

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of a Workshop File to Explore     )  
Legislative and Regulatory Means to Improve    )  
and Clarify Missouri’s Renewable Energy        )  
Standard Law, Mo. Rev. Stat. §§ 393.1020 to     )  
393.1030.   )

File No. EW-2011-0031

**COMMENTS BY CLEAN LINE ENERGY PARTNERS**

NOW COMES Clean Line Energy Partners, and submits the following comments and attachments pursuant to the Order issued by the Missouri Public Service Commission (“Commission”) on August 5, 2010.

Clean Line Energy Partners, a Limited Liability Company organized under the laws of the state of Delaware, is dedicated to developing, construction and operating high-voltage direct current electric power lines designed to deliver renewable energy from high-resource areas to load centers in need of additional transmission capacity.

**Grain Belt Express Clean Line – Project Description**

Clean Line Energy Partners proposes to construct and operate a new overhead high voltage direct current (“HVDC”) transmission line that will be capable of moving up to 3,500 MW of renewable energy from new generation projects in western Kansas to southeast Missouri.

The Grain Belt Express Clean Line will facilitate the reliable delivery of affordable renewable energy, and allow Missouri (and other states) to meet renewable energy requirements. This project will meet the needs of generators and utilities for new transmission capacity, and enable the construction of

thousands of megawatts of new, cost-effective renewable electric generation capacity. This project will create new jobs, stimulate domestic manufacturing, and lead to cleaner air and water.

By accessing the most robust wind resources, the project can deliver low-cost renewable energy while stimulating the Missouri economy. Clean Line has conducted analysis of Missouri's manufacturing base and discovered tremendous potential for Missouri to benefit from the growth of wind energy in the U.S. The attached report, A Growth Opportunity for Missouri Manufacturing, shows how Missouri's strong manufacturing base will benefit from growth in the wind energy sector. This opportunity is likely to occur where wind farms are located in Missouri or in neighboring states.

As a matter of public policy, a meaningful Renewable Energy Standard in Missouri will create jobs, provide diversity to utility's generation fleet and provide electricity without polluting our water and air. Clean Line Energy Partners provides the attached report to assist Missouri decision makers appreciate the options for complying with the Renewable Energy Standard as well as the tremendous economic opportunity wind energy brings to the state.

We appreciate the opportunity to provide this information and participate in this docket.

Respectfully submitted,

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Date: October 1, 2010

# GRAIN BELT EXPRESS

## CLEAN LINE

### **A Growth Opportunity for Missouri Manufacturers**

September 2010



## **Domestic Wind Energy Development: Good News for Missouri Manufacturing**

Missouri's manufacturing environment was ranked 1<sup>st</sup> nationwide in a 2008 study conducted by Ball State University in Indiana.<sup>1</sup> With 13% of its workforce engaged in manufacturing, the sector is vital to the state's economic health. Over the past ten years, however, hundreds of thousands of manufacturing jobs in the US have been lost as companies have increasingly sourced their products overseas. Missouri is among the states that have suffered the most from this trend. From January 2001 to July 2007, the state lost 50,710 manufacturing jobs, or approximately 12.25% of its total manufacturing workforce.<sup>2</sup> The wind energy industry could be the impetus Missouri needs to keep its manufacturing sector and overall economy strong.

Since the best wind resources in the United States are concentrated in specific regions, it is often assumed that the states within those regions benefit most from domestic wind energy development due to construction, operational jobs and landowner payments. But equally significant are the economic benefits from increased demand for wind turbine components.

In September 2004, the Renewable Energy Policy Project ("REPP") conducted analysis under contract with the US Department of Energy to examine where investments and job creation would likely be distributed if a national policy were put in place to substantially increase domestic wind energy development. REPP discovered that 70% of the job creation caused by wind development is related to the manufacturing of wind turbine components, followed by 17% of jobs related to installation and 13% in operations and maintenance.<sup>3</sup> The report concluded that wind turbine manufacturing investment would gravitate towards some of the most populous regions of the country, and would especially benefit regions that are in most need of new manufacturing jobs to replace jobs recently lost. Missouri ranked in the top 20 states in terms of investment that would result from a national renewable energy policy.

In July 2008, REPP published a subsequent report to investigate in greater detail how Missouri would benefit from growth of the US renewable energy industry. To quantify the benefits resulting from a specific scenario, REPP made the assumption that if the US moved to stabilize carbon emissions from the electric sector, 124,900 MW of wind energy would be developed nationally, bringing over \$62 billion of investment.

To determine how those investment dollars would be distributed, REPP utilized North American Industrial Classification System ("NAICS") codes to identify the companies that do or could supply an expanded US wind energy industry. Every component manufactured in North America can be classified using NAICS codes, and a company that currently manufactures generators and reports "333611" has the technical potential to manufacture generators for wind turbines and would be a likely candidate to supply generators to the wind energy industry.

Because Missouri has a manufacturing base in most of the industries relevant to wind turbine technology, REPP estimated that if a national renewable energy policy were put in place, Missouri would receive over \$1.5 billion of wind related investment and over 10,000 new full time equivalent ("FTE") jobs; see Table I.

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<sup>1</sup> Missouri Partnership: Brochure on the Wind Industry.

<http://www.missouripartnership.com/LinkClick.aspx?fileticket=0hVStVdUjgs%3d&tabid=91>.

<sup>2</sup> Sterzinger, George. Renewable Energy Policy Project, *Component Manufacturing: Missouri's Future in the Renewable Energy Industry*, July 2008. [http://www.repp.org/articles/static/1/binaries/Missouri\\_Final.pdf](http://www.repp.org/articles/static/1/binaries/Missouri_Final.pdf).

<sup>3</sup> Sterzinger, George and Svrcek, Matt. Renewable Energy Policy Project, *Wind Turbine Development: Location of Manufacturing Activity*, September 2004, 46. <http://www.repp.org/articles/static/1/binaries/WindLocator.pdf>.

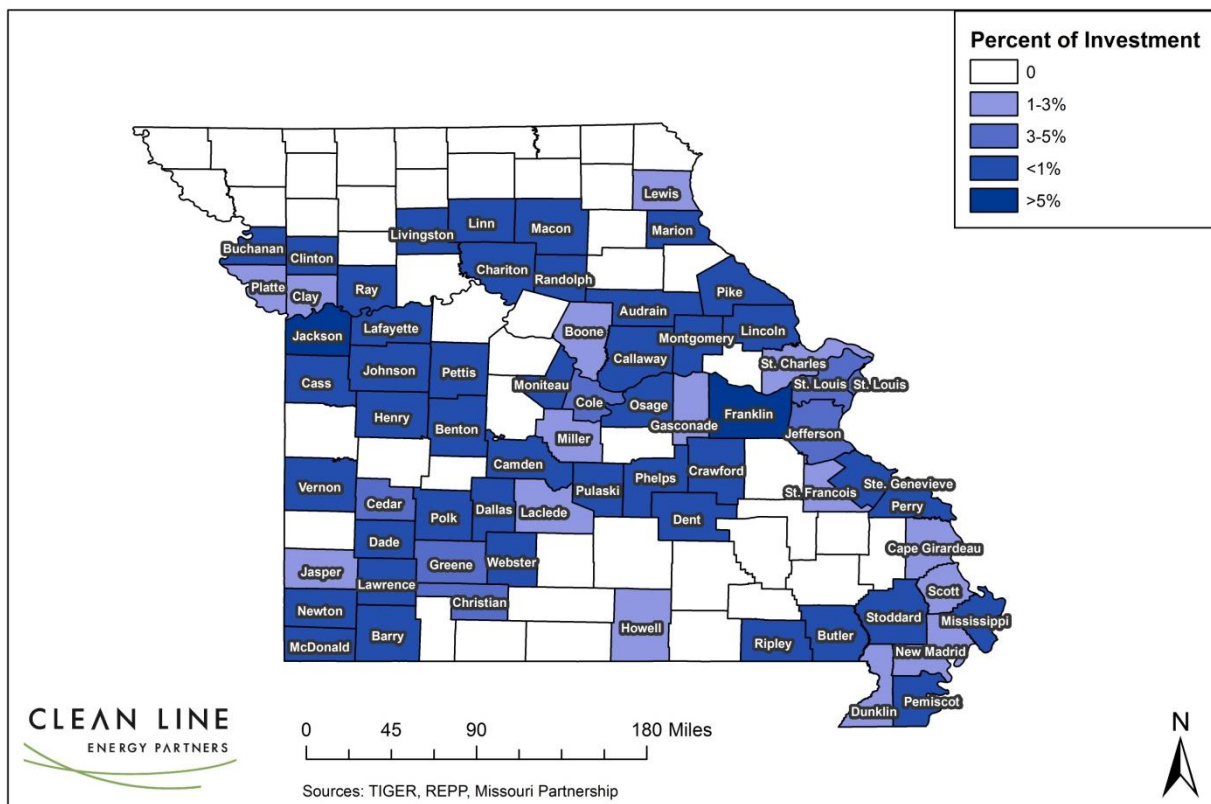
**Table I**  
**Potential Benefits to Missouri from National Renewable Energy Policy**

	Number of Firms	Investment (millions)	New FTE Jobs
Wind	311	\$1,531	10,260
Solar	178	\$1,456	7,532
Geothermal	66	\$431	2,907
Biomass	230	\$314	2,097
Total	785	\$3,731	22,796

Source: REPP, Missouri Component Manufacturing

Based on the existing manufacturing capabilities of firms in Missouri and the expertise of the local workforce, the investments and new jobs would be distributed across 67 Missouri counties, as shown in Figure I, affecting a large number of communities and Missourian families.

**Figure I**  
**Distribution of Wind Energy Manufacturing Investment**



Source: Clean Line Energy

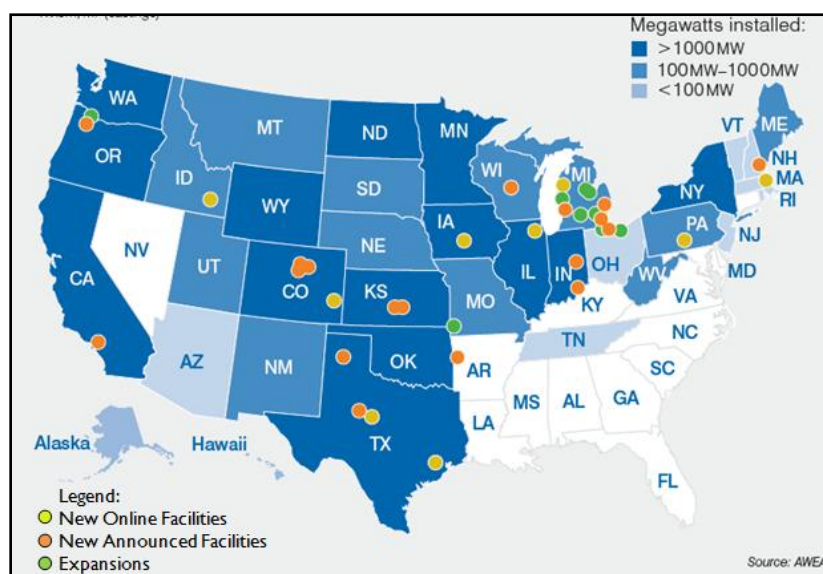
## The Grain Belt Express Clean Line and Missouri Manufacturing

While the estimates above are based on a hypothetical scenario, the successful development and construction of the Grain Belt Express Clean Line will provide tangible benefits even without major national policy changes. The new transmission capacity will enable the development of up to 4,000 MW of new wind farms very close to Missouri, in neighboring Kansas, and based on the 2004 REPP report, 70% of jobs resulting from the new wind farms would be in manufacturing the turbine components.

The 2008 REPP report quantified investments and jobs that would result in the manufacturing industry from wind energy development based on the following assumptions: \$1 billion of investments in rotors, generators, towers and other related investments for every 1,000 MW of new wind energy and 3,000 FTE component manufacturing jobs for every \$1 billion of investment.<sup>4</sup> Using this methodology, the new wind farms made possible by the Grain Belt Express would result in \$4 billion of manufacturing investments and 12,000 FTE jobs. Missouri is well positioned to reap a portion of those economic benefits not only because of its existing manufacturing potential but also because of the state's proximity to the new wind farms and wind turbine manufacturing facilities.

The US wind industry has been expanding in recent years, and the domestic content of turbines is increasing. According to AWEA, "With supportive policies in place since 2004 and a rapidly growing market, US domestic manufacturing of wind turbines and their components has increased 12-fold with domestic content increasing from less than 25% to 50% even with a much larger market."<sup>5</sup> Trends to date indicate that new manufacturing facilities tend to be located near sites where wind turbines are installed. Figure 2 shows wind turbine and component manufacturing facilities opened or expanded in 2009 in relation to installed megawatts of wind energy.

**Figure 2**  
**Expansion of Manufacturing Facilities in 2009**



Source: American Wind Energy Association

<sup>4</sup> Sterzinger, George. Renewable Energy Policy Project, *Component Manufacturing: Missouri's Future in the Renewable Energy Industry*, July 2008. [http://www.repp.org/articles/static/1/binaries/Missouri\\_Final.pdf](http://www.repp.org/articles/static/1/binaries/Missouri_Final.pdf).

<sup>5</sup> American Wind Energy Association, *Windpower Outlook 2010*. [http://www.awea.org/pubs/documents/Outlook\\_2010.pdf](http://www.awea.org/pubs/documents/Outlook_2010.pdf).

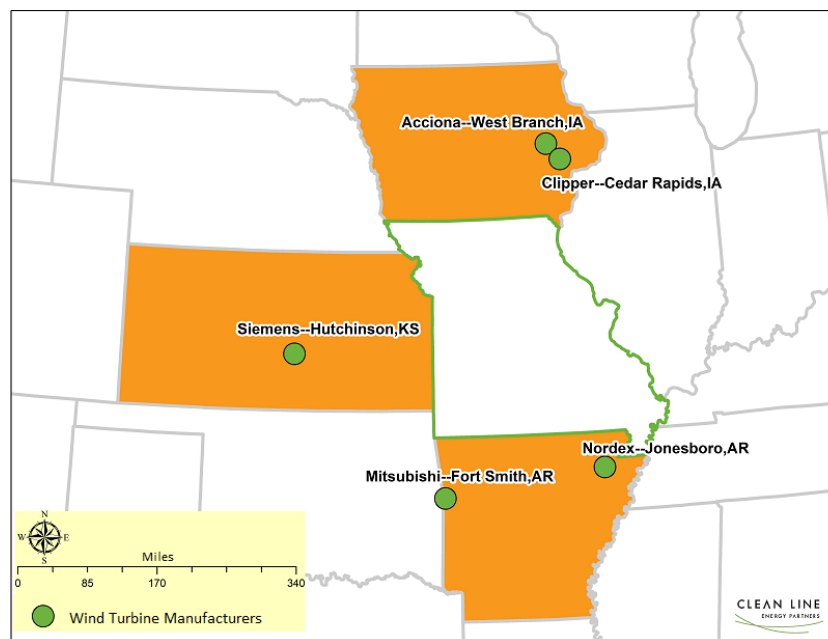
Five wind turbine manufacturing companies with existing or newly announced facilities in states surrounding Missouri captured roughly 30% of the US wind turbine market in 2009. These companies are shown in bold in Table 2 and illustrated in Figure 3.

**Table 2**  
**Market Share Distribution of Domestic Wind Turbine Installations in 2009**

Wind Turbine Manufacturer	2009 Installed MW	Market Share
GE	3,995	39.97%
Vestas	1,490	14.91%
<b>Siemens</b>	<b>1,162</b>	<b>11.63%</b>
<b>Mitsubishi</b>	<b>814</b>	<b>8.14%</b>
Suzlon	702	7.02%
<b>Clipper</b>	<b>605</b>	<b>6.05%</b>
Gamesa	600	6.00%
REPower	330	3.30%
<b>Acciona</b>	<b>204</b>	<b>2.04%</b>
<b>Nordex</b>	<b>63</b>	<b>0.63%</b>
Other	31	0.31%

Source: National Renewable Energy Laboratory

**Figure 3**  
**Wind Turbine Manufacturing Facilities near Missouri**



Source: Clean Line Energy

Wind turbine and nacelle assembly manufacturers have supply chains that include thousands of components ranging from brakes to bearings. To minimize transportation costs, companies that depend on numerous suppliers, such as car manufacturers, often prefer to source locally as long as quality standards are met. Missouri's transportation network, consisting of extensive highways, a Class I rail system and the Missouri and Mississippi Rivers, and its proximity to wind turbine manufacturers make the state an attractive supplier location from a wind turbine manufacturer's point of view.

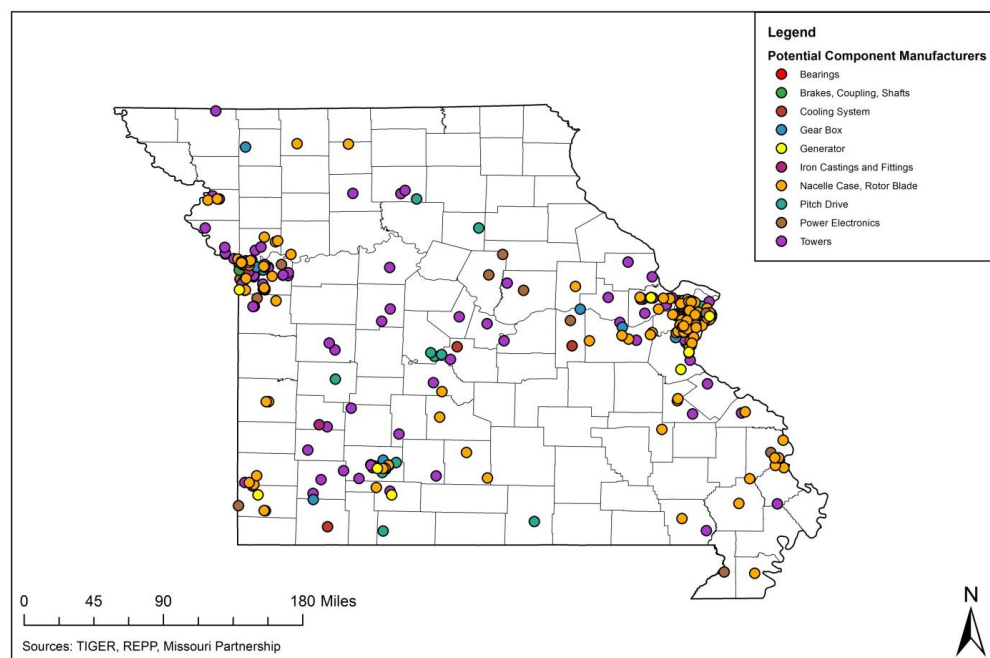
Using manufacturing company data provided by the Missouri Partnership and NAICS Industry Codes relevant to wind turbine technology, Clean Line has identified 327 companies in Missouri that have the technical potential to enter the wind turbine supply chain if demand for components grew in conjunction with growth in the region's wind turbine market. Together, these companies employ over 18,600 people at 340 facilities, as shown in Table 3. Figure 4 shows the broad geographic distribution of the companies in 118 of Missouri's cities.

**Table 3**  
**Missouri Facilities and Employees with Wind Turbine Component Manufacturing Potential**

Wind Turbine Component	NAICS Industry Code	Facilities with NAICS Industry Code	Total of Current Employees
Bearings	332991	1	760
Blade Extender, Hub, Nacelle Frame, Tower Flange and Bolts	331511	3	314
Brakes, Coupling, Shafts	333613	1	12
Cooling System	333412	5	2,517
Gear Box	333612	14	138
Generator	333611	9	97
Nacelle Case, Rotor Blade	326199	118	6,674
Pitch Drive	335312	18	2,216
Power Electronics	335999	18	1,437
Towers	332312	153	4,484
<b>Grand Total</b>		<b>340</b>	<b>18,649</b>

Source: Clean Line Energy

**Figure 4**  
**Missouri Facilities with Potential to Manufacture Wind Turbine Components**



Source: Clean Line Energy



Two companies in Missouri have already taken steps to enter the wind turbine supply chain. Liberty-based Continental Disc Corporation introduced a new rupture disc assembly specifically for wind turbine hydraulic braking systems in July of 2009.<sup>6</sup> Five months later, FAG Bearings, an established automotive industry supplier, announced an expansion to its Joplin facility that will allow the company to make larger bearings for wind turbine generators. Joplin's City Council was instrumental in this decision, approving tax breaks to subsidize the \$33 million expansion in exchange for job and wage guarantees.<sup>7</sup> These and perhaps dozens more Missouri companies stand to benefit from growth in the region's wind turbine market. The Grain Belt Express will spur demand for 4,000 MW of wind turbines in neighboring Kansas, bringing significant revenue generating opportunities to Missouri businesses.

### **Strengthening Missouri's Talent Pipeline**

Missouri higher education is actively engaged in alternative energy and wind power. Missouri University of Science and Technology in Rolla is home to the Energy Research and Development Center. Washington University in St. Louis has the country's only department of Energy, Environmental and Chemical Engineering. The University of Missouri has launched the Center for Sustainable Energy in Columbia Missouri. Missouri colleges grant over 1,300 BS degrees in engineering annually; half of those are in mechanical and electrical engineering. Missouri also has several community colleges with precision metal training courses: East Central College, Jefferson College, Linn State Technical School and Metropolitan Community College, among others.

Missouri has a strong pipeline of talent that can help companies develop the capabilities to meet the growing demand for wind turbine components and transmission structures. During construction of the Grain Belt Express, a local workforce with engineering and environmental knowledge will be needed, and Missouri has the capability of providing talent for that workforce. Clean Line is willing to sponsor or partner with job training programs to further Missouri's competitiveness in the renewable energy industry.

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<sup>6</sup> Bloomberg Businessweek, "Continental Disc Corporation Launches New Wind Turbine Hydraulic Braking System Rupture Disc Assembly," July 11, 2009, <http://investing.businessweek.com/research/stocks/private/snapshot.asp?privcapId=4317610>.

<sup>7</sup> Joplin Globe. "Council approves FAG Bearings plan." December 7, 2009. [http://www.joplinglobe.com/joplin\\_metro/x546221676/Council-approves-FAG-Bearings-plan](http://www.joplinglobe.com/joplin_metro/x546221676/Council-approves-FAG-Bearings-plan)

Wind Turbine Components	Company	City	Employees
<b>Bearings</b>	FAG Bearings Corp	Joplin	760
<b>Brakes, Coupling, Shafts</b>	Blue Chip Machine Co	Kansas City	12
<b>Cooling System</b>	Billy Goat Industries Inc	Lees Summit	65
	Fasco Motors Group	Cassville	812
	GE Energy	Raytown	600
	Jefferson Products Co	Owensville	40
	Loren Cook Co	Springfield	1000
<b>Gear Box</b>	Accurate Gear & Machining	Independence	6
	Advanced Jiffy Machine Prod	Monett	9
	Brewer Machine & Gear Co Mfg	St Louis	7
	C & L Gear	St Louis	2
	Gateway Precision Gear	St Peters	13
	Industrial Machine & Gear Inc	Lees Summit	10
	Lawler Gear Corp	Lees Summit	20
	Machinery Spare Parts Inc	Independence	1
	Midwest Manufacturing Co	Stanberry	20
	Moore Gear & Mfg Co	Hermann	35
	Mostar Gear & Machine	Washington	5
	Quality Rod & Gear	Springfield	4
	S T Gear & Machine LLC	House Springs	2
	St Louis Gear Product	Wentzville	4
<b>Generator</b>	Authorized Equipment Co	St Louis	6
	Aviation Turbines Inc	O Fallon	40
	Babcock & Wilcox Co	Kansas City	19
	Century Turbine Repair	Pevely	11
	Hydra Smooth	Ozark	3
	Newco Hydraulics & Diesel Rpr	De Soto	1
	Siemens Power Generation	Columbia	2
	Southern Engineering Inc	Springfield	4
	Turbine Engine Consultants Inc	Neosho	11
<b>Iron Castings and Fittings</b>	Carondelet Corp	Pevely	250
	Clay & Bailey Mfg Co	Kansas City	60
	Quality Castings	Stockton	4
<b>Nacelle Case, Rotor Blade</b>	3M Co	Nevada	640
	A C Buckhorn LLC	Springfield	187
	ACI Plastics Inc	St Louis	21
	American Plastics Group	Union	10
	American Wilcon Plastic Inc	Orrick	140
	Aurora Technologies Inc	Pacific	200
	B & A Plastics	New Florence	10
	Bel-Art Products Inc	Kansas City	13
	Blair Packaging Inc	Scott City	150
	Bore-Flex Industries Inc	Mountain Grove	48

Wind Turbine Components	Company	City	Employees
Nacelle Case, Rotor Blade (continued)	Bray Manufacturing Inc	Barnhart	15
		Pacific	10
	Britech	St Louis	5
	Buckert Mold & Machine Co	Fenton	10
	Bud-Alan Plastics Inc	Camdenton	25
	C K Plastics Inc	St Louis	28
	Cadillac Plastic	St Louis	18
	Caps Inc	Bridgeton	200
	Central Missouri Plastics	Lees Summit	20
	Central States Products Co	St Louis	20
	Chi-Mo Inc	Nixa	9
	Chris Kaye Plastics Corp	Union	10
	Cks Packaging Inc	Kansas City	146
	Classic Films Inc	High Ridge	12
	Clear Impact Acrylics	Kansas City	20
	Commco	Kansas City	30
	Consolidated Plastic Products	Bloomfield	35
	Continental Commercial Prods	Bridgeton	250
	Coon Manufacturing Inc	Spickard	16
	Cope Plastics	Hazelwood	18
	Corrosion Technologies Inc	Union	20
	Cryovac Inc	St Joseph	50
	Curtis Glass Ctr	Flat River	14
	Custom Plastic Fabricators	Ironton	8
	Dallas Plastics	Wentzville	25
	Decimal Place	St Louis	6
	Dynasauer Corp	St Louis	18
	Elmco Engineering	Hartville	5
	Engineered Products Industries	Hazelwood	70
	EPI Inc	Excelsior Spgs	10
	EXT Inc	Excelsior Spgs	10
	Fluoro Seal Inc	St Louis	14
	Forte Plastics Co	Kansas City	6
	Forte Product Solutions	Kansas City	34
	Four Process Ltd	Fenton	10
	George's Hot Stamping	Lebanon	10
	Gill Plastics Inc	St Louis	7
	Graham Packaging Co	Joplin	30
	Gravois Planing Mill Co	St Louis	25
	Green Forest Engineered Prod	Nevada	15
	Harwil Industries	Neosho	10
	High Quality Plastics	Pleasant Hill	6
	Ivx Animal Health	St Joseph	240

Wind Turbine Components	Company	City	Employees
Nacelle Case, Rotor Blade (continued)	J C Finley Co Inc	Gerald	8
	J C Plastics Inc	Independence	12
	K C Plastic Laminating	Kansas City	7
	Koller-Craft Plastic Products	Fenton	100
	L & P Plastics	Poplar Bluff	165
	Laird Plastics Inc	Maryland Heights	18
	Langco Tool & Plastics	Oran	50
	Le Vic Plastics Inc	Grandview	23
	Loxcreen Sales Branch	Hayti	10
	Lucite International	Webster Groves	10
	Mabie Vac-Formed	St Louis	6
	Mac Molding Co	Sappington	60
	Mar Con Marketing Concepts Inc	Kansas City	50
	Medical Graphics Corp	St Louis	8
	Mid-Continent Tool & Molding	Randolph	15
	Mission Plastic	Grandview	160
	Mocap Inc	St Louis	60
	Molds-R-US	Carterville	10
	Morrow Plastics Inc	St Peters	5
	Nike Ihm Inc	St Charles	300
	Norandex Distribution Inc	Kansas City	15
	Nordenia USA Inc	Jackson	325
	Omega Industries Inc	St Louis	8
	Ozark Plastics Products	Neosho	20
	PFI	Hazelwood	10
	PGS LLC	Park Hills	7
	Pioneer Industrial Corp	St Louis	70
	Plastic Enterprises	Independence	6
	Plastic Enterprises Co Inc	Lees Summit	175
	Plastic Lumber Co	St Louis	17
	Plastic Veneers Inc	Arnold	7
	Plastics Molding Co	St Louis	35
	Plasti-Lite Signs	St Louis	10
	Polyfab Plastics & Supply Inc	Springfield	25
	Precise Mold & Engineering	Valley Park	22
	Precision Products	St Louis	5
	Pretium Packaging	Chesterfield	18
	Prinsco Inc	Bethany	9
	Printpack Inc	Hazelwood	300
	Pro Plas Inc	St Louis	40
	Pro-Tect Mfg	St Louis	10
	Quick Point Inc	Fenton	175
	R & D Tool & Engineering	Lees Summit	275

Wind Turbine Components	Company	City	Employees
<b>Nacelle Case, Rotor Blade (continued)</b>	Regal Plastics Supply Co	Joplin	6
		Kansas City	46
		Springfield	10
		St Louis	15
	Rexam Closures & Containers	Union	199
	Ring Container Technologies	St Joseph	37
	Ruco Products Inc	Blue Springs	15
	Siegel-Robert Inc	Fenton	100
	Sieler Plastics	St Louis	20
	Sinclair & Rush Inc	Arnold	10
	Spartech	Scott City	10
	Spartech Corp	St Louis	30
	Spartech Plastics	Cape Girardeau	100
	Spartech Polycom	Cape Girardeau	55
	Specialty Plastics	St Peters	54
	Spiralcoil Inc	Fenton	8
	Swift Incentives	St Louis	5
	Tabor Plastics	St Louis	12
	Taylor Packaging	Imperial	30
	Tnt Plastics Inc	Perryville	62
<b>Pitch Drive</b>	Variform Inc	Kearney	225
	W N Shaw Co	Pacific	5
	Allen's Outboard Svc	Imperial	1
	Da Fox & Assoc Inc	Maryland Heights	10
	Emerson Electric Co	Kennett	601
	Emerson Motor Co	St Louis	100
	Fasco Motors Group	Eldon	800
	Independent Electric Machry Co	Springfield	9
	Megavolt Inc	Springfield	100
	Mercury Remanufacturing	Springfield	1
	Mil Spec Inc	Fenton	11
	Osceola Marine Repair	Osceola	2
	Parker Marine Ctr	Rocky Mount	5
	Regal-Beloit Corp	West Plains	550
	Sims Marine	Gravois Mills	4
	Smith Electric Motorworks	Marceline	4
	Superior Watercraft Inc	Moberly	2
	Taney Auto Electric	Branson	2
	Total Generator Svc	Strafford	2
	Westport Yacht Club	Gravois Mills	12
<b>Power Electronics</b>	A B Chance	Centralia	10
	Burndy Electrical Products	St Louis	1
	Butler Supply	Fulton	5

Wind Turbine Components	Company	City	Employees
<b>Power Electronics (continued)</b>	Courion Ind	St Louis	60
	Eagle Picher Industries Inc	Seneca	50
	ECC Supply	St Louis	25
	Edelman-Lyon Co	Kansas City	15
	Eic Systems Inc	Jackson	3
	Emerson Electric Co	St Louis	700
	Hubbell Power Systems Inc	Centralia	500
	Jimco Tech Inc	Raymore	4
	Lectro Engineering Co	St Louis	40
	Maxima Electrical Sales Co	St Charles	1
	Moellinger Electronics	Hermann	2
	Power Equipment Sales Co	Springfield	2
	Siemens Power Generation	Buckner	10
	Sojitz Corp Of America	St Louis	2
	Super Bright Leds Inc	Earth City	7
<b>Towers</b>	A & J Towing	Buffalo	4
	Acme Structural Inc	Springfield	100
	Alsolor Corp	Monett	7
	Alt Corporated	Oak Grove	18
	Aluminum Fabricators Inc	Kansas City	19
	Ambassador Steel Corp	Kansas City	36
		St Louis	21
	American Iron Steel Mfg Co	St Louis	20
	American Steel Fabrication	Pevely	12
	American Steel Works Inc	Kansas City	9
	Antonia Fabricators	Antonia	14
	Asterisk Inc	Kansas City	4
	Atlas Iron Works	St Louis	24
	B & D Fabrication	Joplin	45
	B & D Metal Products	St Louis	10
	B & K Dock & Barge Co	Lake Ozark	7
	Beachly Steel Structures	Halltown	4
	Ben Hur Steel Worx	St Louis	12
	Best Tool & Mfg Co Inc	Kansas City	100
	Binkley Co	Warrenton	200
	Blattner Steel	Cape Girardeau	30
	Blauvelt Tower Maintenance	Clinton	3
	Bloomsdale Welding Co Inc	Bloomsdale	13
	Blue Dragon Metal Works	Weston	12
	Bountiful Enterprises	Humansville	30
	Bratton Corp	Kansas City	100
	Brookfield Fabricating Corp	Brookfield	150
	Builders Steel Co	Kansas City	50

Wind Turbine Components	Company	City	Employees
Towers (continued)	Canam Steel Corp	Chesterfield	4
		Washington	160
	Capital Steel & Supply Inc	Jefferson City	8
	Cauttrell Enterprises Inc	St Louis	50
	Ceco Building Systems	Defiance	12
	Ceco Corp	St Louis	8
	Cei Specialty Products	St Louis	6
	Cellcom Services Inc	Peculiar	4
	Central Wire & Iron Works Inc	St Louis	12
	Century Steel & Welding	Kansas City	5
	Champ Industries	Seymour	15
	Chance Civil Construction	Independence	35
	Chillicothe Iron & Steel Inc	Chillicothe	44
	Cis Communications	Creve Coeur	10
	Cmc Joist & Deck	Kansas City	4
	Collins & Hermann Inc	St Louis	100
	Columbia Iron Works Inc	St Louis	14
	Continental Fabricators Inc	St Louis	85
	Continental Steel & Conveyor	Kansas City	50
	Countryside Products	Hopkins	50
	Crown Castle Intl	St Louis	15
	Crucible Service Ctr	O Fallon	6
	Cummings Welding Inc	St Louis	12
	Custom Expansion Fabricators	Liberty	5
	Custom Manufacturing	Springfield	17
	Custom Powder Systems LLC	Springfield	60
	Custom Steel Fabrication	St Louis	50
	D C Tech	Kansas City	15
	De Long's Inc	Sedalia	23
	Delta Fabricators Inc	Raytown	15
	Design Fabrication Inc	Springfield	15
	Diversified Metalworking	Republic	8
	Dlc Fabricating	St Louis	5
	Doing Steel Inc	Raytown	12
		Springfield	100
	Downing Enterprises LLC	Villa Ridge	5
	E-M-E Inc	Bridgeton	16
	Excelsior Manufacturing & Supl	Brookfield	40
	Fab Co Inc	Kansas City	12
	Flextech Industries Ltd	Clinton	50
	Flow Conditioning Corp	Maryland Heights	20
	Gateway Building Products-Mo	Kansas City	8
	Gateway Co	St Louis	30

Wind Turbine Components	Company	City	Employees
Towers (continued)	Gateway Panel	St Charles	100
	General Steel Fabricators	Joplin	50
	Gerdau Ameristeel	Independence	20
		Kansas City	34
		O Fallon	15
	GPJ Inc	Camdenton	10
	Grahl Manufacturing	Republic	5
	Gs Stainless	Ozark	31
	H & G Marine Svc	Perryville	10
	H & H Steel	Oak Grove	12
	Hammert's Iron Works Inc	St Louis	65
	Hammett's Welding & Steel Con	St Louis	12
	Heintz Steel & Mfg Co	St Louis	25
	Hillsdale Fabricators	St Louis	200
	Hostetler Sales & Construction	Buffalo	30
	Industrial Services Co	Springfield	25
	Industrial Steel Fabrication	Hazelwood	24
	Innovative Machining Svc	Kansas City	6
	Intercontinental Engineering	Kansas City	90
	J L Houston Co	Hopkins	50
	Jack Patterson Inc	O Fallon	5
	Kansas City Structural Inc	Kansas City	21
	Kertz Iron Works	St Louis	8
	Key To Steel North America	St Louis	9
	Koppel Fabrications Inc	Kansas City	12
	La Salle Iron Works Inc	St Louis	25
	Laclede Steel Co	St Louis	12
	Lakeland Steel	Stockton	10
	M & S Steel Fabrication Inc	St Charles	12
	Majestic Iron Works Inc	St Louis	8
	Mc Gilton Construction	Parkville	9
	Metal Culverts Inc	Jefferson City	15
	Metal Sales Mfg Corp	Independence	45
	Midwest Architectural	Hazelwood	20
	Midwest Underground Technology	Lees Summit	8
	Missouri Fabricators	Fulton	50
	Moto Exotica	Fenton	8
	Murray Enterprises Inc	St Louis	12
	North American Galvanizing Co	Kansas City	32
	Northland Steel	Kansas City	10
	Nothum Manufacturing Inc	Lockwood	5
	Ozark Steel Fabricators Inc	Farmington	65
	P K Products	Sedalia	20



Wind Turbine Components	Company	City	Employees
Towers (continued)	PDQ Tower Svc Inc	Grain Valley	30
	Poole Steel & Construction	Broseley	5
		Chesterfield	12
	Precision Fabrication	Silex	5
	Precision Fabrication	Kansas City	7
	Project Group 2000	St Charles	10
	Purpose Wrecker Sales	Wentzville	20
	R & R Buildings	Winfield	6
	Racker's Manufacturing Inc	California	10
	Sachs Steel & Supply Corp	St Louis	13
	Shamrad Metal Fabricators Inc	St Joseph	33
	Southeast Fabricating Inc	Cape Girardeau	15
	Speedway Steel Fabrication Inc	Crystal City	25
	St Louis Stainless Svc	Fenton	22
	Stainless Fabrication Inc	Springfield	146
	Stainless Solutions	Springfield	12
	Stanton Steel Inc	Grain Valley	11
	Steel Beam Svc Inc	Grain Valley	15
	Steel Fabrication Inc	St Louis	12
	Steward Steel Inc	Sikeston	100
	Structural Metals Inc	Kansas City	15
	Structural Steel Contract Svc	Raytown	12
	Synergy Concepts	Hazelwood	18
	T & C Stainless	Mt Vernon	36
	Terradyne Limited	Kansas City	10
	Titan Tube Fabricators Inc	St Louis	60
	Tower Maintenance & Erection	Hazelwood	5
	Trinity Products Inc	O Fallon	80
	Trojan Iron Works	St Louis	8
	Tulley Equipment Co	O Fallon	25
	U S Truss Steel Building Inc	Peculiar	9
	Valley Park Welding	Valley Park	8
	Vektek Inc	St Joseph	25
	Victor Iron Works	St Louis	9
	W B Young Co	Marshall	50
	Wear Concepts	Liberty	39
	Willerding Metal Fabrication	O Fallon	44
	William Ragsdale Co	Independence	13
	Wood Smith Steel Supply Co	Imperial	5
<b>Total</b>	<b>327 companies</b>	<b>118 cities</b>	<b>18,649</b>