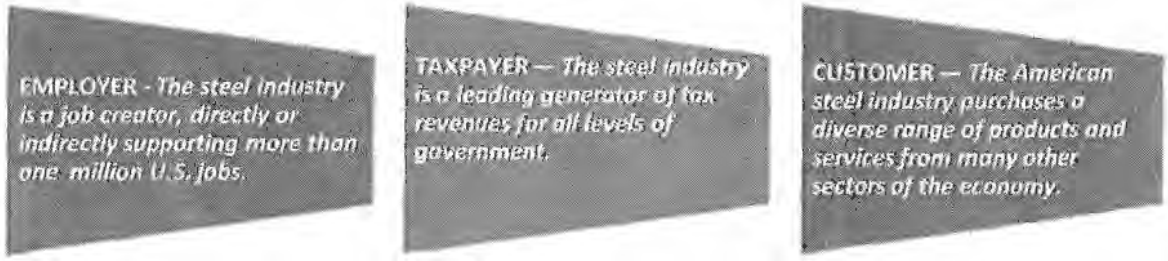
Economic Impacts of the American Steel Industry

Key Findings

- By Timothy J. Considine, SER Professor of Energy Economics, University of Wyoming

The economic impacts of the American steel industry are multiplied many times over because of its central role in the broader U.S. economy. Steel is the most prevalent material in the U.S. economy, and the steel industry—iron and steel mills, and steel product manufacturing—is highly interrelated with other economic sectors. As a result, its economic contributions are multiplied many times over through its purchases of products and services from other economic sectors, its indirect support of hundreds of thousands of jobs along the supply chain, and its generation of billions of dollars in local, state and federal tax revenues.

Multiplier Effect: For every $1 increase in sales for iron and steel mills and ferro alloy industries, total output in the U.S. economy increases by $2.66



EMPLOYER —

The steel industry is a job creator, directly or indirectly supporting more than one million U.S. jobs.

- The steel industry in 2011 directly employed over *150,700 steel workers*, supported another 391,213 workers indirectly through the supply chain, and induced spending by households that supported another 480,096 jobs in other sectors of the economy. In total, the steel industry supported more than one million jobs in the U.S. economy in 2011.
- Each job in America's steel industry supports seven jobs in the U.S. economy.

TAXPAYER —

The steel industry is a leading generator of tax revenues for all levels of government.

- The American steel industry in 2011 generated $22.9 billion in tax revenues at the local state and federal levels. These include tax revenue streams related to Social Security, proprietor income, indirect business taxes, household income, and corporate profits.
- Every $1 million of gross output in the steel sector generates $152,154 of federal tax revenues and $101,046 of state and local tax revenues.

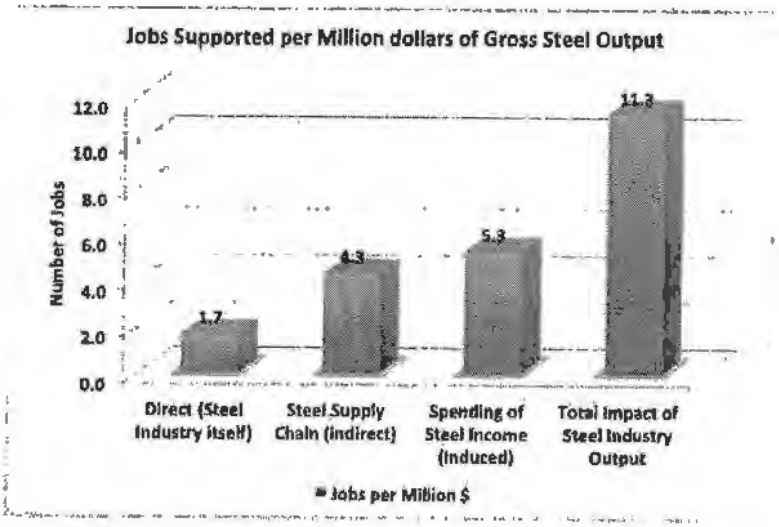
March 2012

Key Findings

CUSTOMER —

The American steel industry purchases a diverse range of products and services from many other sectors of the economy.

- In 2010, the steel industry purchased more than $20 billion of materials produced in other industries, $8 billion of services, $5 billion of energy products, $4.5 billion of machinery, $4.4 billion from wholesale and retail trade sectors, and more than $4 billion of transportation services. It also generated $12.4 billion in labor income.
- The steel industry's purchases are *highly diverse*. The "services" category, for example, includes money spent for management services, securities and investment services, and legal, architectural and specialized design services, among others.



Economic Contributions Of Steel Sector In Millions Of Current Dollars

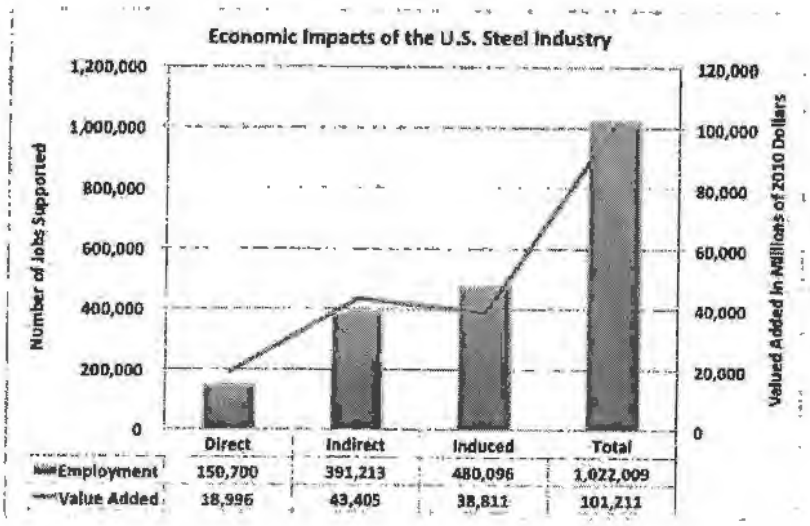


EXHIBIT 30

Beyond the 'Buy America' Debate:

Sustaining America's Industrial and Technological Edge amid the Challenges of Globalization

CDR Christopher S. Robinson, USN

21st Century Defense Initiative
Foreign Policy Studies
The Brookings Institution
Washington, D.C

July 2007

Abstract

This paper proposes ways for the U.S. government to secure a long term advantage in access to industrial and technological capabilities important to national security. The author explores the challenges that economic globalization is imposing on the long term viability of U.S access to critical industrial and technological capabilities. Starting with an analysis of the core globalization issues as they relate to the Berry Amendment restricting DOD procurement sources for certain items, the paper puts forth a framework for bureaucratic reforms. Specific reform recommendations aimed at improving bureaucratic organizations, processes, and practices related to DOD procurement policies conclude the paper.

purchase berets from foreign sources and allowed a domestic producer to enter into a contract despite its use of textile materials from foreign sources. The granting of these waivers by DLA resulted in protests from domestic small businesses, military and veteran's groups, and members of Congress. The House Small Business Committee went on to hold a hearing to discuss the statutory authority to waive the restrictions in the Berry Amendment.[3] The black beret issue seems trivial with respect to major defense acquisition items. This specific issue, however, energized Congress to re-evaluate the effectiveness of domestic source restrictions in light of the perceived growing dependency on foreign suppliers.

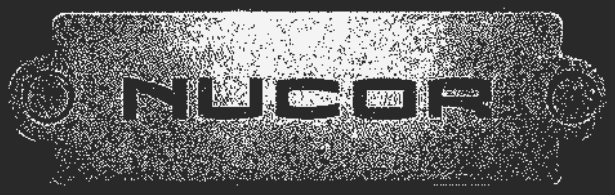
The controversy over foreign dependencies became more acute when a Swiss company, at the beginning of the Iraq War, refused to provide critical parts for Joint Direct Attack Munitions (JDAM) because it disagreed with the U. S. decision to invade Iraq. The Swiss company's president blocked shipment of parts to Honeywell, which manufactures guidance system components as a subcontractor to Boeing. JDAM was the core of U.S. precision strike capability and one of the absolutely essential weapons in the coalition arsenal. Boeing was eventually able to find an alternative U.S. source for the parts at twice the cost of the Swiss made parts.[4]

Representative Duncan Hunter, Chairman of the House Armed Services Committee (HASC) statet that Swiss action on the JDAM parts "should raise a red flag with security-minded Americans."[5] Representative Hunter is a well established advocate of buy America policies and has consistently pushed ro strengthen buy America laws in recent years.[6]

In another high profile case of foreign products on the U.S. defense market, the Navy announced in January of 2005 that the European designed EH-101 helicopter had been selected as the source for the new presidential helicopter over its U. S competition (Sikorsky Aircraft Corporation). Again, Rep. Hunter and other lawmakers highighted the necessity of buy American laws.

These notable controversies reveal the political and security risks that come with the integration of foreign markets and the U.S. defense industry. Many have argued that the backlashes against procuring new Army berets and a U.S. presidential helicopter of

Exhibit 31



PRODUCT REFERENCE GUIDE

04/15

BAR

PRODUCT DETAILS

REBAR

Mills are capable of producing hard metric sizes, please inquire.

	AUBURN†	BIRMINGHAM	CONNECTICUT**†	JACKSON**†	KANKAKEE	KINGMAN**†	MARION**†	SEATTLE***	SOUTH CAROLINA*	TEXAS	UTAH
#3 (10 MM)	●	●	●	●	●	●	●	●	●	●	●
#4 (13 MM)	●	●	●	●	●	●	●	●	●	●	●
#5 (16 MM)	●	●	●	●	●	●	●○	●	●	●	●
#6 (19 MM)	●	●○	●	●	●	●	●○	●	●	●	●
#7 (22 MM)	●	●○		●	●		●○	●	●	●	●
#8 (25 MM)	●	●○		●	●		●○	●	●	●	●
#9 (29 MM)	●	●○		●	●		●○	●	●	●	●
#10 (32 MM)	●	●○		●	●		●○	●	●	●	●
#11 (36 MM)	●	●○		●	●		●○	●	●	●	●
#14 (43 MM)	●	●○						●		●	●
#14J		●									
#18 (57 MM)		●						●		●	●
#18J		●									
#20		●									

*†Mill stocks, but does not produce. **Produces coiled rebar only in sizes 3-6. ***Produces rebar in 10mm, 15 mm, 20 mm, 25 mm, 30 mm, 35 mm, 45 mm, & 55 mm.*
†Produces metric rebar. ○Special round threaded rebar

ENGINEERED BAR (SBQ)

NUCOR STEEL AUBURN	**Round SBQ cut length:** 1/2" to 1 1/2" **Flat sizes:** 1/4" to 1" thick, 1" to 6" wide **Square SBQ cut length:** 1/2" to 1" **Billet sizes:** 5" and 6 1/4" Square
NUCOR STEEL MEMPHIS	**Round SBQ cut length:** 2 1/4" to 10" **Round-cornered square cut length bars:** 2" to 10" **As cast round billets:** 20 1/8", 16 1/4", 13 1/2", 12 1/4", 11 3/8", 10 1/2", 8 7/8" and 6 3/16" **As cast square billets:** 6 5/8" **Rolled square billets:** variable sizes
NUCOR STEEL NEBRASKA	**Round SBQ cut length:** 33/64" to 3 3/32" **Rod/Bar in coil:** 7/32" to 1 9/16" **Hex sizes in coil:** 9/16" to 1 7/16", cut length: 9/16" to 2 3/32" **Square sizes in coil:** 1/2" to 15/16", cut length: 1/2" to 2 1/16" **Round-cornered squares:** 1 1/4" to 2" on request **Flat sizes:** 3/16" to 1 1/2" thick, 1" to 6" wide **Billet sizes:** 6 5/8" Square and 6", 6 3/16" and 7" Round
NUCOR STEEL SOUTH CAROLINA	**Round SBQ cut length:** 9/16" to 3 1/4" **Rod/Bar in coil:** 7/32" to 1 13/16" **Cut length bars:** 9/16" to 3 1/4" **Round-cornered squares:** 1" to 2" **Flat sizes:** 1/4" to 1 1/2" thick, 1 1/2" to 8" wide **Billet sizes:** 5 1/8", 6 1/4", 7" Square **Hex sizes cut length:** 5/8" to 1 1/32" *(please inquire about larger sizes)* *Hex sizes in coil, please inquire.*

WIRE ROD

	SIZES	GRADES
NUCOR STEEL CONNECTICUT	7/32" – 3/4"	1005B – 1078 1541
NUCOR STEEL KINGMAN	7/32" – 3/4"	1541, F1554-36, A36, A615/40, 1005B – 1078
NUCOR STEEL NEBRASKA*	7/32" – 45/64"	1006 – 1090
NUCOR STEEL SOUTH CAROLINA*	7/32" – 23/32"	1006 – 1080

** See engineered bar (SBQ) table for bar in coil capabilities*

PRODUCTS

Product Specs

Berkeley, SC

Crawfordsville, IN

Decatur, AL

Hickman, AR

Nucor Castrip AR, LLC, AR

Nucor Steel Gallatin, KY

Tuscaloosa, AL

Price Sheets

Hot Rolled

Cold Rolled

Coated

Surestride™ Floor Plate

Product Reference Guide

MILL INFO

Certifications, Policies and other Documents

Safety Data Sheet

Request for Quote

Hickman, AR

Hot Rolled

(Produced as Black, Black Temper Passed, P&O and P&O Temper Passed)

Gauge:	.052" min. – .625" min. (.500" Maximum Gauge Black Tempered Passed, .225" Maximum Gauge P&O and P&O Temper Passed)
Width:	36.00" – 64.00"; 35.50" min on P&O and P&O Temper Passed
Grades:	Carbon Range C1005 – C1035, HSLA (45 – 80 (310 – 550 MPa) minimum yield, Line Pipe Grades (X42-X70), Abrasion Resistant Grades, Copper Bearing Grades, Structural Grades 30 – 55 (205 – 380 MPa), CS, DS, A606 (Weathering Steel), Rephos/Renitrogenized, JIS and Euronorm grades

Surestride™ Floorplate

Gauge:	.060" min. - .500" min.
Width:	Standard 48" and 60", inquire for special widths
Grades:	CS, A36 HSLA Grade 50 (340 MPa) (minimum order quantity of 600T)

Surestride Floorplate Coil Weight Restrictions

Minimum Thickness	Widths	
	48"	60"
>= .250 min	45,000 lbs max	48,000 lbs max
.150 <= .249 min	44,000 lbs max	48,000 lbs max
<= .149 min	42,000 lbs max	48,000 lbs max

Cold Rolled

Gauge:	.012" min. - .130" min.
Width:	35.00" – 62.50"
Grades:	CS, DS, DDS, EDDS, Structural Grades 33 – 80 (230 – 550 MPa), HSLA 50 – 70 (340 – 480 MPa), Motor Lamination Types 2 - 6, A606 (Weathering Steel), Rephos/Renitrogenized, JIS and Euronorm grades, Enameling Steel types 2 & 3

Galvanized/Galvannealed

Gauge:	.012" min. - .104" min.
Width:	35.00" – 62.50"
Grades:	CS, FS, DDS, EDDS, Structural Grades 33 – 80 (230 – 550 MPa), HSLA 50 - 80 (340 - 550 MPa), JIS and Euronorm grades
Coating Weights:	G30-G235
Surace Treatments:	RoHS Compliant Chem Treat, Textured (Seville Pattern), Prelube

Castrip® UCS (Ultra-thin Cast Sheet)

(Available as Black, P&O and Galvanized Sheet) < class= tbl-even">

Gauge:	.033" min. - .057" min.
Width:	46.00" – 60.00" cut edge

Grades:	CS, Structural Grades 33 - 60 (230 - 410 MPa), HSLA Grade 50 (340 MPa), A606 Type 4

PRODUCTS

Product Specs

Berkeley, SC

Crawfordsville, IN

Decatur, AL

Hickman, AR

Nucor Castrip AR, LLC, AR

Nucor Steel Gallatin, KY

Tuscaloosa, AL

Price Sheets

Hot Rolled

Cold Rolled

Coated

Surestride™ Floor Plate

Product Reference Guide

MILL INFO

Certifications, Policies and other Documents

Safety Data Sheet

Request for Quote

Berkeley, SC

Hot Rolled

(Produced as Black, P&O and P&O Temper Passed)

Gauge:	.050" min. – .625" min. (.375" Maximum Gauge on Pickle Line, .097" Maximum Gauge Temper Passed)
Width:	36.00" – 74.00"
Grades:	Carbon Range C1001 - C1035, CS, DS, HSLA Grades 45 - 80 (310 - 550 MPa) minimum yield, Line Pipe Grades (X42 - X70), PVQ Grades, Rephos, Structural Grades 33-55 (230 - 380 MPa), 10B38, JIS and Euronorm, Weathering Grades, Dual Phase Grades

Surestride™ Floorplate

Gauge:	.087" min – .500" min.
Width:	Standard 48", 60", and 72", inquire for special widths
Grades:	CS, A36 HSLA Grades 45 - 50 (310 - 340 MPa)

Cold Rolled

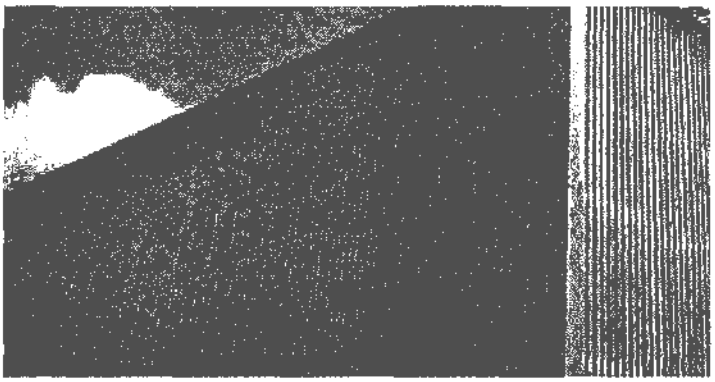
Gauge:	.012" min - .115" min>
Width:	33.00" – 72.00"
Grades:	Carbon Range C1001 - 1055, 1/4 Hard, 1/2 Hard, and Full Hard, CS, DS, DDS, EDDS, HSLA Grades 45 - 70 (310 - 480 MPa), Structural Grades 25-80 (170-550 MPa), JIS and Euronorm grades, Motor Lamination Types 2 - 6, Enameling Steel Types 2 & 3, Rephos, Weathering Grades

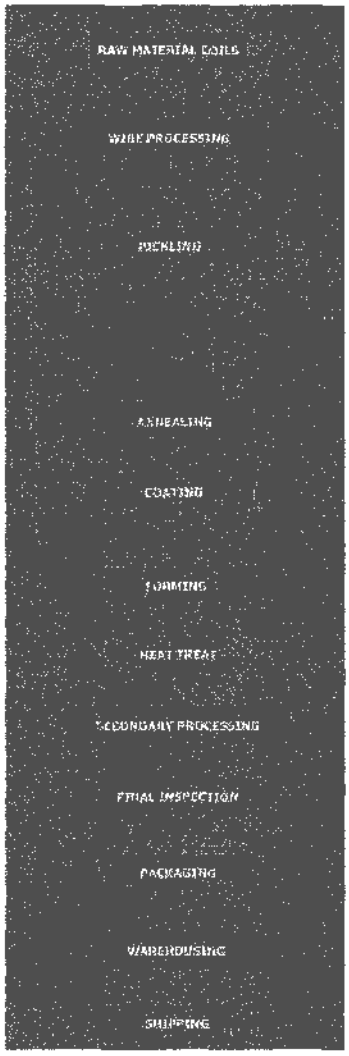
Galvanized / Galvannealed

(Produced as minimum spangle or extra smooth)

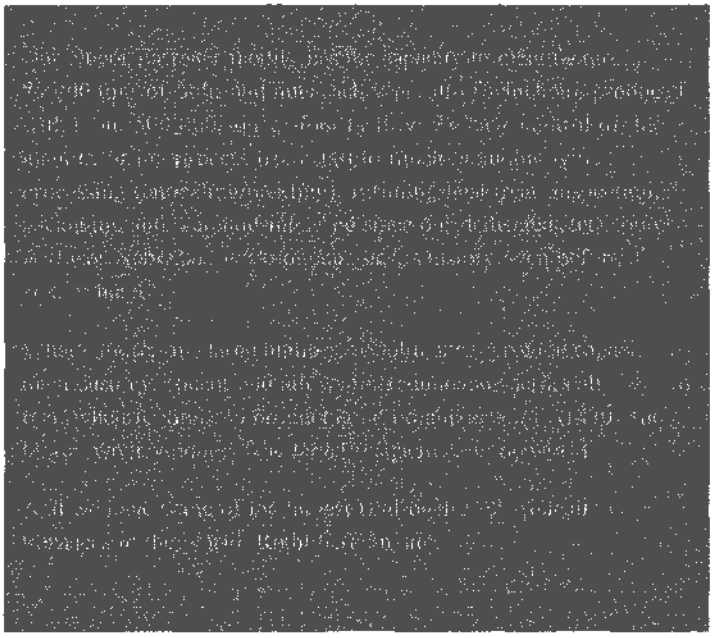
Gauge:	.012" min. – 115" min.
Width:	36.00" – 65.00"
Grades:	CS, FS, DDS, EDDS, Structural Grades 33 - 80 (230-550 MPa), HSLA Grades 40 - 80 (275 - 550 MPa) minimum yield, Dual Phase Grades, Nu Phase® (AHSS), Bake Hard & Dent Resistant, JIS & Euronorm grades
Coating Weights:	Galvanized: G30-G185, Galvannealed: A40 - A60
Surace Treatments:	RoHS Compliant Chem Treat

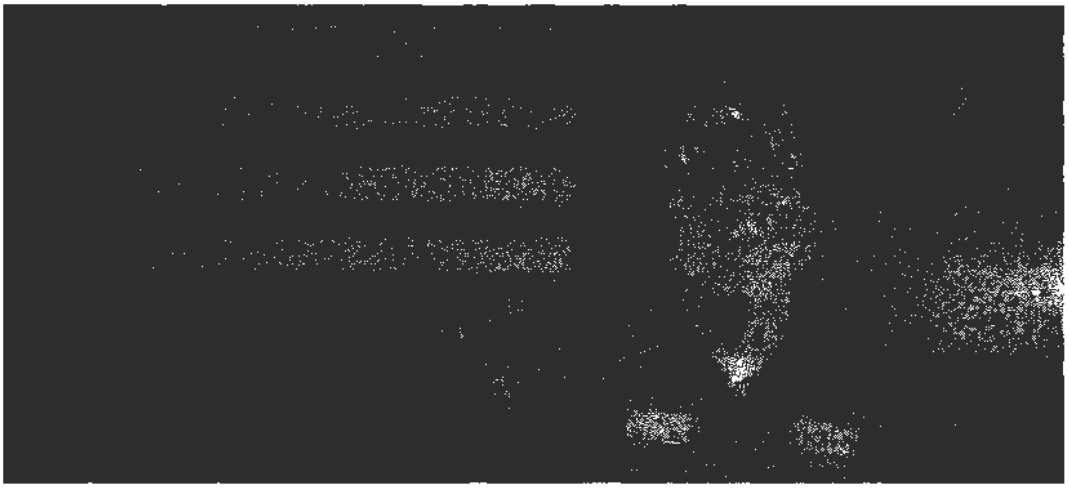
Exhibit 32





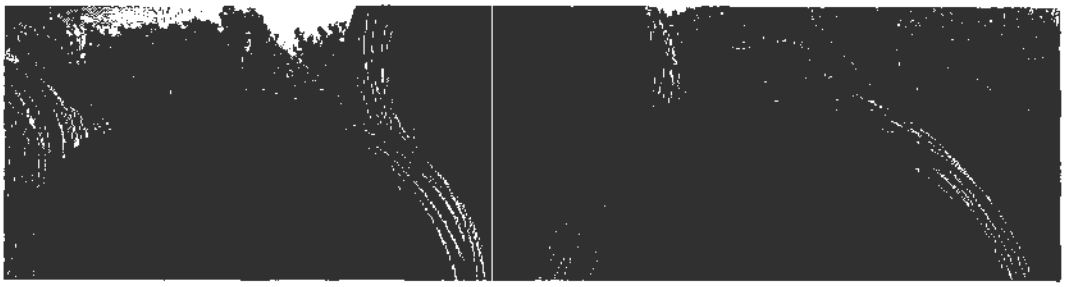
THE NUTS AND BOLTS OF IT...



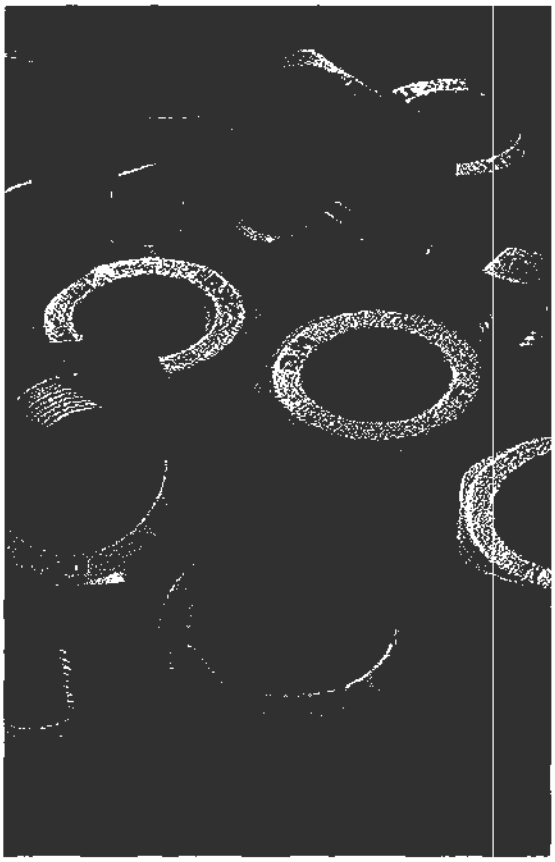


BORN IN THE USA.

All of our products are made from steel that is 100% melted and rolled in the United States. With sister division Nucor Nebraska as our dedicated steel source, our fasteners are backed by the Nucor name from start to finish. And as part of the largest recycler in North America, the steel used at Nucor Fastener is made from recycled steel.



RELY ON OUR STRENGTHS.



Standard Products – Each piece is stamped with the quality, integrity and stability of the Nucor name.

- *More than 20 million pounds of finished goods inventory*
- *Variety of sizes, finishes and grades*
- *Internally and externally threaded*
- *Cold headed, externally threaded fasteners available in diameters 1/4 (M6) up to 1 1/4 (M30).*
- *SAE and metric available*
- *Hex head cap screws*
- *Finished hex nuts*
- *Structural bolts and nuts*
- *Assemblies*
- *Flange bolts*

Build-to-Print Products – Submit a blueprint of your fastener, we'll make it.

- *Variety of head styles, dimensions, grades and finishes*
- *Large production capacity*

FASTENER HEADQUARTERS
REGIONAL SALES MANAGERS
AFFILIATES
REQUEST CONTACT
REQUEST CREDIT APPLICATION

NUCOR FASTENER - INDIANA

MAILING ADDRESS
P.O. Box 6100
St. JOE, IN 46785

STREET ADDRESS
6730 CR 60
St. Joe, IN 46785

MAIN OFFICE: 260.337.1600
TOLL FREE: 800.955.6826
FAX: 260.337.1726

SALES MANAGER
MIKE VEECH
E-mail: michael.veech@nucor.com
Office: 260.337.1627
Fax: 260.337.1726

TECHNICAL SERVICES MANAGER
JIM GIALAMAS
E-mail: jim.gialamas@nucor.com
Office: 260.337.1609
Fax: 260.337.1717

QUALITY SUPERVISOR
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E-Mail: bob.haywood@nucor.com
Office: 260.337.1722
Fax: 260.337.1613

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Fax: 260.337.1717

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Fax: 260.337.1772

KIM PFEFFERKORN
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Fax: 260.337.1774

DANA STROCK
E-Mail: dana.strock@nucor.com
Office: 866.778.1561
Fax: 260.337.1771

Exhibit 33

THE UNITED STATES

INTERNATIONAL TRADE COMMISSION

IN THE MATTER OF:	) Investigation Nos.:
CERTAIN HOT-ROLLED STEEL FLAT	) 701-TA-545-547 and
PRODUCTS FROM AUSTRALIA, BRAZIL,	) 731-TA-1291-1297
KOREA, THE NETHERLANDS, TURKEY,	) (PRELIMINARY)
AND THE UNITED KINGDOM	)

Main Hearing Room (Room 101)
U.S. International Trade
Commission
500 E Street, SW
Washington, DC
Tuesday, September 1, 2015

The meeting commenced pursuant to notice at 9:30 a.m., before the Investigative Staff of the United States International Trade Commission, Douglas Corkran, Chair. presiding

definition doesn't really, for example, eliminate those spurious products, which are not, you know, which create instances, lots of instances of overselling with not a lot of volume associated with them. So those are things we work on towards the final, you know, in the final determination, we'll address those in our post conference brief, also.

MR. SCHAGRIN: This is Roger Schagrin. Just one final point as you're, you know, trying to figure out the domestic industry's capabilities compared to imports and that is, because you'll hear from both UPI and Steelscape this afternoon. You know, they'll certainly make arguments to you that they need special hot-rolled from their 'parent' or in one case, I guess, 'half-parent', that can't be satisfied by the domestic industry.

And we would completely disagree with that. You know, the other 'half-parent' of UPI is at this table today, U.S. Steel. They're certainly well aware, because at one time they owned that entire facility, of what the needs are And they produce, you know, obviously hot-roll steel that goes into cold-rolled galvanized and tin mill.

Steelscape has previously been supplied by SDI, which is ready to supply them again. Once again, they're also one of the major U.S. producers of corrosion-resistant steel in the United States. CSI, in fact, sits five miles away from Steelscape's operations in California and also

Those customers will turn primarily to offshore suppliers for their cold-rolled, galvanized, and tin plate requirements, or close their business due to lack of available steel.

Also, in 2014 POSCO's exports of hot-rolled increased considerably not only because exports to UPI increased, but also because exports of X-70 Grade required for large diameter line pipe increased as well. Moreover, POSCO's exports of X-70 jumped significantly in 2015 due to the supply of line pipe projects.

And a final word about the Korean industry producing hot-rolled is that Dongbu Steel has now closed its hot-rolled capacity, and it leaves only POSCO and Hyundai Steel as a producer of hot-rolled steel in Korea.

Thank you.

STATEMENT OF JOHN CROSS

MR. CROSS: Good afternoon. My name is John Cross and I am President of Steelscape, LLC, a U.S. producer of zinc-and aluminum-coated steel with major production facilities in Kalama, Washington and Rancho Cucamonga, California. I have over 28 years of experience in the steel industry, including over 3 and a half years with Steelscape.

At the outset, let me state that we do not manufacture or sell hot-rolled steel. Instead, we purchase hot-rolled coil, or HRC, almost entirely from our two

joint-venture owners, BlueScope of Australia and Nippon Steel Sumitomo Metals Corporation of Japan. Steelscape's facilities in Kalama process imported HRC by subjecting it to a series of acid baths, and then use a reversing cold mill to reduce the thickness and then ultimately galvanize our steel substrate.

We also ship a portion of the cold-rolled coil we produce in Kalama to our facility in Rancho Cucamonga to apply a zinc-aluminum coating as our Rancho Cucamonga facility does not have a pickling line or cold-roll mill. Both of our facilities can paint the metallic coated coil as well.

Our two facilities on the West Coast employ almost 400 people. Together they represent a commitment of over $150 million to the U.S. steel industry. Our primary focus is supplying coated and painted steel to the building and construction industry in the Western United States. As part of this focus, we sell about one-third of our production to our affiliated building component companies, BlueScope Buildings North America and ASC Profiles. The remainder is supplied to unrelated consumers of painted, galvanized and zinc-aluminum coils, almost exclusively in the Western U.S. To support these operations, we must purchase around 400,000 tons of HRC each year.

As a Western US steel producer, our facility is

Exhibit 34

Wiley Rein LLP

1776 K STREET NW
WASHINGTON, DC 20006
PHONE 202.719.7000
FAX 202.719.7049

7925 JONES BRANCH DRIVE
McLEAN, VA 22102
PHONE 703.905.2800
FAX 703.905.2820

www.wileyrein.com

Alan H. Price
202.719.3375
aprice@wileyrein.com

September 8, 2015

Inv. Nos. 701-TA-545-547 and 731-TA-1291-1297 (Preliminary)
NON-CONFIDENTIAL VERSION

VIA ELECTRONIC FILING AND HAND DELIVERY

Ms. Lisa R. Barton
Secretary
U.S. International Trade Commission
500 E Street, S.W.
Washington, D.C. 20436

Re: ***Hot-Rolled Steel Flat Products from Australia, Brazil, Japan, Korea, the Netherlands, Turkey, and the United Kingdom***: Post-Conference Brief & Answers to Staff Questions

Dear Secretary Barton:

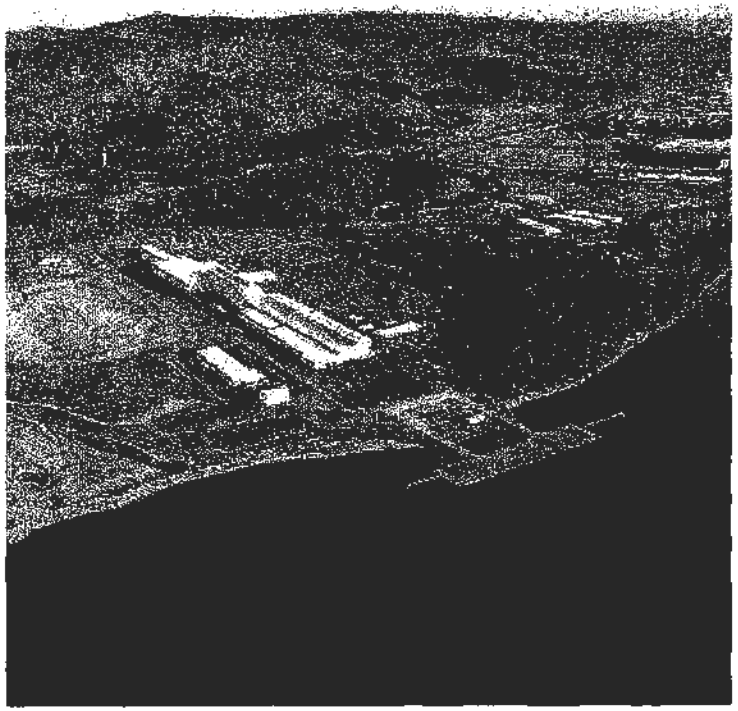
On behalf of Nucor Corporation ("Nucor"), petitioner and domestic interested party in this proceeding, please find enclosed two copies of the non-confidential version of Nucor's Post-Conference Brief and Answers to Staff Questions (**Exhibit 1**) in the above-referenced investigation.

The requisite certification is enclosed in accordance with Sections 201.6 and 207.3 of the Commission's rules. In addition, in accordance with Section 201.16 of the Commission's rules, the enclosed brief has been served, by hand delivery, on all parties entitled to receive it as indicated on the attached public service list.

Exhibit 7

steelscape

Transportation Footprint – Steelscape Kalama

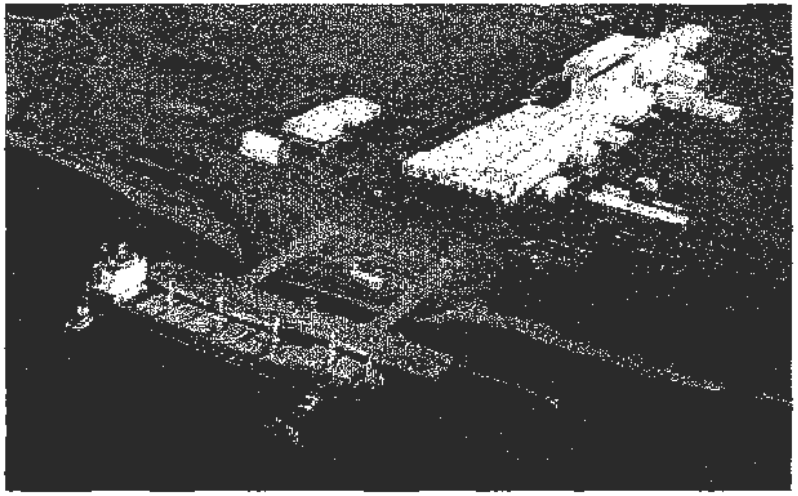


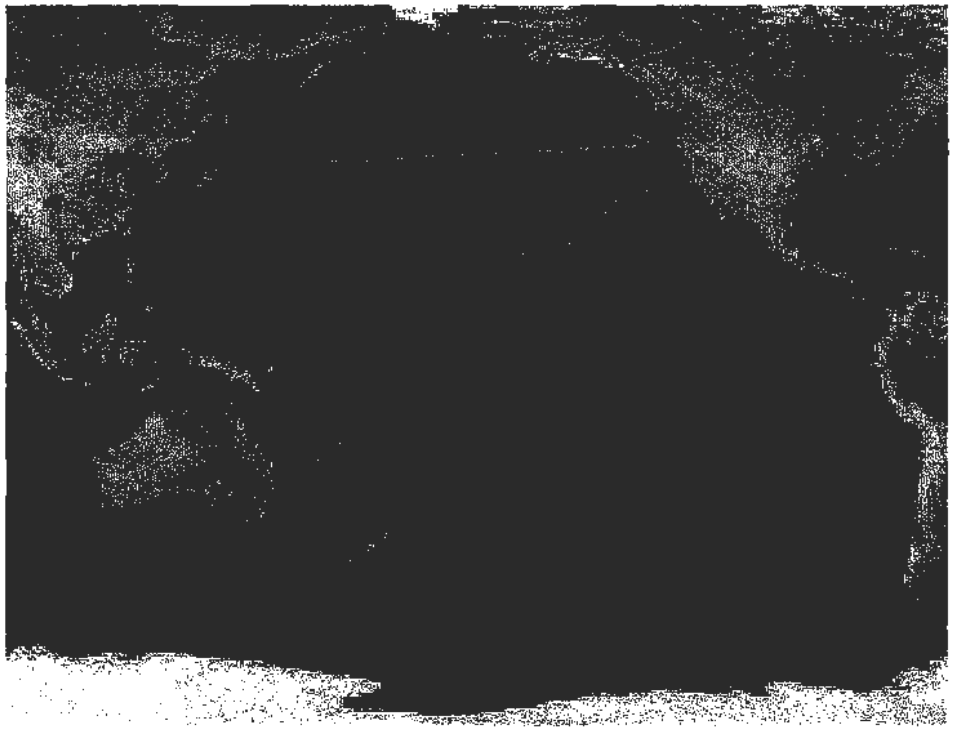

steelscape

Transportation Footprint
Raw Materials

Hot Rolled Coil provided by Parent Companies:

BlueScope, Australia.
Nippon Steel, Japan.



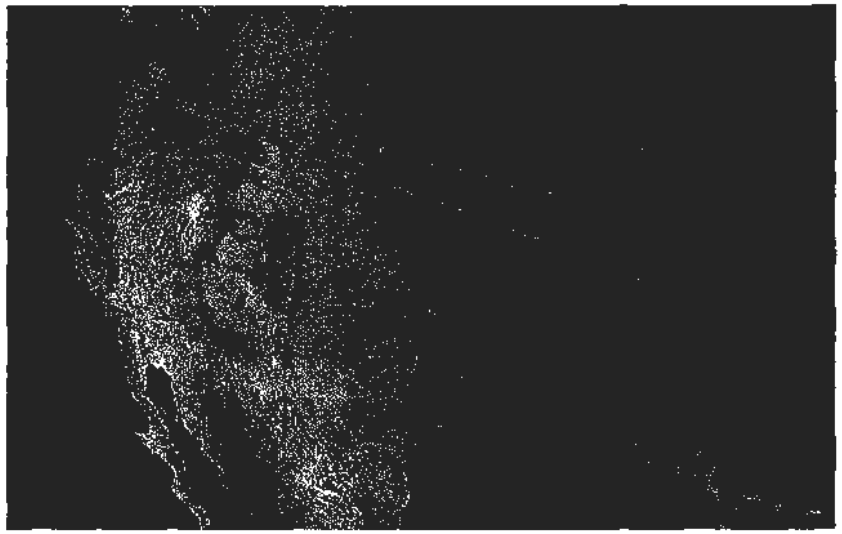


steelscape

Transportation Footprint
Raw Materials

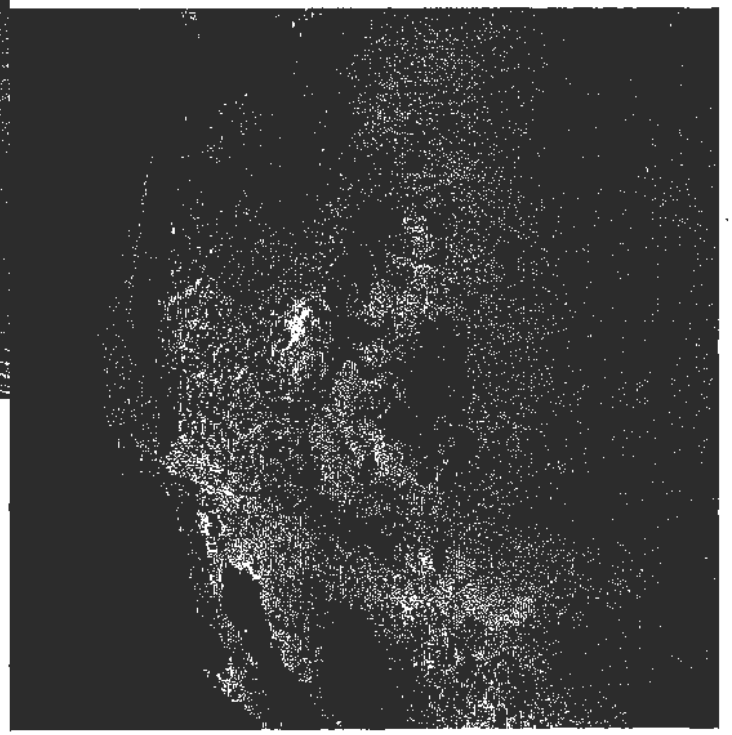
Hot Rolled Coil provided by US Suppliers:

North Star BlueScope, Ohio.
Nucor Steel, Indiana.



steelscape

Transportation Footprint

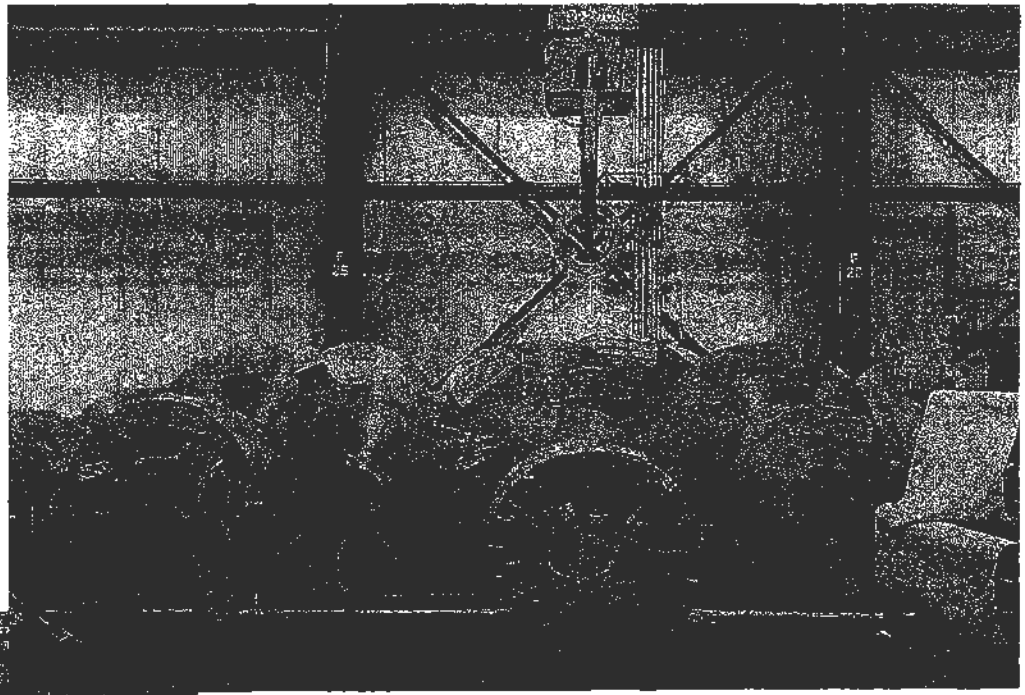


- The Hot Rolled coil is then 'Pickled" (cleaned of oxide and rust) and Cold Rolled to various thickness's.
- About 40% of our Cold Rolled Coil is railed to our Sister plant in Rancho Cucamonga, CA.

steelscape

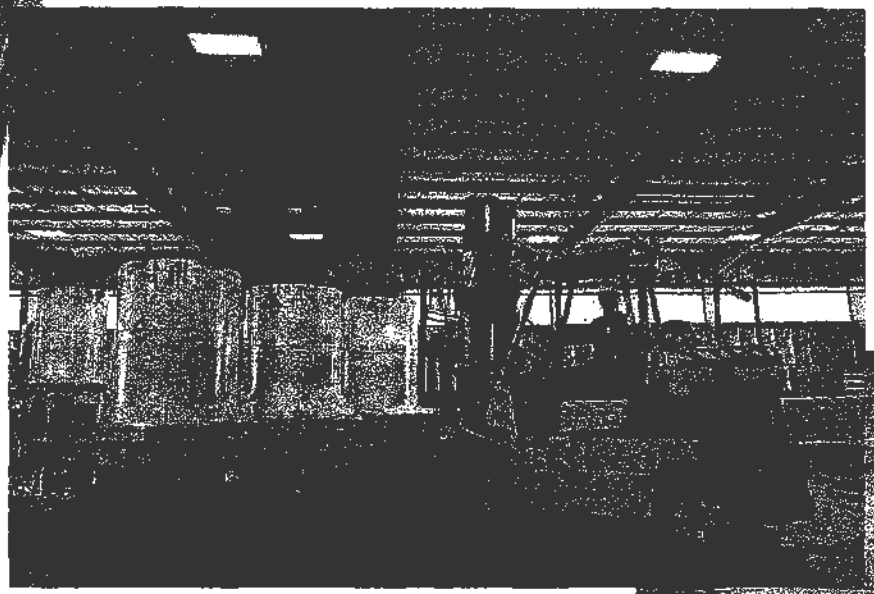
Transportation Footprint

- The remainder here at Kalama is galvanized for sheeting applications such as air-conditioning ducting, steel studs, and floor decking.

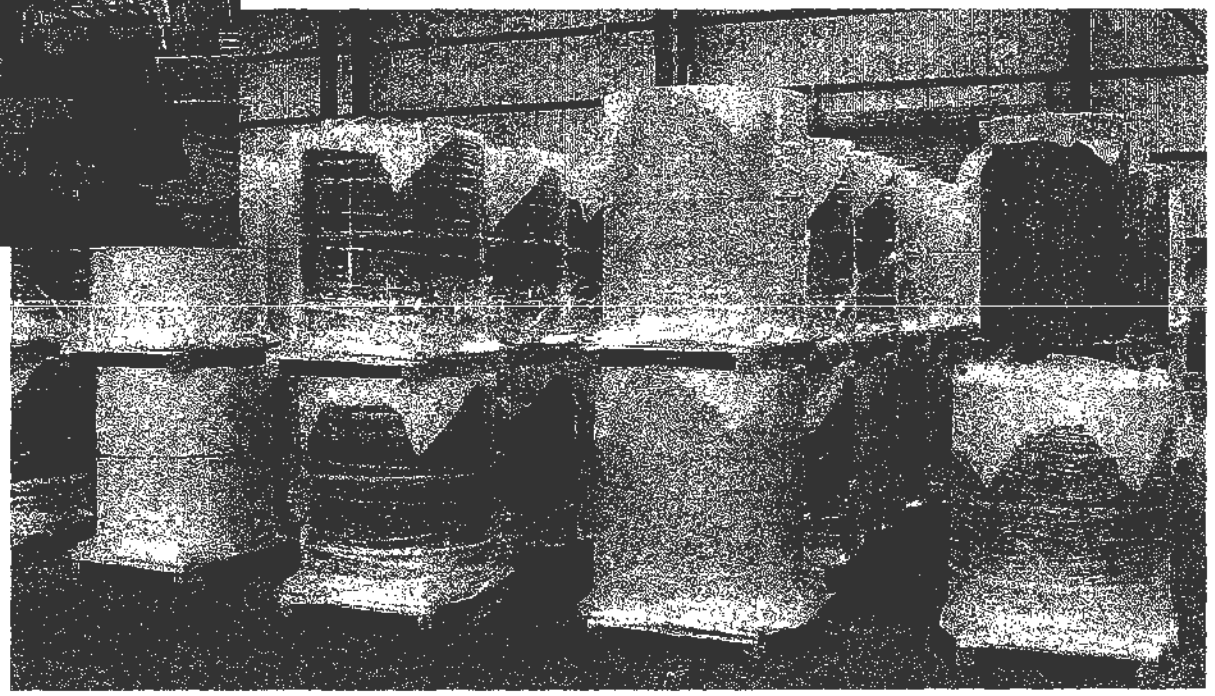


steelscape

Transportation Footprint



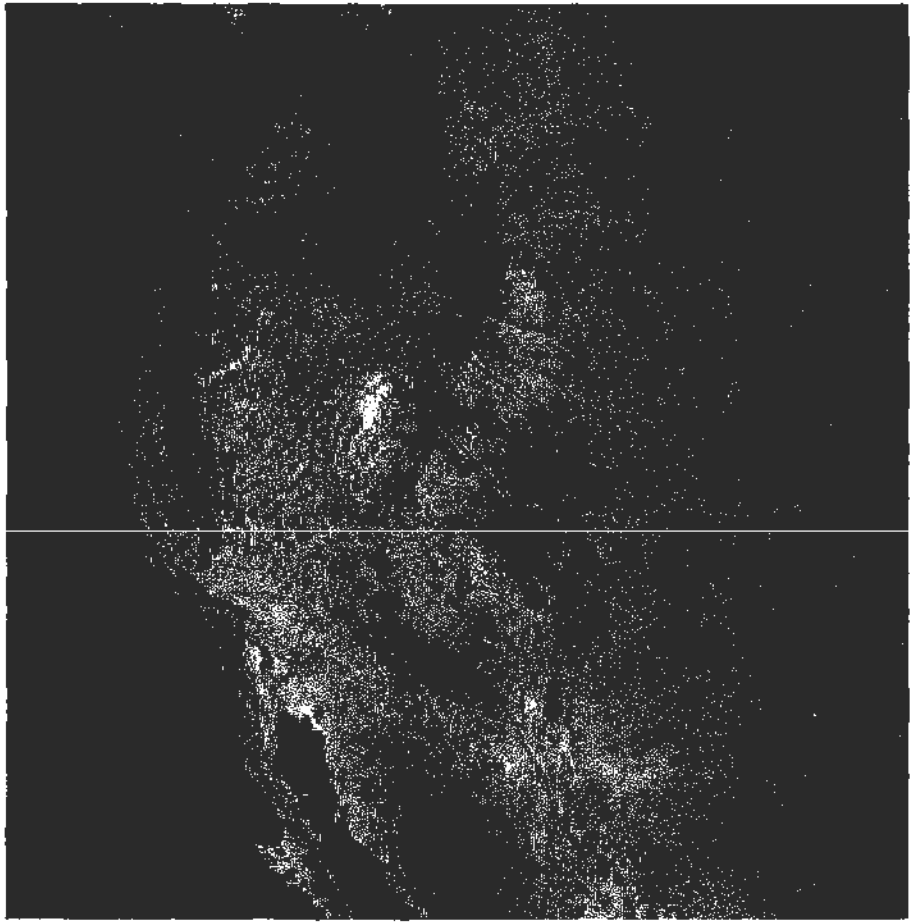
- Some of the galvanized steel is painted on the Kalama Paint Line for use as siding, roofing, or architectural trim.



steelscape

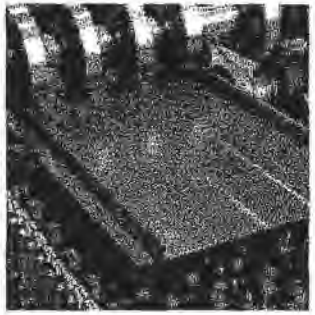
Transportation Footprint

- From Kalama the painted steel is trucked to sister companies and customers across the entire western United States, Alaska by barge, and into the Mid-West.

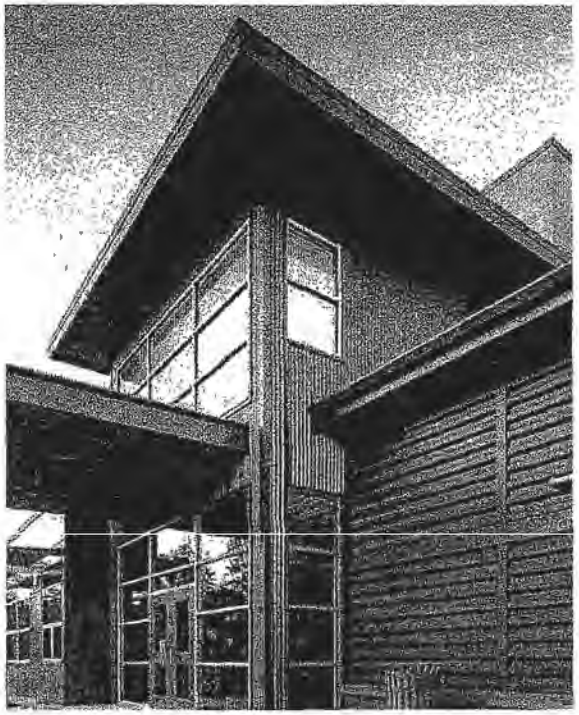


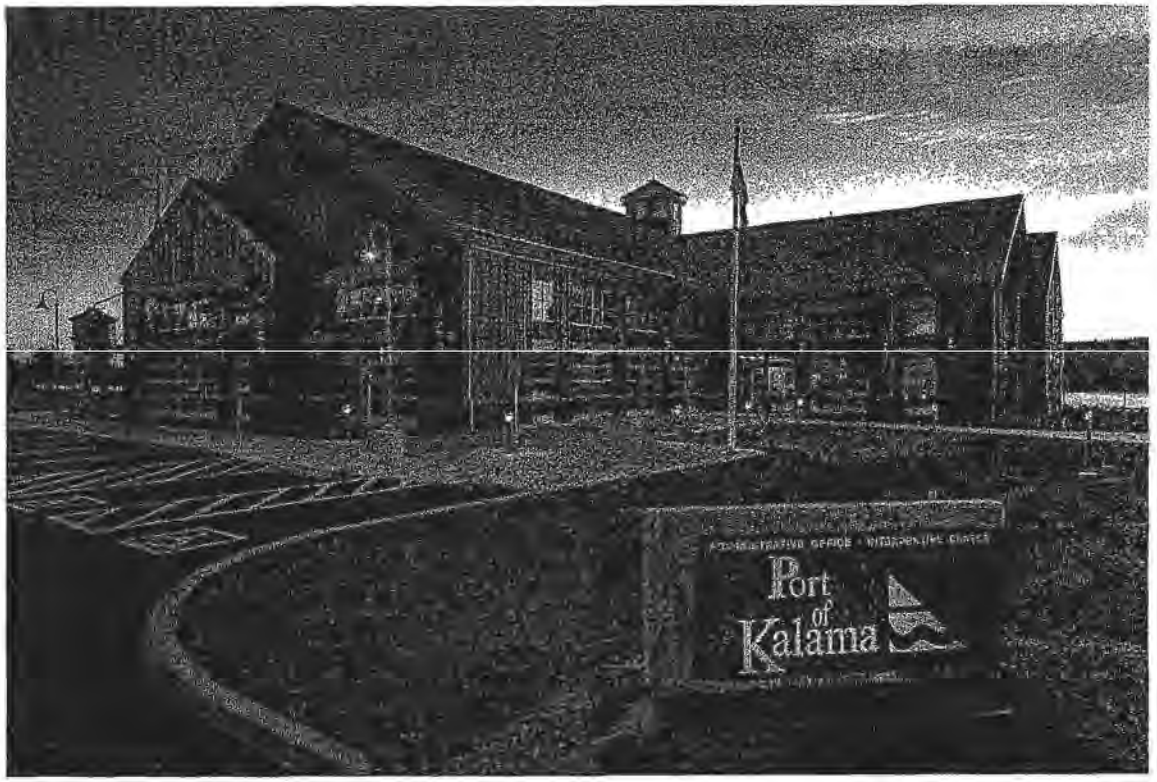
steelscape

Transportation Footprint



- The painted product is formed at the customer for use as roofing and wall sheeting and architectural trim.





steelscape

Transportation Footprint

- **Steelscape Kalama:**
  - **Received 22 shiploads of steel coil**
  - **Received and dispatched 2595 Rail Cars**
  - **Dispatched 7081 trucks in CY 2014.**

steelscape

steelscape

TEAMWORK

Alone we can do so little; together we can do so much.

steelscape

Exhibit 35

UNITED STATES OF AMERICA

BEFORE THE

INTERNATIONAL TRADE COMMISSION

IN THE MATTER OF:	) Investigation Nos :
CARBON AND CERTAIN ALLOY STEEL WIRE	) 701-TA-573-574 AND
ROD FROM BELARUS, ITALY, KOREA,	) 731-TA-1349-1358
RUSSIA, SOUTH AFRICA, SPAIN, TURKEY,	) (PRELIMINARY)
UKRAINE, THE UNITED ARAB EMIRATES,	)
AND THE UNITED KINGDOM	)

Main Hearing Room (Room 101)
U.S. International Trade
Commission
500 E Street, SW
Washington, DC
Tuesday, April 18, 2017

The meeting commenced pursuant to notice at 9:30 a.m., before the Investigative Staff of the United States International Trade Commission, Michael Anderson, Director of Investigations, presiding.

domestic industry has been injured throughout this Period of Investigation. We start off at the low point of the China investigation, as Mr. Price noted, and have stayed at that essentially low and unsustainable profitability level. So unsustainable that the domestic industry witnesses have testified to their inability to make the investments as you've heard, and have been forced to lay off workers and close facilities.

So whatever momentary price announcements are made, number one they're not realized into actual price increases. Number two, they're not necessarily even reflected in increased profitability because a lot of these announcements are merely intended to cover increased costs.

And finally, so far we've seen no real change in the industry's condition despite any announcement you may have heard about in the overall profitability of the domestic industry, which continues to have this overhang of low-priced, large volume of imports.

MR. SZUSTAKOWSKI: Thank you for those answers. Let's dive into the 1080 tire cord. So I suspect that you will be arguing that the domestic like product is coextensive for the scope of these investigations.

Do any of the present U.S. producers make 1080 grade tire cord wire rod?

MR. ASHBY: Steve Ashby, Keystone. So we make

1080 steels every day. We make that mainly for PC strand applications, but we also--

MR. ANDERSON: Steve, I need you to get closer to the mike. People in the back can't hear you.

MR. ASHBY: Okay. Thank you. We make 1080 every day. So mainly for PC strand. We also make tire bead on a production basis.

MR. SZUSTAKOWSKI: I'm sorry? On what basis?

MR. ASHBY: Tire bead. We're actually in production in a regular basis on tire bead. We don't make tire cord today.

MR. SZUSTAKOWSKI: Are the U.S. producers--

MR. CANOSA: Marcelo Canosa with Gerdau. We make 1080 grade. We don't make tire cord.

MR. ROSENTHAL: We think the record will reflect--this is Paul Rosenthal--that there is at least one U.S. producer that makes 1080 tire cord, but we can amplify that in post-conference brief.

MR. SZUSTAKOWSKI: Can 1080 tire cord wire rod be made in an electric arc furnace? I think we heard 1080 or higher. Is there any truth that you need a BOF furnace to do this? I'd like to hear, ideally now, if using an EAF if it's possible to make 1080 grade wire rod

MR. NYSTROM: If I could, Eric Nystrom, Nucor. We do not make tire cord today. But what I will say, just in

general on the steel making process, that using the BO, the basic oxygen process, basic oxygen furnace, or the EAF, you can make low-carbon through high-carbon grades of steel, low alloy, high alloy grades of steel. Basically they're just two separate processes. A little bit different, but it's really about creating the chemistry of the grade of steel with the appropriate cleanliness of the grade of steel, as was mentioned.

In a basic oxygen furnace you start with pig iron provided from a blast furnace. An an EAF you start with scrap. You add pig iron. You add DRI, direct reduced iron, and you can greatly homogenize and purify and reduce some of the residual elements to make a very consistent steel, as well. And you can add very high amounts of DRI, you can add high amounts of pig iron as well. Producers around the world do that.

And again, you can make the full range of steels. And likewise on the basic oxygen furnace, scrap is added into that process up to 25 percent or so. And then you produce a billet. And then once it's rolled on a wire rod mill, that process is pretty uniform throughout producers in this country and around the world.

So there is a little difference there from the steel making side, but as far as getting to the desired carbon level it's very easy. As far as getting to the

chemistry and the cleanliness, they both take some attention to detail and refinement. Both are possible, but just two separate manners to get there.

MR. SZUSTAKOWSKI: So if it's possible, then have U.S. producers tried to make 1080 grade or higher tire cord wire rod? And have they been--are any of these certified? It sounds like the downstream consumer of this product is expecting some sort of certification for this product. Are you familiar with that process? Is it something you can speak to now?

MR. NYSTROM: Yes. From Nucor's perspective, with our particular--one of our newer facilities, the Darlington, South Carolina, facility, we are involved today in trials on 1080 bead. And we are going to continue to pursue those trials.

We have options available between not just that local melt, but also melt from our Memphis facility, as well. We have not necessarily prioritized it to date. It hasn't been necessarily something based on the economics that we wanted to dedicate the time and resources to it at this particular point in time

It's not to say that we can't or we won't. It's just kind of where we've been today in the process baeed on today's marketplace

MR. ASHBY: Steve Ashby, Keystone. So we do use a

pig iron when we're looking at low residual steels, particularly for high carbon grades like 1080, and 1070 grades of steel. We do that all the time, and it's very important that we get the right recipe between pig iron and scrap as we melt it.

Should we pursue tire cord? It's a great question, and probably we could if the prices were better. But the import prices are so low right now there's no need to proceed.

MR. ARMSTRONG: Chris Armstrong, Keystone Consolidated Industries. To carry on Steve Ashby's point, this is where I see these products being no difference between them in terms of the injury caused by the imports.

We, as I said in my testimony, have indeed gone down trying to invest in the higher grade and higher quality that's required in the steel industry to keep on investing. In fact as we heard with the Respondent from, representing the UK. But we have had to postpone those developments, which again injures us, as even the imports of low carbon reduce our margin drastically to the negative on low-carbon rod and medium and high carbon rod. The investments that we've already made do not achieve the return on capital employed, and that causes us to have to delay the projects because we simply do not have the cash to actually invest in them. It's a luxury we do not have

We very much use debt in our companies, and if you look across the accounts of all of our people sitting at this bench you will see a big use of financing in trying to support those investments.

If you look at some of the accounts of the Respondents, I would wager some in particular I know because they're public companies do not have debt at all. And some of the Respondents from foreign countries were the beneficiaries of either very sweeping, effectively quasi-bankruptcy processes as in the United Kingdom, where that company, British Steel, as it was called in its birth day being apparently in the past 12 months, that site has had steel processing on it continually since the mid-19th Century, and was recently sold for one pound because it was so unprofitable because of heavy imports in their country.

And a lot of liabilities were alleviated with the purchase, with the acquisition of this conditional acquisition that did not go with that acquisition, which resulted in a major cost shift of that company.

They used that opportunity to invest in the higher products like tire bead and so forth, but note that they have to export because they don't have a market for it in their own domestic market.

And so the whole import price injury cuts across all grades, all products, all specifications, even if the

injury is caused at the lower end of the range. It constrains the U.S. domestic industry from responding to that.

MR. SZUSTAKOWSKI: I think Mr. Price is waiting to say something, but I'm happy to ---

MR. PRICE: If you have another question for him, go ahead.

MR. SZUSTAKOWSKI: No, that's okay. Go ahead.

MR. ROSENTHAL: If you don't mind?

MR. SZUSTAKOWSKI: Sure.

MR. ROSENTHAL: I just wanted to clarify really two things that were said about the tire cord and bead by the Respondent, and then follow up your question.

There was an exemption granted in the early 2000 case to deal with this issue. And I would argue it was a mistake for the domestic industry to do that. We did it at the behest of some of the customers in the back of the room who asked for that, and the idea was that if we did that, the domestic industry did that, there would be an opportunity to work with its customers to develop that product and begin to sell that product to them.

That ultimately did not materialize the way the domestic producers had intended in large part because pricing overall did not improve for that product. And why was that? Because it was exempted from the scope of the

case--not because it was not the same like-product, which I want to come back to at another point--but because there was a practical decision made, we're going to exempt that in the hopes that we'll be able to work with our customers to develop that product and pricing will get better in the future. That did not happen.

Every one of these companies is capable of producing that product. Several of them in this room who had developing plans for making that product, but pricing was not favorable to do that.

The reason why we did not grant an exemption in the China case and this one, too, is for exactly the same reason. Once that exemption is granted, there is no incentive for the customers to work with the domestic producers to develop that product, which they're fully capable of making.

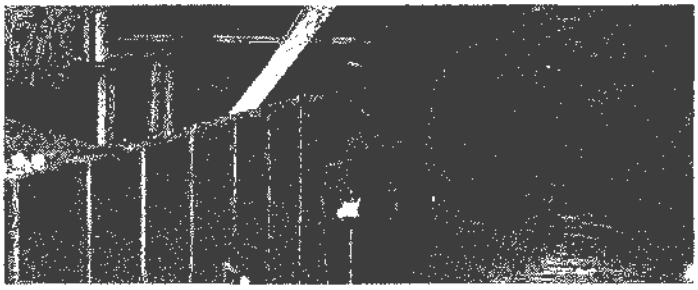
It is an economic decision, not a physical characteristics issue, not a capability issue. It's an economics decision. If the price is right, every one of these companies can make it.

MR. SZUSTAKOWSKI: Mr. Price.

MR. PRICE: Alan Price, Riley Rein.

Two other things just to go into that 1080 tire cord exemption that existed it's actually also been an enforcement nightmare in a lot of these cases because a lot

Exhibit 36



EVRAZ Rocky Mountain Steel is vertically integrated, manufacturing virtually all of the billets for its Rod and Bar mill.

WIRE ROD AND COILED

REINFORCING BAR

EVRAZ Rocky Mountain Steel is vertically integrated, manufacturing and providing virtually all of the billets for its Rod and Bar mill.

Our products exhibit excellent drawability, tensile uniformity, microstructure and chemical control. This provides our customers with superior, consistent performance and excellent value.

Wire Rod

- Low Carbon
- Medium Carbon (control-cooled)
- High Carbon (control-cooled)
- High Carbon Tensile Refined

Sizes

- 0.197 - 0.750 in (5.5 - 20 mm)

Grades

- 1003B to 1093
- High Carbon Tensile Refined Grades
- High Carbon Chemistry Grades

Coil Weights

- 4,600 and 5,800 lb

Wire Rope

Because wire rope is a premium quality product with demanding requirements, it is produced to rigorous internal standards which meet or exceed industry specifications.

Compositional aspects such as segregation control are achieved by controlled melting, casting and rod cooling practices. Surface decarburization is controlled by our walking beam reheat furnace practices, and our ultra heavy duty no-twist V-Block ensures exceptional dimensional control of the rod, which permits more accurate prediction of finished wire properties. Precise controlled cooling of the rod is possible via our modern Stelmor cooling conveyor. Our processes produce carbon steel grades of 1045 up to 1093 to meet the tensile refined grade requirements.

PC Strand

Due to the critical nature of this product, EVRAZ Rocky Mountain Steel employs selective scrap control along with electromagnet stirring both in the mold and below the mold to ensure our products meet the demanding requirements of this application. Tensile Refined grades are typically employed in these applications due to the requirement of precise final wire/strand tensile strength.

Tire Bead and Cord

The high strength, flexibility and adhesive qualities of steel bead and cord make it an ideal rubber reinforcing material. EVRAZ Rocky Mountain Steel produces 5.5 mm high-carbon rods to meet the high quality standards required by our customers. All heats are carefully analyzed for chemical components and the wire rod is critically inspected for surface and internal defects. Each heat of steel is processed as a single unit under controlled conditions.

Representative chemical specification

Carbon

- 0.67 - 0.80%

Copper

- Trace

Manganese

- 0.40 - 0.70%

Nickel

- Trace

Silicon
- 0.15 - 0.30%

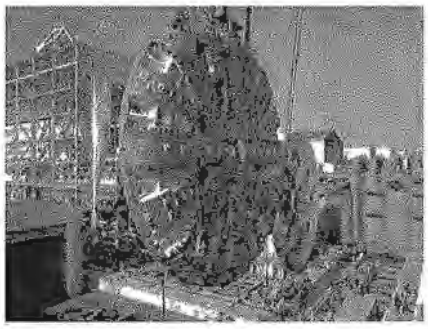
Chromium
- Trace

Phosphorus
- 0.020% max.

Nitrogen
- 60 ppm

Sulfur
- 0.020% max.

Coiled Reinforcing Bar



Big Bertha drilled the Seattle Tunnel; EVRAZ supplied the rebar for its reinforced concrete supporting arches.

Our coiled reinforcing bar represent some of the highest quality rebar products in the world. Our bar exhibits excellent tensile and yield strength, as well as deformation uniformity, microstructure and chemical control. And it provides our customers with superior, consistent performance and value.

The EVRAZ Rocky Mountain Steel facility produces deformed material to ASTM A615, ASTM A706, Dual Grade and CSA standards in the following size ranges:

Sizes available in 4,200 lb coils

- #3 (10 mm)
- #4 (13 mm)
- #5 (16 mm)
- #6 (19 mm)
- 10M Metric
- 15M Metric

Also available: ASTM A-36 and A-615 Grade 40 and 60 smooth bar in rod diameters between .197" to .8125" in coil weights ranging from 4,200 to 5,800 lbs.

Contact us for more information regarding wire rod and coiled reinforcing bar products.

Exhibit 37

The Intelligencer.
Wheeling News-Register

USW Not Confident On Yorkville Plant Restart

YORKVILLE – After letting the plant sit idle for more than a year, Esmark Inc. hopes to soon start work at the former Wheeling-Pittsburgh Steel mill it paid $4.7 million for last year as part of RG Steel's bankruptcy.

United Steelworkers Local 1223 President Jerry Conners is not sure when the facility will be up and running, but he is still waiting to see what happens to the plant that now stands silent along the Ohio River.

"The tracking system is going forward, but I'm still not really confident on the timeline for the rest of the restart," Conners said.

Workers are also are now installing a new information system that will integrate operations and inventory of Ohio Cold Rolling Co. and its biggest customer, the nearby Ohio Coatings Co.

Esmark spokesman Bill Keegan said full capacity at the Yorkville plant would be about 160 workers, though he was not sure how many would be called back, or exactly when they would be called. He declined to provide any additional information for this article.

After acquiring the Yorkville plant last year, Esmark first needed to address some environmental issues at the site. Late in 2012, USW members voted 194-24 to accept Esmark's contract offer in hopes of getting back to work early this year. Conners said the average employee wage in the Esmark deal is set at $21.64 per hour, down from about $26 per hour under the union's last RG agreement.

Since then, however, it has taken Esmark awhile to get things going in Yorkville. Initially, Esmark officials blamed the "fiscal cliff" negotiations that took place between Democrats and Republicans in Washington, D.C., in late 2012 as one of the reasons they would be delayed in restarting the Yorkville mill.

Over the past year, Esmark has cited these reasons to delay firing up the plant:

– "continued weak domestic demand and pricing pressures in the cold-rolled steel marketplace;"

– "the effect of low-priced imports on the U.S. market;" and

– "continued high inventory levels."

Esmark acquired all the Wheeling-Pitt facilities in 2006 before selling them to OAO Severstal in 2008. Severstal later sold the plants to RG, which filed for bankruptcy last year.

Last summer, Esmark leaders considered purchasing the downtown Wheeling RG Steel headquarters. However, Chairman and Chief Executive Officer James P. Bouchard ultimately decided against making a bid for the downtown structure, which was eventually sold to New Albany, Ohio-based Access Infrastructures for $800,000.

Conners said although the situation at Yorkville is not perfect, he recognizes having an owner that intends to operate the facility is a better scenario than is playing out at the remaining facilities of the once mighty Wheeling-Pitt. More than a year after the RG liquidation, the plants in both Martins Ferry and Mingo Junction continue to sit quiet.

A deed on file in the Belmont County Recorder's Office confirms Wheeling Businessmen Quay Mull and Joseph N. Gompers purchased the Martins Ferry mill land for $2 million. Both Mull and Gompers have been unavailable for comment regarding their plans for the property.

A final destiny is also yet to be determined for the large Mingo Junction plant, which Buffalo, N.Y.-based Frontier Industrial purchased out of the RG bankruptcy for $20 million. Craig Slater, general counsel and vice president for Frontier, has said said

steelmakers from India were among those looking at the Mingo facility. India-based steel companies include Essar Steel, Jindal Steel and Tata Steel.

In Steubenville, the rusting structures of the former Wheeling-Pitt. plant are now mostly gone, thanks to the demolition efforts of Wheeling-based Strauss Industries. RG sold the old Steubenville plant to Strauss for a total of $15 million, including $4.3 million for about 103 acres of land, plus another $10.7 million for the scrap and machinery.

Signifying the possible permanent end to steelmaking in Steubenville and Mingo Junction, the USW 1190 hall was closed earlier this year.