COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:	:	
	:	CASE NO. 2009-00548
APPLICATION OF KENTUCKY UTILITIES COMPANY FOR AN ADJUSTMENT OF BASE RATES	:	

IN THE MATTER OF:	:	
	:	CASE NO. 2009-00549
APPLICATION OF LOUISVILLE GAS AND ELECTRIC COMPANY FOR AN ADJUSTMENT OF BASE RATES	:	

DIRECT TESTIMONY AND EXHIBITS

OF

PAUL A. COOMES

ON BEHALF OF THE

KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.

APRIL, 2010

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Application Of Louisville Gas And Electric Company For An Adjustment of Base Rates	:	
	:	

DIRECT TESTIMONY OF PAUL A. COOMES

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

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

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

A. Yes, I have testified and submitted testimony several times before the Kentucky Public Service Commission, to present studies I have performed for utilities and aluminum companies.

Q. Why are you here today?

A. I have been retained by the law firm representing the Kentucky Industrial Utility Customers. KIUC seeks to document the relative economic importance of their members, which include prominent manufacturers around the state. They also wish to document the large amount of

energy purchased by these industrial customers. I have prepared a report and will give a summary of my findings today, as well as answer any questions you have.

Q. In summary, what did you find about the relative economic importance of manufacturing and related industries relative to other industries in Kentucky?

A. Economic activity in Kentucky is classified under hundreds of different industries, but some are much more important than others in terms of overall growth and prosperity in the state. The most important industries are those that export their goods and services to customers around the US and the world. Firms in these industries bring new dollars into Kentucky and thereby lift firms in other linked industries, as well as the incomes of Kentucky households. As household incomes grow, so do sales and employment in support industries (and governments) that provide goods and services to households. The export-based industries are the engines of growth, and hence the target of economic development agencies, while the support industries are essentially captive and require no incentives to operate in the state.

From this perspective, the most important industries are nearly all in the manufacturing, distribution, mining and agricultural sectors, and the least important industries are those in the finance, real estate, retail, health care, education and personal services sectors. In terms of export-based industries with significant employment in Kentucky, those with the greatest spin-off impacts are: petroleum refining, beef and pork slaughtering, fluid milk manufacturing, tobacco (non-cigarette) manufacturing, meat processing, soap and detergent manufacturing, automobile and light truck manufacturing.

Other major employers with large employment multipliers include: motor vehicle parts manufacturing, insurance carriers, coal mining, cattle ranching and farming, poultry processing,

millwork, sawmills, computer equipment, poultry production, distilleries, glass products, frozen food manufacturing, logging, plastic material manufacturing, cookie manufacturing, aluminum fabrication, steel and aluminum production.

Q. And in summary, what did you find concerning energy purchases by these industrial operations in Kentucky?

A. These economically important industries are also among the largest consumers of electricity in Kentucky. Primary aluminum production, for example, spends around $130,000 per employee on electricity, whereas the typical retail or service business spends only a few hundred dollars per employee annually on electricity. Indeed, Kentucky has a strong presence of many of the most energy-intensive industries in the United States, attracted here partly because of our historically competitive electricity rates. I have identified at least eight manufacturing industries in Kentucky that purchase more than $10,000 of electricity per employee. These industries also have large employment multipliers, thereby lifting economic activity in other industries and raising household incomes statewide.

Q. Briefly, what methods did you use to analyze the importance of these industries?

A. I have used the IMPLAN modeling system to organize detailed economic estimates on industrial activity in Kentucky. I sorted the estimates to reveal which industries have the most employment and which have the most employment spinoff impacts. As a measure of spinoff, I use what are called 'Type I employment multipliers'. These measure how much total employment in Kentucky would rise per new job in the reference industry, due to vendor linkages among industries. The Type I multipliers exclude the additional household spending impacts (Type II), and allow us to focus clearly on industrial linkages that drive the overall economy.

Q. Do you have any exhibits to illustrate the different impacts among industries?

A. Yes, I have provided two charts and a table. In the first chart (PAC-1) I plot employment and the interindustry job multipliers for all 490 industries represented in the IMPLAN model. This overall view serves to highlight the extreme differences in interindustry linkages between some important export-base industries and those that serve primarily a local market. Note that the highest job multipliers are in some small food and agricultural processing industries, while the industries with the most jobs primarily sell to Kentucky residents, e.g., restaurants and bars.

In the second chart (PAC-2) I zoom in on industries that have significant employment and have relatively high job multipliers. I use 500 employees as a threshold for employment size and 1.5 as the threshold for job multipliers. Of 490 industries, only 95 meet both criteria, and many of those are industries that serve primarily Kentucky residents.

This filtering clearly reveals the relative economic importance of industries in Kentucky. Note that the industries with the highest job multipliers are all manufacturing and food processing related. Ignoring the home construction, home remodeling and telecommunications industries - which are not exporters but rather dependent on residential incomes - the largest employers are motor vehicle parts manufacturing, insurance carriers, coal mining, automobile manufacturing, and cattle ranching.

A complete list of export-based industries with greater than 500 employees and with an employment multiplier above 1.5 is provided in the table (PAC-3). There are 86 industries, directly employing 227,000 persons, that meet these criteria. Virtually every industry listed is classified as manufacturing. The highest job multiplier is for petroleum refineries, followed by beef and pork slaughtering, milk manufacturing, and other tobacco manufacturing. The reader

should not focus so much on the magnitudes of the multipliers as on the ranking of the industry multipliers. For example, it is unlikely that the true (unknown) employment multiplier for petroleum refining is 11, but it is likely that the industry has one of the highest job multipliers in Kentucky. Given the measurement problems inherent in these regional analyses, the input-output modeling tools can generate extremely high (unrealistic) multipliers, especially for smaller industries with strong linkages to the rest of the economy. The main conclusion supported by this list is that a fraction of industries in Kentucky directly or indirectly support most of the employment in the state.

Q. Do you have any exhibits that illustrate the energy-intensiveness of these industries?

A. Yes, see PAC-4. Many of the industries we identify as having great employment impacts in Kentucky also are among the most energy-intensive. Whereas a household or a small business may spend a few thousand dollars annually on electricity and natural gas, the average aluminum smelter, for example, will purchase more than $20 million in electricity. Larger retail and commercial firms, hospitals, and the like purchase energy for heating, air conditioning and lighting, with annual energy expenditures per employee of perhaps a few hundred dollars. Many manufacturing operations use energy as part of their production processes, and may purchase tens of thousands of dollars of electricity per employee annually.

Some other examples, drawn from our list of high employment multipliers above, illustrate the distinction between a manufacturing operation and a service operation. The average electricity purchases annually for a poultry processing plant purchases is over $800,000, for a fluid milk plant over $500,000, and for a meat processing plant over $230,000, driven largely by their massive refrigeration requirements. The average petroleum refinery purchases over $14 million

per year in electricity. The average truck manufacturing plant purchases $2.7 million in electricity annually, automobile manufacturing plants purchase $1.1 million, and motor vehicle parts plants purchase $200,000.

In Exhibit PAC-4 I display the top 50 manufacturing industries nationally, in terms of electricity purchases per employee, and also show purchases per business establishment for these detailed industries. (The 2007 Economic Census estimates for manufacturing in Kentucky have not yet been published. Moreover, while it will provide good detail on output, employment, payroll and other aggregates, it will not show energy purchases by industry.) The listing is particularly interesting since many of the top energy using industries are prominent in Kentucky. The highest electricity purchases per employee ($131,000) are in the primary aluminum industry, and Kentucky represents a large share of this national industry. Other prominent Kentucky industries in the list include petroleum refining, secondary aluminum, paperboard, steel, plastics, soybean processing, paper, and aluminum sheet, plate, and foil. These industries all purchase more than $10,000 of electricity per employee. And nearly all purchase more than $1 million in electricity per plant. Indeed, access to Kentucky's historically inexpensive electricity is the reason many of these industries are located in the state.

Q. Does that conclude your testimony today?

A. Yes, thank you.

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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 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 Coomes

Subscribed and sworn to or affirmed before me this 12 day of April, 2010, by Paul Coomes.

Cornelia Deckman
Notary Public

CORNELIA DECKMAN
Notary Public, State at Large, KY
My Commission Exp. Aug. 28, 2010

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

Paul Coomes

Subscribed and sworn to or affirmed before me this 17 day of April, 2010, by Paul Coomes.

Cornelia Deckman
Notary Public

CORNELIA DECKMAN
Notary Public, State at Large, KY
My Commission Exp. Aug. 28, 2010

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EXHIBITS

OF

PAUL A. COOMES

ON BEHALF OF THE
KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC.

Exhibit PAC-1

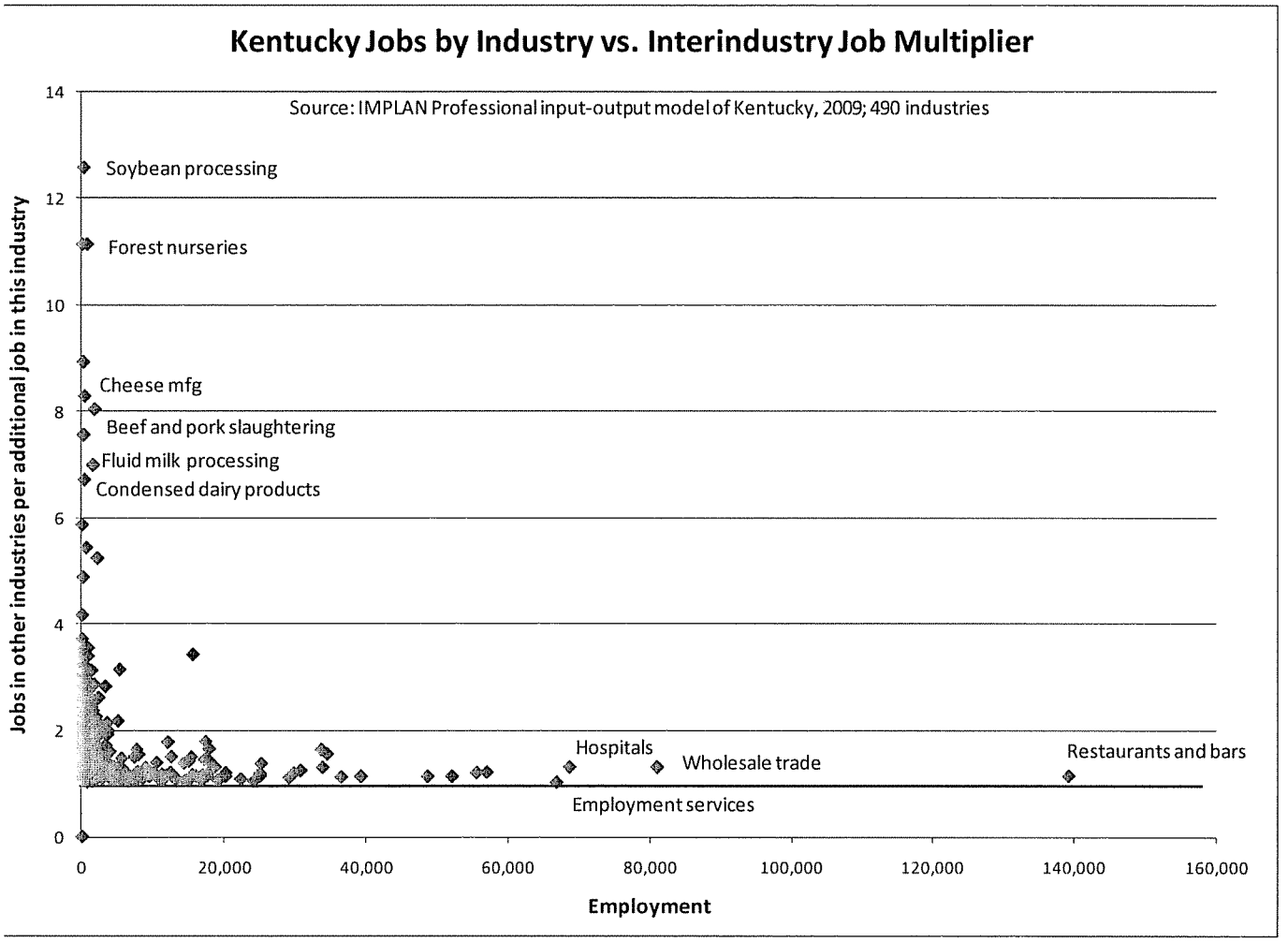

Exhibit PAC-2

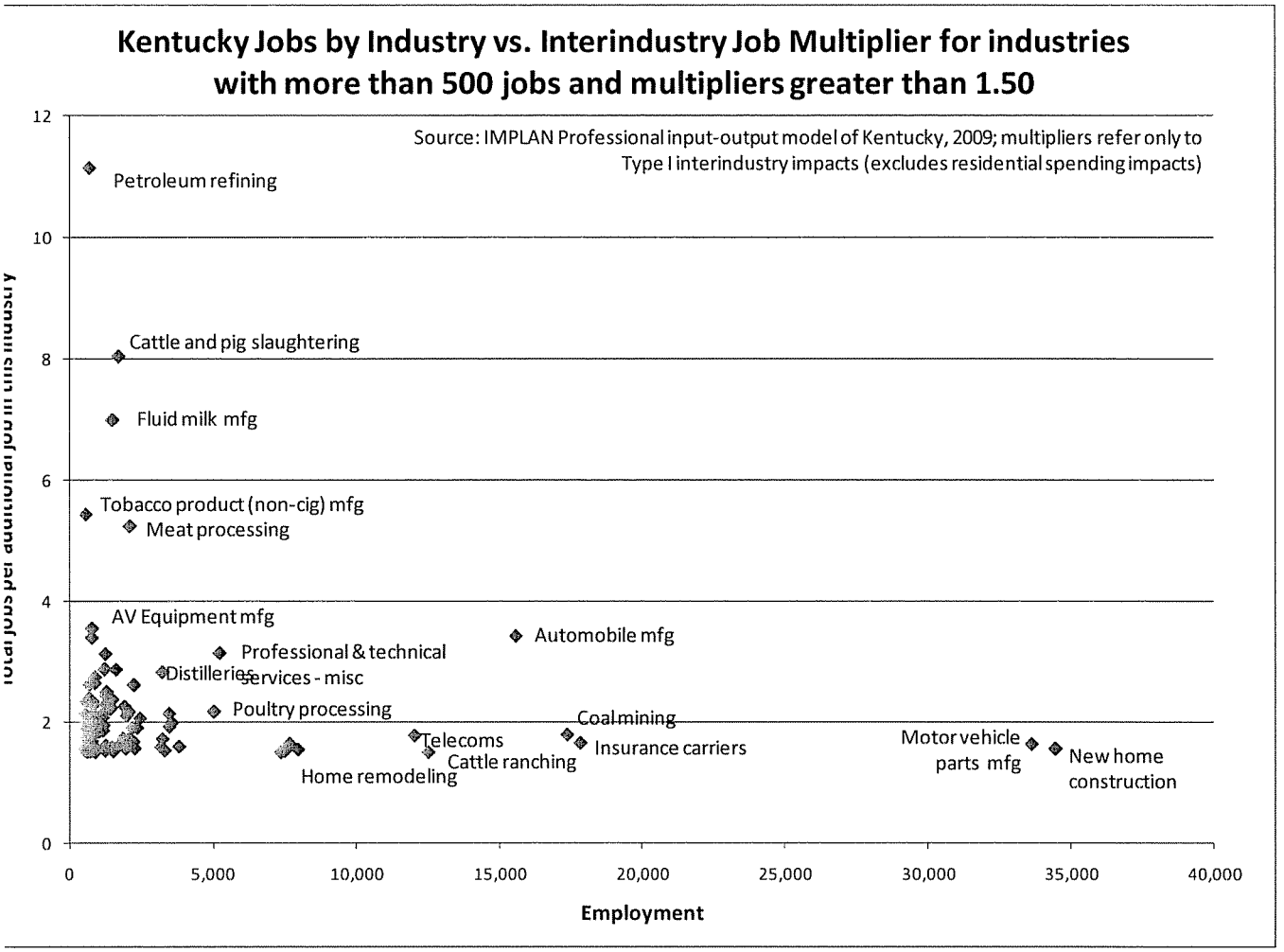

Exhibit PAC-3

IMPLAN Sector Number	Industry description	Employment	Employment Multiplier (Type I)
142	Petroleum refineries	703.0	11.140
67	Animal- except poultry- slaughtering	1,712.0	8.041
62	Fluid milk manufacturing	1,495.0	6.992
91	Other tobacco product manufacturing	577.0	5.436
68	Meat processed from carcasses	2,099.0	5.239
163	Soap and other detergent manufacturing	792.0	3.549
344	Automobile and light truck manufacturing	15,548.0	3.427
309	Audio and video equipment manufacturing	785.0	3.397
450	All other miscellaneous professional and tech	5,219.0	3.143
203	Iron and steel mills	1,262.0	3.127
160	Pharmaceutical and medicine manufacturing	1,237.0	2.883
151	Other basic organic chemical manufacturing	1,225.0	2.870
88	Distilleries	3,235.0	2.826
47	Other animal food manufacturing	899.0	2.745
396	Pipeline transportation	898.0	2.647
78	Roasted nuts and peanut butter manufacturing	705.0	2.621
152	Plastics material and resin manufacturing	2,237.0	2.615
125	Paper and paperboard mills	1,306.0	2.504
331	Household laundry equipment manufacturing	1,267.0	2.447
27	Drilling oil and gas wells	696.0	2.404
134	Sanitary paper product manufacturing	818.0	2.342
61	Fruit and vegetable canning and drying	569.0	2.339
286	Other engine equipment manufacturing	1,275.0	2.293
259	Construction machinery manufacturing	854.0	2.284
150	Other basic inorganic chemical manufacturing	1,921.0	2.258
434	Machinery and equipment rental and leasing	1,461.0	2.244
393	Water transportation	1,431.0	2.225
70	Poultry processing	5,014.0	2.176
211	Aluminum sheet- plate- and foil manufacturing	2,062.0	2.171
84	All other food manufacturing	1,207.0	2.164
305	Other computer peripheral equipment manufactu	3,470.0	2.145
351	Aircraft manufacturing	550.0	2.143
171	Other miscellaneous chemical product manufact	820.0	2.130
209	Primary aluminum production	1,999.0	2.103
216	Copper rolling- drawing- and extruding	1,156.0	2.080
161	Paint and coating manufacturing	1,174.0	2.078
60	Frozen food manufacturing	2,456.0	2.064
423	Information services	683.0	2.060
162	Adhesive manufacturing	918.0	2.021

Exhibit PAC-3 (cont)

IMPLAN Sector Number	Industry description	Employment	Employment Multiplier (Type I)
75	Mixes and dough made from purchased flour	744.0	2.019
352	Aircraft engine and engine parts manufacturin	807.0	1.956
332	Other major household appliance manufacturing	1,196.0	1.952
112	Sawmills	3,486.0	1.922
167	Printing ink manufacturing	580.0	1.919
14	Logging	2,363.0	1.908
74	Cookie and cracker manufacturing	2,193.0	1.903
153	Synthetic rubber manufacturing	1,004.0	1.894
206	Rolled steel shape manufacturing	1,177.0	1.862
317	Totalizing fluid meters and counting devices	566.0	1.857
257	Farm machinery and equipment manufacturing	1,041.0	1.850
20	Coal mining	17,357.0	1.792
289	Air and gas compressor manufacturing	786.0	1.754
129	Coated and laminated paper and packaging mate	1,870.0	1.735
418	Motion picture and video industries	2,091.0	1.722
452	Office administrative services	3,241.0	1.720
329	Household cooking appliance manufacturing	571.0	1.720
417	Software publishers	589.0	1.696
115	Veneer and plywood manufacturing	785.0	1.687
445	Environmental and other technical consulting	2,217.0	1.676
205	Iron- steel pipe and tube from purchased stee	779.0	1.673
427	Insurance carriers	17,815.0	1.653
424	Data processing services	7,664.0	1.646
350	Motor vehicle parts manufacturing	33,606.0	1.638
325	Electric lamp bulb and part manufacturing	1,280.0	1.613
300	Fluid power pump and motor manufacturing	773.0	1.611
288	Pump and pumping equipment manufacturing	554.0	1.607
292	Conveyor and conveying equipment manufacturin	1,714.0	1.606
119	Other millwork- including flooring	3,820.0	1.598
190	Glass and glass products- except glass contai	3,193.0	1.588
130	Coated and uncoated paper bag manufacturing	887.0	1.588
278	AC- refrigeration- and forced air heating	1,497.0	1.583
249	Ball and roller bearing manufacturing	572.0	1.567
432	Automotive equipment rental and leasing	2,272.0	1.567
294	Industrial truck- trailer- and stacker manufa	1,217.0	1.566
346	Motor vehicle body manufacturing	1,556.0	1.565
381	Sporting and athletic goods manufacturing	733.0	1.550
333	Electric power and specialty transformer manu	504.0	1.543
12	Poultry and egg production	3,321.0	1.533
29	Support activities for other mining	1,257.0	1.530
193	Concrete block and brick manufacturing	545.0	1.530
118	Cut stock- resawing lumber- and planing	1,538.0	1.521
340	Other communication and energy wire manufactu	744.0	1.514
173	Plastics pipe- fittings- and profile shapes	914.0	1.505
11	Cattle ranching and farming	12,504.0	1.503
280	Metal cutting machine tool manufacturing	637.0	1.503
444	Management consulting services	7,357.0	1.501

Exhibit PAC-4

Top 50 US Manufacturing Industries, Electricity Purchases per Employee and Establishment

2007 NAICS code	Meaning of 2007 NAICS code	Purchased Electricity per business establishment	Purchased Electricity per Employee
331312	Primary aluminum production	$22,695,722	$131,007
325181	Alkalies and chlorine manufacturing	$11,988,000	$92,302
325120	Industrial gas manufacturing	$1,712,054	$86,156
322122	Newsprint mills	$18,050,381	$77,091
325110	Petrochemical manufacturing	$9,573,232	$57,913
331112	Electrometallurgical ferroalloy product manufacturing	$5,863,450	$54,696
325192	Cyclic crude and intermediate manufacturing	$5,015,710	$51,726
325311	Nitrogenous fertilizer manufacturing	$1,226,173	$48,797
327310	Cement manufacturing	$2,671,589	$45,457
324110	Petroleum refineries	$14,528,561	$42,230
311221	Wet corn milling	$5,387,609	$40,815
331314	Secondary smelting and alloying of aluminum	$1,968,754	$32,789
325188	All other basic inorganic chemical manufacturing	$1,811,216	$31,923
331419	Primary nonferrous metal, except Cu and Al	$1,360,197	$30,856
322130	Paperboard mills	$5,726,968	$29,228
325193	Ethyl alcohol manufacturing	$1,113,575	$28,045
331111	Iron and steel mills	$7,538,793	$24,962
325182	Carbon black manufacturing	$1,201,281	$24,162
311213	Malt manufacturing	$944,680	$23,109
325211	Plastics material and resin manufacturing	$1,550,325	$23,054
327410	Lime manufacturing	$1,038,614	$19,731
325131	Inorganic dye and pigment manufacturing	$1,542,792	$19,473
311222	Soybean processing	$888,105	$17,657
325199	All other basic organic chemical manufacturing	$1,596,993	$16,352
322121	Paper (except newsprint) mills	$5,148,066	$16,342
321219	Reconstituted wood product manufacturing	$1,255,592	$16,105
311223	Other oilseed processing	$585,378	$16,032
325312	Phosphatic fertilizer manufacturing	$1,225,738	$15,654
311211	Flour milling	$516,617	$14,714
327213	Glass container manufacturing	$3,410,556	$14,623
322110	Pulp mills	$2,626,359	$14,093
327420	Gypsum product manufacturing	$626,109	$14,087
327992	Ground or treated mineral and earth manufacturing	$340,004	$13,502
326160	Plastics bottle manufacturing	$996,277	$13,451
325212	Synthetic rubber manufacturing	$794,566	$12,331
327211	Flat glass manufacturing	$2,695,383	$12,321
331411	Primary smelting and refining of copper	$1,668,000	$12,244
327993	Mineral wool manufacturing	$751,534	$12,213
325222	Noncellulosic organic fiber manufacturing	$1,624,596	$12,059
324199	All other petroleum and coal products manufacturing	$374,990	$11,948
325221	Cellulosic organic fiber manufacturing	$1,040,800	$11,539
314992	Tire cord and tire fabric mills	$1,713,182	$10,537
331315	Aluminum sheet, plate, and foil manufacturing	$1,601,052	$10,446
332431	Metal can manufacturing	$1,026,182	$10,087
311225	Fats and oils refining and blending	$650,521	$9,456
325191	Gum and wood chemical manufacturing	$304,216	$9,296
331513	Steel foundries (except investment)	$791,355	$9,289
313111	Yarn spinning mills	$908,394	$9,139
331421	Copper rolling, drawing, and extruding	$1,057,322	$9,046
311212	Rice milling	$530,200	$9,026

Source: US Census Bureau, 2007 Economic Census

http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-ds_name=EC0731I1&-_lang=en