



The Solar and Wind Energy Supply Chain in Ohio

Good for Manufacturing Jobs • Good for Economic Growth
Good for Our Environment



ENVIRONMENTAL LAW & POLICY CENTER



At a Glance:

Wind and Solar Energy Supply Chain in Ohio

- 107 wind power supply chain businesses
- 65 solar power supply chain businesses
- 7,500 workers employed by wind industry suppliers in Ohio
- 1,500 solar manufacturing jobs in Ohio
- Old-line manufacturing companies are re-tooling to make renewable energy equipment for growing markets

Photo credits:

Cover: Turbines near Bowling Green, courtesy of National Renewable Energy Laboratory (top), employee photo courtesy of Cardinal Fastener, Cleveland (left), employee photo courtesy of First Solar Manufacturing Plant, Perrysburg (center), solar PV installation courtesy of Wayne National Forest, Nelsonville (right)

P.7: Timken employee refurbishing bearings, wind turbine at Melink Corp. headquarters, Milford; P.8: Wind turbine bearings courtesy of Timken; P.9: solar installer courtesy of Dupont; P.10: employees at solar installation courtesy of Third Sun Solar; P.11: ground mounted solar array courtesy of Dovetail Wind and Solar; P.12: solar installer courtesy of Wayne National Forest; P.13: Wind Turbines courtesy of Juhl Wind

Back cover: Bearing repair, courtesy of Timken(left), employee photo courtesy of First Solar Manufacturing Plant, Perrysburg (center), solar PV installation courtesy of Dovetail Wind and Solar (left)

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Powering Manufacturing Jobs and Economic Growth in Ohio

Ohio is a leading manufacturing state, and businesses are retooling to produce new equipment for the growing clean energy economy. For example, Ohio's established manufacturing base for glass and plastic films is now producing materials for solar photovoltaic panels, especially in the Toledo area where research institutions further support the solar supply chain. Good-paying jobs are being created and retained as wind power development and solar energy projects provide expanded markets for Ohio-manufactured equipment.

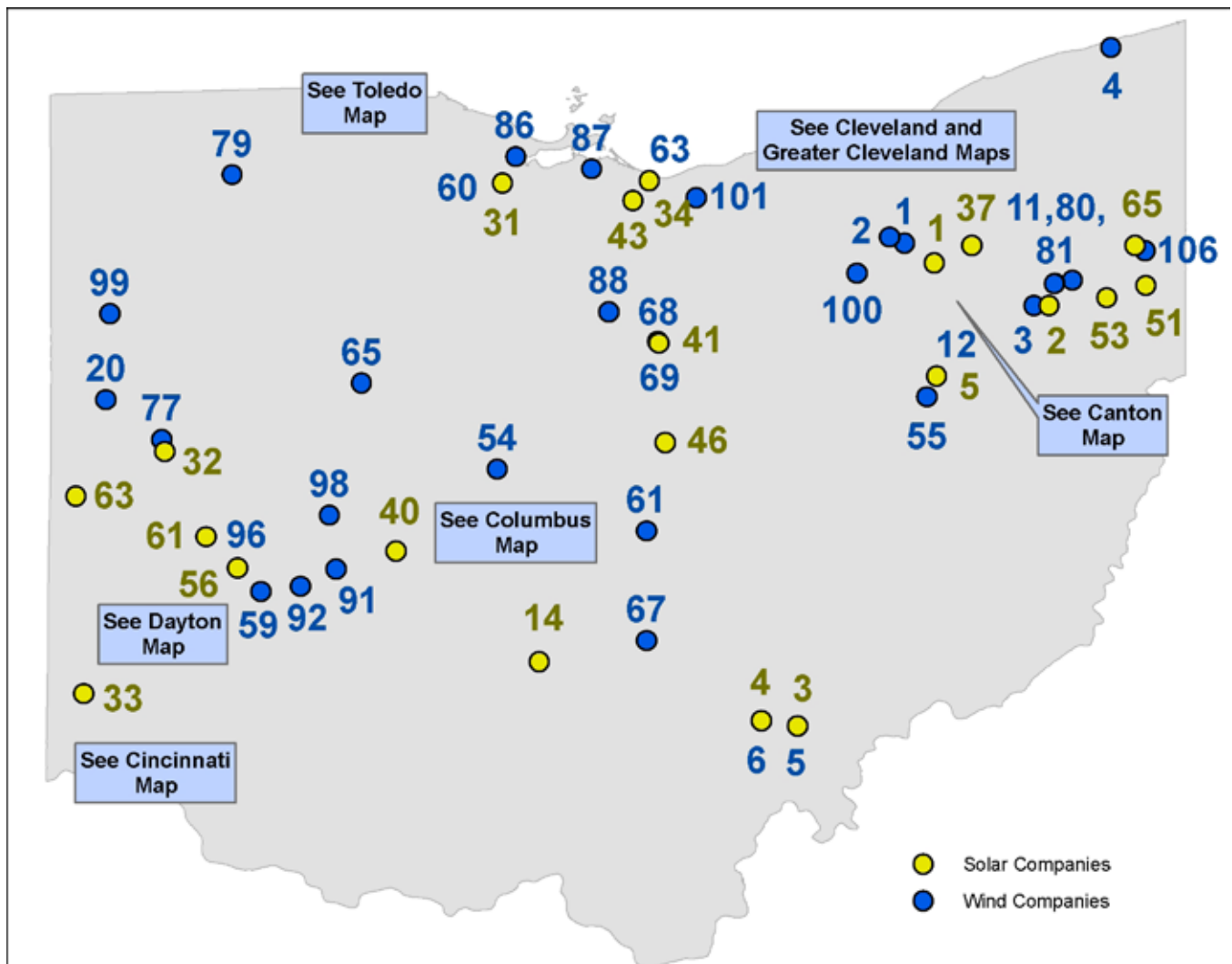
The Environmental Law and Policy Center's (ELPC) analysis shows 107 Ohio companies are engaged in the wind power industry supply chain, and 65 Ohio companies are in the solar power supply chain. Several factors have helped Ohio become a leading wind and solar component manufacturer:

- **Supportive Policy - the Alternative Energy Portfolio Standard.** Ohio has enacted legislation supporting the development of renewable energy in the state, including an Alternative Energy Portfolio Standard, wind and solar tax reforms, and a system benefit charge that provides project incentives (all of which are detailed at the end of this report).
- **State Investment in Clean Energy Jobs.** The Ohio Energy Gateway Fund is a public-private partnership that will invest \$40 million in ARRA funding to be matched by two venture capital funds. The goal of the fund is to create jobs in Ohio's advanced energy sector.
- **Established Manufacturing Base and Trained Workforce.** Ohio has a strong manufacturing base and trained workforce. Many of these manufacturers and skilled workers are well-suited to meet the demand from the growing renewable energy market.
- **Central Location with Proven Transportation and Logistics.** Ohio's manufacturing sector has benefited from its central location and transportation system. Ohio is within 600 miles of 62% of all U.S. and Canadian manufacturing locations. Nearby states' Renewable Electricity Standards eventually call for close to 40,000 megawatts of new renewable energy capacity over time, positioning Ohio in the middle of a huge market for wind and solar power installations.
- **Research Institutions and Higher Education.** Ohio is home to numerous institutions that encourage the growth and development of the renewable industry. Research programs at the University of Toledo have helped that region become a center for the production of flexible sheets of "thin film" photovoltaic cells. Battelle, the world's largest nonprofit independent research and development organization, is headquartered in Columbus. There are seven Edison Technology Centers across Ohio that provide innovation and commercialization services to technology-based businesses, including solar. The Central Ohio Hub for Advanced Energy Manufacturing and Energy Storage was created to position Columbus and Central Ohio as a global leader in advanced energy storage research, commercialization and manufacturing.

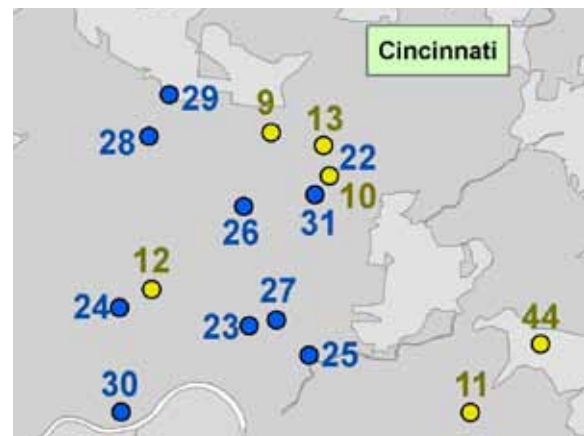
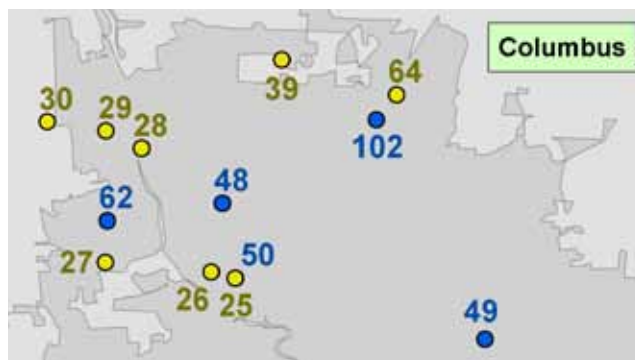
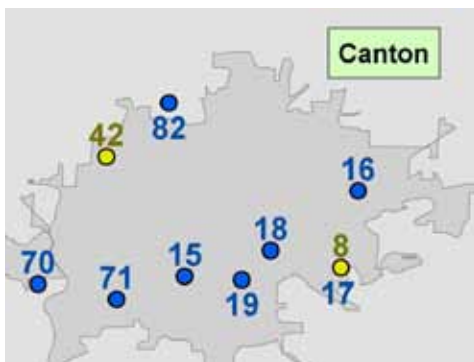
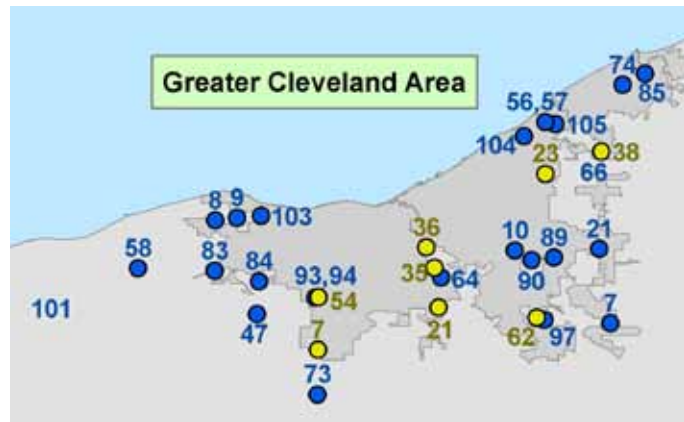
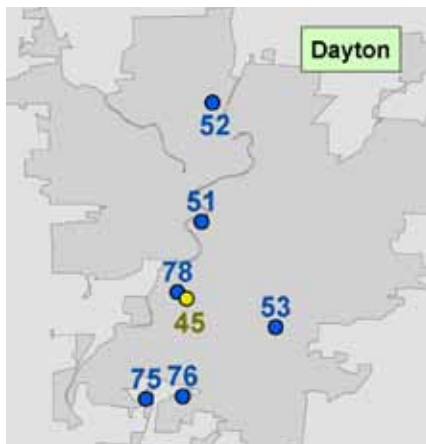
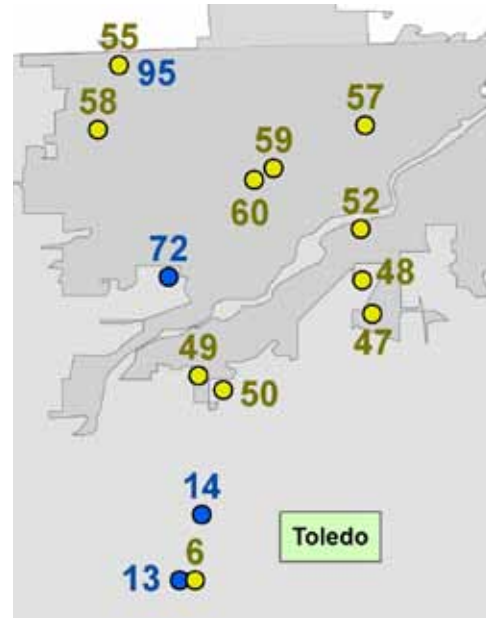
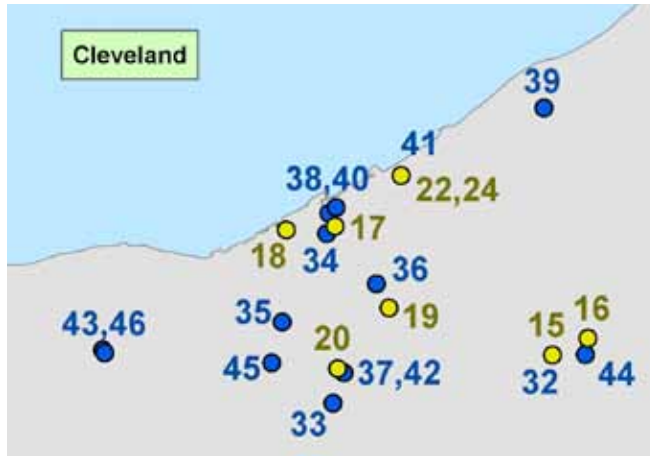
With an established and growing supply chain and supportive Alternative Energy Portfolio Standard, Ohio is well-positioned to increase installed capacity for both wind and solar generation, and put the state on the path to create even more renewable energy manufacturing, installation and other related jobs. The solar and wind industries mean real jobs and real economic opportunity for Ohio.

Wind and Solar Industry Supply Chain Companies in Ohio

The growing wind and solar power demand has spurred business growth and job creation in Ohio. We estimate that wind industry suppliers employ over 7,500 people in Ohio, and according to the Ohio Department of Development, there are 1,500 solar manufacturing jobs statewide. As a result, renewable energy is one of the fastest-growing business sectors for job creation in Ohio. If nationwide wind turbine demand increases, more jobs can be created in Ohio and Iowa than all other states other than California.



Wind and Solar Industry Supply Chain Companies in Ohio



Wind Industry Supply Chain Companies in Ohio

Company Name	City	Company Name	City
1. Glebus Alloys (C)	Akron	55. Sky Climber Wind Solutions (M)	Delaware
2. Green Energy Technologies (WT)	Akron	56. Allied Machine & Engineering (C)	Dover
3. Wind Turbines of Ohio LLC. (S)	Alliance	57. MRD Solutions (WT)	East Lake
4. Molded Fiber Glass Companies (C)	Ashtabula	58. ALD Group (M)	Eastlake
5. Dovetail Solar & Wind (M)	Athens	59. Nelson Stud Welding (C)	Elyria
6. Third Sun Solar (C)	Athens	60. TFC Energy (M)	Fairborn
7. Hamby Young (C)	Aurora	61. Crown Battery (C)	Fremont
8. Clyde Industrial (S)	Avon	62. Owens Corning (C)	Granville
9. Kaydon Corporation (C)	Avon	63. Ohio Semitronics (S)	Hilliard
10. Cardinal Fastener & Specialty (C)	Bedford Heights	64. Engineered Process Systems (M)	Huron
11. Wodin (C)	Bedford Heights	65. Avtron Industrial Automation (C)	Independence
12. Ohio Windmill Manufacturing (WT)	Berlin Center	66. Robinson Fin Machines (C)	Kenton
13. Harris Battery (C)	Bolivar	67. Renaissance Group (M)	Kirtland
14. Marathon Special Products (C)	Bowling Green	68. Emega Technologies (M)	Lancaster
15. Starks (M)	Bowling Green	69. Energy Technologies (C)	Mansfield
16. Canton Drop Forge (C)	Canton	70. Tyco Electronics Corp (C)	Mansfield
17. Cot-Puritech (S)	Canton	71. King Machine & Tool (C)	Massillon
18. Midwest Industrial Supply (S)	Canton	72. Magnetech Industrial Services (C)	Massillon
19. Power Systems Development (C)	Canton	73. Alignment Supplies (S)	Maumee
20. The Timken Company (C)	Canton	74. Hansen Transmissions (C)	Medina
21. Celina Industries (C)	Celina	75. Enterprise Welding & Fabricating(C)	Mentor
22. Custom Materials (C)	Chagrin Falls	76. Dayton Superior (C)	Miamisburg
23. Blue Chip Solar & Wind (M)	Cincinnati	77. Webcore Technologies (C)	Miamisburg
24. Cast-Fab Technologies (C)	Cincinnati	78. Minster Machine Company (C)	Minster
25. CE Power Solutions (S)	Cincinnati	79. Tuf-Tug (S)	Moraine
26. Cincinnati Gearing Systems (C)	Cincinnati	80. Automatic Feed Company (C)	Napoleon
27. General Tool Company (C)	Cincinnati	81. BCS Alliance (T)	North Benton
28. ILSCO (C)	Cincinnati	82. O'Brock Windmills (WT)	North Benton
29. Magna Machine Co. (C)	Cincinnati	83. Graco (C)	North Canton
30. McSwain Manufacturing (C)	Cincinnati	84. Kalt Manufacturing (C)	North Ridgeville
31. Star Sailor Energy (WT)	Cincinnati	85. Nautica Windpower (WT)	Olmsted
32. Woolpert (S)	Cincinnati	86. Dyson Corporation (C)	Painesville
33. Acorn Technology Corp. (C)	Cleveland	87. North Coast Wind & Power (M)	Port Clinton
34. ALL Erection & Crane Rental (S)	Cleveland	88. SUREnergy (M)	Sandusky
35. Applied Industrial Technologies (S)	Cleveland	89. American Tower Company (T)	Shelby
36. Art Galvanizing Works (C)	Cleveland	90. Erico (C)	Solon
37. Gexpro (S)	Cleveland	91. Wellman Products Group (C)	Solon
38. Cleveland Gear Company (C)	Cleveland	92. Konecranes (S)	Springfield
39. Horsburgh & Scott (C)	Cleveland	93. TPI Composites (C)	Springfield
40. Lincoln Electrical Services (C)	Cleveland	94. Insight Services (S)	Strongsville
41. Phillips Electric (C)	Cleveland	95. PPG (C)	Strongsville
42. Repower Solutions (M)	Cleveland	96. W. Drescher & Associates (S)	Sylvania
43. Stork Herron Testing Labs(S)	Cleveland	97. Ohio Green Wind (S)	Tipp City
44. Swiger Coil Systems (C)	Cleveland	98. PSL of America (C)	Twinsburg
45. Torqhoist (S)	Cleveland	99. Hughey & Phillips (S)	Urbana
46. Transformer Engineering Corp. (C)	Cleveland	100. Horizon Wind Energy (D)	Van Wert
47. United Tool & Gage Company (C)	Cleveland	101. Ebner Fab (C)	Wadsworth
48. Joe Mescan Windmill (WT)	Columbia Station	102. St George's Renewable Energies (M)	Wakeman
49. Alte (M)	Columbus	103. Quadrant Insurance Managers (S)	Westerville
50. BHE Enviromental (S)	Columbus	104. Koyo Corporation of U.S.A. (C)	Westlake
51. Zyvex Technologies (C)	Columbus	105. Lubrizol (C)	Wickliffe
52. IQC (S)	Dayton	106. Norbar Torque Tools (C)	Willoughby
53. Sick Stegmann (C)	Dayton	107. Brilex Industries (C)	Youngstown
54. SIME Corp. (C)	Dayton		

Key

C=Components M=Midscale Wind D=Developer S=Services T=Towers, Poles, Foundation WT= Wind Turbines

Solar Industry Supply Chain Companies in Ohio

Company Name	City	Company Name	City
1. Jennings Heating & Cooling (D/I)	Akron	34. Engineered Process Systems (D/I)	Huron
2. SSOE (D/I)	Alliance	35. Five Star Technologies (M)	Independence
3. Dovetail Solar & Wind (D/I)	Athens	36. Yellowlite (D/I)	Independence
4. Third Sun Solar (D/I)	Athens	37. Solaris Blackstone (D/I)	Kent
5. Harris Battery (A)	Bolivar	38. The Renaissance Group (D/I)	Kirtland
6. Marathon Special Products (M)	Bowling Green	39. Automation Tooling Systems (M)	Lewis Center
7. Mariner Energy Systems (D/I)	Brunswick	40. SolarWindTek (D/I)	London
8. Midwest Industrial Supply (S)	Canton	41. Energy Technologies (M)	Mansfield
9. Ameridian Specialty Services (D/I)	Cincinnati	42. A Better Focus (M)	Massillon
10. Blue Chip Solar & Wind (D/I)	Cincinnati	43. Edison Solar & Wind (D/I)	Milan
11. Icon Solar Power (D/I)	Cincinnati	44. Melink Corporation (D/I)	Milford
12. RBI Solar Inc. (M)	Cincinnati	45. Joyce/Dayton (D/I)	Moraine
13. SunRock Solar (D/I)	Cincinnati	46. Replex Plastics (S)	Mount Vernon
14. DuPont (M)	Circleville	47. First Solar (M)	Perrysburg
15. Acorn Technology (M)	Cleveland	48. Glasstech (M)	Perrysburg
16. Bold Alternatives (D/I)	Cleveland	49. Techneglas (M)	Perrysburg
17. Cleveland Thin Film Technologies (M)	Cleveland	50. Willard & Kelsey Solar Group (M)	Perrysburg
18. Ferro (M)	Cleveland	51. McCarthy Systems (D/I)	Poland
19. Garland Company (D/I)	Cleveland	52. Pilkington (M)	Rossford
20. Gexpro (S)	Cleveland	53. Valley Energy Solutions (D/I)	Salem
21. Multi Solar (D/I)	Cleveland	54. PPG (M)	Strongsville
22. Ohio Solar Cooperative (D/I)	Cleveland	55. W. Drescher & Associates (S)	Sylvania
23. Preformed Line Products (M)	Cleveland	56. OGW Energy Resouces (D/I)	Tipp City
24. Repower Solutions (D/I)	Cleveland	57. Advanced Distributed Generation (D/I)	Toledo
25. MetaMateria Partners (M)	Columbus	58. Netronex Energy Systems (M)	Toledo
26. OTB USA (D/I)	Columbus	59. ShadePlex (M)	Toledo
27. SCI Engineered Materials (M)	Columbus	60. Xunlight Corporation (M)	Toledo
28. Energy Systems Group (D/I)	Dublin	61. EnergyWize (D/I)	Troy
29. Hull and Associates (D/I)	Dublin	62. Essential Research (S)	Twinsburg
30. Tipping Point Renewable Energy (D/I)	Dublin	63. Inspiramental (D/I)	Union City
31. Crown Battery (A)	Fremont	64. Advanced Solar (D/I)	Westerville
32. LP Hoying (S)	Ft. Loramie	65. Astrum Solar (D/I)	Youngstown
33. Extreme Solar & Alternative Solutions (D/I)	Hamilton		

Key

A=Ancillary

D/I=Design/Install

M=Manufacturing

S=Services

Ohio: A Leading Supplier to the Wind Industry

Ohio has 107 wind supply chain companies, ranging from small to large, and from old-line manufacturers to just-launched entrepreneurial ventures. Half of the suppliers are component manufacturers, while about a dozen are small wind turbine manufacturers. All of the companies tell a similar story about the importance of wind energy demand to spur job creation and growth of this business sector.

BCS Alliance, North Benton, is a specialty foundation drilling and general contracting company founded in 1989. BCS lays the foundations for wind towers throughout the region. Since Ohio currently has only one mid-scale operational wind farm, the majority of BCS's wind business has been in other Midwest states. BCS recently drilled the foundation for a wind installation at the "green" Western Reserve High School district. BCS also recently completed a wind installation for the first "green" auto dealer in Ohio. "We are poised to take advantage of more demand for wind installations," commented Bill Barrett of BCS. "The wind business has been great for us, and we look forward to more in-state generation."

Cast-Fab Technologies, Inc., Cincinnati, is a metal casting foundry and metal fabrication shop with 220 employees. The company supplies iron castings and grey ore ductile castings with weights from 5 to 80,000 pounds, as well as sheet metal and structural fabrication with weights up to 40 tons. Cast-Fab produces castings for several turbine companies, primarily for 1.5 megawatt or 2.5 megawatt turbines. The castings can weigh as much as 30,000 pounds and include bearing housings, input housings and gearbox castings.

Hughey & Phillips, Urbana, designs and manufactures obstruction lighting technology. The company's low, medium and high intensity lighting technology solutions provide illumination for wind turbines as well as communication towers, buildings, smokestacks, bridges, and other obstructions to aerial

navigation. Hughey & Phillips also provides engineering design for optical, electrical and mechanical projects.

Hughey & Phillips has been in business for 75 years and recently completed a 50,000 square-foot addition to its manufacturing, testing and product development facilities. "As we witness a growing trend in renewable wind energy internationally with our medium intensity product line, H&P is experiencing greater demand for our full line of obstruction lighting products and solutions in this and a range of other industries," said Jeff Jacobs, vice president of sales.



Cincinnati Gearing System,

Cincinnati is a precision gear and transmission design manufacturer. The company has over 100 years of experience producing products for a wide range of power transmission applications, including automotive, marine and wind. Cincinnati Gearing has 135 employees and has been involved in the wind industry since 1990. About 20% to 25% of its business is now attributable to wind industry demand.

Dyson Corporation,

Painesville, supplies large fasteners and forgings for wind turbine construction. The company started as a specialty forge shop in Cleveland in 1884 and has been providing fastening and forging products to the wind industry since its inception. Dyson has 100 employees, and wind equipment comprises about 15% of its total business. "Job creation is really what is important, and by supporting renewable energy, Ohio will help create jobs," stated Dyson Sales Manager Dustin Johnson.



Glebus Alloys, Akron, manufactures self-lubricated bearings, wear plates and bushings. The company produces G-METAL, a material that combines graphite and bronze to form a single self-lubricating metal compound. In Ohio, Glebus has 6 employees in sales, while its manufacturing operation is in the Czech Republic.

Owens Corning, Toledo, is a supplier to the wind industry. The company has developed a fiberglass fiber reinforcement for the wind industry called WindStrand Plus. This product allows turbine blade manufacturers to increase the length of the blades without increasing the weight, thereby generating more power from the same turbine at a lower cost.

Star Sailor Energy, Cincinnati, designs and manufactures turbines for wind power installations up to 150 kilowatts. Star Sailor's design allows its turbines to provide power over a higher range of wind speeds than traditional wind turbines. Because they are vertical, the Star Sailor turbines can be used on urban roof tops and other settings where horizontal-axis turbines are not practical. The unique turbine design allows them to be "stacked" on towers or on roofs and other existing structures to create more power.

Star Sailor has been in business since 2007 and has seven employees with manufacturing and distribution partners in other states. "Star Sailor Energy has seen growth in interest and is partnering with manufacturers and distributors throughout the United States," commented Dr. Pamela Menges, President. "We hope to see increased growth and opportunities in Ohio with our large-scale vertical wind turbines (16.8 kW and up) for urban, commercial and community power projects."



Timken, Canton, employs approximately 4,400 workers in Ohio and has operations in 27 countries. The company produces a variety of highly engineered bearings to original equipment manufacturers, designers, and end users of gearboxes and wind turbine main shafts to minimize downtime and lengthen maintenance cycles. Timken also supplies the aftermarket with wear-resistant bearings, condition monitoring services and bearing re-manufacturing. Timken has been in business for over 110 years and has been supplying the wind energy market since 1982. In addition to supplying the U.S. market, Timken exports to China as part of a joint venture with a Chinese manufacturer.

Timken works with many wind turbine manufacturers at varying stages of development and has developed a broad supply chain of manufacturing and service locations around the world dedicated to serving the industry. Timken also provides clean steel from its facilities in Canton for its own production and various wind energy components for other customers.

Zyvex Technologies, Columbus, employs 25 people and produces Arovex, a nanotechnology-enhanced carbon fiber with a resin system that is pre-impregnated with nanotube-enhanced epoxy. This technology creates a material that is more than 50% stronger than conventional carbon fiber. Zyvex is marketing Arovex to manufacturers of wind turbine blades, towers and nacelles, and also builds tower structures for the marine industries that could also be used for wind turbines. The company has manufacturing agreements with APV Engineered Coatings in Akron and Renegade Materials Corporation in Springboro.

Ohio: A Leading Supplier to the Solar Industry

Ohio's solar supply chain includes a large number of component and equipment manufacturers. Many of the state's plastic and glass manufacturers have taken advantage of the growing demand in solar, retooling to become suppliers to the new clean energy economy. Here are some of Ohio's solar supply chain companies:

Dupont, at its manufacturing facility in Circleville, is investing \$175 million to complete the multi-phase expansion of its high-performance DuPont™ Tedlar® PV 2001 series film production line. The investment is in addition to \$120 million in capacity expansions, announced in August 2009, for new materials used to make the film. Tedlar® films serve as the critical component of photovoltaic backsheets, providing long-term durability and performance for photovoltaic modules in all-weather conditions. Much of the Tedlar® film is sold to solar producers in China.

First Solar, Perrysville, has its operations, R&D and manufacturing division near Toledo in addition to nine international and six domestic locations. First Solar uses a fully integrated, automated process and is the largest manufacturer of thin film solar modules in the United States, with an annualized run rate of close to 60 megawatts. The company also develops, monitors and maintains utility-scale photovoltaic systems. First Solar recently completed a 500,000 square-foot, \$141 million addition to its existing thin film solar plant in Perrysburg, adding 200 employees and bringing its Ohio employment to 1,100.

Melink Corporation, Milford, began in 1987 as an HVAC testing and balancing firm and expanded into LEED commissioning and energy-efficient kitchen ventilation controls manufacturing. After designing and building its own new headquarters with a LEED Platinum® EB certification from the U.S.

Green Building Council and an Energy Star 97 rating, the company started its renewable energy division. Melink designs, installs, maintains, monitors and finances commercial solar photovoltaic systems. It also has developed Ingrid, a 2kW ground-mounted system, to make solar energy achievable for small businesses, farms and homeowners. The company has grown to 70 employees.





Third Sun Solar, Athens, is a design-build contractor for renewable energy systems, serving commercial, non-profit, government, industrial and residential customers in Ohio and other states. The company has been in business since 2000 and has installed over 250 solar energy systems. Third Sun Solar's workforce has increased from three employees in 2001 to 28 employees at present (including 13 new hires in 2010). The company expects more growth in 2011, reflecting its triple-digit average annual revenue growth rate from 2006 to 2010.

Third Sun Solar was part of a technology start-up incubation program at Ohio University, where the company received early-stage assistance with its business planning and marketing. Wayne National Forest hired Third Sun Solar to install 51 kilowatts of solar power generation on its headquarters in Nelsonville, Ohio, that year. By the end of 2011, Third Sun Solar will have completed over \$9 million in solar energy projects supported by over \$4 million of ARRA funding. "We deliver a smooth transition to solar energy at any scale," says Third Sun Solar founder Geoff Greenfield. "And

we are pleased to be one of the renewable energy sector firms adding jobs in this critical time for the economy."



Businesses Working in Both the Wind and Solar Industries

Thirteen companies supply both the wind power and solar power industry. Here are a few examples:

Acorn Technology, Cleveland, is a system integrator that supplies both the wind and solar industries. For solar installers, the company builds and designs tracking and combining systems and integrates inverters. Acorn also makes systems for pitch and yaw control for wind machines. Almost 75% of Acorn's wind and solar production is exported to other countries. "If you want to make things, Ohio is the state to be in. Last century, Ohio was dominant as a manufacturer for the aerospace, energy and automotive industries. So transitioning to renewables has been natural for our state's workforce," commented Robert Green, VP of Operations and Strategic Planning.



Crown Battery, Fremont, is an employee-owned battery manufacturing facility that has been in business for over 80 years and supplies 2, 6, and 12-volt batteries to the wind and solar industries.

In 2009, Crown opened its Renewable Energy Center and, integrated wind and solar generation into its manufacturing operations in order to reduce its reliance on grid energy. Crown has developed a line of storage battery products specifically designed to provide power storage solutions for solar and wind systems. The company also offers a battery

recycling program, and it works with industry counterparts to ensure that used lead batteries are removed from circulation and disposed of safely.

Dovetail Solar and Wind, Athens, was founded in 1995 and has experience in renewable energy system design, installation and green building. The company installs systems across Ohio with offices located in all five Ohio regions and in nearby states. Dovetail implements wind, solar photovoltaic and solar thermal systems. It has completed more than 185 systems, totaling more than 2 megawatts of generating capacity. The company makes an effort to source its products from U.S.-based manufacturers, many of which are located in Ohio.

Gexpro, Cleveland, is an electrical, security, and voice and data products supplier. Gexpro has been in business since 1904 and has 2,500 employees nationwide. The company, formerly known as GE Supply, is a supplier to both the solar and wind industries. Its wind industry products include fasteners, cables, and turbine production hardware such as high strength, large diameter studs, bolts and nuts. Gexpro also supplies production line materials to wind OEMs and provides inventory logistics management services.

For the solar industry, Gexpro can create turn-key solutions, as well as supply a complete line of solar components from panels, to the wires and racking systems. Gexpro has been supplying to the renewable energy segments since 2008, and has experienced significant growth in both the solar and wind segments in Ohio.

Policy Makes the Difference

Federal and state policies are key to encouraging investment that can grow the wind power and solar energy industries, thereby creating more jobs and economic growth.

Federal Policies

Production Tax Credit (PTC), Investment Tax Credit (ITC) & Section 1603 Tax Credit/Cash Grant: The PTC, ITC and Section 1603 cash grant have been significant drivers of renewable energy development over the past several years. The PTC offers a credit of 2.1 cents per kilowatt hour for wind projects put in service before the end of 2012. Solar developers, and to a lesser extent wind developers have also been able to utilize the 30% ITC and the Section 1603 Treasury Grant Program. Under the 1603 program the ITC was convertible into a cash grant that helped developers more effectively utilize the tax credit. The cash grant expired at the end of 2011, and ELPC encourages extending or removing the expiration for the ITC, PTC and 1603 cash grant.

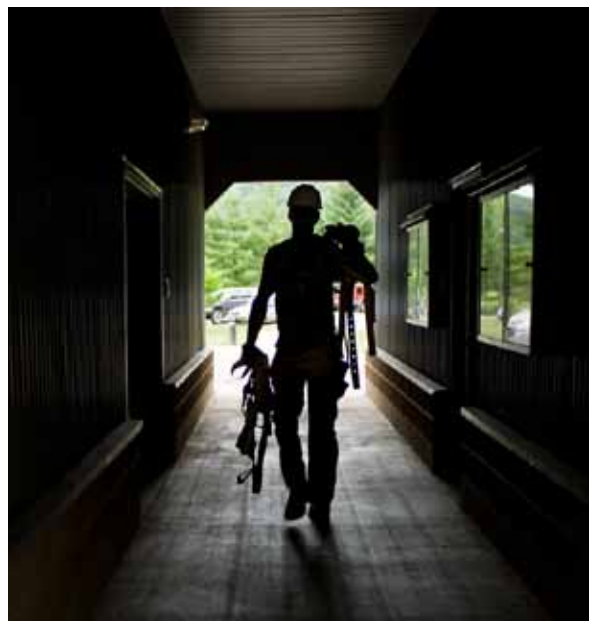
Federal Renewable Electricity Standard: This proposed federal legislation would require all electric utilities, which act as collective power purchasing agents for consumers, to buy a growing percentage of their electricity from renewable energy resources. Creating a federal renewable electricity floor would drive more demand nationally and in Ohio for wind and solar generated electricity. Ohio would benefit through more job creation and economic growth for its supply chain businesses.

Qualifying Advanced Energy Manufacturing Investment Tax Credit: Through ARRA, renewable energy manufacturers were able to take a 30% Federal Investment Tax Credit. The program expired in 2009 and should be considered for renewal.

Accelerated Depreciation: Allowing wind and solar generation assets to be depreciated over six years can create additional value if developers achieve significant income.

Residential Renewable Energy Tax Credit: Homeowners can receive a personal income tax credit for up to 30% of the cost of a solar thermal, photovoltaic or wind system installed on their primary residence. The credit expires in 2016 and is limited to \$500 per 0.5 kilowatt of power capacity.

Rural Energy for America Program: REAP is a program under the Farm Bill that provides grants (up to 25%) and loan guarantees to agricultural producers and rural small businesses to develop energy efficiency and renewable energy. The program has helped create over 200 clean energy projects on Ohio farms and rural small businesses including solar, wind and farm digesters.



Ohio Programs & Policies

Alternative Energy Portfolio Standard: Ohio Senate Bill 221 provides a scaled-up approach to renewable energy development, eventually leading to 25% of electricity sold in Ohio generated from alternative energy sources by 2025. Half of this electricity (12.5%) must be generated by renewable energy sources, of which some (0.5%) must come specifically from solar. Currently, Ohio has only 10 megawatts of installed wind capacity and slightly more solar capacity. However, almost 1,300 megawatts of wind are currently in the development pipeline in Ohio, and a 50 megawatt solar project is being built on reclaimed coal mining land in Eastern Ohio.

Advanced Energy Fund Grants: The Advanced Energy Fund collected up to \$5 million per year for the five years ending December 31, 2010, and was funded through a \$0.09-per-month charge to customers of Ohio's four investor-owned electricity utilities. The funds provided incentives for over 600 advanced energy and energy efficiency projects. Only customers who pay the charge have been eligible to take advantage of the incentives. All funds for fiscal year July 1, 2010, through June 30, 2011, have been exhausted; however, a small balance of funds will be available for the following fiscal year. If the fund is extended by the Ohio General Assembly, the same level of funding may be reinstated.

Ohio Energy Gateway Fund: This public-private partnership is intended to stimulate job creation and growth in Ohio's advanced energy sector. It was created with \$40 million of ARRA funding and matched with \$40 million of funding from two venture capital funds, Arsenal Ventures and Enertech Venture Capital Funds. The Ohio Energy Gateway Fund was launched in October 2010.





Environmental Law & Policy Center

The Environmental Law & Policy Center is the Midwest's leading public interest environmental legal advocacy and eco-business innovation organization. We develop and lead successful strategic advocacy campaigns to improve environmental quality and protect our natural resources. We are public interest environmental entrepreneurs who engage in creative business dealmaking with diverse interests to put into practice our belief that environmental progress and economic development can be achieved together. ELPC's multidisciplinary staff of talented and experienced public interest attorneys, environmental business specialists, public policy advocates and communications specialists brings a strong and effective combination of skills to solve environmental problems.

ELPC's vision embraces both smart, persuasive advocacy and sustainable development principles to win the most important environmental cases and create positive solutions to protect the environment. ELPC's teamwork approach uses legal, economic, scientific and public policy analysis, and communications advocacy tools to produce successes. ELPC's strategic advocacy and business dealmaking involves proposing solutions when we oppose threats to the Midwest environment. We say "yes" to better solutions; we don't just say "no."

ELPC was founded in 1993 and has achieved a strong track record of successes on national and regional clean energy development and pollution reduction, transportation and land use reform, and natural resources protection issues. ELPC's creative public advocacy effectively links environmental progress and economic development together and improves the quality of life in our Midwestern communities.

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