Review of the Big River Steel Incentive Proposal

A Market Viability and Cost-Benefit Analysis

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This report offers an independent assessment of the proposed Big River Steel Project. IHS is exclusively responsible for this report and all of the analysis and content contained herein. The analysis and metrics developed during the course of this research represent the independent views of IHS.

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Executive Summary

Project Background

Amid the languid economic recovery from the Great Recession, public and private economic development organizations are actively using incentives to attract employers that promise sustainable, higher wage jobs while also capable of developing a network of local suppliers. Big River Steel (BRS) proposes to build a $1.1 billion electric arc furnace (EAF) steel mill in Mississippi County in northeast Arkansas. The proposed plant will be located on a 1,140-acre site about seven miles southeast of the City of Osceola with frontage on the Mississippi River, have an initial annual production capacity of 1.7 million short tons per year and create 525 full-time jobs.

Amendment 82 of the Arkansas Constitution enables the General Assembly to authorize the issuance of general obligation (GO) bonds to attract large economic development projects having a minimum investment of $500 million and creating at least 500 permanent jobs with an average annual salary of at least $70,000. The State is considering Amendment 82 bonds to support the development of the BRS Project. In order for the General Assembly to evaluate the bond issue, the Arkansas Economic Development Commission (AEDC) has conducted a cost-benefit analysis of the proposed incentive package that solely considers the costs incurred and benefits accrued by the State. Amendment 82 grants the State the option to hire independent consultants to perform a third party review of the AEDC's cost-benefit analysis. IHS Global Insight (IHS) was retained by the State of Arkansas to perform such a review, focusing on two areas: 1) the long-term economic viability of the proposed BRS plant; and 2) the benefit-cost analysis performed by the AEDC. The results of IHS Global Insight's review are summarized below.

The economic incentive package being considered will consist of a $125 million GO bond issue with two components: 1) a $75 million issue to pay for site improvements and 2) $50 million as a low-interest loan to BRS. The State will also provide other types of economic incentives in form of tax credits, deductions, and refunds and in-kind services. The major incentive being considered is a credit against the State's corporate income tax under the Recycling Equipment Tax Credit Program that has a potential value of up to $216 million. Other incentives under consideration include: the Arkansas Advantage Program; Tax Back Program; provision of $10 million in customized job training; and exemptions to or refunds of the sales and use tax for purchases of equipment, materials, electricity and natural gas. Further detail on the economic incentives is provided in the full IHS report.

Economic Viability of the Big River Steel Plant

Steel Market Sizing

To determine the long term viability of Big River Steel, IHS assessed the potential market size for the products the facility will produce. Over the next ten years, IHS research indicates the largest total addressable US market available to BRS for its steel products is slightly less than 9 million short tons. We define the market size opportunity for BRS as steel consumption in excess of pre-

recession levels and some portion of non-NAFTA imports that depend on the individual dynamics of each market defined below. Each market is assessed based on our ten year forecast (i.e. market conditions in 2023).

Using IHS estimates of operating costs for electric arc furnace facilities in the United States, we expect an industry-wide average operating profit of $90/ton over the next decade. This equates to an operating margin of 12%, based on our price and cost estimations. Projected BRS capital cost figures are in line with comparable facilities built in recent years.

The steel industry can absorb the addition of Big River Steel, both Phase I and Phase II, from a capacity perspective. However, if any other major facilities, other than projects already announced, were to be added to the US steel stock, the industry would quickly find itself in a highly competitive, zero-sum environment. If this occurs, the BRS production goals and operating margins are not achieved. While decreasing margins will affect profits and corporate income taxes, the real threat to not having a positive benefit-cost ratio is the level of production; if these decline, then the indirect and induced effects decline, which drags down tax revenues.

Financial Cost-Benefit Analysis

The AEDC performed two cost-benefit scenarios that included the $10 million in job training services: 1) a 20-year analysis with no early payoff of the $50 million incentive loan; and 2) a 20-year analysis with an early payoff. The AEDC's analysis estimated positive net economic benefits, on a net present value basis (NPV), for both combinations, ranging from $54.2 million for the former to $49.8 million for the latter. The AEDC did not provide any detail on the specific types and values of the individual benefits in its report, but nonetheless identified and described the general methodologies employed in a written response requested by IHS. In our judgment, the types of benefits and costs considered in the AEDC cost-benefit analysis were appropriate, and to the best of our judgment, the methodologies were sound. The AEDC also employed generally conservative assumptions so as not to overestimate the benefits or underestimate the costs.

IHS asserts that the AEDC has, to some extent, overestimated the long-term, net economic benefits of the incentives being considered for the BRS project, primarily because they did not fully consider the uncertainties that surround some of the key assumptions identified in the following paragraph. These uncertainties could negatively impact the project's net economic benefits or possibly result in costs exceeding benefits. IHS agrees with AEDC's finding that modest net economic benefits are likely to be generated from the incentive package if the BRS plant operates consistently at the projected levels of employment and output, and achieves the operating margin noted above. However, there is at least some chance that costs could exceed benefits if these operating criteria are unmet and other uncertainties (see paragraph below) emerge. We recommend the AEDC conduct additional sensitivity analyses to determine the extent to which these uncertainties would significantly reduce the benefits or result in the State incurring higher net costs for the benefit package being considered. The State has appropriately inserted claw back and penalty language in its offer letter to recover costs if BRS does not meet defined performance criteria.

The major sources of uncertainty affecting the cost-benefit analysis are: 1) the likelihood that the BRS plant will operate consistently at the projected levels of production and employment so as to yield the overall economic impacts and attendant increases in tax revenues necessary to pay off the bonds; 2) the large size and timing of the Recycling Equipment tax credit which will prevent the State from receiving any increase in corporate income tax revenues until late in the project; 3) the share of inputs and supplies that will be purchased from Arkansas vendors during operations; and 4) the share of BRS's income that will be subject to the corporate income tax since the majority of the BRS plant's production will be sold out of state. Other variables, such as the effective tax rates, are also uncertain and will affect the level of tax revenues generated by the project.

IHS' cost-benefit analysis yielded slightly lower net economic benefits than those estimated by the AEDC, and in certain scenarios resulted in costs exceeding benefits. Our baseline scenario that attempted to mirror AEDC's analysis yielded positive net economic benefits with an NPV of +$50.4 million using the 3% discount rate, and +$30.13 million using a 5% discount rate. The AEDC did not indicate the discount rate they used; the bond schedule indicates the State's current cost of capital is 3%. If AEDC used a 5% discount rate, then the net benefits of our baseline scenario are about half the AEDC estimate; if AEDC used a 3% discount rate, our baseline results are similar.

IHS then performed a variety of sensitivity analyses to evaluate the areas of uncertainty by decreasing performance (i.e., lowering the capacity utilization factor, allowing for a ramp up in production, decreasing effective tax rates, changing growth rates in prices, etc.) to evaluate the downside risk. In virtually all scenarios the net economic benefits were barely positive and in some cases costs exceeded benefits.

Background and Purpose of Study

The purpose of this study is to review the benefit cost analysis of the proposed Big River Steel (BRS) project prepared by the Arkansas Economic Development Commission (AEDC). Legislative review of the proposed development is required pursuant to Amendment 82 of the Arkansas Constitution enabling the State to provide financing for qualified economic development projects. IHS Global Insight's review of AEDC's assessment considers two issues: 1) the long-term economic viability of the BRS project and whether the tax revenues generated by project-related economic activity are sufficient to generate the tax revenues needed to repay the State for its investment; and 2) the results of the benefit cost analysis prepared by the AEDC which concluded that there would be positive, net economic benefits for the state.

The proposed BRS Plant would be located on an approximately 1,200 acres site in Mississippi County in the northeast corner of the State, about 7 miles southeast of the City of Osceola. Development of the proposed steel electric arc furnace would have a total capital cost of approximately $1.1 billion. Once operations commence in calendar year 2016, phase 1 of the proposed plant would have an annual production capacity of 1.7 million short tons, and create 525 full time jobs paying an average annual salary of $75,000. An additional 1.7 million tons of production capacity may be installed in subsequent years depending on market conditions. Both AEDC's analysis and IHS Global Insight's review consider only phase 1.

Amendment 82 authorizes the State of Arkansas to borrow money using general obligation bonds (GO) and use the proceeds to help finance a portion of the capital costs of a "superproject" specifically, a big employer that will invest at minimum $500 million and employ at minimum 500 people. The financing is intended to support start-up costs incurred by the beneficiary company. In addition, state and local governments in Arkansas can provide additional economic incentives in the form of tax credits, tax exemptions, tax refunds and grants.

In reviewing the incentives provided by the state and local governments of Arkansas, IHS Global Insight also evaluates the perceived benefits and costs incurred by the state and local governments of Arkansas. Ultimately, in order for the Big River Steel Project to receive any public funding, it will need the Arkansas Legislature's approval. If the legislature concludes that the Big River Project will fulfill both the investment and job creation requirement as set forth by Amendment 82, only then will it make funds available to the company. IHS Global Insight makes recommendations based on its review of the AEDC's analysis and commentary on the economic viability of the proposed steel plant.

Project Description and Costs

Steel Facilities Description

BRS is proposing a new steel mill in Arkansas that will use the electric arc furnace method of steelmaking – which recycles steel scrap rather than melting virgin iron ore – to produce various flat-rolled products. The company hopes to implement two separate phases of construction, each involving 1.7 million short tons of annual capacity. If both phases are implemented, BRS would be capable of producing 3.4 million short tons of steel in total.

The facility is equipped to produce four categories of steel products: hot-rolled carbon sheet, cold-reduced carbon sheet, hot-dipped galvanized sheet, and electrical steel (both grain-oriented and non-grain-oriented). Electrical steel capabilities would not be added until Phase II, when the necessary equipment is added to the facility. All are considered flat-rolled products, meaning that they are wider than they are thick, as opposed to long products which are longer than they are wide.

Hot-rolled carbon sheet is the most commodity grade of flat-rolled steel products, serving nearly every major end market in at least some capacity, but focused on the automotive industry.

Cold-reduced carbon sheet is similar to hot-rolled in every respect, except that it is rolled into shape at cooler temperatures, which improves the strength and finish. This in turn allows cold-reduced carbon sheet to be used in more demanding applications in both the automotive and construction sectors, among others.

Hot-dipped galvanized sheet is the result of applying a thin layer of zinc coating to either hot-rolled or cold-reduced sheet steel. The inclusion of zinc increases steel's corrosive resistivity, allowing it to be used in more demanding environments like the exposed steel on automobiles.

Electrical steel is an alloy steel that includes silicon to make steel more electrically resistive. Subsequently, this means steel can be used in more electrically demanding environments such as transformers and motors where electrical current is often present.

Capital Costs

The initial capital cost estimates for the BRS facility, estimated at $1.1 billion, are consistent with comparable facilities recently built in the United States. Specifically, the Severstal facility in Columbus, Mississippi, in which lead BRS developer John Correnti was also involved, is almost the exact same capacity and was built for $880 million from 2005 to 2008.[1] The project shared the two phase approach, capacity expectations, project length, targeted end markets, and management team.

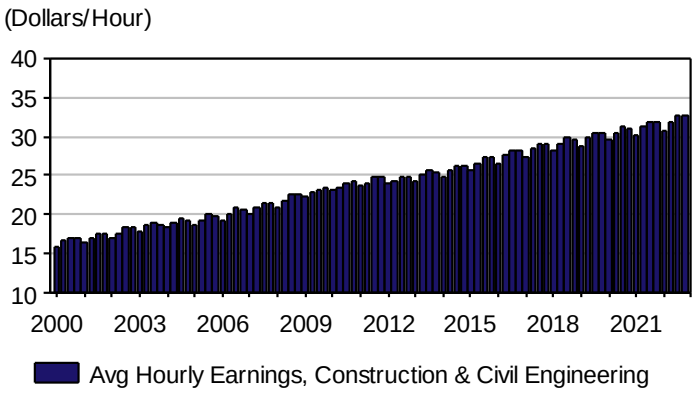
[1] http://www.severstalna.com/files/315/SNAComms_Information%20Kit%202012-13.pdf

The second phase of the Columbus facility was completed four years after the first phase at a cost of $550 million. Severstal required an additional $100 million in financing for the deal, although it is unclear if the funding was related to project cost overruns or cash flow issues during the recession (the funding was raised in October 2008, during the peak of the financial market lockup).[2] In total, for capital projects, the management of BRS has a good record in keeping costs in line with expectations.

The similarities among these two projects, coupled with the success of the Columbus facility from a capital cost and project time perspective, leads us to view the estimated capital costs for the Big River Steel Facility as reasonable.

With respect to estimated job creation, Severstal Columbus employs 545 workers at an average salary of $72,000 after starting with just 50 industry veterans. These statistics are almost identical to the promises of the BRS management team, at 525 jobs at $75,000 average salary with 50 industry veterans.

Construction Wages Well Below $50/hr



Source: History, Bureau of Labor Statistics; Forecast, IHS.

The $50/hour construction labor cost estimate is above the latest estimates of the United States Bureau of Labor Statistics for Heavy and Civil Construction Labor.[3]

Other recent steel facilities built in the United States are inferior points of comparison. The ThyssenKrupp facility at Calvert Alabama is not a fair comparison because it is a part of a large global supply chain – a "virtual integrated mill" as the company terms it – that was produced at a much higher planned capital cost. The electric arc furnace production method utilized at the Columbus facility and the planned Big River Steel facility is much less capital intensive.

Bottom Line: The capital cost estimates laid out by Big River Steel are consistent with similar facilities constructed in recent years.

[2] http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a7PonFs8GEME
[3] BRS Site Plan and Facility Descriptions

Economic Incentives

This section briefly describes the package of economic development incentives that the State of Arkansas is considering providing to the project's sponsor – Big River Steel.

Grants and Loans from Arkansas and Local Governments

Contingent upon the requisite legislative approvals, Arkansas will issue Amendment 82 general obligation (GO) bonds with a 20-year term to raise $125 million to pay for some of the capital costs of the BRS Project in Mississippi County. The $75 million bond issue will be used for qualified site preparation costs and piling costs. The State will also provide a $50 million incentive loan, which will be used for the purchase of qualifying assets. An additional $14 million in grants will be provided from two local governments; the city of Osceola will provide a $2 million grant and Mississippi County will contribute $12 million. Mississippi County will receive a fixed annual payment in lieu of taxes (PILOT) of $3.5 million over the 20 year term of the GO bonds.

Advantage Arkansas Program

The Advantage Arkansas program provides an Arkansas income tax credit based upon a percentage of the annual payroll paid to the new full-time permanent employees hired at BRS. The program allows for a 4% income tax return on total net new payroll for jobs created in Mississippi County. The income tax credit begins in which the new employees are hired and is earned each tax year for a period of 5 years.

Recycling Equipment Tax Credit

As per Act 654 of 1993, the State of Arkansas provides for a tax credit of 30% of the cost of equipment and installation costs used for the reduction, reuse or recycling of solid waste material for commercial purposes. Since the proposed plant would use scrap metal, the equipment used in its production process would qualify. This tax credit could be worth approximately $216 million ($721 million in projected equipment costs including installation times 30%) to BRS if they are able to use all of it. The credit is earned in the year in which the purchase of eligible equipment is made. The State of Arkansas is considering extending the current carry forward period from 3 years to 14 years, so that project's sponsor would have a period of fifteen years in which to claim the credit. Recipients of this tax credit are not entitled to any other state or local tax credit or deduction for the purchase of machinery and equipment.

Tax Back Program

The Tax Back Program provides a refund of a portion of the sales and use taxes paid on the purchase of material used in the construction of a commercial project, and also for purchase of eligible equipment. The current Arkansas sales and use tax rate is 6%, but the refund would be only 5% of the purchase costs. The refund of local sales and use taxes will be based on the rates that are imposed in the host county and municipality. Mississippi County currently imposes a 2% sales and use tax, while the City of Osceola imposes a 1% tax. The proposed steel plant would be located about 7 miles southeast of the City of Osceola.

Customized Training Incentives

The state of Arkansas will provide $10 million worth of training services during the first two years of the construction project. Funds are applicable to costs associated with training BRS's workforce and will be spread equally over a two year period.

Sales and Use Tax Exemptions

Purchases of Machinery and Equipment

Manufacturing machinery and equipment that is purchased for use in a new manufacturing facility in Arkansas are exempt from the sales and use tax. The incentive excludes the purchase of pollution control equipment. Machinery and equipment for which a tax credit is obtained under the Recycling Equipment Tax Credit program discussed above would not be eligible to receive this tax exemption.

Purchase of Utilities

The State of Arkansas currently imposes a reduced sales and use tax rate of 2.75% for the purchase of electricity and natural gas used in a manufacturing process. They are considering exempting all electric and natural gas purchases from the sales and use tax for steel mills that invest at least $500 million, and create at least 300 new jobs with an average annual wage of at least $70,000 (i.e., the proposed BRS Plant).

Understanding the types and values of the incentives being considered is necessary to determine if the long-term economic benefits that will be received by the State of Arkansas produced by the construction and operation of BRS Project will exceed the costs incurred by the State, or vice versa. The State of Arkansas has provided penalty or claw back provisions in most of the incentives described above, especially for the two bond issues, in order to recapture most or all of the value of the incentive provided if BRS does not meet the performance criteria for each incentive.

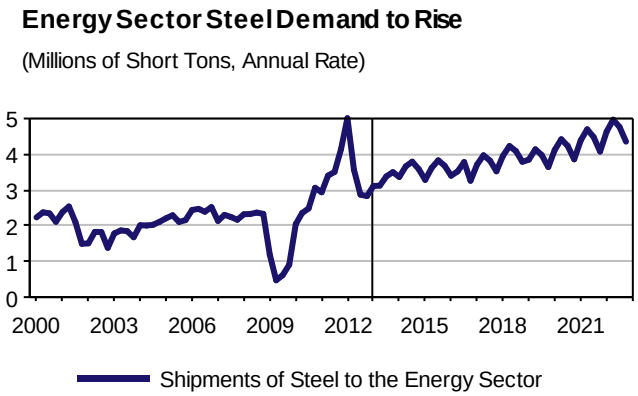
Steel Plant Economic Feasibility Analysis

This section evaluates the economic feasibility of the proposed BRS Project. State tax revenues that flow from the direct, indirect, and induced increases in economic activity generated by the plant's operation will be used to reimburse the State for the costs of the incentives it provides. As a result, the projected economic feasibility of the proposed BRS plant is crucial in evaluating whether the State should offer the proposed incentive package to BRS.

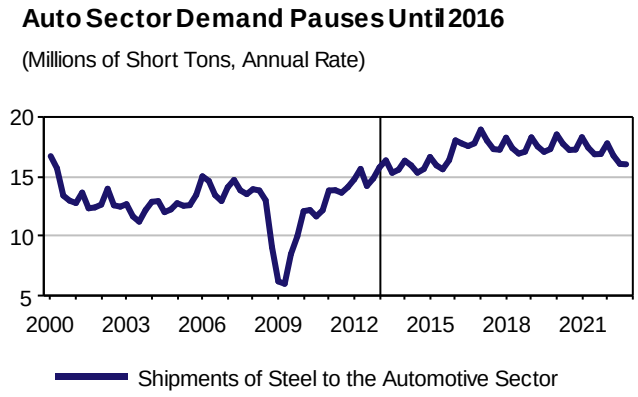
Market Sizing

End Market Strength

BRS proposes primarily targeting two steel end markets: energy and automotive. These two markets are among the strongest for steel and represent the most promise for growth beyond pre-2008 production levels.



Source: History, American Iron and Steel Institute; Forecast, IHS



Source: History, American Iron and Steel Institute; Forecast, IHS.

Automotive Sector Outlook

The United States is among the largest producers of vehicles in the world, and one of the world's largest automotive manufacturing hubs has long been established in the Detroit area. Four states comprise the bulk of automotive manufacturing jobs in the United States: Michigan, Ohio, Indiana,

and Illinois. Over the past three decades the US auto manufacturing base has grown in other areas, to the detriment of these four states. Southeast Michigan bears the hallmarks of an industry in decline, with U.S. automakers cutting capacity, closing plants and shifting production to lower cost manufacturing locations overseas. Meanwhile European and Asian automakers have better access to local production and to the local markets, opening production facilities in North America (referred to as "transplants").These transplants are newer, more modern facilities in the southern states, which are far less unionized and better able to adapt their production schedules to volatile demand levels.

North American production suffered greatly during the most recent recession. Production was strong in 2007 with volumes above 15 million units. However, it slipped 16% in 2008 before plummeting further in 2009. The strong 15 million unit volume across North American that existed in 2007 shrank all the way to 8.6 million units in 2009. The industry bounced back over the next two years, reaching 13 million units by 2011.

North America output recovered robustly in 2012 to exceed 15.4 million units, 2.3 million units more than in 2011. Output is poised to climb even further in 2013 but at a much slower pace, providing a net volume gain of nearly 450,000 units. Further production gains of nearly 400,000 units in 2014 and 800,000 units in 2015 will be realized as local sourcing plans are implemented.

While the growth rate for domestic automotive production will ease in 2013, the number of anticipated product redesigns will surge as the market transitions into 2014, climbing to the highest level in the past decade. This production surge could collide with capacity constraints, given that assembly capacity and supply chain bandwidth remain under tremendous pressure as production levels return to normal.

Energy Sector Outlook

The United States is the world's largest consumer of oil, and its third largest producer. In 2011, the country produced 5.67 million barrels per day (b/d) of crude oil, with increasing domestic unconventional output, natural gas liquids (NGL) production, and refinery gain having increased the overall oil supply from domestic sources. Nevertheless, petroleum demand in the US outstrips domestic production, requiring the country to import more than 40% of the oil it consumes.

The United States is one of the most mature oil-producing regions in the world, with more than 150 years' worth of petroleum extraction. From aggregate total production of only around 175,000 b/d at the turn of the 20th century, US crude oil production continued to climb ever higher, hitting a peak of 9.63 million b/d in 1970, according to the US Energy Information Administration. Crude oil production began to decline in the 1970s, falling to 8.1 million b/d in 1976, then recovering as high as 8.9 million b/d in 1985. Production has been declining since then. However, US crude oil production is slowly rising again on the back of unconventional resource recovery – commonly referred to as shale or 'tight' oil. IHS expects US crude production to grow to about 7 million b/d by 2021 before reversing into decline again.

The US has been producing natural gas since the early part of the 20th century, with production rising rapidly from the 1930s through to the 1960s. Since the 1970s, however, it has struggled to maintain output in the face of ever-growing consumption. The country's vast untapped shale gas resources are critical for the future natural gas supply. Shale gas quickly turned a country that was to be increasingly dependent on LNG imports into a major natural gas producer that is contemplating natural gas exports. According to the US Energy Information Administration's (EIA) 2011 Annual Energy Outlook, US shale gas resource estimates were up from 35 trillion cubic feet (tcf) in 2003 to 862 tcf in 2011.

Unconventional gas in the US is found mainly in the Eastern Appalachian Basin (Pennsylvania, New York, West Virginia) and the Permian Basin (Texas, New Mexico). Other US states with shale gas resources include Utah, Colorado, Oklahoma, Arkansas, Louisiana, Montana, North Dakota, Kansas, Nebraska, and Wyoming. The major producing natural gas shales are the Barnett play (Texas; oldest and largest production site), the Marcellus Shale (New York, Pennsylvania, West Virginia), the Bakken formation (Montana, North Dakota), and the Haynesville play (Texas, Louisiana). IHS analysis of the unconventional oil and gas market indicates that the cumulative capital investment related to exploration and production activity will surpass $5.1 trillion by 2035, at an average of $200 billion annually. In 2012, 33,100 jobs in Arkansas were directly or indirectly linked to unconventional oil and gas activity.

Product Competition (Domestic and Import)

Big River Steel (BRS) proposes four main product categories: hot-rolled sheet, cold-reduced sheet, galvanized sheet, and electrical steel sheet. We address each product category in turn from the perspective of a potential market size in excess of what domestic producers already serve. We also assume no displacement of NAFTA trading partners because the geographic proximity and favorable trade treatment means steel mills in Mexico and Canada in many ways approximate “domestic” American production. Therefore, we define the market opportunity for BRS as consumption in excess of pre-recession levels and some portion of non-NAFTA imports to depend on the individual dynamics of each market defined below. Each market is assessed based on our ten year forecast (i.e. market conditions in 2023).

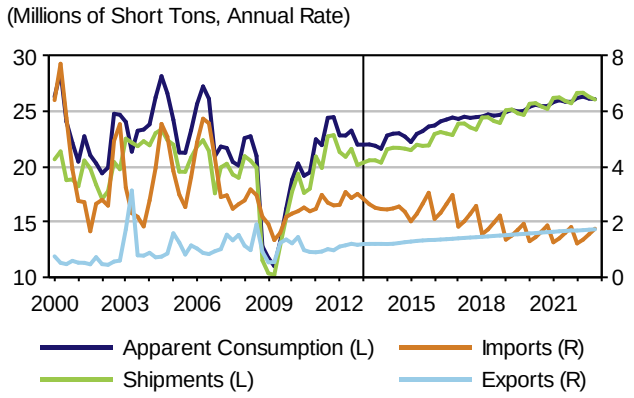
Hot-Rolled Carbon Sheet

Hot-rolled carbon sheet (HRCS) is in many ways the building block of finished steel products, although it is a significant product in its own right. HRCS serves a wide variety of end markets, but gets most of its demand from the auto sector and from conversion into other products – notably the other products under examination: cold-reduced carbon sheet, galvanized sheet, and electrical steel sheet.[4] As such, it is representative of the larger steel market and our outlook aligns

[4] The Service Center market segment represents shipments of steel that go through processors, stockists, and distributors. Although the shipments become difficult to track at this level, it is a fair assumption that the proportion of shipments out of service centers to end users will approximate direct shipments from mills to end users. That is, the same end markets that buy direct from the mill will by and large also be making purchases from service centers.

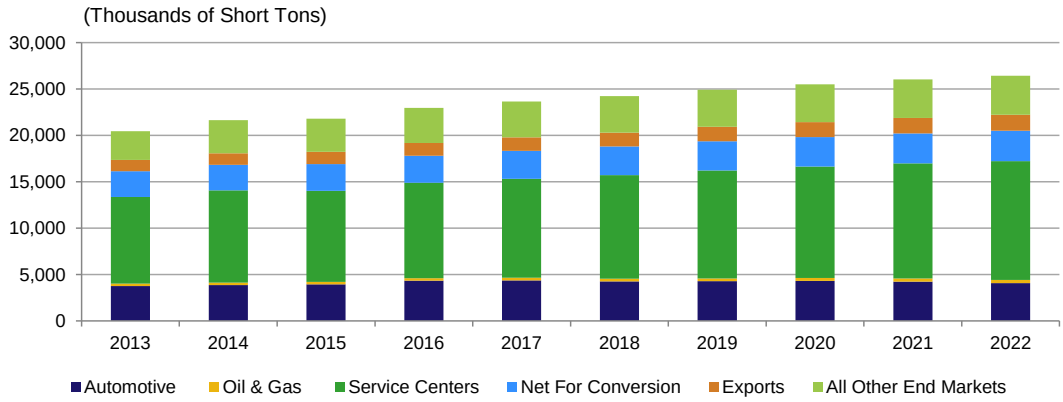
accordingly. Although HRCS has largely recovered from the recession, we do not see sustained levels of shipments or consumption[5] above pre-recession peaks until the very end of our 10 year forecast horizon. Import penetration has been falling for more than a decade, on account of new low cost mills being built in the United States. We expect this trend to continue, with import penetration at or below 10% starting in 2014.

Hot-Rolled Sheet



Source: History, American Iron and Steel Institute; Forecast, IHS.

Hot-Rolled Shipments by End Market



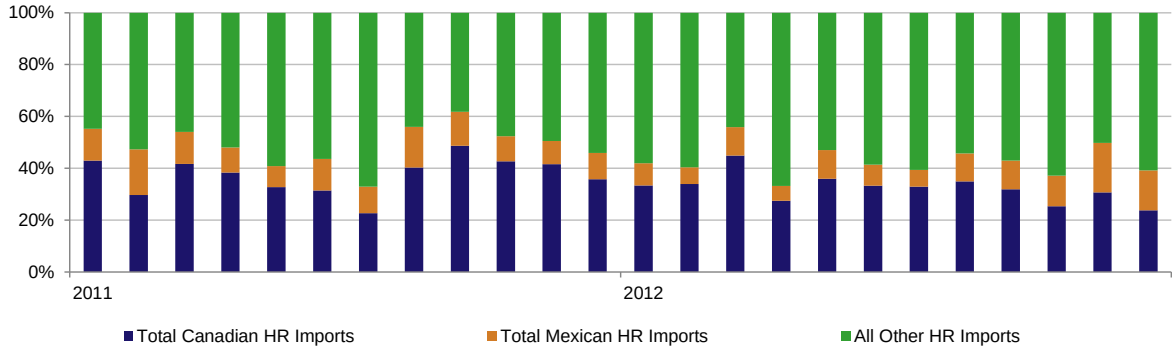
Source: IHS.

BRS would be entering into a HRCS market that is highly competitive and generally sees lower profit margins. BRS hopes to differentiate on quality. They are targeting more difficult grades of steel to produce that are wider and thicker than existing capacity. However, there are no completely un-served end-use markets, only under-served markets. Most of the hot-rolled

[5] Apparent consumption is equal to shipments plus imports minus exports; Given that there is an implicit assumption of no change in inventories, apparent supply is a similar concept.

production at the new facility would probably find itself competing in the commodity grade pile; that is, generic steel that is not well differentiated by quality. Nucor facilities in the southeast United States, especially the Berkeley, South Carolina facility, are already capable of producing HRCS at widths of up to 67 inches; US Steel is capable of producing widths in excess of 70 inches; AK steel claims even greater possible widths. The BRS facility would likely have a lower cost of production than several mills within the United States, though attributable to lower labor costs than lower material costs or other efficiencies. As such, BRS would be positioned to displace at least some domestic producers by competing on price.

NAFTA Partners are Source of Over 40% of HRCS Imports



Source: Iron and Steel Statistics Bureau.

Total imports are around 2 million short tons per year, but over 30% of that comes from Canada and over 10% from Mexico, both of which are unlikely to be entirely displaced. Furthermore, many of the remaining tons are not consistent flows and rather represent steel buyers placing opportunistic orders as a method of fighting back against domestic price increases. We estimate BRS could displace no more than 250,000 short tons of HRCS imports per year.

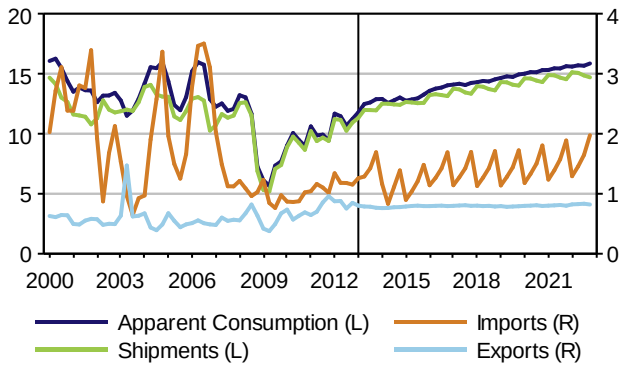
Bottom Line: The hot-rolled carbon sheet market is expected to grow by 4 million short tons beyond pre-recession levels in the next decade, with 250,000 tons available for displacement. At best, the market potential for BRS in the HRCS market is 4.25 million short tons.

Cold-Reduced Carbon Sheet

The cold-reduced carbon sheet (CRCS) market shares many similarities with the HRCS market in terms of end-use markets and competition both domestic and import. As such, a very similar story emerges. Automotive is the single largest end market; conversion to other products like galvanized sheet also takes a sizeable chunk of CRCS shipments. Like hot-rolled carbon sheet, the cold-reduced carbon sheet market is quite large (consumption will likely exceed 12 million short tons in 2013), but also highly competitive. Just as in HRCS, the differentiating factor would be width, serving markets that are currently under-served, but not un-served. The very same facilities and specifications exist for CRCS as was laid out for HRCS above, with the exception that Nucor's Berkeley facilities can only produce CRCS at 65 inches, rather than 67 inches.

Cold-Reduced Sheet

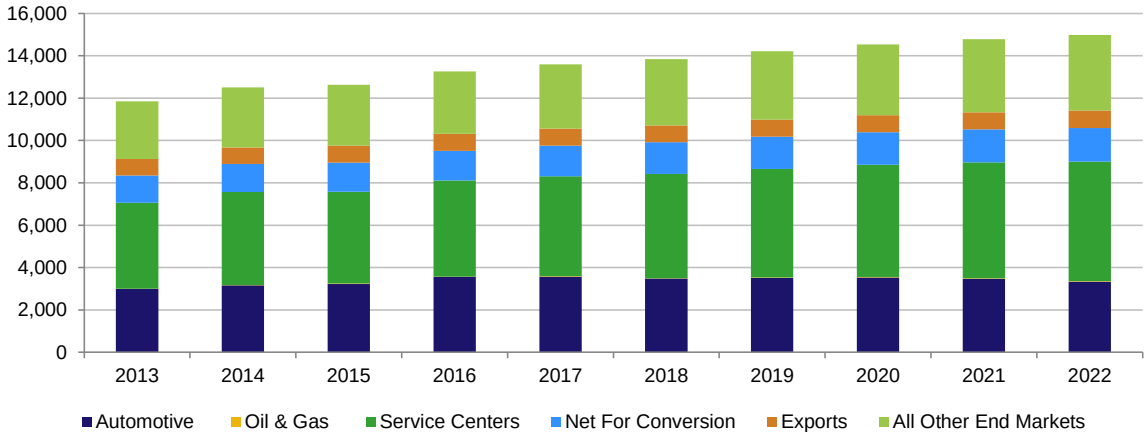
(Millions of Short Tons, Annual Rate)



Source: History, American Iron and Steel Institute; Forecast, IHS.

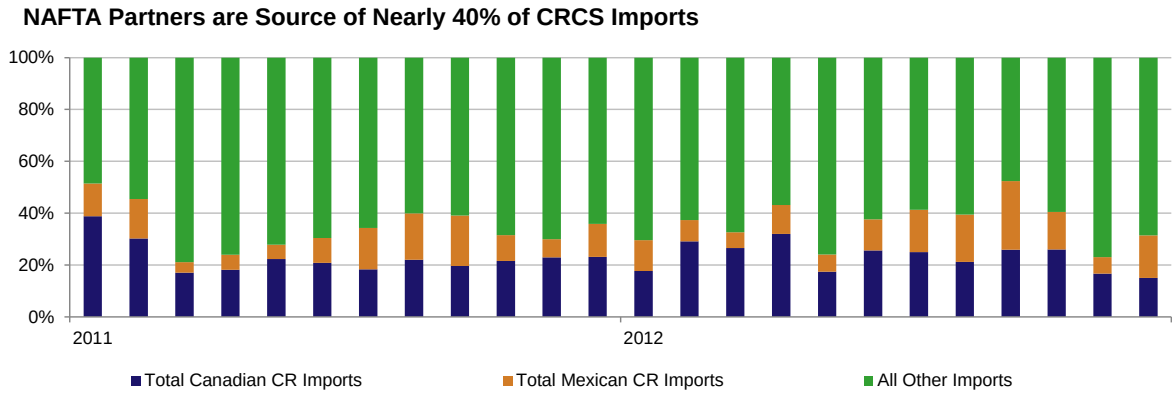
IHS sees some growth beyond pre-recession levels, but only by 1.5 million short tons. Import penetration is even lower than for HRCS and is similarly concentrated in NAFTA trading partners who would be difficult to displace.

Cold-Reduced Shipments by End Market



Source: IHS.

The slightly smaller market size than HRCS means the potential for import displacement starts at about 1.5 million short tons. After adjusting for the NAFTA trading partners' share of imports, the potential market shrinks to under 1 million short tons, again considering that most of the remaining countries that import into the United States do not do so on a month to month basis, but rather as needed by select suppliers and as higher domestic price conditions attract imports. Import displacement would amount to no more than 150,000 short tons.

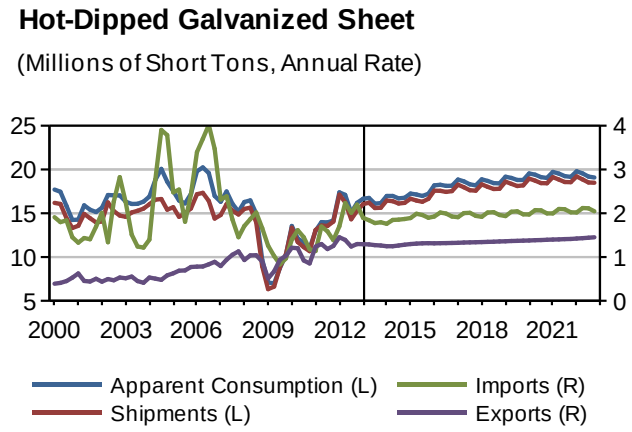


Source: Iron and Steel Statistics Bureau.

Bottom Line: The cold-reduced carbon sheet market is expected to grow by 1.5 million short tons beyond pre-recession levels over the next decade, with 150,000 tons available for displacement. At best, the market potential for BRS in the CRCS market is 1.65 million short tons.

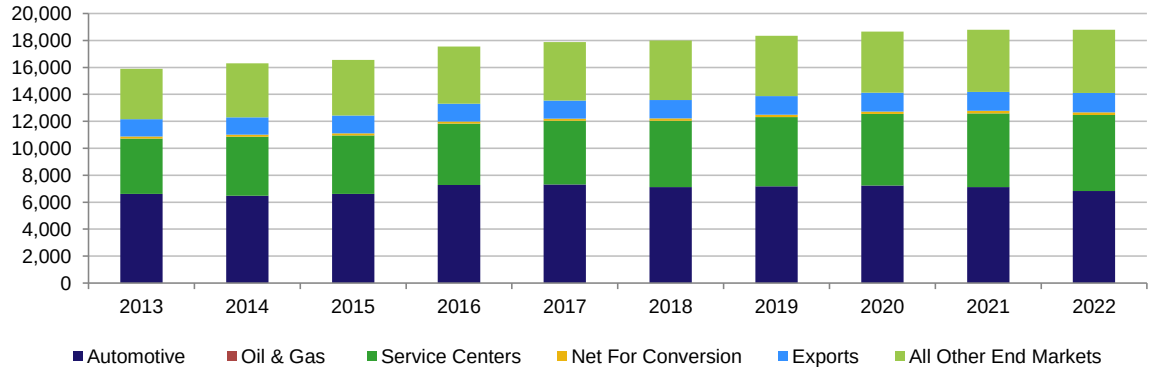
Hot-Dipped Galvanized Sheet

The hot-dipped galvanized sheet (HDGS) demand is concentrated largely in the automotive and construction markets. The application of zinc during the galvanizing process makes steel corrosion resistant, a crucial element for automotive applications. This inclusion of zinc makes HDGS more expensive, but also reduces global competition because all producers worldwide pay close to the same amount for the most expensive galvanizing input material cost, zinc. As a result, the United States is quite competitive globally and was briefly a net exporter of HDGS during the 2008-2009 recession. Consumption has a strong upward trend in the forecast period because of continued growth in the automotive market and because HDGS is expected to take market share from another (similar) steel product: electro-galvanized sheet steel. Shipments should exceed pre-recession levels by over 2 million short tons on average.



Source: History, American Iron and Steel Institute; Forecast, IHS.

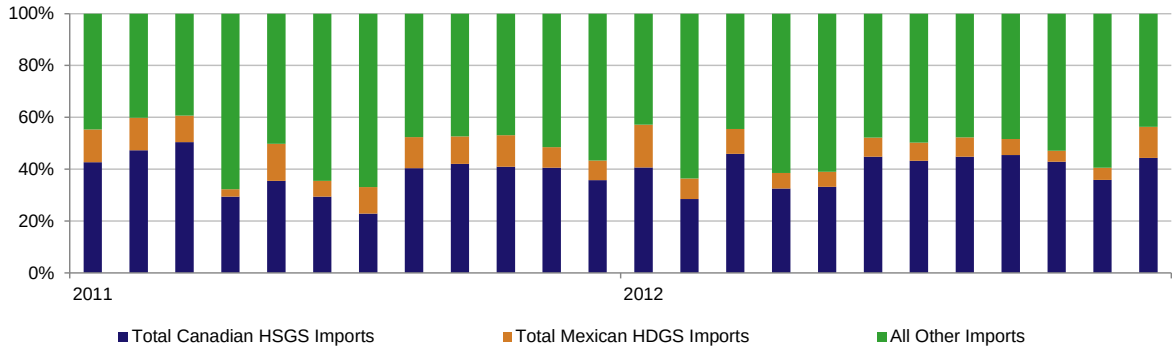
Hot-Dipped Galvanized Sheet Shipments by End Market



Source: IHS.

On the import side, the market is not as large as it seems beyond NAFTA trade flows. NAFTA trading partners supply more than half of the 2 million short tons that the United States imports each year. Canada alone is responsible for more than 40% of total tonnage imported to the US. Still, the size of imports and the relative competitiveness of the United States in HDGS mean BRS could displace as much as 300,000 short tons of imports. As with HRCS and CRCS, there is some risk of domestic displacement as well, including Nucor's Hickman, Arkansas mill (which can produce at a width of 62.5 inches).

NAFTA Partners are Source of 50% of HDGS Imports



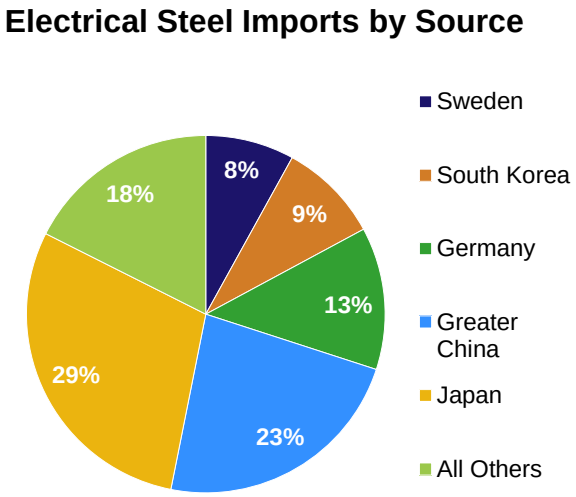
Source: Iron and Steel Statistics Bureau.

Bottom Line: The hot-dipped galvanized sheet market is expected to grow by 2.0 million short tons beyond pre-recession levels over the next decade, with 300,000 tons available for displacement, thus offering the second-largest market of the three major products for BRS at 2.3 million short tons.

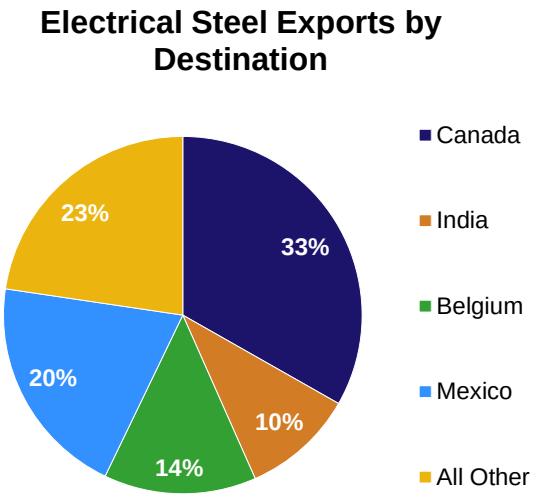
Electrical Steel

Electrical steel is a much smaller, more specialized product than the three aforementioned products, but also offers the greatest market opportunity. Electrical steel is made by adding silicon

to carbon steel, which increases the electrical resistivity of steel and enables it to be used in more applications such as transformers and motors. Electrical steels can be grain-oriented or non-grain-oriented, referring to whether or not the steel has the same magnetic properties in each direction. The market has too few domestic producers to enable a specific 'reported shipments' breakout by the American Iron and Steel Institute, leaving little data available for market sizing. In the United States, there are only two producers of electrical steel: Allegheny Ludlum (ATI Technologies) and AK Steel. Although the domestic market is still recovering from a tonnage perspective, both companies enjoy high margins on electrical steel products and have found export markets for their products. In fact, the United States is a net exporter of electrical steel.



Source: Iron and Steel Statistics Bureau.



Source: Iron and Steel Statistics Bureau.

The United States as currently a net exporter suggests two things: first, the cost of production profile of the two producers is competitive globally; second, there is more capacity to produce in the United States than is consumed in the United States. New capacity in the United States could displace domestic tonnage in addition to building upon the export market. This would be beneficial to electrical steel buyers, but would hinder the finances of existing producers.

Bottom Line: The electrical steel market is well served from a tonnage perspective, but is a high margin business that could benefit from some competition. There is the possibility of expanded exports from the United States, but the greater effect would almost certainly be domestic price competition.

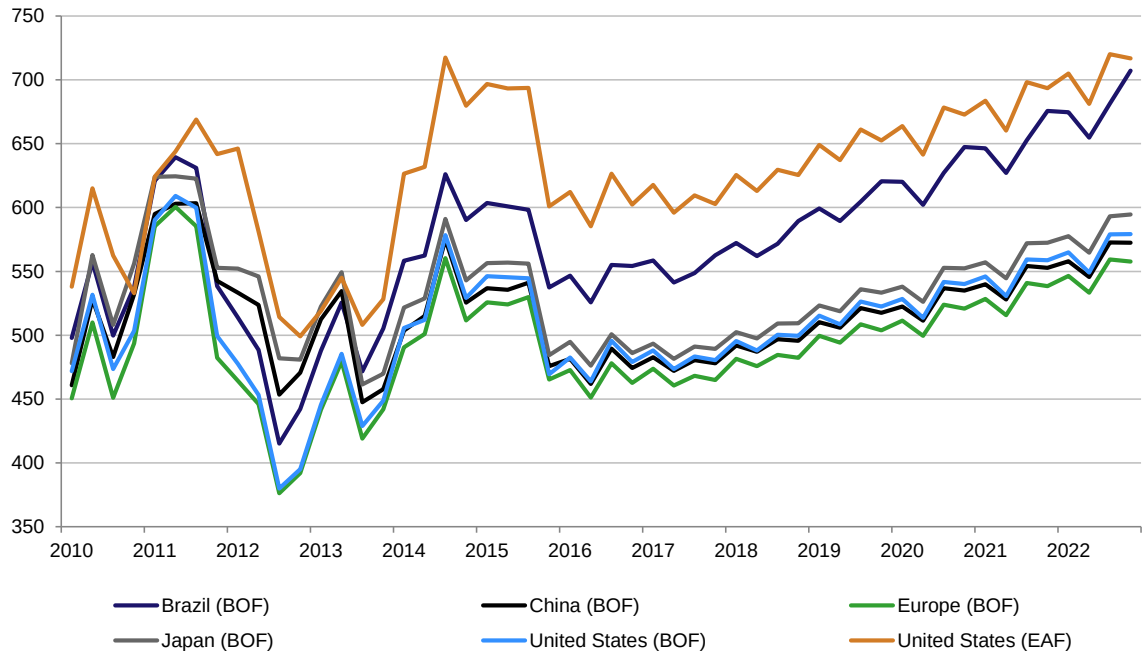
Export Possibilities

US Production Costs vs. the Rest of the World

The United States formerly enjoyed a significant cost advantage on the rest of the world because of the large domestic supply of steel scrap that was recycled in electric arc furnaces for steelmaking. However, much of the build-up of scrap over the past century of industrialization has now been melted or exported, leaving only real-time supplies for use. There isn't a shortage of scrap, per say, but the glut that existed has passed and prices have adjusted accordingly.

Production Cost Comparison*

(US Dollars/Metric Tonne)



Source: History, IHS; Forecast: IHS.

NOTE: *Production cost is defined as the material cost of producing a ton of steel plus an industry wide wage estimate. It is important to note that different facilities will have vastly different efficiencies as these are top-level estimates only.

Today, the US has production costs towards the median of the rest of the world. The (re)introduction of direct reduction iron (DRI) into the mix for steel mills in the US will suppress costs in the future. IHS does not currently forecast DRI production costs because so few facilities use the technology worldwide. Therefore, there is some upside risk to our forecast of exports, but not large enough to impact our view of the viability of BRS.

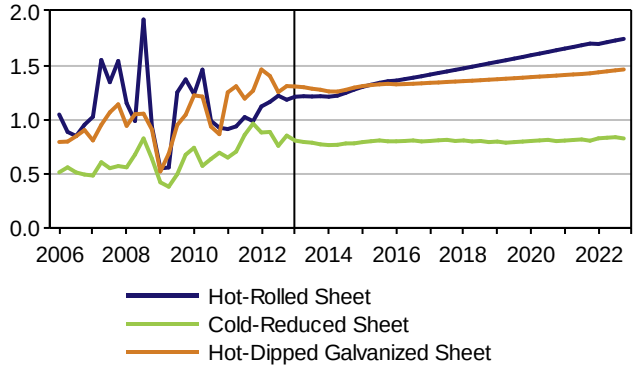
The result of this analysis is to show that the United States is indeed now and will remain in the future, cost competitive with the rest of the world. The United States is certainly not the low-cost producer by any means, but it is in the middle of the pack from an industry wide perspective.

Export Forecasts for Target Products

Although the United States does maintain a cost advantage over many of the world's major steel producers, it historically has not been well positioned to be a major exporter. First, many large competitors, primarily China, offer their steel mills favorable financing agreements. Financing costs can be a significant drag on a capital intensive business. Securing low, stable financing costs means that steel mills there can run at cost for extended periods of time. This condition, coupled with the size of the Chinese steel industry, mean that American mills are often outmaneuvered in export markets. The second reason is the dollar's role as the world's reserve currency. Although the United States enjoys significant benefit to the dollar's role as the world's reserve currency in financing its debt, the artificial strength also makes its products less competitive abroad. Only recently, due in large part to the rounds of quantitative easing from the US Federal Reserve, has the dollar depressed to a level that permits more steel exports.

Export Potential

(Millions of Short Tons, Annual Rate)



Source: History, American Iron and Steel Institute; Forecast, IHS.

IHS does see the weaker dollar persisting through the end of the decade, meaning we see exports sustained near current levels, rather than falling back to historic trends. That said, outside of industry specific dynamics – such as those in electrical steel markets – there is little reason to

believe that a new steel mill would improve the competitiveness of American steel products abroad, we only see levels being maintained. Electrical steel is the only product of those proposed by BRS that has a high probability of succeeding outside of the United States and even then, only at low tonnages. We estimate 250,000 short tons of exports would be possible.

Long Term Viability of the Plant

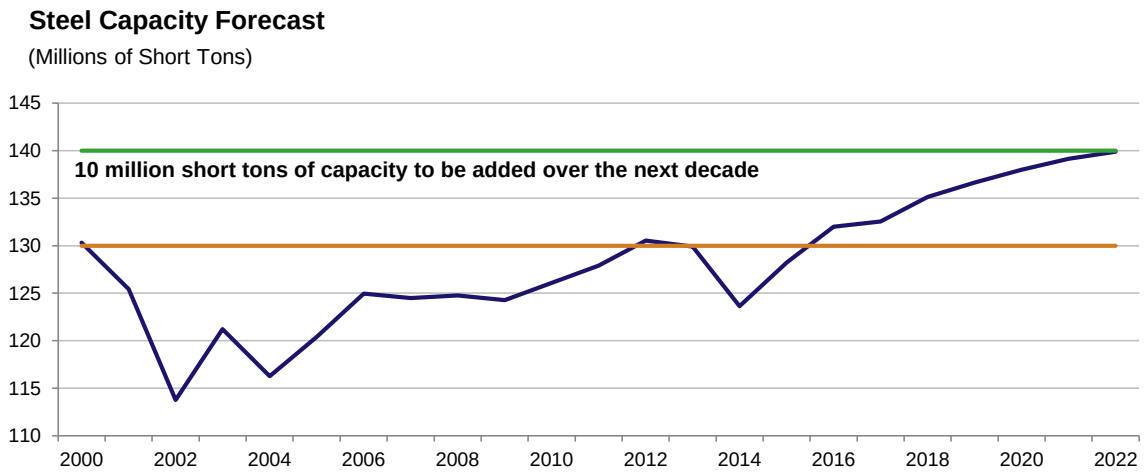
Zero Sum vs. Non-Zero Sum Production

To determine the long term viability of Big River Steel, we assessed the potential market size for the products the facility will produce. Over the next ten years, we believe the absolute largest market for BRS that would involve no material impact from a tonnage perspective (there would certainly be an impact from a price, cost, and profitability perspective) to existing producers in the United States is slightly less than 9 million short tons. However, it is important to note that this estimate reflects ideal demand conditions and that IHS projects just 10 million short tons of capacity for all steel products combined (including those that the BRS facility would not be able to produce) to be added over the next decade prior to the announcement of the Big River Steel Facility.

Product (Millions of Short Tons)	Growth	Import Displacement	Export Potential	Total
Hot-Rolled Carbon Sheet	4.00	0.25	0.00	**4.25**
Cold-Reduced Carbon Sheet	1.50	0.15	0.00	**1.65**
Hot-Dipped Galvanized Sheet	2.00	0.30	0.00	**2.30**
Electrical Steel	0.25	0.00	0.25	**0.50**
Total	**7.75**	**0.70**	**0.25**	**8.70**

Units: Millions of Short Tons per Year

If both Phase I and Phase II come onto the market (a total of 3.4 million short tons of capacity), a third of all steel production growth in the country over the next decade would be accounted for in a single project. Considering competing projects that are already underway, such as Nucor's DRI facility in Louisiana and ThyssenKrupp's facility in Alabama, the American steel industry could quickly find itself in a troubling over-supply condition.



Source: History, American Iron and Steel Institute; Forecast, IHS.

Our forecasts for expected steel capacity growth rely on an assumption of a recovering steel industry. If the automotive or construction industries were to experience a downturn on the scale of the 2008-2009 recession again, many steel companies and a large portion of steel capacity (including BRS) would be in a perilous position. IHS does not view this as a high probability scenario and even our standard pessimistic forecast scenarios do not involve as deep of a recession in the forecast horizon.

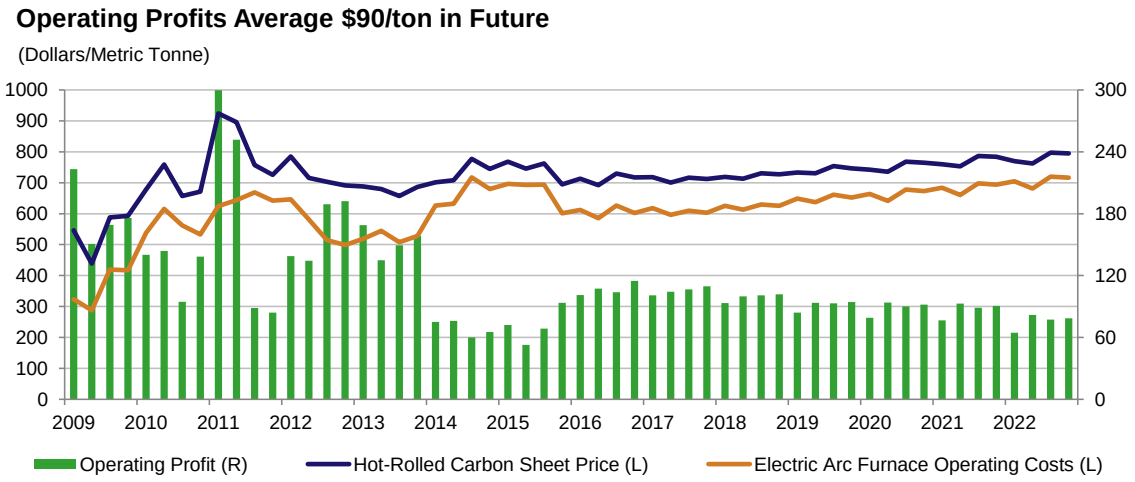
Although the Nucor facility in Louisiana and the ThyssenKrupp facility in Alabama present some risk to our outlook, we believe that there is space in the market for all three. Nucor's facility will be a direct reduced iron (DRI) facility with no rolling capabilities, so it is likely that the facility will actually displace scrap consumed in Nucor's existing electric arc furnaces rather than add to the total steelmaking capacity in the US, possibly offsetting the increased demand for scrap from the BRS facility.

The ThyssenKrupp facility in Alabama has melting and rolling capabilities, but no steelmaking capacity. Instead, the plant is served by semi-finished steel from Brazil. This facility does present a risk because it shares many of the same finished steel capabilities and has better access to auto plants. However, in our view the growth in automotive production capability in the American South is sufficient to allow both facilities to thrive.

Bottom Line: The steel industry can handle the addition of Big River Steel, both Phase I and Phase II, from a capacity perspective. However, if any other major facilities, other than projects already announced, were to be added to the US steel stock, the industry would quickly find itself in a highly competitive, zero-sum environment.

Profitability

Using IHS estimates of operating costs, for electric arc furnace facilities in the United States, we expect an industry-wide average operating profit of $90/metric tonne over the long term. This equates to an operating margin of 12%, based on our price and cost estimations.



Source: History, IHS Steel Business Briefing; Forecast, IHS.

The margin is just barely sustainable for modern facilities and on the line of unsustainable for the more dated facilities in the United States. We produced a number of scenarios using higher and lower operating profit per metric tonne estimates, as well as different capacity utilizations to stress test the various financial possibilities.

(A) Operating Profit (Dollars/Metric Tonne)	(B) Capacity Utilization (Percent)	(C) Capacity (Metric Tonnes)	(D) Gross Profit (Dollars; A*B*C)
40	50%	1,500,000	30,000,000
40	70%	1,500,000	42,000,000
40	80%	1,500,000	48,000,000
90	50%	1,500,000	67,500,000
90	70%	1,500,000	94,500,000
90	80%	1,500,000	108,000,000
120	50%	1,500,000	90,000,000
120	70%	1,500,000	126,000,000
120	80%	1,500,000	144,000,000

Bottom Line: In our estimation, the gross profits in almost every scenario are sufficient to service the debt, especially considering the tax incentives that are also a part of the package.

Cost-Benefit Analysis

This section reviews the AEDC's cost-benefit analysis of the proposed economic incentive package that Arkansas is considering providing to BRS. The purpose of AEDC's analysis is to determine if the value of the long-term economic benefits received by the State in supporting the BRS project will exceed the long-term cost of the incentive package being offered. The first two sections of this chapter discuss the types of costs and benefits that will occur during the 20-year term of the general obligation (GO) bonds. In the third section IHS reviews the results of the AEDC's cost-benefit analysis. In the fourth section we present results of our own cost-benefit analysis which we performed to better evaluate respond to AEDC's analysis. This chapter considers only costs incurred by and benefits received by the State.

Types of Costs

The State of Arkansas will incur the following types of costs if it decides to provide economic incentives for the BRS project based on the tables presented on pages 10 through 13 of the AEDC report:

- Annual debt service payments for the two bond issues – one for $75 million (20-year term and 10 year call), and the other for $50 million (20-year term, 2-year call). The second issue is a low-interest loan that BRS will repay over time;
- Providing $10 million in job training services during the first two years of construction;
- Foregone state tax revenues because of the tax credits, refunds, and deductions taken by, or awarded to, BRS under the Tax Back and Recycling Equipment incentives;

The individual costs listed on these two tables do not consider the following incentives:

- The Advantage Arkansas Program;
- The sales and use tax exemption for the purchase of natural gas and electricity used by the plant (a relatively small cost).

The AEDC properly excluded the cost of the sales and use tax exemption for the purchase of manufacturing equipment as BRS would not be eligible for this incentive if they receive the tax credits under Recycling Equipment incentive. Similarly, the refund of sales and use taxes under the Tax Back program should include only the materials used during construction; the purchases of equipment would also not be eligible under this program as they would already have been used to claim the Recycling Equipment tax credit.

While it is not a direct cost to taxpayers of Arkansas and is properly not included in the cost-benefit analysis, the $50 million incentive loan would provide an interest rate subsidy to BRS, especially if it is not paid off early. The State's cost of capital for the incentive loan is the all-in true interest cost (TIC) of 4.33% as shown on the bond schedule. This rate is more than 4 percentage points lower than BRS's likely weighted average cost of capital of 8.5%; as a result the value of the estimated

subsidy could be as high as $28.5 million over 20 years. We agree with AEDC's analysis showing that the net present value (NPV) of the economic benefits of the project will increase with an early payoff.

We agree largely with the assumptions presented on page 9 of AEDC's report. The IMPLAN input/output model for Arkansas IHS utilized yielded indirect employment effects that we felt were too high given the supplier network present in the State. A review of our IHS Global Insight Arkansas forecast model confirmed that the employment multipliers would be lower. There exists the potential for a clustering effect given the other mills in proximity to the BRS site, thus some of the supply chain will already exist. We concur that the site's close proximity to the Missouri and Tennessee borders, and the short travel time to the Memphis Metropolitan Statistical Area (MSA), means that a significant amount of direct spending and employment will leak out of the State.

IHS assumes that AEDC's cost-benefit analysis used nominal costs for all variables as the debt service payments shown in analysis were based on nominal interest rates. If this is correct, then all the other revenue and cost variables should have been expressed in nominal terms. The ADEC did not indicate the discount rate they used, so we cannot confirm that a nominal analysis was done. The State's nominal cost of is 3% based on the all-in true interest cost for the $75 million bond issue. Our analysis of costs and benefits was performed using only nominal values; we obtained growth rates from our proprietary forecasts and data bases.

Types of Benefits

The benefit to the State of Arkansas will be comprised of the increases in state tax revenues, a significant portion of which will be used to pay off the $125 million in GO bonds. BRS will repay the $50 million incentive loan. There will be three primary sources of state tax revenues:

- The sales and use tax, currently at a rate of 6%;
- The personal income tax;
- The corporate net income tax.

These three taxes have accounted for approximately 78% of total state tax revenues, excluding property taxes, in Arkansas since 2000. The increases in the other types of state level taxes, such as the Motor Fuels Sales tax, would be small, are difficult to estimate, and are often deposited in special funds where they cannot be used for debt service payments. Increases in state-level tax revenues will be generated by the direct spending and employment effects, and by the accompanying indirect and induced economic effects.

The tables on pages 10 and 11 of AEDC's report present annual benefits in toto; so we could not initially determine the individual benefits that comprise them. In response to a question from IHS about the types of benefits, the AEDC indicated they consist of increases in individual income, sales and use, and corporate income tax revenues generated by economic activity during the construction and operations phases of the project, including indirect effects from company

purchases (i.e., supply chain effects), and induced effects (i.e., worker spending). IHS concurs that the primary focus of the benefits analysis should be on these three tax revenue streams.

The AEDC also stated that effective tax rates were used to derive the revenue flows. IHS agrees in principle with this approach based on our experience on similar tax studies. However, in order to provide an in-depth review in these types of studies, it is necessary to obtain details on the methodology and assumptions made to estimate each type of benefit. For example, the calculation of an effective tax rate depends entirely on the taxable base (i.e., the denominator) used in the calculation. Finally, AEDC's report states on page 8 that an input-output (I/O) model was used to derive sector-specific economic impacts and likely tax revenue flows. We generally agree with this approach, especially in estimating tax revenues generated by indirect and induced multipliers. Our own analysis constrained the multipliers to our forecast expectations for the Arkansas economy.

The AEDC correctly assumed that the State would not receive any corporate income tax revenues for the first 15 years of the analysis period. The AEDC assumed that BRS will be organized as a corporation instead of in another form such as an S Corporation, a Limited Liability Partnership (LLp), or as a Limited Liability Company (LLc). The substantial jump in the annual benefits of $5 million starting in FY 2029 is a function of the expiration of the Recycling Equipment tax credit. Only then would the State begin to realize an increase in corporate income taxes produced by the plant's construction and operation (including the indirect and induced effects). We agree with this assumption, which implicitly assumes that the project sponsor would be able to take the full amount of the tax credit. The state is considering increasing the number of years for which the Recycling Equipment tax credit can be carried forward from three to 14 years, increasing the likelihood that BRS will be able to use the entire credit.

We estimate the value of the Recycling Equipment tax credit to be about $216 million (2013$) over a 15-year period ($721.1 million in equipment costs including installation times 30%). IHS would like to obtain information on the methodology and assumptions used to estimate the increased corporate income tax revenues that will flow because they comprise a significant share of the project's economic benefits, even though they occur relatively late in the analysis period.

Results of the AEDC's Cost-Benefit Analysis

The AEDC analyzed two cost-benefit scenarios, with two options for each as follows:

- A 20-year analysis with no early payoff of the $50 million incentive loan
    - Excluding the $10 million training costs during the first two years of construction, resulting in net positive economic benefits with a total net present value of +$59.1 million and breaking even in year 5.
    - Including the $10 million training costs during the first two years of construction, resulting in net positive economic benefits with a total NPV of +$54.2 million and breaking even in year 6.

- An early payoff of the $50 million incentive loan in 2017. According to the commitment letter of January 28, 2013, the project's sponsor may repay the loan at any time without penalty.

    - Excluding the $10 million training costs during the first two years of construction, resulting in net positive economic benefits with a total NPV of $54.6 million and breaking even in year 6.

    - Including the $10 million training costs during the first two years of construction, resulting in net positive economic benefits with a total NPV of $49.8 million and breaking even in year 8.

IHS believes that the AEDC has somewhat over-estimated the long-term, net economic benefits of the incentive package being offered. This finding is based on information made available to IHS as we did not, however, have access to the complete set of assumptions, calculations, and methodologies used by AEDC, especially in calculating benefits. IHS' own cost-benefit analysis discussed below yields lower, but still positive, net economic benefits based on our effort to replicate, as accurately possible, AEDC's analysis.

Our principal finding is that the incentive package, as presently designed, is likely to generate a modest level of economic benefits on a NPV basis under current operating assumptions. While we agree that the AEDC was generally conservative in their assumptions, we are concerned that the BRS project has the potential to produce higher costs than benefits (i.e., net costs) under some conditions. This outcome is possible since there are some significant areas of uncertainty, primarily in the long-term performance of the BRS plant and the amount of tax revenues that would flow from the increased economic activity produced by it. We feel that the risk is on the downside – the probability is higher that the project's net economic benefits will be lower than estimated by the AEDC, or that there could be net costs to the State under some conditions, than the probability that the economic benefits will be higher than those estimated by the AEDC. These uncertainties require more analysis, as we recommend below, in order to evaluate their potential effect on the project's net benefits. Major areas of uncertainty in the cost-benefit analysis are:

- The proposed plant must operate continuously at the projected capacity utilization factor to achieve the levels of production, sales, and operating to generate the tax revenues necessary to cover the costs of the incentives. The IHS Steel group recommends an annual capacity utilization factor of 70% and a steel product market price in 2016 of $713 per ton.

- The proposed plant must also operate at the projected levels of output and employment in order to generate the desired indirect and induced increases in economic activity across the state, which will produce increases in the three primary state tax revenue streams, especially personal income and sales & use taxes. For example, the 525 jobs at an annual average salary of $75,000 each (2013$) must be maintained, along with the sizable

purchases of inputs from in-state suppliers, which should increase over time as the supply chain develops.

- As noted above in our Steel Market analysis, the threat always exists that another steel manufacturing facility could be built in the US. The resulting competition, assuming that it competes directly with the BRS plant, could result in lower prices and reduce the forecast operating margin. As a low-cost and highly productive steel producer, BRS may compete well in this type of market.

- The $50 million loan must be fully repaid; the sooner the pay-off the higher the project's NPV of benefits and the lower the interest rate subsidy received by BRS.

- The size, timing, and potential use of the entire Recycling Equipment Tax credit are major sources of uncertainty. As the AEDC properly notes, this incentive will prevent the State from receiving any increase, on a net basis, in corporate income tax revenues generated directly or indirectly by the plant's construction and operation until FY2029. BRS's ability to use this entire tax credit also depends on the plant's ability to annually produce a profit against which the credits can be taken.

- Once the Recycling Equipment tax credit expires, the project will begin to generate an annual increase in corporate income tax revenues as noted in Tables 10 and 11 of the AEDC's report. While we agree that a large increase in benefits will occur, two areas of uncertainty exist with regard to how large it will be: 1) the percent share of the plant's sales that will be available as income subject to tax; and 2) the share of this income that will be subject to Arkansas's corporate net income tax. In allocating corporate income for tax purposes, the State weights sales 50%, along with 25% weights for payroll and property. The double weighting of sales would reduce the corporate income taxes paid to the State as a very high share of the BRS plant's output will be sold outside it.

- Given the project's location in northeast Arkansas near the Missouri and the Tennessee borders, and its close proximity to the Memphis MSA, there is likely to be significant leakage of direct spending out of the State's economy, especially during operating phase. The State will require that BRS purchase $250 million in goods and services from in-state suppliers during the construction phase.

We recommend that AEDC consider conducting sensitivity analyses to assess the potential effects of the sources of uncertainty discussed above on the incentive package's likely benefits and costs. A sensitivity analysis, such as a Monte Carlo simulation, could be performed by varying the key risk factors such as: annual production and sales levels, the capacity utilization factor, steel price, share of the corporate income subject to AR taxes, percent of in-state purchases, effective tax rates for the three primary revenue streams; etc. Conducting such an analysis would identify the conditions under which the State may not receive enough tax revenues to pay off the two bond issues. Our

own analysis demonstrates that one way to increase the probability that the economic benefits will exceed the costs is to reduce the level of Recycling Equipment tax credit below 30%.

IHS Global Insight's Cost-Benefit Analysis

IHS Global Insight prepared its own estimates of costs and benefits in order to provide a thorough review of AEDC's results. We attempted to replicate AEDC's approach in order to better understand how they derived their results, and to identify variables that would have a significant impact on the results. For certain benefits, we used a conservative approach (i.e., applied a low effective corporate income tax rate, assumed a low capacity factor and low price per ton of steel, considered a ramp up in production, etc.). We were able to estimate the costs of several additional incentives using our proprietary data bases and forecasts, of which the State is a recipient.

The initial step in our benefit-cost analysis was to create a baseline scenario that incorporated the assumptions used in the AEDC analysis and the additional ones described below. The baseline scenario was based on the information provided to IHS. We then performed a series of sensitivity analyses by changing key variables to determine how the project's mix of costs and benefits would be affected. The assumptions used by IHS are described below.

- All figures were estimated in nominal dollars using growth rates derived from various IHS data bases and forecasts;
- A nominal discount rate of 3% based on the all-in true interest cost for the $75 million GO bond issue;
- Total construction spending was distributed as follows: 10% in 2014; 50% in 2015, and 40% in 2016 based on the labor loading schedule;
- 525 permanent jobs beginning during the first year of operation in 2017 and continuing at that level every year thereafter;
- Total annual capacity in phase 1 of 1.7 million short tons per year, a capacity utilization factor of 70%, an average current price of $688 per ton, and average annual growth rate in steel prices of 1.35%; the latter three assumptions are from the IHS Steel Group;
- Performed the analysis on a calendar year basis; the debt service schedule was converted from a fiscal year basis;
- Included costs for the following incentives: the Advantage Arkansas program, and the sales tax exemption for utility purchases;
- Considered only benefits and costs to the state of Arkansas, those for Mississippi County and the City Osceola were not included; these two local governments have agreed to provide grants of $12 million and $2 million respectively for the project. Mississippi County

will receive a fixed annual payment in lieu of taxes (PILOT) of $3.5 million over a 30-year period;

- BRS would take the full amount of all tax credits granted to it by the State so as to maximize potential costs to the State;
- BRS will be organized as a corporation. If they were to organize in a different form, such as an LLc or LLp, different tax rates on income may apply. This assumption enabled us to use 11 years of data from the Internal Revenue Service's Statistics on Income (SOI) data on steel mills to derive appropriate effective tax rates.
- Economic multipliers and effective tax rates were derived from our proprietary economic model for the State of Arkansas, and the IMPLAN input/output model for the State of Arkansas.

We did not analyze scenario two – the early repayment of the $50 million incentive loan, since we agree with the AEDC that if this pay-off occurs in fiscal year 2017 then the NPV of the benefits will rise.

Our baseline scenario also yielded positive net economic benefits with an NPV of +$50.4 using the 3% discount rate, which declined to +$30.13 million using a 5% discount rate. The IHS baseline scenario yielded a smaller, but still positive net economic benefit than the AEDC result assuming that they had used discount rate of about 5%, and a comparable figure if they had used a lower rate. The large change in the NPV of the benefits in our baseline scenario demonstrates the sensitivity of the results to the selection of the discount rate. We then performed some sensitivity analyses described below; for each one we made the change indicated and held all the other variables and assumptions constant.

- Reduced the percent share of income subject to AR's corporate income tax to 50%, which reduced the NPV of the net benefits to +$26.62 million using the 3% discount rate and to +$10.87 million using the 5% rate. The large drop in the net benefits confirmed that it is important for the State to evaluate the share of BRS's income that will be subject to its corporate net income tax;
- Lowered the plant's employment and output during the first two years of operation to account for a ramp-up in production. Under this scenario, the NPV of the benefits declined modestly to +$32.5 for the 3% rate, and to +$13.58 using the 5% discount rate;
- Dropped the annual capacity utilization factor to 60% throughout the entire operating period to simulate a lower than forecast market share. The project still had net economic benefits of only +$3.53 million for the 3% rate, while it had net costs of -$7.59 million with a 5% discount rate. This result further confirmed that it is essential for BRS plant to operate at a minimum 70% capacity utilization from day one with a total of 525 workers in order to increase the probability that the project will have net economic benefits;

- Lowered the Recycling Equipment Tax credit to 25%, which raised the NPV of the economic benefits to +$79.57 million at a 3% discount rate and to $54.73 million using a 5% discount rate; the latter figure is comparable to the AEDC's result for scenario 1 with no early loan repayment.

The results of IHS cost-benefit analysis yields net economic benefits that are lower than those presented in AEDC's study, especially if they used a 5% or comparable discount rate. Our analysis indicates the probability that the project will produce net economic benefits for the State is highly dependent on the assumptions made for some key variables for which there is substantial uncertainty, especially: the ability of the BRS plant to operate continuously at the projected levels of capacity utilization employment and operating margin; the characteristics of the Recycling Equipment Tax Credit; the effective tax rates, especially share of BRS's income that will be subject to State's corporate income tax; and the share of inputs purchased from Arkansas vendors during operations. IHS recommends the State evaluate these variables further to determine their potential effects on the project' s costs and benefits before making a final determination on the economic incentives under consideration.

Appendix A. Product Breakout Forecasts

Table A1
Hot Rolled Carbon/Alloy Sheet
(Thousands of Short Tons)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Apparent Consumption	21,877	22,885	23,005	24,124	24,420	24,631	25,020	25,479	25,884	26,190
Shipments	20,471	21,649	21,821	22,983	23,669	24,245	24,939	25,517	26,031	26,427
Imports	2,618	2,472	2,511	2,519	2,186	1,879	1,634	1,576	1,528	1,481
% of Apparent Consumption	12	11	11	10	9	8	7	6	6	6
Exports	1,212	1,237	1,327	1,378	1,435	1,492	1,553	1,613	1,675	1,718
Net For Conversion	2,781	2,764	2,862	2,906	3,016	3,103	3,168	3,183	3,229	3,274
Independent Forgers (NEC)	0	0	0	0	0	0	0	0	0	0
Industrial Fasteners	1	1	1	2	2	2	2	2	2	2
Distributors And Service Centers	9,353	9,935	9,819	10,282	10,681	11,149	11,631	12,010	12,403	12,809
Construction (Excl Pipelines)	878	980	1,045	1,116	1,165	1,192	1,223	1,258	1,291	1,310
Automotive	3,777	3,869	3,950	4,352	4,372	4,259	4,292	4,328	4,251	4,076
Rail Transportation	102	112	116	120	123	127	131	138	144	149
Shipbuilding & Marine Equipment	1	1	1	1	1	1	1	1	1	1
Aircraft & Aerospace	0	0	0	0	0	0	0	0	0	0
Oil & Gas	249	273	273	265	285	305	296	315	334	355
Mining, Quarrying & Lumber	4	11	19	19	21	21	21	22	21	21
Agricultural	62	79	88	94	101	104	107	110	115	121
Machinery, Industrial Eq. & Tools	102	125	128	134	132	138	145	150	157	163
Electrical Equipment	69	76	78	81	84	88	93	97	102	107
Appliances, Utensils & Cutlery	298	303	312	319	328	339	352	366	382	398
Other Domestic & Commercial Eq.	54	52	49	49	48	50	50	50	50	51
Containers & Shipping Materials	226	231	228	227	236	236	235	233	232	231
Ordnance & Other Military	0	0	0	0	0	0	0	0	0	0
For Export (Reporting Cos. Only)	1,212	1,237	1,327	1,378	1,435	1,492	1,553	1,613	1,675	1,718
Non-Classified	1,301	1,600	1,524	1,638	1,638	1,638	1,638	1,638	1,638	1,638

Source: IHS.

Table A2
Cold Rolled Carbon/Alloy Sheet
(Thousands of Short Tons)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Apparent Consumption	12,478	12,859	12,997	13,844	14,183	14,439	14,820	15,187	15,505	15,751
Shipments	11,845	12,503	12,634	13,261	13,601	13,850	14,213	14,533	14,787	14,984
Imports	1,422	1,129	1,162	1,385	1,389	1,390	1,401	1,460	1,527	1,598
% of Apparent Consumption	11	9	9	10	10	10	9	10	10	10
Exports	789	773	800	802	807	800	793	806	810	831
Net For Conversion	1,283	1,332	1,379	1,400	1,453	1,495	1,526	1,534	1,556	1,578
Independent Forgers (NEC)	0	0	0	0	0	0	0	0	0	0
Industrial Fasteners	0	0	0	0	0	0	0	0	0	0
Distributors And Service Centers	4,062	4,387	4,336	4,540	4,716	4,923	5,136	5,303	5,477	5,656
Construction (Excl Pipelines)	312	317	325	338	348	354	358	363	368	373
Automotive	2,980	3,158	3,224	3,552	3,569	3,476	3,504	3,533	3,470	3,327
Rail Transportation	0	0	0	0	0	0	0	0	0	0
Shipbuilding & Marine Equipment	0	0	0	0	0	0	0	0	0	0
Aircraft & Aerospace	0	0	0	0	0	0	0	0	0	0
Oil & Gas	16	18	18	17	19	20	19	21	22	23
Mining, Quarrying & Lumber	1	4	7	7	7	8	8	8	8	8
Agricultural	16	21	23	24	26	27	28	29	30	31
Machinery, Industrial Eq. & Tools	71	88	90	94	93	97	101	105	110	114
Electrical Equipment	851	940	962	998	1,042	1,089	1,144	1,200	1,260	1,319
Appliances, Utensils & Cutlery	815	830	854	874	898	929	963	1,003	1,046	1,090
Other Domestic & Commercial Eq.	356	337	321	319	317	326	327	327	331	334
Containers & Shipping Materials	292	299	295	293	305	305	304	301	300	299
Ordnance & Other Military	0	0	0	0	0	0	0	0	0	0
For Export (Reporting Cos. Only)	789	773	800	802	807	800	793	806	810	831
Non-Classified	0	0	0	0	0	0	0	0	0	0

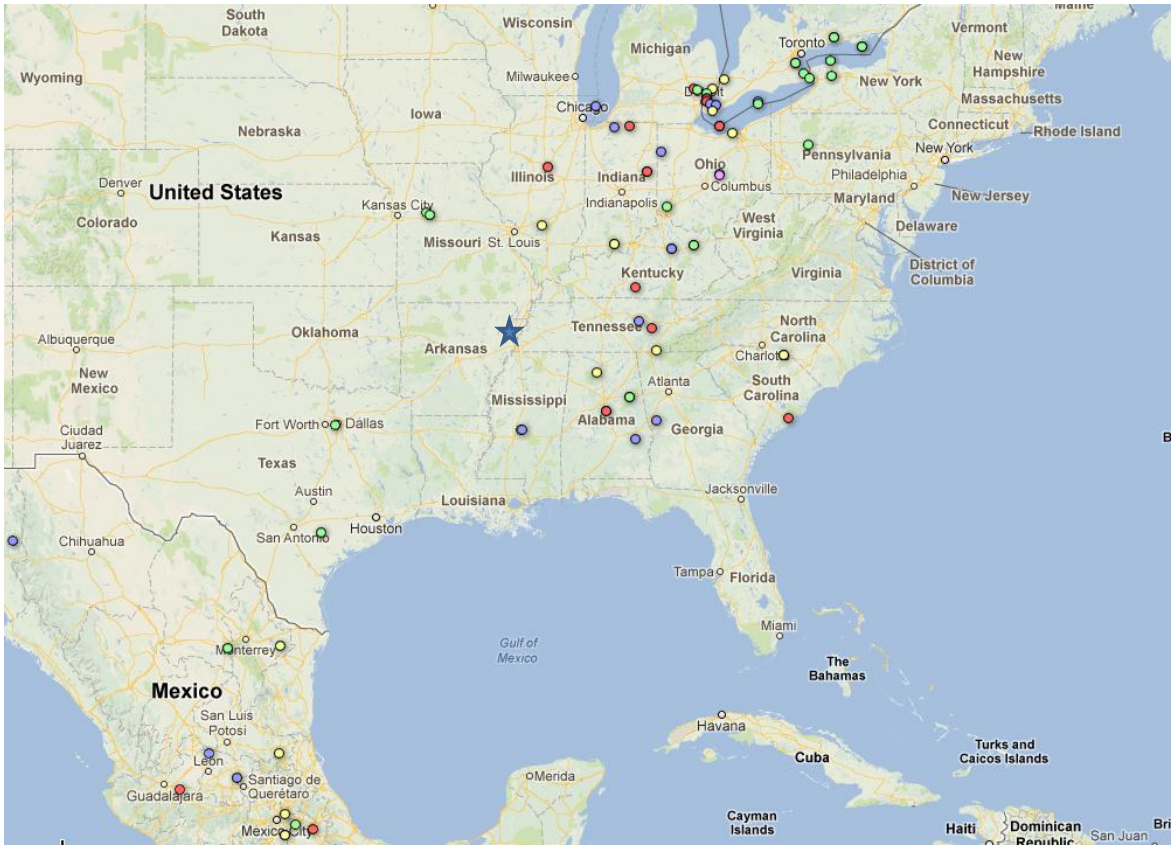
Source: IHS.

Table A3
Galvanized Sheet, Hot Dipped
(Thousands of Short Tons)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Apparent Consumption	16,447	16,883	17,171	18,201	18,515	18,625	18,971	19,296	19,432	19,419
Shipments	15,903	16,313	16,547	17,556	17,883	17,996	18,344	18,658	18,790	18,785
Imports	1,834	1,840	1,942	1,972	1,974	1,988	2,004	2,035	2,058	2,081
% of Apparent Consumption	11	11	11	11	11	11	11	11	11	11
Exports	1,289	1,270	1,318	1,327	1,343	1,359	1,377	1,397	1,416	1,447
Net For Conversion	153	157	162	165	171	176	180	180	183	186
Independent Forgers (NEC)	0	0	0	0	0	0	0	0	0	0
Industrial Fasteners	0	0	0	0	0	0	0	0	0	0
Distributors And Service Centers	4,092	4,387	4,336	4,540	4,716	4,923	5,136	5,303	5,477	5,656
Construction (Excl Pipelines)	2,476	2,460	2,520	2,621	2,696	2,747	2,778	2,816	2,849	2,891
Automotive	6,621	6,474	6,610	7,282	7,317	7,127	7,183	7,243	7,114	6,821
Rail Transportation	15	16	17	17	18	18	19	20	21	21
Shipbuilding & Marine Equipment	0	0	0	0	0	0	0	0	0	0
Aircraft & Aerospace	0	0	0	0	0	0	0	0	0	0
Oil & Gas	0	0	0	0	0	0	0	0	0	0
Mining, Quarrying & Lumber	0	0	0	0	0	0	0	0	0	0
Agricultural	46	59	65	70	75	77	79	82	86	90
Machinery, Industrial Eq. & Tools	41	50	51	54	53	55	58	60	63	65
Electrical Equipment	80	89	91	94	99	103	108	114	119	125
Appliances, Utensils & Cutlery	360	367	378	387	397	411	426	444	462	482
Other Domestic & Commercial Eq.	30	28	27	27	26	27	27	27	28	28
Containers & Shipping Materials	27	27	27	27	28	28	28	27	27	27
Ordnance & Other Military	0	0	0	0	0	0	0	0	0	0
For Export (Reporting Cos. Only)	1,289	1,270	1,318	1,327	1,343	1,359	1,377	1,397	1,416	1,447
Non-Classified	672	930	945	945	945	945	945	945	945	945

Source: IHS.

Appendix B: Auto Production Plant Locations



Key:
Red ≤ 100,000 Vehicles
100,000 < Yellow ≤ 200,000
200,000 Green ≤ 300,000
300,000 < Blue ≤ 400,000
Pink > 400,000 Vehicles