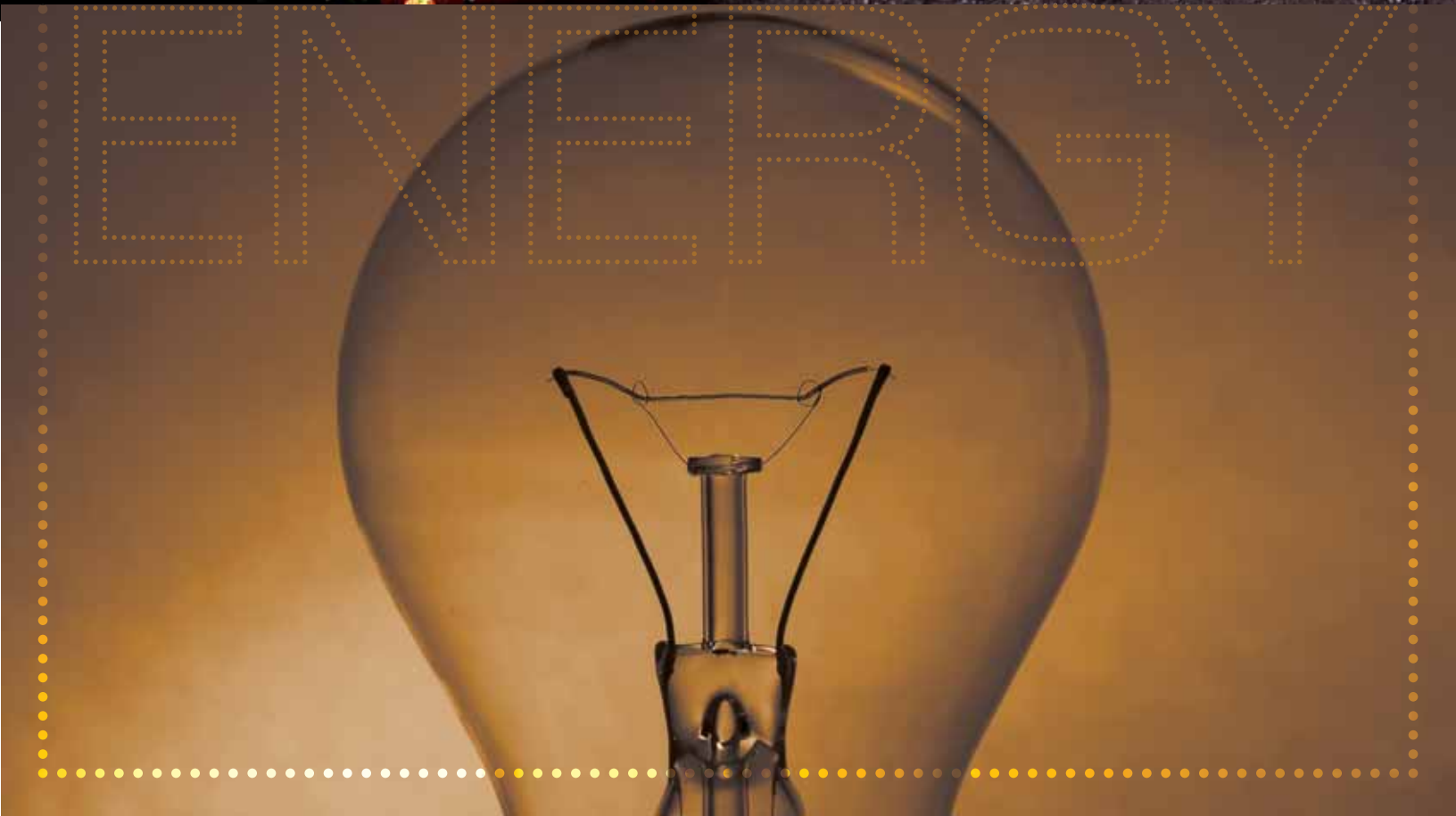
ENERGY



Energy–Definition

The Energy cluster is defined by industries involved in the operation of power facilities, and the manufacturing of machinery and parts used in the production of energy.

Missouri's Strengths

Energy Generation

Energy Generation, particularly fossil fuels and hydroelectric generation, represent key export industries in Missouri. These companies have displayed tremendous growth over the past five years and lead the cluster in employment.

Technology

Other large employers and exporters within the energy segment in Missouri represent the technological core of the cluster. These industries manufacture and design transformers, communication and energy wire, environmental control systems, and switchgear apparatus. ABB Power Company, Regal Beloit, and Fasco Industries are some of the companies involved in energy technology.

Alternative Fuels

Alternative fuel resources from corn (ethanol) and soybean oil (biodiesel) are growing industries in Missouri. The demand for biofuels is driven by the Renewable Fuels Standard which requires that Missouri gasoline contain at least 10 percent ethanol by 2008. This industry is also expected to be a major exporter of biofuels by 2008.

Mining and Exploration

Mining and Exploration represent an important function within the energy cluster. Coal mining and crude oil exploration are industries found in Missouri. Companies such as Peabody are involved in mining coal. However, Missouri currently has limited traditional energy resources which places limits on the expansion of these companies.

Key Locations

The Energy cluster employment distribution in Missouri occurs mainly in counties of higher population density. The largest Energy employing areas are located mainly in St. Louis, Kansas City, Callaway County, and Howell County. The highest growth areas include the Kansas City region, Jasper County, the southeast, counties north of St. Louis, and the center line of Missouri running from north to south. Areas of high concentration include central Missouri (north to south), Holt County, the southwest, the southeast, and the St. Louis region.

Factoid:

- The transportation and residential sectors lead state energy consumption.
- Nearly 591,000 tons of coal is excavated in Missouri annually.
- Missouri averages 92,000 barrels of crude oil annually, a value of $4.2 million dollars of sales in 2005.

What's Next in Energy?

Missouri's energy industry benefits from a diverse set of resources which has helped maintain recent industry employment growth and spurred advancements in energy research, especially ethanol.

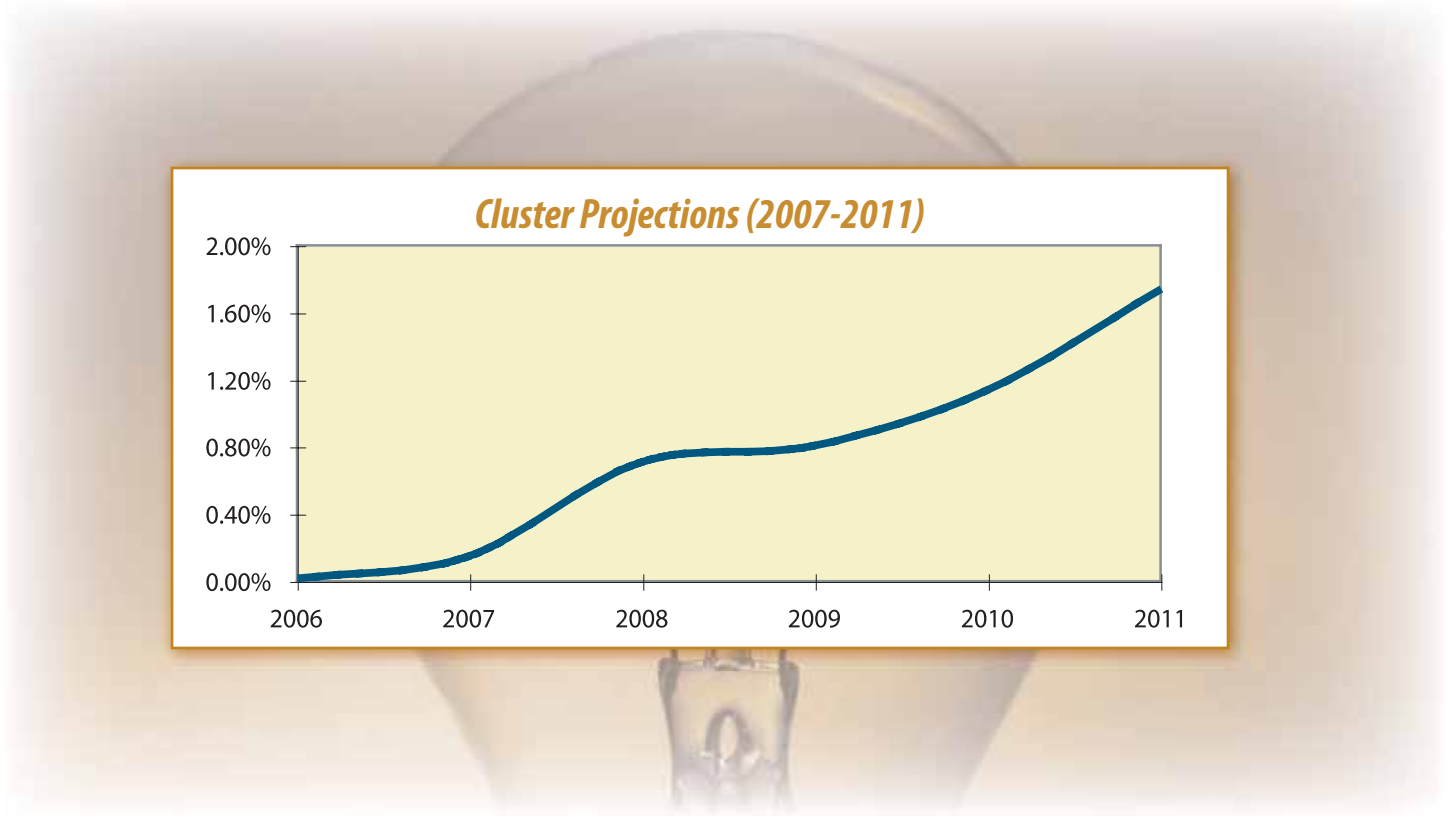
In 2006, the Missouri Renewable Fuel Standard passed into law. This will require all gasoline in the state to contain at least 10 percent ethanol by 2008. This requirement makes Missouri one of the few states in the nation to implement a 10 percent ethanol standard.

Missouri is well suited for this task, with four ethanol plants operating at a capacity of 155 million gallons per year. Additional plants will increase production capacity to nearly 800 million gallons per year in 2008. Although ethanol has taken center stage in the energy industry, it's not Missouri's only alternative energy source. Biodiesel from soybeans, hydropower from Missouri's dams, solar energy, and wind energy are making their marks on Missouri's energy landscape as well.

Nevertheless, Missouri relies heavily on traditional means of energy production, with coal accounting for 85% of net electricity generation. Oil and nuclear power are also key energy generating resources in the state and are expected to be for many years.

In contrast, developing technologies are changing the type of resources traditionally used as fuel as well as producing energy saving devices used in automobiles, homes, and businesses. Methods are being advanced in producing fuel efficiently from biomass products, such as ethanol and biodiesel. Battery assisted engines and hydrogen fuel cells are other examples of developing technologies in automobiles. Homes, businesses, and public use spaces are increasingly benefited from "green" construction materials and other products which provide energy efficiency and low emissions. All of these technological trends represent opportunities for Missouri in manufacturing, research, construction, and biofuel production.

Specialized energy firms can also benefit from the increasing global demand for electricity. Electrical equipment manufacturers, for example, may see new market opportunities as developing economies around the world strive to increase their power generation capacities.



Cluster Statistics

- Number of Businesses (2006) 696
- Number of Jobs (2006) 20,275
- Percent of Total Missouri Jobs (2006) 0.88%
- Average Annual Wages (2005) $58,053
- Location Quotient (2006) 1.29
- Percent Change from 2001 Location Quotient ..... -1.91%
- Net Percent Change in Jobs (2001-2006) ..... -17.6%

- Total Change in Jobs (2001-2006) ..... -4,320

Employment Change from 2001 attributed to:

- National Factors 631
- Industry Factors ..... -4,315
- Missouri's Competitiveness ..... -637

Top Five Industries

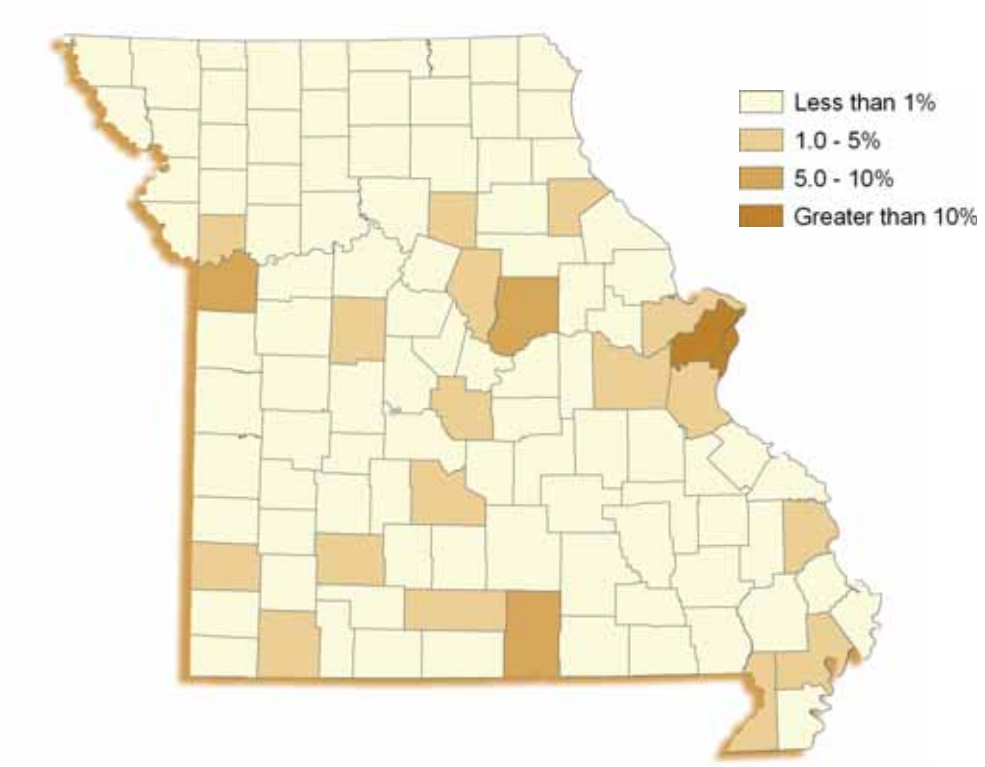
- Fossil fuel electric power generation
- Motor and generator manufacturing
- Power and communication system construction
- Electric power and specialty transformer mfg.
- Professional and technical services

74.2% of Cluster Jobs

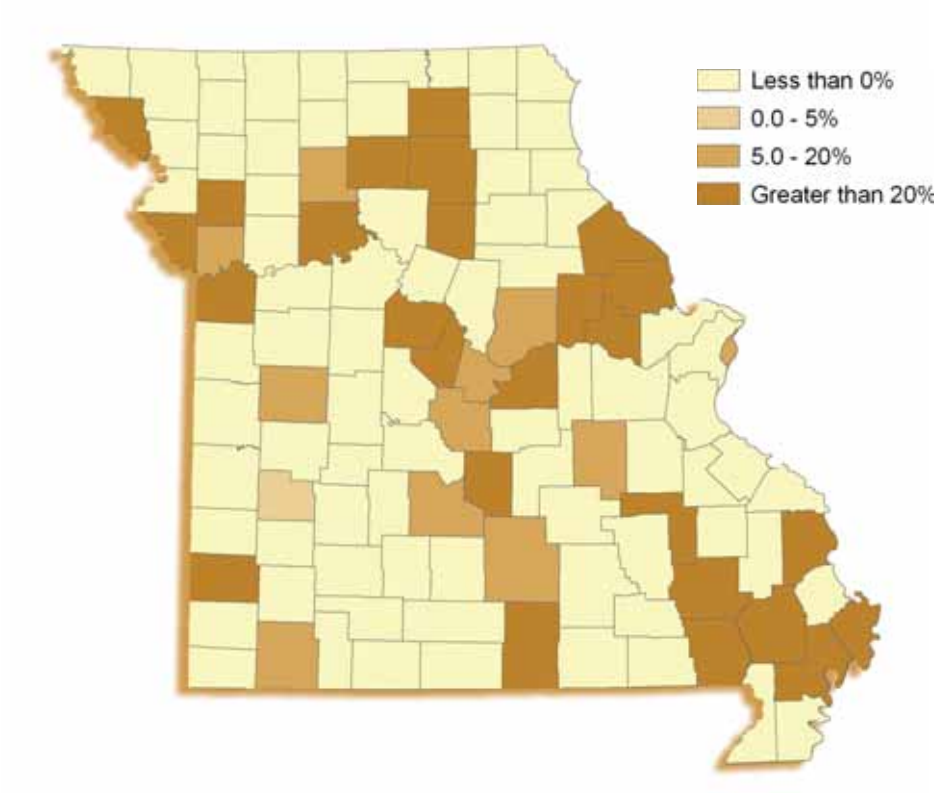
Targeted Occupations with Projected Growth and Current Wage

15% of Cluster Occupations	Current Wage	Projected Growth 2004–2014
Customer Service Representatives	$29,480	16.00%
Operating Engineers and Other Construction Equipment Operators	$40,960	13.30%
Maintenance and Repair Workers	$32,410	10.30%
Management Analysts	$67,400	7.20%
Truck Drivers	$36,510	6.80%

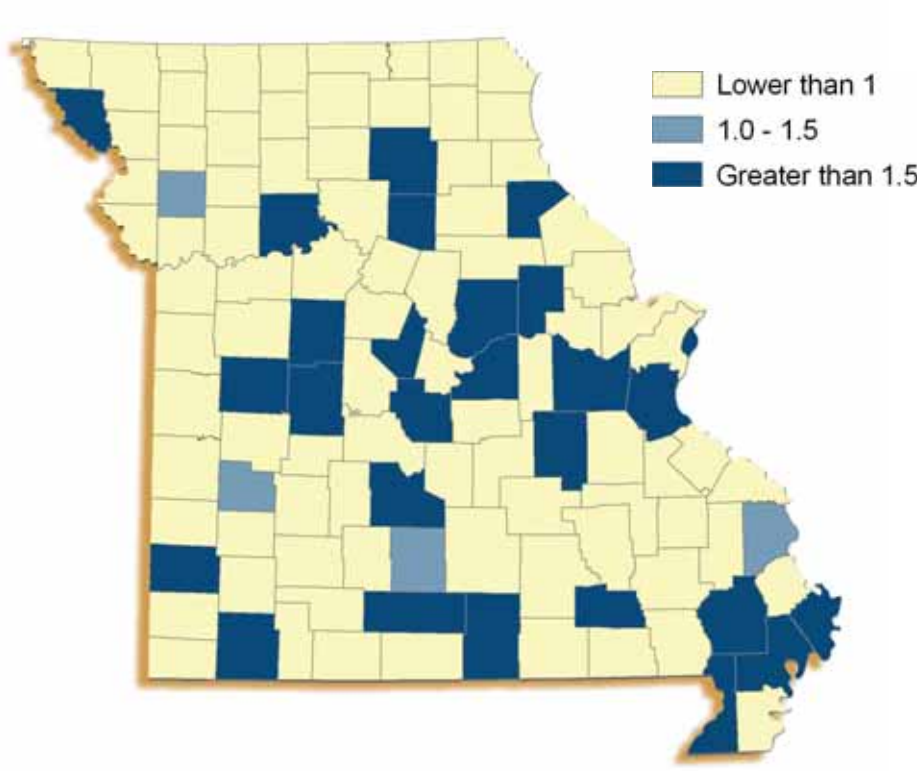
Employment Percentage by County (2006)



Employment Change by County (2001-2006)



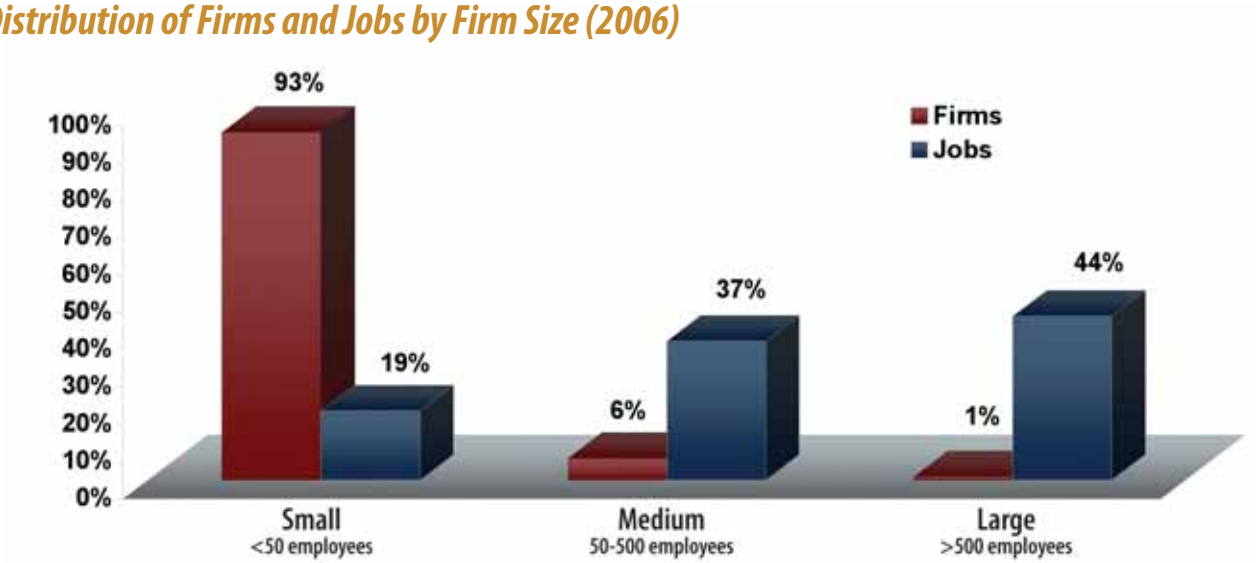
Location Quotient by County (2006)



Top Industries by 2006 Location Quotient (LQ) with Change from 2001 LQ

NAICS	Industry	2006 LQ	Percent Change
335312	Motor and generator manufacturing	4.53	-12.85%
335311	Electric power and specialty transformer mfg.	2.53	16.52%
335929	Other communication and energy wire mfg.	2.46	246.00%
334512	Automatic environmental control manufacturing	1.93	39.07%
221112	Fossil fuel electric power generation	1.70	142.07%
331319	Other aluminum rolling and drawing	1.64	78.77%
335313	Switchgear and switchboard apparatus mfg.	1.50	4.77%
237130	Power and communication system construction	1.24	-29.43%
325193	Ethyl alcohol manufacturing	1.14	19.53%
221111	Hydroelectric power generation	1.05	70.10%

Distribution of Firms and Jobs by Firm Size (2006)



NAICS industries included in targeted cluster

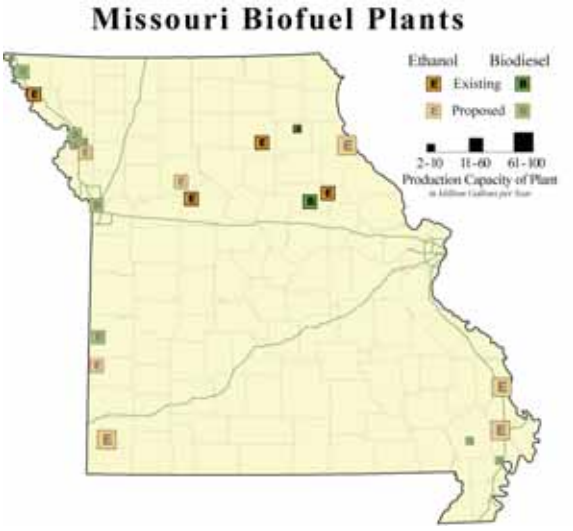
221111	Hydroelectric Power Generation
221112	Fossil Fuel Electric Power Generation
221113	Nuclear Electric Power Generation
221119	Other Electric Power Generation
237130	Power and Communication Line and Related Structures Construction
325193	Ethyl Alcohol Manufacturing
331319	Other Aluminum Rolling and Drawing
331422	Copper Wire (except Mechanical) Drawing
332410	Power Boiler and Heat Exchanger Manufacturing
334512	Automatic Environmental Control Manufacturing
334515	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals
335311	Power, Distribution, and Specialty Transformer Manufacturing
335312	Motor and Generator Manufacturing
335313	Switchgear and Switchboard Apparatus Manufacturing
335921	Fiber Optic Cable Manufacturing
335929	Other Communication and Energy Wire Manufacturing
541618	Other Management Consulting Services
541990	All Other Professional, Scientific, and Technical Services
562213	Solid Waste Combustors and Incinerators

Economic Impact of the Biofuel Industry in Missouri

Biofuels are renewable fuels made from organic matter. In recent years increased demand for these fuels has created a large push to build biofuel plants around the United States. Ethanol, derived from corn, is the most common biofuel in the U.S. and is typically blended with gasoline. Biodiesel, a smaller biofuel industry, is beginning to gain ground in the U.S. market as a substitute for petroleum diesel. Biodiesel in the U.S. is usually derived from soybean oil and can be used in diesel engines without modification.

Overview

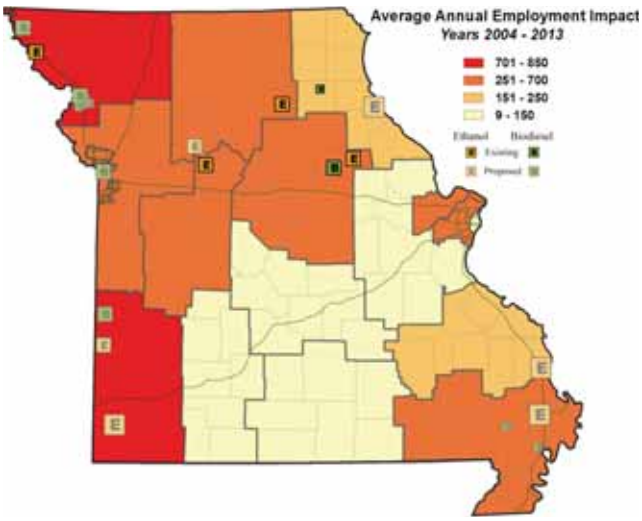
MERIC conducted an analysis for years 2004 to 2013 to quantify existing and estimated future economic impacts of the biofuel industry in Missouri. Direct benefits to Missouri include investment and jobs associated with 21 biofuel plants as well as increased farm incomes.

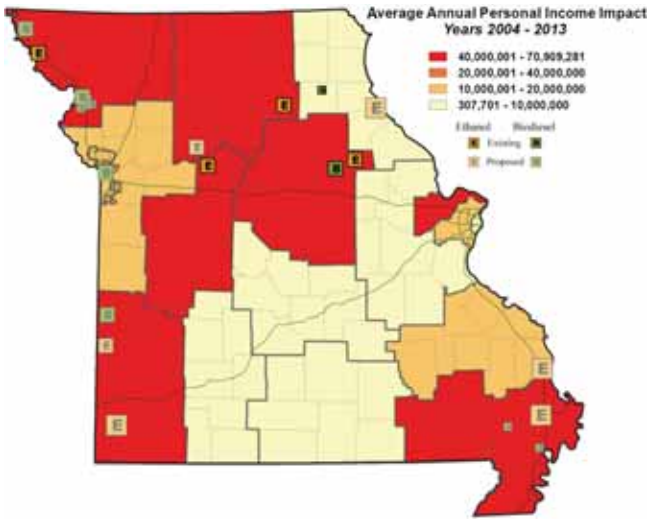


The biofuel industry directly impacts the manufacturing and agricultural sectors, in particular farmers who invest in biofuel plants or who supply feedstock. Missouri biofuel incentives are targeted at crop producers, typically located within the state, which help keep profits in Missouri. Because of this, much of the gain to Missouri's economy can be seen in investor dividends and farm incomes. This money, along with income generated by plant employment, flows through the state creating additional jobs and income in other industries.

Average Annual Impact to Economic Regions in Missouri

The maps represent the average construction and operation phase impacts of employment and personal income over a 10 year period (2004-2013). Existing and proposed plants are also shown.





The Impact of Targeting Incentives towards Missouri Investors

Missouri biofuel incentives require that the majority of plant investors be agricultural producers, which are typically farmers located in Missouri. Targeting incentives helps promote gains to Missouri income that may not occur if plant profits accrue to out-of-state investors.

The boxes illustrate gains to Missouri from biofuel plants owned by in-state investors. In-state investors own 100% of most biofuel plants in Missouri. The ethanol plant impact is based on a typical facility producing 50 mgy and employing 38 workers.

The typical biodiesel plant produces 30 mgy and employs 21 workers. For comparison, the same plants were modeled assuming 100% out-of-state ownership. Although impacts will vary based on individual facilities, the overall benefit to Missouri from targeting incentives is clearly evident.

What Difference Can One Ethanol Plant Make?

Additional impact of profits that accrue to in-state rather than out-of-state investors:

	10 year Avg
ADDITIONAL AVG. ANNUAL EMPLOYMENT	300 jobs
ADDITIONAL PERSONAL INCOME	$293 million

New personal income to Missourians for every gallon purchased:

	Personal Income *(10 year Avg)*
100% IN-STATE INVESTORS	$0.82
100% OUT-OF-STATE INVESTORS	$0.17
DIFFERENCE	*$0.65*

What Difference Can One Biodiesel Plant Make?

Additional impact of profits that accrue to in-state rather than out-of-state investors:

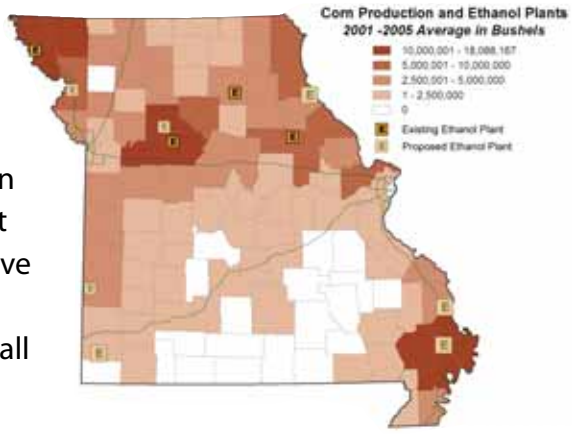
	10 year Avg
ADDITIONAL AVG. ANNUAL EMPLOYMENT	267 jobs
ADDITIONAL PERSONAL INCOME	$278 million

New personal income to Missourians for every gallon purchased:

	Personal Income *(10 year Avg)*
100% IN-STATE INVESTORS	$1.16
100% OUT-OF-STATE INVESTORS	$0.13
DIFFERENCE	*$1.03*

Biofuel Supply

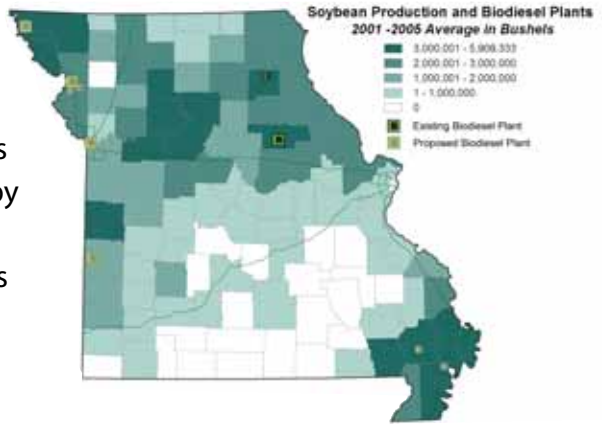
U.S. ethanol production was nearly 4 billion gallons in 2005, up from 1.8 billion in 2001. This represents an annual increase of 20 percent. Currently 101 ethanol plants in the U.S. have a combined capacity of 4.8 billion gallons a year. Construction of 39 additional ethanol plants along with expansions will bring that capacity to 7.4 billion gallons. Missouri has 4 existing ethanol plants with a capacity of 163 million gallons, with 7 additional plants planned in the next couple of years. By 2008, Missouri's 11 plants will have a total ethanol production capacity of nearly 800 million gallons per year, representing 11 percent of all U.S. ethanol production.



National biodiesel production has increased dramatically in the past 5 years, rising from 5 million gallons in 2001 to 245 million gallons by 2006. Capacity is expected to reach over 1.8 billion gallons a year in 2007. Missouri currently has two biodiesel plants with a capacity of 32 million gallons. Eight additional plants are currently in the planning stages. If all plants are built by 2008, Missouri will have 10 plants with the capacity to produce over 200 million gallons of biodiesel a year.

Biofuel Demand

Current demand for biofuels has been driven largely by high oil prices and the initiatives of the federal government, along with several states, to expand the use of biofuels within their borders. The Renewable Fuels Standard (RFS), part of the national 2005 Energy Policy Act, requires the blending of renewable fuels with gasoline or diesel to reach 7.5 billion gallons by 2012. All gasoline in Missouri, by 2008, will contain a minimum of 10 percent ethanol. Four other states have similar measures.



The RFS, continued high oil prices, and improved production technologies could continue to make Missouri's biofuels a competitive alternative to standard gasoline and diesel fuels. However, uncertainties in future commodity prices along with emerging biofuel technologies which use alternatives to corn and soybeans could create changes in the market that are hard to forecast at this time.

Definition of Terms

Location Quotient

Location Quotient (LQ) measures the employment concentration of an industry within a specified area relative to the nation as a whole. It is calculated by dividing the region's industry employment share by the nation's industry employment share. A LQ of 1.00 or greater means that there is a higher concentration in the region for an industry than exists nationally. The Location Quotient is a quick guide to understanding key industries within an area, especially when coupled with employment growth trends that shift-share analysis can reveal.

What Does the Location Quotient (LQ) Mean?		
	Low Employment Growth	High Employment Growth
High LQ	Important industries that may require attention	Important growth industries
Low LQ	Industries with lower potential for local economy	Potential emerging industries

Statewide Location Quotients are provided by cluster in the summary section and in each cluster and sub-cluster section. Top industry and county Location Quotients are included in each cluster and sub-cluster section.

Shift Share Analysis

Shift Share analysis measures employment changes in an industry, cluster, or regional industry mix. It breaks out employment changes into three components: National Share (NS), Industry Mix (IM), and Regional Shift (RS).

National Share (NS)–is the share of regional employment changes attributed to factors in the national economy.

Industry Mix (IM)–identifies local industry employment changes attributed to national industry employment changes.

Regional Shift (RS)–identifies a region's lagging or leading industries. This is also considered a measure of a region's competitiveness.

The shift share analysis is provided in the summary section and in each cluster and sub-cluster section under the heading Cluster Statistics.

Summary of Clusters

	Agribusiness	Automotive	Defense Homeland Security	Energy	Finance	Information Technology	Life Sciences	Transportation Logistics	All Clusters
Employer Units (2006)	3,040	258	348	696	9,769	2,345	1,034	12,468	29,349
Employment (2006)	88,645	36,223	16,922	20,275	132,036	38,604	31,295	175,064	519,316
Average Employment per Establishment (2006)	29	140	49	29	14	16	30	14	18
Percent of Total Missouri Jobs (2006)	3.86%	1.58%	0.74%	0.88%	5.75%	1.68%	1.36%	7.62%	22.62%
Average Annual Wages (2005)	$39,605	$54,167	$77,935	$58,053	$52,206	$70,938	$66,505	$43,374	$51,285
Location Quotient (2006)	1.19	1.65	0.78	1.29	1.04	0.79	0.91	1.05	1.06
Percent Change from 2001 Location Quotient	5.25%	3.91%	38.25%	-1.91%	-2.34%	8.69%	11.95%	0.11%	1.22%
Projected Employment Change (2011)	1.03%	-1.43%	4.61%	1.72%	0.12%	9.25%	11.41%	3.81%	2.88%
Percentage of Firms with less than 50 Employees	91%	66%	88%	93%	92%	93%	91%	94%	93%
Net Percentage Change in Jobs (2001-2006)	-8.9%	-12.2%	42.2%	-17.6%	1.4%	10.8%	17.4%	0.3%	-3.40%
Employment Change in Jobs (2001-2006) Total Change	-8,654	-5,051	5,024	-4,320	1,798	3,760	4,629	446	-18,482
Employment Change from 2001 attributed to National Factors	2,498	1,059	305	631	3,343	894	685	4,482	13,805
Employment Change from 2001 attributed to Industry Factors	-14,590	-7,066	180	-4,315	3,204	195	932	-2,178	-32,559
Employment Change from 2001 attributed to Missouri's Competitiveness	3,438	956	4,538	-637	-4,749	2,670	3,013	-1,858	272

Note: Some industries are in more than one cluster, so the sum of individual clusters will not equal the total for all clusters.