

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

APPLICATION OF BIG RIVERS)
ELECTRIC CORPORATION FOR A) **CASE NO. 2011-00036**
GENERAL ADJUSTMENT IN RATES)

DIRECT TESTIMONY AND EXHIBITS
OF
PAUL A. COOMES

ON BEHALF OF THE
KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.

MAY, 2011

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DIRECT TESTIMONY OF PAUL A. COOMES

1 **Q. Please state your name, address, and profession.**

2 A. My name is Paul A. Coomes. My address is 3604 Trail Ridge Road, Louisville KY
3 40241. I am a consulting economist. I have a Ph.D. in economics from the University of
4 Texas. I am also a professor of economics at the University of Louisville.

5 **Q. Have you testified before the Kentucky Public Utility Commission?**

6 A. Yes, I have testified and submitted testimony several times before the Kentucky Public
7 Service Commission to present studies I have performed for utilities, the Kentucky
8 Industrial Utility Customers, Inc. (“KIUC”) and Century Aluminum of Kentucky General
9 Partnership and Rio Tinto Alcan (“Smelters”).

10 **Q. What is the purpose of your testimony?**

11 A. I am providing testimony in support of a study that I conducted entitled, *The Estimated*
12 *Economic and Fiscal Impacts of Kentucky’s Two Aluminum Smelters (May 23, 2011).*

1 This study attempts to quantify the economic impact of Kentucky's two aluminum
 2 Smelters and the estimated impact on the Kentucky economy if the two Smelters were to
 3 curtail operations. This study is attached to my Direct Testimony as Attachment 1.

4 **Q. What are the likely impacts on the Kentucky economy if the two Smelters curtailed**
 5 **operations?**

6 There would be direct and indirect consequences to the Kentucky economy. The direct
 7 consequences would be the loss of the actual jobs at the two Smelters and the loss of the
 8 tax revenue provided by the Smelters and their employees. These direct losses are
 9 summarized in the table below:

Two Aluminum Smelter Plants in Western Kentucky, 2010		
Direct Impacts		
1	Total jobs	1,207
2	Average annual pay per job	\$60,448
3	Total annual wages and salaries	\$72,960,643
4	Occupational taxes to Hancock and Henderson counties	\$501,100
5	Kentucky state income taxes paid by employees	\$3,575,865
6	Property and other taxes to Hancock and Henderson county governments	\$374,633
7	Property and other taxes to Hancock and Henderson county public schools	\$619,450
8	Property taxes to State of Kentucky	\$871,168
9	Corporate income and license taxes, State of Kentucky	\$350,000
10	Other taxes (fuel, sales, energy), State of Kentucky	\$2,504,769
11	Subtotal: local governments in Kentucky	\$1,495,183
12	Subtotal: Kentucky state government	\$7,301,802
13	Total Kentucky state and local governments	\$8,796,985

10 Source: RioTinto/Alcan and Century, except for Kentucky income tax, which is estimated by author.

1 As shown above, Kentucky would lose the approximately 1,200 jobs of the individuals
2 that are directly employed by the Smelters. These individuals collectively earn
3 approximately \$73,000,000 in wages annually and over \$116 million annually in wages,
4 salaries, and benefits. These 1,200 jobs are highly prized manufacturing jobs. Average
5 annual pay at the Rio Tinto and Century facilities is \$60,000 per job. Company-provided
6 benefits for health insurance, unemployment insurance, worker's compensation
7 insurance, vacations, retirement, payroll taxes and the like boost this to over \$96,000 per
8 job. The companies and their employees pay about \$7.3 million in taxes to Kentucky
9 state government, and \$1.5 million to county governments and local public school
10 districts. State and local governments in Kentucky would lose nearly \$9 million in annual
11 tax revenue.

12 **Q. Have you estimated the indirect impact on the Kentucky economy that would result**
13 **if the two Smelters curtailed operations?**

14 **A.** Yes, when we add the indirect impacts to the region and the Commonwealth to the
15 analysis the impact is far more severe due to the inevitable loss of related jobs and
16 commercial and retail jobs that are in place partly to serve smelter employees. Because
17 the aluminum and related manufacturing operations serve primarily national and
18 international markets, they bring new dollars into the regional economy. In this sense, a
19 curtailment of the two Smelters would have large and predictable negative economic and
20 fiscal impacts in western Kentucky. Curtailing the smelting operations would jeopardize
21 the viability of related business activities, both upstream and downstream. Among the
22 supporting industries that would be affected are river barges (that bring in alumina),
23 engineering firms, maintenance contractors, trucking firms, and the other vendors to the

1 smelting plants. Downstream, the Smelters supply raw aluminum to rolling and
 2 extruding mills in the region, which are clustered to support wire plants, auto parts plants,
 3 can factories, and other heavy aluminum users in the region. The Southwire Rod and
 4 Cable Mill, adjacent to the Hawesville smelter, could be in immediate jeopardy if the
 5 Smelters were to curtail, since its current business model depends upon the low costs
 6 associated with direct access to molten aluminum that meets its stringent purity
 7 specifications. These are just some of the businesses that would suffer if the Smelters
 8 were to curtail operations in Western Kentucky.

9 In the below table I provide estimates of the total effects – direct plus spinoff.

Estimated Total Annual Economic and Fiscal Impacts of Shut-down		
Two Aluminum Smelter Plants in Western Kentucky		
Total: Direct, Indirect, and Induced Impacts		
1	Lost jobs in region	4,733
2	Lost annual payroll in region	\$176,267,634
3	Lost property taxes - county governments	\$374,633
4	Lost property taxes - schools	\$619,450
5	Lost property taxes - Kentucky state government	\$871,168
6	Lost occupational taxes - local governments	\$501,100
7	Lost Kentucky state income tax receipts	\$5,136,252
8	Lost Kentucky state sales tax receipts	\$1,836,490
9	Lost other Kentucky state taxes	\$2,854,769
10	Subtotal: local governments in Kentucky	\$1,495,183
11	Subtotal: Kentucky state government	\$10,698,679
12	Total Kentucky state and local governments	\$12,193,862

1 The total net annual loss in the region would be 4,700 jobs and \$176 million in wages and
2 salaries. State and local governments in Kentucky would lose over \$12 million annually.

3 The Southwire rod mill employs around 300 persons, with a payroll of about \$12 million
4 annually. Should it close, the additional negative economic impact in the region would
5 be 850 jobs and \$23 million in payroll. Kentucky state and local governments would lose
6 at least an additional \$1.4 million tax revenues annually.

7 Of course there would be many other negative impacts that cannot be reasonably
8 estimated. Local real estate and retail markets would likely be depressed, unemployment
9 and crime rates would rise, retraining and social services costs would increase, and many
10 ancillary tax revenues would fall as economic activity in the region diminished.

11 **Q. What would be the long-term impact on the region if the two Smelters were to**
12 **curtail operations?**

13 **A.** My study shows that the direct impact of curtailment of Smelter operations would result
14 in the loss of about three quarters of a billion dollars in wages to the region (in 2010
15 dollars) over the next decade. The impact to local and state tax receipts would also be
16 large. The Smelters represent over \$88 million in taxes to Kentucky state and local
17 governments over the next ten years.

18 When we add the indirect impacts to the region and the Commonwealth to the analysis
19 the impact is far more severe. Over a ten year period the residents of Western Kentucky
20 would lose approximately \$1.75 billion in payroll and state and local governments would
21 lose over \$120 million in tax revenues.

22



1 Q. Does this conclude your testimony?

2 A. Yes.

3



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ATTACHMENT 1
OF
PAUL A. COOMES

The Estimated Economic and Fiscal Impacts of Kentucky's Two Aluminum Smelters

by

Paul A. Coomes, Ph.D.
Consulting Economist

a research report for
Century Aluminum and Rio Tinto Alcan

May 23, 2011

Executive Summary

Kentucky has two aluminum smelters, one near Hawesville and the other about fifty miles west at Sebree, near Henderson. These smelters are major employers and taxpayers in the greater Evansville-Owensboro-Henderson regional economy. Should electricity prices rise sufficiently these two plants could be closed, with relatively severe economic consequences for the region.

The smelters are owned by two companies: Century Aluminum (Hawesville) and Rio Tinto Alcan (Sebree). The companies are interested in learning about and documenting the regional economic importance of the operations, so they can better communicate the ramifications of rising electricity costs should prices reach a threshold such that the smelting operations were financially threatened. The purpose of this report is to document and communicate the regional economic and fiscal importance of these aluminum plants.

This report provides updates to my 2008 report on the same topic. The two Kentucky smelters together employ around 1,200 persons, who collectively earn over \$116 million annually in wages, salaries, and benefits. I have used regional data and industry-specific multipliers to estimate the negative economic and fiscal impacts of such a possible shut-down. I estimate that the total net annual loss in the region would be 4,700 jobs and \$176 million in wages and salaries. State and local governments in Kentucky would lose over \$12 million annually. These estimates are for the economic and fiscal categories most easily quantified. There would be many other negative impacts, though they are harder to measure with any precision. Local real estate and retail markets would likely be depressed, unemployment and crime rates would rise, retraining and social services costs would increase, and many ancillary tax revenues would fall as economic activity in the region diminished.

Background and Methodology

There are two aluminum smelters in Kentucky, one operated by Century near Hawesville and the other by Rio Tinto Alcan at Sebree. Smelters can demand as much electricity load as a mid-sized city. With low cost power available to many new international aluminum smelters, the economic viability of these two Kentucky smelters depends critically on the cost of electricity. Shutting down the smelting operations would jeopardize the viability of related business activities, both upstream and downstream. Among the supporting industries that would be affected are river barges (that bring in alumina), engineering firms, maintenance contractors, trucking firms, and the other vendors to the smelting plants. Downstream, the smelters supply raw aluminum to rolling and extruding mills in the region, which are clustered to support wire plants, auto parts plants, can factories, and other heavy aluminum users in the region. The Southwire Rod and Cable Mill, adjacent to the Hawesville smelter, could be immediately shut-down if the smelter were to close, since its current business model depends upon the low costs associated with immediate access to molten aluminum that meets its stringent purity specifications.

Geographic Scope of Impacts

While Hancock and Henderson counties are the sites for the plants, the economic and fiscal impacts will permeate a much larger region. In this section, I discuss various geographic measures and explain how the choice of study impact region was made.

Both counties are part of the greater Evansville-Owensboro-Henderson Economic Area, a 23-county region in Kentucky, Indiana, and Illinois, as defined by the US Bureau of Economic Analysis¹. The latest definitions for economic areas were released in 2004, and are based primarily on commuting patterns data from the 2000 Census. Hancock County is also part of the Owensboro MSA, a three county designation. Henderson County is part of the Evansville-Henderson MSA, a six county designation.

The map shows the component counties, major cities, road and water features in the economic area. The red stars denote the approximate position of the Century and Rio Tinto Alcan smelter plants. All the counties shaded in gray

Population of Evansville IN-KY Economic Area, 2009		
Geocodes	County	Residents
18051	Gibson, IN	32,750
18129	Posey, IN	26,004
18163	Vanderburgh, IN	175,434
18173	Warrick, IN	58,521
21010	Henderson, KY	45,496
21233	Webster, KY	13,706
21780	Evansville, IN-KY Metropolitan Statistical Area	351,911
21059	Daviess, KY	95,394
21091	Hancock, KY	8,635
21149	McLean, KY	9,607
36980	Owensboro, KY Metropolitan Statistical Area	113,636
17047	Edwards, IL	6,444
17059	Gallatin, IL	5,705
17185	Wabash, IL	11,997
17193	White, IL	14,661
18027	Daviess, IN	30,620
18037	Dubois, IN	41,419
18101	Martin, IN	13,070
18123	Perry, IN	18,812
18125	Pike, IN	12,259
18147	Spencer, IN	20,039
21107	Hopkins, KY	46,167
21177	Muhlenberg, KY	31,274
21183	Ohio, KY	23,534
21225	Union, KY	14,990
57054	Evansville, IN-KY Economic Area	756,538

Source: US Census Bureau

¹ See US Bureau of Economic Analysis, www.bea.gov/regional/docs/econlist.cfm.

or green are part of the economic area, while those with the darker green shading are also part of the Evansville-Henderson or Owensboro Metropolitan Statistical Areas. The economic area classification was developed by the US Bureau of Economic Analysis, and assigns all US counties to some regional economy. This broader definition is very useful in analyzing the markets for labor, industrial supplies, major retail purchases, television and print media, air transportation, higher education, and major medical and professional services.



The latest population estimates are provided in the accompanying table. Note that the complete economic area has a population of about 757,000, with the Evansville-Henderson MSA accounting for 47 percent of the total, and the Owensboro MSA accounting for 15 percent of the total. Henderson County, just across the Ohio River from Evansville, has the fifth largest population of any county in the economic area. Hancock County has the third lowest population of any county.

The Evansville area also has a number of important aluminum operations, though it is beyond the scope of this study to analyze them. Warrick County, for example, is home to the giant

Alcoa plant upstream from Evansville on the Ohio River. The plant has 2,100 employees, pays over \$7 million in local property taxes annually, and purchases over \$100 million in goods and services from vendors in the region². The region as a whole is one of the biggest concentrations of aluminum production and downstream processing in the US. The plants are linked indirectly through the transportation, energy, auto parts sectors that are prevalent regionally.

Importance to Hancock and Henderson counties, entire region

It is not hard to see in publicly available data how important aluminum is to the regional economy. In the next two tables, I have organized information on the largest industrial employers in Hancock and Henderson counties, as currently displayed on the web site of the Kentucky Cabinet for Economic Development³. I have highlighted in red the firms that produce or process aluminum. Note that in Hancock County three out of four of the top employers are aluminum-related. The Century smelter is the largest manufacturing employer in the County. Similarly, in Henderson County two of the top three manufacturing employers are aluminum-related. The Rio Tinto smelter is the third largest employer in Henderson County.

Largest Industrial Employers, Hancock County			
Firm	Products	Employment	Date established
Century Aluminum of Kentucky LLC	Aluminum molten metal, sows & smelting	771	1967
Aleris Rolled Products	Coils, aluminum tubing & flexible conduits	603	1966
Domtar Paper Company LLC	Fine paper and mills bleach pulp	437	1967
Southwire Company Kentucky Plant	Aluminum rod and bare aluminum cable	317	1969
Dal-Tile Corp	Quarry tile	115	1959
First Class Services Inc		78	N/A
Precision Roll Grinders Inc	Roller repair & precision grinding	18	1998
Hancock County Ready Mix	Ready-mixed concrete	16	1964
Maxwell Brothers Lumber Co	Sawing rough lumber, cross ties, pallets	16	1984
McElroy Metal Inc	Metal forming, panel, trim, accessories	16	1964
Hancock County Ready-Mix	Sand & gravel, ready-mix concrete	15	1964

Source: Kentucky Economic Development Cabinet, August 2010
 (www.thinkkentucky.com/edis/cmnty/cmntyindex.htm)

² See www.alcoa.com/locations/usa_warrick/en/pdf/2007ReportToTheCommunity.pdf

³ Employment reported by the Kentucky Economic Development Cabinet for the Century and Rio Tinto Alcan plants will differ somewhat from the corporate counts in this report due to the different reference dates.

Largest Industrial Employers, Henderson County

Firm	Products	Employment	Date established
Tyson Foods Inc	Chicken slaughtering, processing & packaging	930	1995
Gibbs Die Casting Corp	Aluminum & magnesium die castings, headquarters	800	1966
Rio Tinto Alcan	Aluminum extrusion billets & ingots	488	1972
Dana Corporation	Truck axles & brake components	250	1970
Accuride Corp	Truck wheels & rims	234	1973
Brenntag Mid-South Inc	Chemical blending, industrial chemical distribution	228	1947
Audubon Metals LLC	Heavy-media separator and secondary specification aluminum alloy	150	1996
Columbia Sportswear Company	Storage and distribution of footwear and apparel products	130	2004
Sitex Corporation	Headquarters and uniform supply service	124	1961
Sonoco	Aluminum & steel can ends	120	1967
Hercules Manufacturing Co	Insulated & dry freight truck bodies & trailers	100	1902
Hugh E Sandefur Training Center Inc	Voc rehab; corrugated products; boxes, partitions, die cuts.	100	1967
Service Tool & Plastics	Injection molded plastics	99	1977
International Paper	Recycled linerboard	75	1994
Azteca Milling LP	Milled Mexican corn flour	72	1988
Cresline Plastic Pipe Co Inc	Plastic pipe & fittings	68	1966
Royster's Machine Shop LLC	Machine shop: general & CNC machining,	66	1975
Fortis Plastics LLC	Thermoplastics & plastic injection molding, finishing, fabricating	61	1951
Shamrock Technologies Inc	Teflon recycling, micronized polytetrafluoroethylene	61	1997
SGS North American Inc Mineral	Analytical coal testing	60	1809

Source: Kentucky Cabinet for Economic Development (8/15/2010).

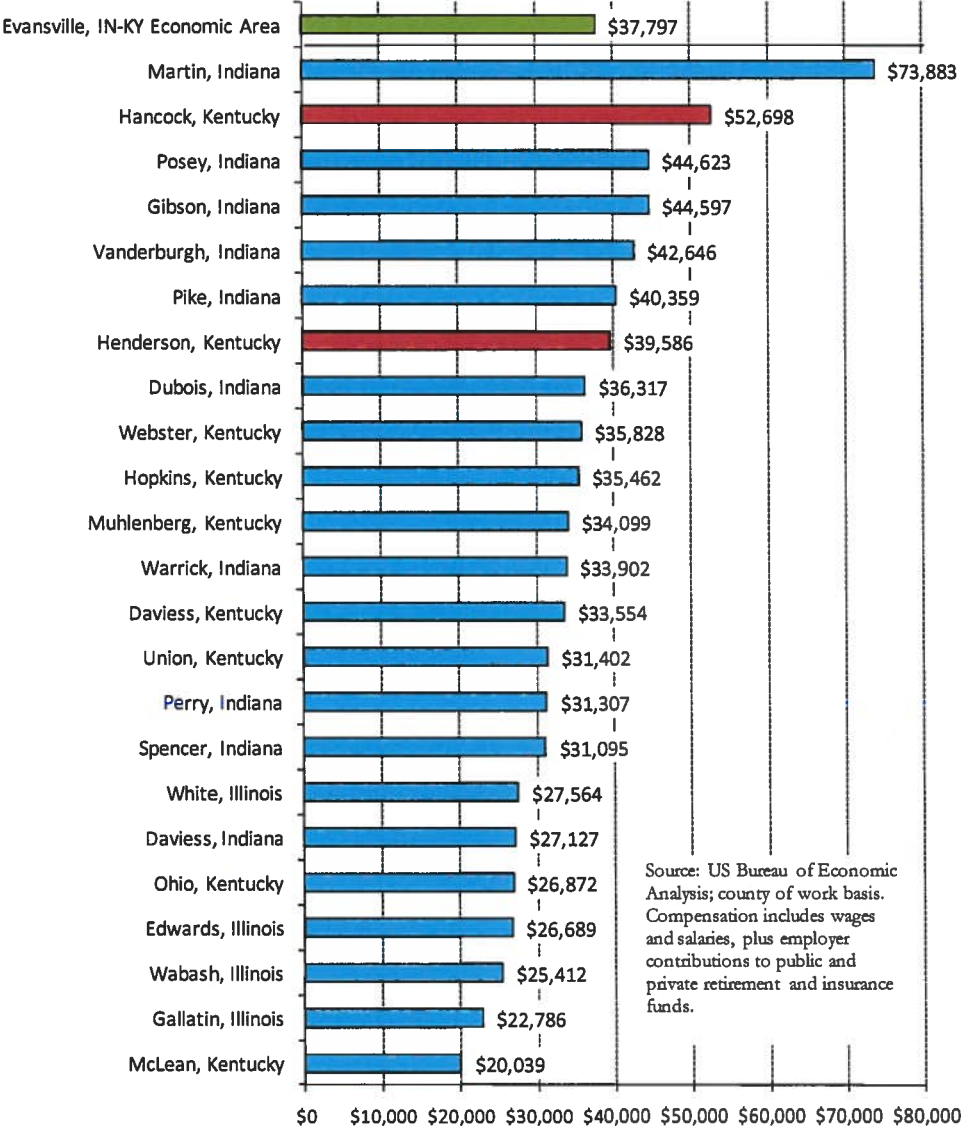
There are about 372,000 private sector jobs in the region, of which 68,000 are in the manufacturing sector. Due to confidentiality laws, the federal statistical agencies do not disclose enough data to accurately measure the total aluminum-related employment and payroll in the region. But, using publicly available estimates on aluminum production employment, including Alcoa in Warrick County, and the aluminum fabrication companies in Hancock and Henderson counties, we can see that at least 4,800 of the region's manufacturing jobs are directly related to aluminum. Clearly, aluminum production and processing are critical to the health of the regional economy.

Moreover, the two smelter operations are crucial components of the tax and economic base in Hancock and Henderson counties. The Century operation in Hawesville accounts for 21 percent of all private sector wages and salaries earned in Hancock County, and directly accounts for about 19 percent of the total county's occupational tax receipts. The Hawesville plant also accounts for about six percent of all property taxes collected to support the Hancock County Public School system. The Rio Tinto Alcan operation accounts for over five percent of private

wages and salaries in (much more populated) Henderson County, and over 2 percent of all property and utility taxes collected for public schools and county government. Rio Tinto is believed to be the largest single taxpayer in Henderson County.

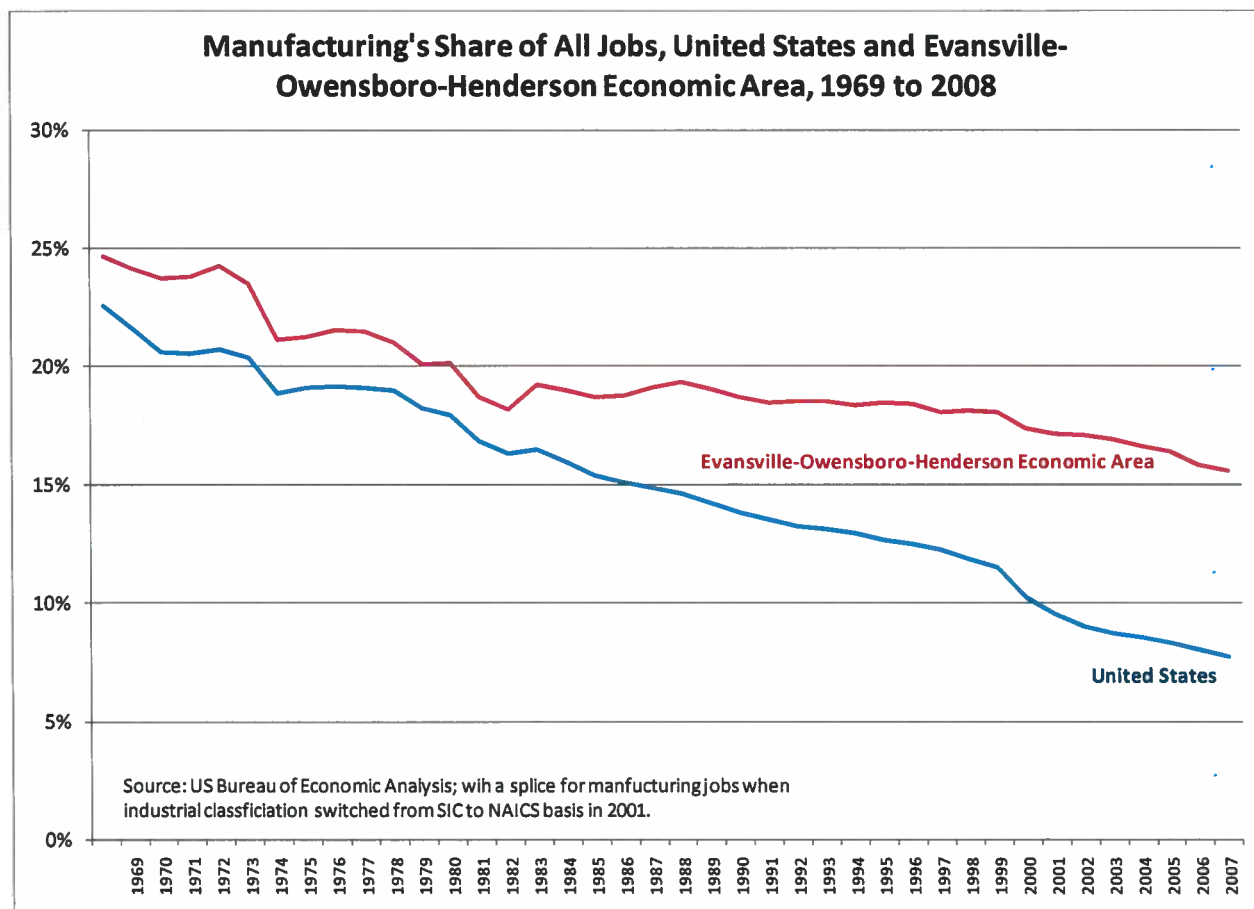
The importance of the aluminum-related jobs in the region stems from (a) their large number, (b) their linkages to other jobs in upstream and downstream industries, and (c) their high average pay and benefits. Average pay at the Rio Tinto and Century facilities is \$60,000 per job. Company-provided benefits for health insurance, unemployment insurance, worker’s compensation insurance, vacations, retirement, payroll taxes and the like boost this to over \$96,000 per job.

**Average Annual Compensation per Job, 2008
Evansville-Owensboro-Henderson Economic Area**



The concentration of many such aluminum-related jobs in Hancock and Henderson counties puts those two in the top third in the region in terms of earnings per job. The relationship is particularly easy to see in Hancock County, as the county is lightly populated and aluminum is the most important industry. At \$52,698, Hancock is second highest among counties in the region in terms of total compensation per job. Henderson County ranks seventh among the 23 counties in terms of compensation per job. Warrick County, home to the large Alcoa smelter and electricity plant, ranks twelfth highest.

Manufacturing has long been of great economic importance in the region. There has been a steady decline for decades nationally in manufacturing's share of jobs, including in the Evansville area economy. The trend is due to increased productivity, as technological developments in machinery have allowed each worker to produce much more output. But the decline in employment has been much less severe in the region. While manufacturing today accounts for only 7.8 percent of jobs nationally, in the Evansville region the share is twice that, at 15.6 percent.



This relatively high concentration of manufacturing jobs in the Evansville-Owensboro-Henderson Economic Area, along with its high labor compensation, has kept per capita income in the region from falling behind nearby economic areas, even though there has been only modest overall population and job growth. In the next table, I have organized data on 40 years

of growth for four macro performance indicators. I compare growth in the Evansville area to that of all 180 economic areas in the US, as well as those nearest – Indianapolis, Evansville, Paducah, St. Louis, and Champaign. While the Evansville area ranked low in terms of population and job growth overall, it ranks well in terms of average earnings per job, which in turn improves its ranking for per capita income. Clearly, the manufacturing strength in the region has been the key factor in maintaining the standard of living for residents there. Aluminum production and fabrication have been a major part of that manufacturing strength throughout the period.

Macro Economic Indicators of Growth*, 1969 to 2008			
	Evansville, IN-KY-IL Economic Area	rank among all 180 Economic Areas	rank among 6 nearest Economic Areas
Population	0.4%	135	4
Jobs	1.0%	147	5
Average earnings per job	5.0%	97	2
Per capita income	6.2%	118	2
Source: US Bureau of Economic Analysis, with rankings by author.			
* compound average annual growth rate			

Economic Impact Methodology

Because the aluminum and related manufacturing operations serve primarily national and international markets, they bring new dollars into the regional economy. In this sense, a shut-down of the two smelters would have large and predictable negative economic and fiscal impacts in western Kentucky, southern Indiana and throughout the two states. The activity supports thousands of jobs and millions of dollars in payrolls, and ultimately large tax revenues for Kentucky and Indiana state and local governments.

I use standard regional economic impact methods to evaluate the economic and fiscal impacts of the loss of the two plants. Region-specific economic impacts were derived from a custom input-output model built for the Evansville-Owensboro-Henderson economic area, discussed further below. The model includes detailed information on 440 industries in the region, including primary aluminum production. This industry is defined according to the North American Industrial Classification System (NAICS) code 331312. The official definition is as follows:

This U.S. industry comprises establishments primarily engaged in (1) making aluminum from alumina and/or (2) making aluminum from alumina and rolling,

drawing, extruding, or casting the aluminum they make into primary forms (e.g., bar, billet, ingot, plate, rod, sheet, strip). Establishments in this industry may make primary aluminum or aluminum-based alloys from alumina.

www.census.gov/epcd/naics02/def/ND331312.HTM#N331312

I have constructed a custom regional input-output model, using the IMPLAN system. The IMPLAN model provides a representation of the linkages among 440 regional industries, as well as spending patterns of area households⁴. The regional model used here is derived from the national input-output transactions tables, using detailed data on local industries. Regional input-output models are the most common tool used to evaluate economic impacts of industries and events. These models provide consistent and unbiased estimates of the ripple effects in a region when there is a change in activity at any other industry. These impacts are often summarized using economic multipliers, which are the ratio of changes in total economic impacts to a change in direct activity in an industry. Their strengths and weaknesses are well-known, and I believe this model is the best tool available to analyze the impacts of a plant shutdown.

Regional economists often make the distinction between the indirect and induced components of a multiplier, and in some cases make separate estimates for each. The indirect effects refer to the linkages between the exporting industry (aluminum) and their industrial vendors (electricity, barges, tools, computers, insurance). When the directly impacted industry expands it raises its purchases from its vendors, thus lifting their employment and payrolls. The induced effects refer to the impact of the new export-based sales on the local economy through the rounds of re-spending of the additional consumer income caused by the expansion. Regional sales of cars, groceries, building supplies, banking services, and so on are all sensitive to growth

Economic Multipliers for the Primary Aluminum Industry		
Evansville-Owensboro-Henderson Economic Area		
	Indirect effects: inter-industry expenditures	Total effects: indirect plus induced (household spending) effects
Employment	2.753	3.921
Employee compensation	2.062	2.416
Output	1.628	1.768
Value added	2.429	2.861

Source: regional input-output model of region, using IMPLAN version 3.

Multipliers shown measure the total impact in the region per one unit increase in economic category. For example, in the first row, an additional job in the aluminum industry leads to a total of 3.921 jobs in the regional economy, of which 2.753 jobs are due to inter-industry purchases.

⁴ See www.implan.com for documentation.

in disposable income. In the final impact estimates, I use the total multipliers for the regional aluminum industry, those that summarize both the indirect and induced effects on the economy.

The economic multipliers shown in the table summarize the predicted impacts on the region for a change in the aluminum industry. Economic multipliers derived from input-output models are symmetric. That is, one gets the same proportional economic impact from an increase or a decrease in activity at a local industry. For example, the employee compensation multiplier for the primary aluminum production industry in the Evansville-Henderson-Owensboro economic area is 2.416, meaning that for every dollar of new export-based payroll created at a local aluminum smelter another \$1.416 in payrolls are created in other sectors around the region. The job multiplier for the primary aluminum sector in the area is 3.921, meaning that for every new export-based job created at a smelter, another 2.921 jobs are created elsewhere in the region.

The output multiplier is a measure of the additional sales by firms in the region related to primary aluminum production. Finally, for completeness, we show the value added multiplier for the aluminum industry. Value added is a term used in economic accounting to distinguish between the total value of output (sales) and the dollars that stick to the local economy. It measures the regional payments to labor, capital, and land in return for producing the output sold regionally. This can be an important distinction. For example, if someone purchases a new Volkswagen automobile for \$20,000 at a local dealership, probably no more \$2-3,000 gets captured in the regional economy, with the bulk going to the auto manufacturing plant in another state, to transportation expenses, to the corporate headquarters staff, and to shareholders. By contrast, most of the \$15 one might pay for a haircut gets captured locally, to pay the barber and the rent, utilities, and taxes on the barber shop.

There are no good national sources of data on which to make estimates of the fiscal impacts of a regional expansion or contraction. However, there are plentiful data available from state and local governments. I have compiled several years of tax receipts data from Kentucky and Indiana state governments, as well as tax information from city and county governments in the region. By comparing the growth in tax receipts to the growth in payrolls historically, I calculate 'effective' tax rates and use those to estimate the loss of income, sales, and occupational taxes due to the simulated loss of aluminum industry payrolls. The tax calculations are discussed in more detail in the next section and in an appendix to this report. Next we turn to a discussion of geographic issues.

Taxes and fiscal impacts

The plants generate an array of taxes for state and local governments. The value of real estate and tangible property is quite large, and thus the plants generate substantial property taxes for the state of Kentucky and Hancock and Henderson county governments, including the two county public school systems. The workers associated with the plant spend much of their income in the regional economy, generating state income, state sales, and local occupational taxes. I provide estimates of all these tax flows below.

Additional tax impacts are also likely, though much harder to quantify. For example, proprietors and corporations around the region will be liable for state individual and corporate income taxes, and for some 'net profits' taxes in cities and counties where these are levied, e.g., the City of Owensboro, Kentucky. Gasoline taxes, coal severance taxes, unemployment insurance taxes, insurance premiums taxes, building permit fees, motor vehicle sales taxes, and many other business tax categories would see some decline due to plant shut-downs. Employees would pay less in the way of gasoline taxes, motor vehicle sales taxes, and there would be a dampening effect on the regional real estate market. These categories are much harder to measure than the income and general sales taxes, but fortunately are not as important dollar-wise as the main taxes I do measure in this report.

Estimates of new Kentucky and Indiana state individual income and sales tax revenues are calculated by multiplying effective tax rates times the new regional payrolls. The ratios of state individual income taxes or sales taxes collected to wages and salaries are very stable historically. Using these ratios, or effective tax rates, is superior to using published nominal tax rates, as the amount of income or sales subject to taxation is always less than total income received and retail spending that occurs.

For example, groceries and prescription drugs are exempt from state sales tax in Kentucky, and hence one cannot simply multiply the statutory sales tax rate of six percent times expected retail sales. Similarly, individual income tax rates apply to 'adjusted gross income' or 'taxable income', rather than total income. In Kentucky, residents can deduct such things as medical expenses, mortgage interest payments, charitable contributions, and many other items from their gross income before calculating their tax liability. Looking at historical tax collections as a percentage of payrolls is a more reliable way to estimate the amount of taxes likely to be generated from future payroll growth. An appendix provides a summary of the effective tax rate calculations used in the impact assessment.

Estimated Impacts

In this section, I display and explain my estimates of the economic and fiscal impacts of the two aluminum smelters. I am essentially simulating what would happen if the two operations were removed from the region. In the first table, I organize data and estimates of the direct impacts of the two plants. That is, I am considering only the jobs, taxable payrolls and taxes paid by the operations, and am not yet considering any spinoff effects in the regional economy.

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8	Property taxes to State of Kentucky		\$871,168
9	Corporate income and license taxes, State of Kentucky		\$350,000
10	Other taxes (fuel, sales, energy), State of Kentucky		\$2,504,769
11	Subtotal: local governments in Kentucky		\$1,495,183
12	Subtotal: Kentucky state government		\$7,301,802
13	Total Kentucky state and local governments		\$8,796,985

Source: RioTinto/Alcan and Century, except for Kentucky income tax, which is estimated by author.

The plants employ over 1,200 persons and have a combined annual payroll of about \$73 million, excluding benefits. The companies and their employees pay about \$7.3 million in taxes to Kentucky state government, and \$1.5 million to county governments and local public school districts. All the entries except that on line 5 were provided by the two companies that own and operate the smelters. The companies do not know the amount of Kentucky state income taxes actually paid by their employees, since employees file income tax returns from their place of residence. Companies do withhold state income taxes from workers paychecks, but have no way of knowing how much additional tax employees end up paying, or how big of a tax refund they receive each year. To estimate the Kentucky state income taxes paid, I applied an effective income tax rate, one that was calculated by dividing Kentucky state income taxes paid by Kentucky wages and salaries earned. The rate is 4.90 percent of payrolls.

In the second table, I provide estimates of the total effects – direct plus spinoff. Here I use the economic multipliers to estimate the loss in jobs and payrolls regionally. Then I use effective tax rates to estimate the additional loss in income and sales taxes to Kentucky state government. These fiscal impacts include an estimate of the state income and sales taxes related to spinoff payroll, not just that from the plant operations.

Estimated Total Annual Economic and Fiscal Impacts of Shut-down		
Two Aluminum Smelter Plants in Western Kentucky		
Total: Direct, Indirect, and Induced Impacts		
1	Lost jobs in region	4,733
2	Lost annual payroll in region	\$176,267,634
3	Lost property taxes - county governments	\$374,633
4	Lost property taxes - schools	\$619,450
5	Lost property taxes - Kentucky state government	\$871,168
6	Lost occupational taxes - local governments	\$501,100
7	Lost Kentucky state income tax receipts	\$5,136,252
8	Lost Kentucky state sales tax receipts	\$1,836,490
9	Lost other Kentucky state taxes	\$2,854,769
10	Subtotal: local governments in Kentucky	\$1,495,183
11	Subtotal: Kentucky state government	\$10,698,679
12	Total Kentucky state and local governments	\$12,193,862

I estimate the total job loss in the region to be about 4,700 jobs, and the payroll loss to be \$176 million annually. The total loss to Kentucky state government is much more than when considering only the direct impacts. I estimate that Kentucky would lose a total of \$12.2 million in income, sales and other tax revenues if the plants shut down. The reader might note that the total estimated payroll impact is 2.4 times the direct payroll impact, while the total estimated fiscal impact is only 1.4 times the direct fiscal impact. This is because the direct fiscal impact includes many non-payroll items, including property and corporate income taxes. I do not attempt to estimate any indirect and induced tax impacts beyond the state individual income and sales taxes linked to more regional payroll.

The Southwire rod mill employs around 300 persons, with a payroll of about \$12 million annually. Should it also close, the additional negative economic impact in the region would be 850 jobs and \$23 million in payroll. Kentucky state and local governments would lose at least an additional \$1.4 million tax revenues annually.

References

Kentucky Cabinet for Economic Development, "Profile of the Aluminum Industry in Kentucky", by Rene True, May 2005. www.thinkkentucky.com/kyedc/pdfs/Aluminum_Report.pdf

Minnesota Implan Group, MIG, www.implan.com

APPENDIX

State Individual Income and Sales Tax Revenues

I have calculated effective tax rates for both Kentucky and Indiana income and sales taxes, summarized in the table on the next page. I show these in two ways, one as a percentage of total regional wages and salaries, and second as a percentage of just the wages and salaries earned in each state. The effective state tax rate is obviously much smaller when the entire regional payroll is considered, since each state makes up only a fraction of the region. In the fiscal impact estimates provided, I use these state effective tax rates calculated as a percentage of the total regional payroll. Since the economic multiplier effects are analyzed over the entire 23-county economic area, we see the effect of the aluminum operations on wages and salaries throughout the region. Hence, the regional effective tax rates are more applicable.

Note that the Kentucky effective income tax rate is 1.51 percent. This means that Kentucky state government can expect to receive (lose) in income taxes that percentage of wages and salaries *in the region* when payrolls grow (shrink). Similarly, the Kentucky effective sales tax rate is 1.04 percent of wages and salaries in the region. The regional effective tax rates for Indiana state government are higher than for Kentucky state government, reflecting the higher proportion of payrolls, income taxes, and sales taxes on the Indiana side of the regional economy. The Kentucky effective income tax rate is higher than the effective sales tax rate, while in Indiana the effective sales tax rate is higher than the effective income tax rate. This reflects both Kentucky's higher income tax rate (topping at 6% compared to Indiana's which tops out at 3.4%), and the concentration of retail activity in Evansville.

Average Annual Wages and Salaries, and State Tax Receipts, by County, 2005 to 2008			
County	Wages and Salaries, by County of Work	State individual Income Taxes Paid, by County of Residence	State Sales Taxes Paid, by County of Collection
Edwards, Illinois	\$94,180,750		
Gallatin, Illinois	\$48,229,500		
Wabash, Illinois	\$114,508,250		
White, Illinois	\$160,085,000		
Daviess, Indiana	\$349,720,750	\$15,604,546	\$19,217,452
Dubois, Indiana	\$1,017,137,250	\$32,720,178	\$46,637,774
Gibson, Indiana	\$740,795,750	\$20,220,337	\$8,740,361
Martin, Indiana	\$388,755,250	\$5,650,547	\$4,947,782
Perry, Indiana	\$219,496,000	\$10,319,579	\$12,107,029
Pike, Indiana	\$126,917,750	\$7,386,286	\$1,399,167
Posey, Indiana	\$434,829,500	\$19,122,831	\$12,314,706
Spencer, Indiana	\$250,206,750	\$12,484,294	\$7,333,808
Vanderburgh, Indiana	\$4,275,895,250	\$118,534,579	\$190,451,240
Warrick, Indiana	\$567,881,500	\$47,714,466	\$8,338,172
Daviess, Kentucky	\$1,453,203,500	\$70,446,207	\$60,545,673
Hancock, Kentucky	\$208,735,750	\$5,919,378	\$3,514,191
Henderson, Kentucky	\$721,062,000	\$31,219,230	\$24,930,991
Hopkins, Kentucky	\$625,859,750	\$31,988,133	\$18,644,412
McLean, Kentucky	\$49,044,000	\$5,944,519	\$2,449,612
Muhlenberg, Kentucky	\$319,666,000	\$15,895,804	\$9,922,632
Ohio, Kentucky	\$207,207,000	\$11,115,268	\$5,018,780
Union, Kentucky	\$185,568,000	\$10,198,584	\$4,798,603
Webster, Kentucky	\$144,737,000	\$9,154,535	\$2,532,127
Evansville, IN-KY Economic Area	\$12,703,722,250	\$481,639,301	\$443,844,510
Kentucky subtotal - 9 counties	\$3,915,083,000	\$191,881,657	\$132,357,023
Indiana subtotal - 10 counties	\$8,371,635,750	\$289,757,643	\$311,487,488
Kentucky effective tax rate, collections as percent of Economic Area payroll		1.51%	1.04%
Kentucky effective tax rate, collections as percent of KY payroll		4.90%	3.38%
Indiana effective tax rate, collections as percent of Economic Area payroll		2.28%	2.45%
Indiana effective tax rate, collections as percent of IN payroll		3.46%	3.72%

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In The Matter Of: The Application Of Big Rivers Corporation For General Adjustment of Rates. : Case No. 2011-00036
:

AFFIDAVIT OF PAUL COOMES

STATE OF KENTUCKY (COUNTY OF JEFFERSON)

Paul Coomes being first duly sworn, deposes and states that:

1. He is a consulting economist and Professor of Economics at the University of Louisville;
2. He is the witness who sponsors the accompanying testimony entitled "Direct Testimony and

Exhibits of Paul A. Coomes;"

3. Said testimony was prepared by him and under his direction and supervision;
4. If inquiries were made as to the facts and schedules in said testimony he would respond as therein

set forth; and

5. The aforesaid testimony and schedules are true and correct to the best of his knowledge, information and belief.



Paul A. Coomes

Subscribed and sworn to or affirmed before me this 23 day of May, 2011, by Paul Coomes.



Notary Public

CARLA L. TIDD
NOTARY PUBLIC
STATE AT LARGE
KENTUCKY
MY COMMISSION EXPIRES DECEMBER 02, 2014