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**Via E-file**

May 11, 2018

Public Utilities Commission of Ohio  
PUCO Docketing  
180 E. Broad Street, 10th Floor  
Columbus, Ohio 43215

**In re: Case No. 18-0450-EL-AEC**

Dear Sir/Madam:

Please find attached the JOINT STIPULATION AND RECOMMENDATION e-filed today in the above-referenced docket.

Please place this document of file.

Respectfully yours,

A handwritten signature in blue ink, appearing to be "Michael L. Kurtz" followed by a flourish and "Jody Kyler Cohn".

Michael L. Kurtz, Esq.  
Jody Kyler Cohn, Esq.

**BOEHM, KURTZ & LOWRY**

MLKkew  
Attachment  
Cc: Certificate of Service

**BEFORE THE  
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application for Approval of an Economic Development Arrangement between AK Steel Corporation and Duke Energy Ohio, Inc.	:	Case No. 18-450-EL-AEC
	:	
	:	

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**JOINT STIPULATION AND RECOMMENDATION**

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**I. Introduction**

Ohio Adm. Code 4901-1-30 provides that any two or more parties to a proceeding may enter into a written stipulation covering the issues presented in such a proceeding. This document sets forth the understanding and agreement of the Parties who have signed below ("Signatory Parties") and jointly present to the Public Utilities Commission of Ohio ("Commission") this Joint Stipulation and Recommendation ("Stipulation") in order to resolve all of the issues that have been or could have been raised in this proceeding through the Application for Expedited Approval of a Reasonable Arrangement ("Application") filed by AK Steel Corporation ("AK Steel" or "Customer") on March 15, 2018.

This Stipulation is supported by adequate data and information, is the product of serious bargaining among capable, knowledgeable parties, represents a just and reasonable resolution of issues in this proceeding, benefits customers and the public interest, violates no regulatory principle or precedent, and complies with and promotes the policies and requirements of Title 49 of the Ohio Revised Code. The Stipulation represents an accommodation of the diverse interests represented by the Signatory Parties and, though not binding, is entitled to careful consideration by the Commission. For purposes of resolving the issues raised by this proceeding, the Signatory Parties agree to fully support adoption of the Stipulation without modification in this proceeding.

## **II. Signatory Parties**

The Stipulation is entered into by and among:

AK Steel  
Duke Energy Ohio, Inc. ("Duke Energy Ohio")  
Staff of the Public Utilities Commission of Ohio ("Staff")

While not a Signatory Party, the Stipulation is not opposed by:

Industrial Energy Users-Ohio

## **III. Recitals**

WHEREAS, on March 15, 2018, AK Steel filed an Application in the above-captioned proceeding pursuant to R.C. 4905.31 and Ohio Adm. Code 4901:1-38-05;

WHEREAS, the Application proposes an Arrangement under which AK Steel would receive a monthly rate credit in exchange for subjecting up to 110 MW of its electric load to interruption in order to support firm service customers;

WHEREAS, the Arrangement would serve as a replacement for Duke Energy Ohio's current large customer interruptible load program, in which AK Steel participates, which was initially established in June 2012, but which the Company proposes to end May 31, 2018;

WHEREAS, the Arrangement would result in a monthly rate credit lower than that available to AK Steel under Duke Energy Ohio's current interruptible program. The level of the monthly rate credit available under the Arrangement would match the credit available to certain interruptible customers in Ohio Power Company's ("AEP Ohio") service territory pursuant to the August 25, 2017 Joint Stipulation and Recommendation approved by the Commission in Case Nos. 16-1852-EL-SSO *et al*;

WHEREAS, the structure of the Arrangement is similar to that of other interruptible load programs available in the Ohio Edison Company, Toledo Edison Company, Cleveland Electric Illuminating Company, and AEP Ohio service territories as well as the PowerShare program currently available in Duke Energy Ohio's service territory. One notable difference, however, is that the Arrangement would incorporate a capital investment commitment as discussed herein;

WHEREAS, the Signatory Parties found common ground with respect to the complex issues raised in this proceeding;

WHEREAS, the Signatory Parties agree that the Arrangement, as modified by this Stipulation, satisfies the seven key factors used by Staff and the Commission when considering reasonable arrangements;<sup>1</sup>

WHEREAS, AK Steel's business is acutely energy-intensive. Its Middletown facility is the largest single-site electric customer in the state of Ohio and the energy delivered to AK Steel is more than 6% of all of the energy delivered by Duke Energy Ohio. The facility has a distinct energy profile that allows the facility to quickly interrupt its power use in order to support firm service customers. AK Steel is also one of only two customers participating in Duke's current large interruptible load program;

WHEREAS, AK Steel has made a commitment of \$105 million in new capital investment in Ohio as set forth herein;

WHEREAS, the economic impact of AK Steel's facility on the State's economy is significant. The facility employs approximately 2,160 people, with an annual payroll of about \$144 million, plus \$67 million in fringe benefits. The facility spends approximately \$590 million annually in purchases from Ohio vendors. In 2017, the total net annual economic of the facility in Ohio was estimated to be approximately 8,075 jobs and \$529 million in labor income. Of that, about 5,840 jobs and \$403 million in labor income was in Butler County. State and local governments in Ohio also received at least \$43.6 million in tax revenues annually in 2016 and 2017 related to operations at the Middletown facility, of which about \$5.8 million was in the form of local income and sales tax receipts in Butler County;<sup>2</sup>

WHEREAS, AK Steel has explored or taken advantage of other opportunities for operational savings, such as basic budgetary management, shopping for electricity, energy efficiency, and participation in utility or regional transmission organization conservation or reliability programs. AK Steel actively manages its peak load contribution at significant operational cost to the facility and actively participates in PJM demand response programs in addition to undertaking cost-effective energy efficiency projects;

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<sup>1</sup> *In the Matter of the Joint Application for Approval of an Economic Development Arrangement Between Ohio Power Company and Acero Junction, Inc.*, Case No. 17-2132-EL-AEC, Opinion and Order (May 2, 2018) at 6-7.

<sup>2</sup> See Attachment 1 to this Stipulation.

WHEREAS, Duke Energy Ohio would incur no incremental costs of service as a result of the Arrangement, and AK Steel would contribute to the payment of fixed costs. The Arrangement would not result in a negative transmission and distribution bill for the facility. Nor would it provide AK Steel with a discount on any transmission or distribution tariffs. Rather, any interruptible credit received by AK Steel under the Arrangement would be in exchange for its commitment to serve as an interruptible resource on Duke Energy Ohio's system;

WHEREAS, the benefits to the community stemming from the Arrangement far outweigh the costs of this interruptible contract. As discussed above, the total net annual economic of AK Steel's facility in Ohio last year was estimated to be approximately 8,075 jobs and \$529 million in labor income. This significant annual benefit vastly exceeds the \$25.8 million seven-year total cost of the Arrangement. Additionally, AK Steel is committing to \$105 million in new capital investment in Ohio over the Term of the Arrangement. Further, AK Steel's ability to quickly interrupt its service in order to support firm service customers will provide energy efficiency and reliability benefits to other customers.

WHEREAS, the Arrangement is for a set term that will expire May 31, 2025;

NOW THEREFORE, the Signatory Parties agree and recommend resolution of the Application and related issues through this Stipulation.

#### **IV. Joint Recommendations of Signatory Parties**

- A. **Term and Effective Date.** The Term of this Arrangement shall commence immediately after the date of a Commission order approving this Application, but no earlier than June 1, 2018. The Term of this Arrangement shall end May 31, 2025. While the end of the Arrangement Term is designed to coincide with the end of Duke Energy Ohio's pending Electric Security Plan ("ESP") proposal in Case No. 17-1263-EL-SSO, this Arrangement will continue in effect irrespective of the results of any legal review of that ESP proposal. Beginning on the effective date of the Arrangement, AK Steel and Duke Energy Ohio will enter into a written contract that is consistent with the Application approved by the Commission in this proceeding, which will be filed at the Commission. During the Term of this Arrangement, as part of the Commission's approval of this Arrangement, Duke Energy Ohio shall be authorized timely and full cost recovery of the costs of the interruptible rate credit contemplated herein through its Economic Competitiveness Fund Rider, or an equivalent recovery mechanism, with such recovery a fundamental term of this Arrangement. If at some point during the Term of this Arrangement, Duke Energy Ohio is not permitted to recover all of the costs of the interruptible rate credit through retail rates, then the Arrangement will be suspended until such full recovery is permitted.

**B. General Terms and Conditions Applicable Throughout Arrangement Term.**

1. Customer will receive a rate credit for its monthly interruptible demand, subject to the terms set forth herein. That rate credit shall be determined by multiplying Customer's monthly interruptible demand times the PJM Base Residual Auction ("BRA") market rate for the Duke Energy Ohio zone times 0.7. Monthly interruptible demand shall be the difference between the monthly billing demand determined in accordance with the applicable rate schedule under which Customer receives service and Customer's designated firm service contract capacity. In no event shall Customer's monthly interruptible demand be greater than 110 MW.
2. From June 1, 2021 through May 31, 2025, the annual rate credit received by Customer will be capped at 70% of the 2018/19 RPM BRA clearing price (\$164.77/MW-day), which is \$4.63 million, subject to the additional provisions set forth below. The total amount of rate credit received by Customer throughout the Term of this Arrangement will be capped at \$25.8 million.
3. In no event will the monthly interruptible rate credit received by Customer pursuant to this Arrangement result in a negative monthly bill to Customer from Duke Energy Ohio for transmission and distribution service, excluding Customer's Universal Service Rider charges (Customer's "wires charges"). If the monthly interruptible credit received by Customer pursuant to this Arrangement would otherwise exceed its wires charges in a given month, then Customer will be permitted to "bank" the difference between the monthly interruptible credit and the monthly wires charges. Customer will then be permitted to draw upon any "banked" interruptible credit for use in offsetting future monthly wires charges during the Term of this Arrangement. Upon expiration of the Arrangement Term, Customer will forfeit any remaining "banked" interruptible credit. An illustrative example of the mechanics of "banking" contemplated herein is included as Attachment 2 to this Stipulation.
4. Customer interruptions will be limited to emergency events, whether called by Duke Energy Ohio or PJM. The Company will endeavor to provide Customer as much advance notice as possible of an upcoming emergency interruption, but Customer will not be required to interrupt on less than 120 minutes notice. Such notice will specify the starting and ending hour of the interruption if known. If Customer fails to interrupt load as requested by Duke Energy Ohio for an emergency interruption, then Customer will be required to refund for the load that failed to interrupt the interruptible rate credits received under this Arrangement during the precedent 12 months for the uninterrupted demand.
5. Customer's interruption capability will be calculated monthly. Any changes in Customer's firm service level must be communicated by December 1 of each year.
6. Customer commits to invest a minimum of \$15 million in the Middletown facility or AK Steel's other facilities located in Ohio during each year of the Arrangement Term, for a total capital investment of \$105 million. For the first year of the Arrangement Term, this capital investment commitment will include any investments made since the Application was filed in this proceeding. If AK Steel's capital investment commitment is not achieved in a given Arrangement Term year, without valid justification, then the Commission may reduce the annual rate credit available to AK Steel in the following Arrangement Term year in proportion to the percentage of capital investment commitment that was not achieved (e.g. if AK Steel's first year capital investment commitment is missed by 2%, then the total amount of credit that AK Steel could receive in the second year of this Arrangement may be reduced by 2%). If AK Steel invests a total of \$105 million in the Middletown facility or AK Steel's other facilities located in Ohio after the start of the Arrangement Term, but before the end of the Arrangement Term, then AK Steel's obligations under this provision

will have been satisfied and AK Steel will no longer be subject to penalty as set forth herein.

7. Customer will provide annual reports to Commission Staff on the status of its capital investment in the facility. Duke Energy Ohio shall continue to bill AK Steel under the terms of the approved Arrangement until otherwise directed by the Commission.
8. Duke Energy Ohio will be permitted to recover the costs of the interruptible rate credit contemplated herein through its Economic Competitiveness Fund Rider, or an equivalent recovery mechanism, with such recovery a fundamental term of this Arrangement.
9. Participation in this Arrangement does not preclude Customer from also participating in other PJM demand response programs through a curtailment service provider. Customer is permitted to retain any compensation received by PJM for its participation in those programs.
10. Customer shall have the right to opt out of Duke Energy Ohio's energy efficiency and peak demand reduction programs as provided by S.B. 310.
11. The Arrangement, including all rights and obligations hereunder, shall be fully assignable by Customer to any new owner or operator of the plant with the prior, written consent of Duke Energy Ohio, which consent shall not be unreasonably withheld, and prior approval of the Commission.
12. Customer can elect to terminate this Arrangement upon six-month advance written notification to Duke Energy Ohio and the Commission.
13. Customer shall not be required to repay any credit received or accrued under the Arrangement except as authorized by the Arrangement or in the case where Customer commits fraud or misrepresentation.

## **V. Procedural Matters**

- A. Except for enforcement purposes or to establish that the terms of the Stipulation are lawful, neither this Stipulation nor the information and data contained herein or attached hereto shall be cited as a precedent in any future proceeding for or against any Signatory Party, if the Commission approves the Stipulation. Nor shall the acceptance of any provision within this Stipulation be cited by any party or the Commission in any forum so as to imply or state that any Signatory Party agrees with any specific provision of the Stipulation. More specifically, no specific element or item contained in or supporting this Stipulation shall be construed or applied to attribute the results set forth in this Stipulation as the results that any Signatory Party might support or seek, but for this Stipulation in these proceedings or in any other proceeding. This Stipulation contains a combination of outcomes that reflects an overall compromise involving a balance of competing positions, and it does not necessarily reflect the position that one or more of the Signatory Parties would have taken on any individual issue. Rather the Stipulation represents a package that, taken as a whole, is acceptable for the purposes of resolving all contested issues without resorting to litigation. The Signatory Parties believe that this Stipulation, taken as a whole, represents a reasonable compromise of varying interests.
- B. This Stipulation is conditioned upon adoption of the Stipulation by the Commission in its entirety and without material modification. If the Commission rejects or materially modifies all or any part of this Stipulation, any Signatory Party shall have the right within thirty (30) days of issuance of the Commission's order to apply for rehearing. The Signatory Parties agree that they will not oppose or argue against any other Party's application for rehearing that seeks to uphold the original unmodified Stipulation. If the Commission does not adopt the Stipulation without material modification upon any rehearing ruling, then within thirty (30) days of such Commission rehearing ruling, any Signatory Party may terminate its Signatory Party status and withdraw from

the Stipulation by filing a notice with the Commission. If the Commission does not act upon the application(s) for rehearing in support of the Stipulation as filed within forty five (45) days of the filing of the application(s) for rehearing, then any Signatory Party may terminate its Signatory Party status by filing a notice with the Commission of its withdrawal from the Stipulation. No Signatory Party shall file a notice of termination and withdrawal without first negotiating in good faith with the other Signatory Parties to achieve an outcome that substantially satisfies the intent of the Stipulation. If a new agreement is reached, the Signatory Parties will file the new agreement for Commission review and approval. If the discussions to achieve an outcome that substantially satisfies the intent of the Stipulation are unsuccessful, the Commission will convene an evidentiary hearing to afford the Signatory Parties the opportunity to present evidence through witnesses, to cross-examine witnesses, to present rebuttal testimony, and to brief all issues that the Commission shall decide based upon the record and briefs as if this Stipulation had never been executed. If the discussions to achieve an outcome that substantially satisfies the intent of the Stipulation are successful, some, or all, of the Signatory Parties shall submit the amended Stipulation to the Commission for approval after a hearing if necessary.

- C. Unless the Signatory Party exercises its right to terminate its Signatory Party status or withdraw as described above, each Signatory Party agrees to and will support the reasonableness of this Stipulation before the Commission, and to cause its counsel to do the same, and in any appeal it participates in from the Commission's adoption and/or enforcement of this Stipulation. The Signatory Parties also agree to urge the Commission to accept and approve the terms hereof as promptly as possible.

IN WITNESS WHEREOF, this Stipulation has been signed by the authorized agents of the undersigned Parties as of this 11<sup>th</sup> day of May, 2018.

Respectfully submitted,



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**COUNSEL FOR INDUSTRIAL ENERGY USERS-  
OHIO**

# **ATTACHMENT 1**

# **The Estimated Local and Statewide Economic and Fiscal Impacts of the AK Steel Middletown Works Plant, Butler County, Ohio**

by  
Barry J. Kornstein  
Consulting Economic Researcher

October 18, 2017

## **EXECUTIVE SUMMARY**

**T**he AK Steel Middletown facility, which is located just west of Interstate 75 about halfway between Cincinnati and Dayton in Butler County, Ohio, is the nation's most productive integrated steel operation. Its carbon steel melting, casting, hot and cold rolling, and finishing operations produce hot and cold rolled, enameling, electrogalvanized, hot tip galvanized, aluminized, and stainless steels used in a wide variety of products. AK Steel is interested in learning about and documenting the regional and statewide economic importance of its Middletown Works plant. The purpose of this report is to document and communicate the regional and statewide economic and fiscal importance of the AK Steel Middletown plant to Butler County and the state of Ohio.

The analysis in this report is based on data provided by AK Steel detailing its spending on various production inputs and the volume and value of production output from the beginning of 2016 through the second quarter of 2017. The AK Steel Middletown Works plant employed about 2,160 people during this time period, with an annual payroll of about \$144 million, plus \$67 million in fringe benefits. AK Steel sold nearly \$2 billion worth of steel in the final four quarters of the data provided. Based upon AK Steel's own estimates supplemented by information on steel and ferroalloy manufacturing plants already operating within Ohio, about 77 percent of the value of the steel manufactured at the plant will be accounted for by the value of intermediate goods. From this information, we also estimate that AK Steel purchases from Ohio vendors will be about 30 percent of the value of their sales, approximately \$590 million. Based on this and other regional economic data, and using a customized industry input-output model to estimate the economic impacts of the AK Steel Middletown Works plant, it is my opinion to a reasonable degree of economic certainty that the AK Steel's total net annual economic impact in Ohio was approximately 8,075 jobs and \$529 million in labor income. Of that, about 5,840 jobs and \$403 million in labor income was in Butler

County. Further, it is my opinion to a reasonable degree of economic certainty that state and local governments in Ohio received at least \$43.6 million in tax revenues annually in 2016 and 2017 related to operations at the Middletown Works plant, of which about \$5.8 million were in the form of local income and sales tax receipts in Butler County.

The above estimates are for the economic and fiscal categories most easily quantified. Although difficult to quantify, it is also my opinion that there are other, positive economic impacts related to the operation of the Middletown Works plant. For example, the area real estate market is linked to the payrolls at such facilities, but it is very difficult to sort out all the factors that contribute to housing values and commercial properties. Real estate markets are impacted over decades by complex interactions among many factors, including retirements, migration, mortgages, second incomes, second careers, children, as well as any industrial changes in the marketplace. Social indicators, like unemployment and crime, are also likely related to the Middletown Works plant's employment levels, as are public costs for unemployment benefits, retraining, and social services. And the finances of local school districts are linked to the Middletown Works plant's operations. AK Steel pays property taxes annually, and employees pay property taxes on their homes as well.

In the remainder of the report, I describe the methods used in this study, provide the detailed economic and fiscal estimates, and also highlight the relative importance of manufacturing industries to Butler County.

## METHODOLOGY

Because the steel produced by the AK Steel Middletown Works plant will be sold in national and international markets, it will bring new dollars into the regional and state economy – as opposed to simply absorbing local dollars, as is the case for most retail and service operations. In this sense, the operation of the Middletown Works plant has large and predictable economic and fiscal impacts in Ohio. I now turn to a discussion of the methods used to measure the regional economic and fiscal impacts. First, I explain how I defined the regional economic footprint for purposes of this impact study. Then, I discuss in some detail the input-output model used to measure the statewide impacts.

### Location and Economic Footprint

The Middletown Works plant is located in Butler County, Ohio, in the small city of Middletown, midway between Cincinnati and Dayton, just a few miles from heavily travelled Interstate 75. The residence county to workplace county commuting flow file from the U.S. Census Bureau's 5-Year American Community Survey of 2009-2013 estimates that 65% of Butler County workers also live in the county and that 95% live in Ohio. An alternative measure of commuting, from the Census Bureau's Longitudinal Employer-Household Dynamics program, which is derived directly from state unemployment insurance reports, estimates that 43% of Butler County workers in goods producing industries also live in the county, and 93% live in Ohio. It is, therefore, very likely that much of the spin-off activity resulting from the household spending of Middletown Works employees stays within Butler County and most of it within Ohio. As will be seen below, the software model of the Ohio state economy I utilize agrees with this assessment. The employment and spending patterns of the Middletown Works plant indicate that it has both significant local economic impact and impact that reaches statewide. Therefore, I utilize both an economic model of Butler County and one of the State of Ohio to derive the overall impacts.

### Input-Output Model of Ohio

To evaluate the economic and fiscal impacts of the AK Steel Middletown Works plant, I used standard regional economic impact methods. I obtained detailed economic data for Butler County and the State of Ohio, and used them to build IMPLAN input-output models of the region.<sup>1</sup> The model is able to simulate the effects of changes in economic activity for any of 536 regional industries. It also can predict detailed inter-industry purchases and household spending related to industrial changes. Such region-specific

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<sup>1</sup> As best I can tell, IMPLAN is one of the most widely used regional input-output modeling systems in the world. It has been used for thousands of impact studies. It was developed by economists at the University of Minnesota, and is sold by IMPLAN, Inc. See [implan.com](http://implan.com) for documentation.

models have the advantage that they take into account those industrial supplies and retail items likely available in the region, and thus provide more precise economic impact estimates than one that assumes everything is available in the region. The more that local industries can support the plant operation and the employees' household demands, the greater the regional economic multipliers, and hence the greater the predicted regional economic impact.

The IMPLAN sector of interest used for this study is number 217, Iron and Steel Mills and Ferroalloy Manufacturing. This industry is defined according to the North American Industrial Classification System (NAICS) code 331110. The official definition is as follows:

*This industry comprises establishments primarily engaged in one or more of the following: (1) direct reduction of iron ore; (2) manufacturing pig iron in molten or solid form; (3) converting pig iron into steel; (4) making steel; (5) making steel and manufacturing shapes (e.g., bar, plate, rod, sheet, strip, wire); (6) making steel and forming pipe and tube; and (7) manufacturing electrometallurgical ferroalloys. Ferroalloys add critical elements, such as silicon and manganese for carbon steel and chromium, vanadium, tungsten, titanium, and molybdenum for low- and high-alloy metals. Ferroalloys include iron-rich alloys and more pure forms of elements added during the steel manufacturing process that alter or improve the characteristics of the metal being made.*

<http://www.census.gov/eos/www/naics/>

At the heart of regional input-output models are the estimates of how much of the supply needs of an industry can be provided by other regional industries. The models use federal data on the presence of industries in the local economy to predict how much of an industry's inputs can be supplied locally versus that which must be imported from other regional economies.

However, for the AK Steel Middletown Works plant, the default industry production function for Iron and Steel Mills and Ferroalloy Manufacturing differed from AK Steel management's estimates of their own production needs in significant ways. This is largely due to the fact that the Middletown Works plant is an integrated mill producing a wide variety of products, rather than mini-mill. The industry wide statistics which IMPLAN's production recipes are based on include both integrated and mini mills, but mini-mills do not need to purchase coal, coke or iron ore, and may only purchase a limited range of chemical additives. We therefore customized the industry production function based on AK Steel management's estimates of their direct production needs. For other inputs, such as wholesale, transportation, maintenance, and other business

services we assumed they would be needed in the same relative proportions as in the default model. We used IMPLAN's defaults for the percentage of each input that would be purchased either in Butler County or elsewhere in Ohio.

In Table 1, I show the top 21 commodities used as inputs at the Middletown Works plant, as predicted by the customized IMPLAN model. I show both the predicted supply from everywhere, as well as the predicted supplies from Butler County and other Ohio companies, stated per million dollars of inputs bought. One can see that the model anticipates that almost none of the iron ore can be sourced in Ohio, but that about 31% of the value of coke can come from Ohio suppliers (though from beyond Butler County). Other important commodities, like wholesale distribution, rail and truck transportation, electricity, and natural gas, are modeled as being supplied largely by Ohio companies, many local to Butler County. Altogether, the models predict that about 21% of the value of all inputs will come from local Butler County businesses and 39% from businesses in Ohio.

The AK Steel Middletown Works plant produced nearly \$2 billion worth of steel products in the four quarters ending in June of 2017. When we apply this production function to the making of that much steel, the estimated value of inputs purchased in Butler County is about \$322 million and the value of inputs purchased from all Ohio vendors is estimated to be around \$587 million. The economic richness and industrial detail of the IMPLAN modeling system, as well as the sound, peer-reviewed, methodology gives us confidence in the ultimate predictions of regional economic impact based on the custom model.

**Table 1. Top Commodities Purchased per \$1 million of AK Steel Middletown Works Inputs in Butler County & Ohio**

	from everywhere	from Butler County suppliers	from Other Ohio suppliers
Iron ore	\$232,158	\$0	\$7,692
All other petroleum and coal products	\$154,085	\$1,381	\$47,883
Scrap	\$134,484	\$20,137	\$27,095
Nonferrous metal (exc aluminum) smelting and refining	\$65,564	\$145	\$1,993
Wholesale trade distribution services	\$64,351	\$64,351	\$0
Natural gas distribution	\$60,012	\$4,157	\$49,282
Electricity transmission and distribution	\$38,667	\$27,111	\$3,304
Rail transportation services	\$31,061	\$6,120	\$13,900
Industrial gases	\$23,496	\$8,241	\$8,492
Maintained and repaired nonresidential structures	\$23,232	\$21,497	\$352
Coal	\$19,640	\$0	\$1,281
Truck transportation services	\$17,010	\$17,010	\$0
Services to buildings	\$11,616	\$10,553	\$0
Commercial and industrial machinery and equipment repair and maintenance	\$11,616	\$10,008	\$620
Aluminum products	\$9,195	\$6	\$681
Other basic inorganic chemicals	\$8,904	\$89	\$1,645
Bricks, tiles, and other structural clay products	\$4,904	\$9	\$3,182
Management of companies and enterprises	\$4,780	\$1,298	\$3,311
Architectural, engineering, and related services	\$4,457	\$2,310	\$1,178
Other miscellaneous chemical products	\$4,386	\$83	\$1,492
Petroleum lubricating oil and grease	\$4,290	\$2,605	\$0
other commodities not shown	\$72,093	\$17,675	\$3,356
<b>Total, all commodities</b>	<b>\$1,000,000</b>	<b>\$214,787</b>	<b>\$176,738</b>

Source: IMPLAN version 3 input-output models of Butler County, Ohio and the State of Ohio, using 2015 economic data.

### ECONOMIC IMPACTS

Based on that method, the IMPLAN model uses annual economic data to provide reasonable estimates of statewide effects on sales, jobs, and payrolls for export-based expansions or contractions of any of 536 industries in Ohio. In Table 2, I summarize the results of the IMPLAN simulations I ran on the customized Butler County and State of Ohio models based on production estimates for final two quarters of 2016 and first two quarters of 2017. The table is divided into sections covering the estimated impacts within Butler County, the spread to the rest of Ohio, and the Ohio totals. The Other Counties in Ohio impact is actually inferred from the difference between the two models run, but is useful for illustrative purposes. A discussion of the relevant economic terms follows the table.

**Table 2. Estimated Local and Statewide Impact of AK Steel Middletown Works Plant, FY2017**

<b>Impact Type</b>	<b>Employment</b>	<b>Labor Income</b>	<b>Value Added</b>	<b>Output</b>
<b>Butler County, Ohio</b>				
Direct Effect	2,157	\$210,756,191	\$443,651,903	\$1,942,379,005
Indirect Effect	1,942	\$121,280,714	\$204,426,548	\$370,473,971
Induced Effect	1,740	\$70,946,021	\$132,676,728	\$226,024,346
<b>Total Effect</b>	<b>5,839</b>	<b>\$402,982,927</b>	<b>\$780,755,180</b>	<b>\$2,538,877,323</b>
<i>Implied Multiplier</i>	<i>2.71</i>	<i>1.91</i>	<i>1.76</i>	<i>1.31</i>
<b>Other Counties in Ohio</b>				
Direct Effect	0	\$0	\$0	\$0
Indirect Effect	1,058	\$71,143,889	\$186,609,699	\$373,780,518
Induced Effect	1,179	\$54,810,867	\$97,815,964	\$175,661,232
<b>Total Effect</b>	<b>2,237</b>	<b>\$125,995,219</b>	<b>\$284,510,840</b>	<b>\$549,814,674</b>
<b>State of Ohio Total</b>				
Direct Effect	2,157	\$210,796,655	\$443,737,081	\$1,942,751,929
Indirect Effect	3,000	\$192,424,603	\$391,036,247	\$744,254,489
Induced Effect	2,919	\$125,756,888	\$230,492,692	\$401,685,578
<b>Total Effect</b>	<b>8,076</b>	<b>\$528,978,146</b>	<b>\$1,065,266,020</b>	<b>\$3,088,691,997</b>
<i>Implied Multiplier</i>	<i>3.74</i>	<i>2.51</i>	<i>2.40</i>	<i>1.59</i>

Source: IMPLAN version 3 input-output models of Butler County, Ohio and the State of Ohio, using 2015 economic data. Dollar figures are measured in 2017 dollars.

For each of several impact types (Employment, Labor Income, Value Added and Output), the IMPLAN model begins with a direct effect – here, a change of 2,157 jobs. The direct effect would be a change at the plant, from nonoperating to 2,517 employees earning \$211 million in compensation producing \$1.94 billion worth of steel. Labor income includes fringe benefits (both privately provided, such as health insurance or retirement fund matches, and government provided, such as Social Security and Medicare payments) as well as proprietor income (e.g. self-employment and unincorporated small businesses). Value added refers to the value of the product that is not tied to the prices of the purchased inputs. It is the difference between the sales value of the steel products and the value of all the purchased inputs, so it is the additional value gained during the production process. Since an input of one industry is the output of an industry upstream in the production process, focusing on value added avoids double counting. State level GDP, for example, is just the sum of the value added at all businesses in the state (not the sum of their output/sales). Given a Direct Effect, the

IMPLAN model calculates an Indirect Effect, Induced Effect, Total Effect, and an economic Multiplier.

The Indirect Effect in Table 2 refers to the linkages between the exporting industry (steel) and its industrial vendors (raw materials, transportation, electricity, tools, computers, insurance, etc.). When the exporting industry expands or contracts, it raises or lowers its purchases from its vendors, thus changing their employment and payrolls. Of course, the vendors also purchase goods and services from each other, so that the total indirect effect includes all the inter-industry linkages.

The Induced Effect refers to the impact of the new sales in the exporting industry (steel) on the local economy through the rounds of re-spending of the additional household income caused by the operation of the plant. Regional sales of cars, groceries, building supplies, banking services, and so on are all sensitive to growth in disposable income, as are donations to nonprofit groups, churches, and charities. The induced effect includes the household spending of all households affected directly and by the indirect linkages. The Total Effect is the sum of the Direct, Indirect and Induced Effects.

The table clearly shows that the Middletown Works plant has considerable impact both locally and statewide. Within Butler County alone we estimate that as many as 5,840 total jobs are supported by the operation of the plant (including the jobs at the plant). Those jobs infuse the local economy with an additional \$403 million in labor income. Those figures represent roughly 3 and 3.8 percent of current jobs and labor income in Butler County, so the impacts are noticeable. Those jobs would be associated with approximately \$781 million in value added, about 4.2% of current value added in Butler County. Roughly a third of the jobs and income would be due to business-to-business spending, both between AK Steel and its suppliers and between those suppliers themselves. About 30 percent of the jobs and \$71 million of income would be due to the household spending of Middletown Works employees and those households affected by the added business-to-business spending (induced effects tend to result in lower average income per job because much of the employment is in lower paying retail and personal service industries).

Beyond Butler County, all that activity generated by the Middletown Works plant could be expected to benefit the rest of Ohio by supporting about 2,240 jobs with annual labor income of \$126 million. A little less than half of those jobs and 56 percent of the labor income would come from the indirect effect of business-to-business spending.

In sum, the AK Steel Middletown Works plant operations likely benefit the state of Ohio by supporting an additional 5,920 jobs in addition to the 2,160 jobs at the plant itself.

Those jobs add about \$318 million in labor income to state households. With the affected businesses adding around \$622 million to the state GDP. Including the plant, AK Steel Middletown Works supports about \$1 billion of Ohio's GDP.

A few things about the multiplier lines in the table are worth mentioning. The IMPLAN Multipliers allow a reasonable prediction of the total statewide economic impact of a change such as the Direct Effect. For example, looking at the last entry in the Employment column of Table 2, the estimated job multiplier for the Middletown Works plant in Ohio is 3.74, meaning that for every job at Middletown Works, another 2.74 jobs are created elsewhere in Ohio. Similarly, the multiplier for Labor Income for Ohio in Table 2 is 2.51, meaning that for every dollar of income created at Middletown Works another \$1.51 in income is created in other Ohio industries. The Output Multiplier for Ohio, 1.59 as shown in Table 2, measures the total statewide revenues of companies divided by the direct Middletown Works revenues of \$1.94 billion. The Output Multiplier of 1.59 means that companies in Ohio see an additional \$0.59 in sales when Middletown Works sales rise by one dollar. Finally, the Value Added Multiplier estimates the sales dollars that 'stick' to Ohio. Value added refers to the portion of total sales that is accounted for by regional companies and which stimulate the regional economy.<sup>2</sup> The Value Added Multiplier of 2.40 means that companies in Ohio add \$1.40 in value to the Ohio economy for every \$1 added by the Middletown Works plant operations. The distinction between Output and Value Added is important in regional economic studies since much of what goes into the total value of a product is intermediate goods and services purchased from vendors outside the region, and thus local economic activity can affect many regions.

### **TAXES AND FISCAL IMPACTS**

In this section, I provide estimates of the total regional tax and fiscal impacts. The estimated tax and fiscal impacts flow directly from the IMPLAN modeling system just discussed, supplemented with company records and an analysis of state and local tax rates, and thus require a more extensive discussion. First, here is a short summary of the economic impacts with just those details relevant to fiscal analysis (Table 3).

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<sup>2</sup> For an insightful example of value added, consider the purchase of a new car at a Middletown area dealership. If a resident spent \$25,000 on a new Ford Escape, most of the dollars would flow immediately to the manufacturer of the car, built in Louisville with top management in Detroit. Only a few thousand dollars in dealer prep work and commissions would be captured in the Middletown economy. So, in economic parlance, the value of output (sales) would be \$25,000, and value added might be only \$3,000.

**Table 3. Estimated Local and Statewide Economic Impact of AK Steel Middletown Works Plant**

<b>Direct Impacts</b>	
Employment, FY2017	2,157
Wages and salaries paid in FY2017	\$143,864,595
Fringe benefits paid in FY2017*	\$66,939,052
Total employee compensation	\$210,803,647
<b>Total Economic Impacts **</b>	
Jobs, Butler County	5,839
Jobs, Statewide	8,076
Labor Income, Butler County	\$402,982,927
Labor Income, Statewide	\$528,978,146

\* Includes company payments for payroll taxes, retirement plans, health and life insurance. Following methods used by the US Bureau of Economic Analysis, employee compensation also includes company payments for unemployment insurance and workers' compensation plans.

\*\* Total economic impacts estimated using IMPLAN version 3 input-output models of Butler County and State of Ohio, constructed using economic data for 2015.

### **Taxes and Fiscal Impacts**

To reasonably estimate the fiscal impacts of an industrial expansion or contraction in a region, analysts must rely on company records and local sources of data. I turn now to a discussion of the types of taxes and how I link fiscal impacts to economic impacts. My estimates are summarized in Table 4. The entries in the first three lines of the table, referring to company direct tax payments made to local and state governments for property taxes, sales taxes, commercial activity taxes, and energy taxes, are based on information provided by AK Steel.

The impacts on governments are much greater than these direct payments, since employees end up paying an array of state and local income and sales taxes. These estimated tax revenues are related both to the direct AK Steel Middletown Works wages and salaries and to the indirect and induced labor income statewide, as predicted by our IMPLAN models. I estimate that the total annual fiscal impact in Ohio will be \$43.6 million, as summarized in Table 4, with the methods of estimating lines 4 through 7 discussed below.

**Table 4. Estimated Fiscal Impacts of AK Steel Middletown Works Plant**

Line	Total Fiscal Impacts	
1	Local property taxes paid directly by company	\$836,291
2	State of Ohio electricity taxes paid directly by company	\$2,907,236
3	State of Ohio sales and commercial activity taxes paid directly by company	\$5,372,361
4	State of Ohio individual income taxes linked to payrolls	\$11,284,070
5	State of Ohio sales taxes linked to payrolls	\$15,035,241
6	City and Village income taxes linked to payrolls	\$5,924,407
7	Local sales taxes linked to payrolls	\$2,243,538
Total State and Local Taxes		\$43,603,144

Note: Of the tax in line 6, \$4,214,738 is collected by Butler County, the remainder is collected by jurisdictions throughout Ohio. Of the tax in line 7, \$1,556,375 is collected in Butler County, the remainder is collected by counties throughout Ohio.

Because I used both Butler and Ohio IMPLAN models, I can estimate the sales and income tax revenues linked to the Middletown Works plant at both the state and local levels. Employees pay state and local sales taxes when they spend their wages in the local economy, and are also liable for state and local income taxes in Ohio.

In addition, all of the fiscal impacts in lines 4 through 7 in Table 4 are calculated based on three categories of impact. There is a fiscal impact due to the direct, indirect and induced effect that occurs in Butler County, and there is a combined indirect and induced effect that occurs in businesses and households spread throughout Ohio.

#### Ohio State Sales and Income Tax

Based on data from 2011 to 2015, all workers in Butler County have earned on average about \$9.4 billion annually in labor income. We also know that, over the same time in the county, average annual state sales tax receipts were about \$266 million and average annual state income tax receipts were about \$250 million. By comparing the ratio of tax receipts to regional labor income, I calculate 'effective' tax rates and use those to estimate the amount of Ohio income and sales taxes linked to Middletown Works' payroll. The calculations are shown in Table 5. Although Table 5 shows the five-year average rates, Table 4 is based on the effective rates for 2015 because the effective rates have been trending over time as the state and some local sales tax rates have been adjusted upwards and the state income tax rates have been adjusted downwards in recent years.

For example, residents of Butler County paid about \$233.4 million in Ohio state income taxes in 2015. This is 2.24 percent of the labor income earned by workers in the county

that year. Similarly, the effective state sales tax rate is 3.05 percent of labor income, and the effective rate for the Butler County local sales tax is 0.40 percent. Not shown in the table, but used to calculate statewide fiscal effects resulting from activity beyond Butler County, are the corresponding statewide effective rates of 1.99 percent for state income taxes, 2.46 percent for state sales taxes, and 0.55 percent for county sales taxes.

We apply the Butler County effective rates to the labor income effect in the county and the statewide effective rates to the labor income effect that is spread out over the rest of the state. Calculated this way, in lines 4 and 5 I estimate that state government revenues attributable to the Middletown Works plant will be \$11.28 million in income taxes and \$15.04 million in sales taxes.

**Table 5. Effective Tax Rates, Butler County, Ohio**

	2011	2012	2013	2014	2015	average, last five years
<b>Economic and Tax Receipt Data</b>						
Labor income, by place of work	\$8,735,473,000	\$8,922,032,000	\$9,234,290,000	\$9,778,223,000	\$10,403,477,000	\$9,414,699,000
Ohio state individual income tax liability	\$254,627,267	\$274,517,206	\$242,229,131	\$246,949,237	\$233,444,128	\$250,353,394
Ohio state sales tax receipts	\$225,464,909	\$238,971,736	\$262,434,855	\$287,152,503	\$317,357,605	\$266,276,322
Butler County local sales tax receipts	\$30,745,215	\$32,587,055	\$35,147,525	\$37,454,674	\$41,394,470	\$35,465,788
<b>Effective Tax Rates, using Labor Income</b>						
Ohio state income tax	2.91%	3.08%	2.62%	2.53%	2.24%	2.68%
Ohio state sales tax	2.58%	2.68%	2.84%	2.94%	3.05%	2.82%
Butler County local sales taxes	0.35%	0.37%	0.38%	0.38%	0.40%	0.38%

Sources: compensation data from US Bureau of Economic Analysis; tax data from Ohio State Department of Revenue.

### Local Income and Sales Taxes

Note that employees of the AK Steel Middletown Works plant not only pay state income and sales taxes, they also pay local income and sales taxes. The annual impact of these payments can be reasonably estimated, too, and are significant.

Seven municipalities in Butler County levy a local income tax, with total tax revenues of \$91.9 million in 2015. This tax applies to the wages, salaries and most other income of city and village workers. I assume that Middletown Works workers pay the 1.75 percent city of Middletown tax rate. I do not know the distribution of the other jobs in Butler County impacted by Middletown Works, nor how much of the associated incomes are subject to local income taxes, but it is reasonable to assume they mirror the overall geographic distribution of jobs in the county and we can divide the \$91.9 million in local income tax revenues by the labor income in the county to arrive at an effective tax rate of 0.88 percent. Similarly, for the payroll associated with the indirect and induced effects beyond Butler County, we use the statewide average effective rate for municipal

income taxes of 1.36 percent. Thus, I estimate that Middletown Works employees and those of other impacted companies in the county and beyond are responsible for about \$5.92 million of local income tax revenue (line 6 in Table 4). Of that, about \$4.2 million would be collected in Butler County.

Beyond the state government receipts from the 5.75 percent state sales tax, local governments in Ohio collected \$2 billion in sales taxes in 2015. Butler County levies a 0.75 percent sales tax, resulting in \$41.4 million in collections during 2015. We apply the effective rate of 0.40 percent discussed above and in Table 5 to the direct and spinoff effects within Butler County, and the effective rate of 0.55 percent to the spinoff effects occurring outside of the county. Applying these rates to the appropriate total labor income effect, I estimate that \$2.24 million in local sales taxes are generated as a result of the Middletown Works plant (line 7 of Table 4). Of that, about \$1.5 million would be collected in Butler County.

Although harder to measure, additional tax impacts are also likely. For example, corporations around the region are liable for state commercial activity taxes, and there are many such businesses linked to the AK Steel Middletown Works operations. Unemployment insurance taxes, insurance premiums taxes, building permit fees, motor vehicle sales taxes, and many other business tax categories are all affected by the operations of the plant. Employees also pay gasoline taxes and property taxes, and there are positive effects on the regional real estate market.

## NOTE ON MANUFACTURING'S IMPORTANCE IN THE BUTLER COUNTY AREA

While not the primary focus of this report, it is useful to highlight the relative concentration of manufacturing in the Butler County area economy. Butler County supported 20,850 manufacturing jobs in 2002, was down to just 19,460 by 2009, but rebounded to have 22,470 manufacturing jobs in 2015. That was 12.7 percent of all jobs in all industries in the county in 2002, and about 22 percent of total labor compensation (due to the high average annual pay of manufacturing jobs) in the county. Now manufacturing jobs account for 11.6 percent of all jobs and 20.2 percent of labor compensation in Butler County. I organized data on jobs and compensation by industry over the past ten years, and summarized it in Table 6. Compared to the state of Ohio and the nation as a whole, manufacturing employment and compensation in Butler County has done very well. While manufacturing employment has dropped statewide and nationwide it has actually increased in Butler County. Butler County is now actually a bit more dependent on manufacturing than is Ohio as a whole, and much more so than the U.S. in terms of both employment and labor compensation.

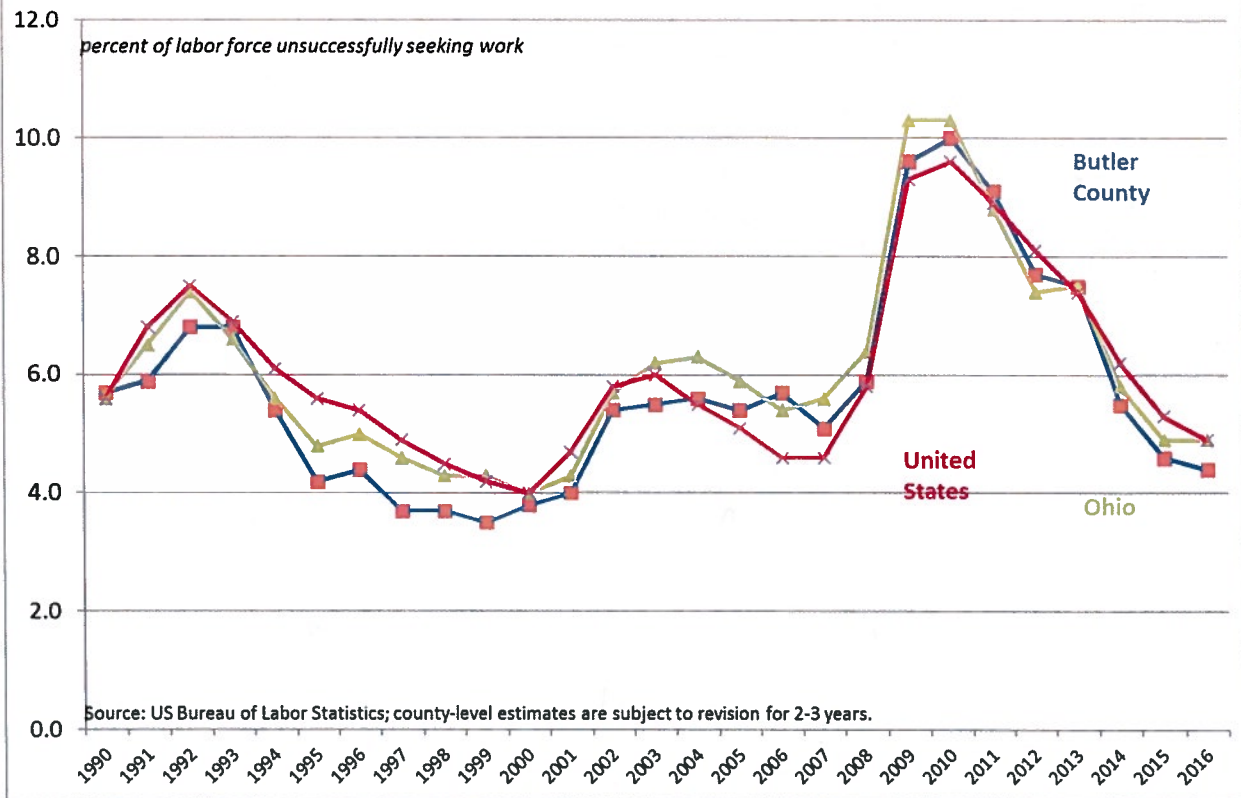
**Table 6. Manufacturing's Economic Importance in Butler County**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Manufacturing's Share of All Jobs</b>										
Butler County, OH	11.0%	11.0%	11.1%	10.6%	11.0%	10.8%	10.8%	10.5%	11.0%	11.6%
State of Ohio	12.1%	11.7%	11.3%	10.1%	10.0%	10.2%	10.3%	10.3%	10.4%	10.4%
United States	8.3%	8.0%	7.8%	7.2%	7.0%	7.0%	7.0%	7.0%	6.9%	6.9%
<b>Manufacturing's Share of Total Labor Compensation</b>										
Butler County, OH	18.2%	18.8%	19.6%	18.5%	20.1%	19.5%	18.0%	18.8%	19.6%	20.2%
State of Ohio	18.8%	18.3%	17.5%	15.6%	15.6%	15.9%	15.8%	15.7%	15.8%	15.7%
United States	12.3%	12.0%	11.6%	10.8%	10.7%	10.7%	10.7%	10.5%	10.5%	10.4%

Source: US Bureau of Economic Analysis

Butler County's manufacturing base suffered losses in the 1980s, but has remained fairly steady since that time in contrast to much of the nation. At a time when much of the rest of the country was doing quite well, Butler County's unemployment rate was well below the state and national rates for much of the 1990s and into the early 2000s. The Great Recession of 2008-09 triggered a drop in manufacturing employment, but the county has rebounded with its manufacturing base and the area's unemployment rate has generally been below the state and national rates during the recovery (Figure 1).

**Figure 1. Unemployment Rates**  
**Butler County, State of Ohio, United States**




# **ATTACHMENT 2**

	IRP Payment	T&D	Bank	Draw Down From Bank
2018/2019	\$4.6 million	\$3.5 million	\$1.1 million	N/A
2019/2020	\$2.8 million	\$3.5 million	\$0.4 million	\$0.7 million
2020/2021	\$3.6 million	\$4.1 million	\$0	\$0.4 million

## CERTIFICATE OF SERVICE

In accordance with Rule 4901-1-05, Ohio Administrative Code, the PUCO's e-filing system will electronically serve notice of the filing of this document on the parties referenced on the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served (via electronic mail) on the 11<sup>th</sup> day of May, 2018 to the following:

  
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Summary: Stipulation Joint Stipulation and Recommendation electronically filed by Mr. Michael L. Kurtz on behalf of AK Steel Corporation