

Wisconsin

Summary and Analysis

Wisconsin has no coal, oil, or natural gas, making it dependent on the importation of fossil fuels. The state generates 69 percent of its electricity from coal-fired generators. Although energy independence may seem idealistic, Wisconsin has started off strong with high renewable portfolio standards and other legislation that generates significant demand for renewable energy and energy efficiency. On the supply side of renewable energy, Wisconsin has carefully diversified its clean-tech sector and has begun to tap into its regional advantages. The state government has used trade organizations, economic development groups, and the university research structure to help coordinate different clean-tech industries.

- As the state with the most residents employed in the manufacturing sector per capita, Wisconsin has wisely focused on retooling that sector both in terms of assisting manufacturers in becoming more energy efficient and in helping manufacturers tap into new clean-tech supply chains.
- Wisconsin has used the federal ARRA funding wisely, instituting a centralized revolving loan fund, the Wisconsin Green to Gold Fund, to help small- to mid-size manufacturers transition to the green economy.
- Expansive public-private partnerships around the University of Wisconsin system and some of the state's larger companies such as Johnson Controls, Inc., have helped to develop clean-tech industry clusters in wind, biofuels, energy storage, and solar hot water.
- Wisconsin has created a sound organizational infrastructure that attracts federal dollars and also enables the state to get in on the ground floor of new federal programs such as the Department of Energy's state energy code compliance pilot program.

General Background Policy

Energy Goals. Wisconsin joined the Midwestern Greenhouse Gas Reduction Accord in 2007, therefore agreeing to a goal of 10 percent renewable-energy production by 2015. The 2006 Energy Efficiency and Renewables Act (SB 459) also established a 25 percent goal by 2025 and an increase in the state government's purchases of renewable energy to 20 percent by 2015. The state government also has a goal of 20 percent renewable energy by 2012 (EPA 2008). In April of 2010, legislation based on the recommendations of the Governor's Task Force on Global Warming was defeated, failing to get out of committee. The legislation, referred to as the Clean Energy Jobs Act, would have created an energy-efficiency standard of 2 percent per year for electricity and 1 percent per year for natural gas. According to one study, the act would have

saved consumers \$1 billion dollars and created 16,000 jobs by 2025 (Center for Climate Strategies 2010). In our discussions with advocates in Wisconsin, the failure of the Clean Energy Jobs Act was attributed to three things: the lame duck status of the governor, the failure of those who wrote the legislation to reach across the aisle, and the belief that the bill was “too much, too soon.” With the gubernatorial election slated for November of 2010, clean-energy policy appears to be at a standstill.

Public Benefits Fund. Wisconsin’s public benefits programs are administered by the Focus on Energy program, which has a budget of about \$94 million per year. Because of the problem of transfer of funds from the program to other parts of the state government, in 2006 the program was restructured to be administered directly by the utilities and organizations with which they contract. The programs support energy efficiency, renewable energy, and energy research (DSIRE 2010). Focus on Energy has programs geared toward large farms, businesses, and proprietors of commercial buildings providing cash-back rewards, generally 25 percent of project costs, for energy-efficient project and renewable energy system implementation (State of Wisconsin 2008a).

Green Building Policy. The Energy Efficiency and Renewables Act of 2006 (SB 459) requires state government buildings to maximize energy-efficiency standards and to exceed federal and other standards. An executive order issued in 2006 (145) called on the state government to reduce energy consumption by 20 percent by 2010 (DSIRE 2010) and ensure that new state facilities are 30 percent more energy efficient than commercial code (Center on Wisconsin Strategy 2007). In 2010, the state of Wisconsin was selected to participate in the Department of Energy’s state energy code compliance pilot program, which aims to help states measure and report compliance with building energy codes outlined by the Department’s Building Energy Codes Program (Midwest Energy Efficiency Alliance 2010).

Green Jobs Training. The Wisconsin Department of Workforce Development received \$6 million in ARRA funding for green jobs training in 2010. The most notable recipient of funding is the Wisconsin Regional Training Partnership/Building Industry Group Skilled Trades Employment Program (WRTP/BIG STEP), a leader in green-collar jobs training, particularly in weatherization, residential construction, lead abatement/hazardous materials removal, and manufacturing. Founded in the 1990s, WRTP was created to answer the skills shortage experienced by Wisconsin’s manufacturing sector and to meet the pre-employment skills training needs of the Milwaukee-area’s low-income population and the growing number of people no longer eligible to receive welfare benefits following Governor Tommy Thompson’s welfare reform program, Wisconsin Works (W-2) (Wisconsin Regional Training Partnership n.d.). WRTP works with member businesses and labor unions in order to identify industry needs, and it coordinates with training providers to develop a proper curriculum for workers. By working with businesses, WRTP ensures a demand for workers (Maguire et al. 2009). WRTP/BIG STEP’s Center of Excellence offers workers “academic assessments and individualized tutoring for apprenticeship exams; pre-employment skills training and certification; and connections to community organizations that can assist with daycare, transportation, GED preparation, job readiness and other services” (Center on Wisconsin Strategy 2010a). However, programs such as WRTP/BIG STEP are facing significant challenges getting newly trained workers into the

pipeline while there is a considerable number of skilled workers, laid off during the recent economic downturn, waiting in the wings.

Clean-Energy Industries

General Background. Wisconsin has more residents employed in the manufacturing sector per capita than any other state in the nation. In order to retain and create new manufacturing jobs, the state has created the Wisconsin Energy Independence Fund to award about \$150 million over ten years in grants and loans to businesses that are developing new clean-energy products (State of Wisconsin 2008b, 2010). The state also used ARRA funds to establish the Wisconsin Green to Gold Fund, a \$100 million revolving loan fund. The fund provides low- and no-interest loans to small- and mid-sized manufacturers to help make their operations more energy efficient, transition their facilities to manufacture green products, or to support clean-energy companies. The Green to Gold Fund will use funding from the State Energy Program, the Wisconsin Energy Independence Fund, and any future federal funding, creating a “one-stop shop” for manufacturers looking for funds to make their business more green. The organization of the fund positions Wisconsin to be a recipient of future federal funding sources such as Senator Sherrod Brown’s (D-OH) proposed Investment for Manufacturing Progress and Clean Technology (IMPACT) Act (Buffa 2010; Wispolitics.com 2010).

In 2005, the Wisconsin Angel Network (WAN) was formed as part of Governor Doyle’s Grow Wisconsin plan. Funded through the Department of Commerce and managed by the Wisconsin Technology Council, WAN seeks to build early-stage capital capacity throughout the state and to help high-technology start-ups. Currently, there are twenty-two angel investor groups under the WAN umbrella, three of which are actively funding clean technology and another six that are seriously considering focusing on clean-technology start-ups (Eggert 2010). In 2008 angel investors put \$99 million into state companies and in 2009 they invested \$73.2 million (Gallagher 2010). In order to stimulate early investment in the high-tech sector in Wisconsin, the state provides a tax credit of up to 25 percent of investments for angel investors (Act 255) (Wisconsin Department of Commerce 2010a). Interest in funding clean tech entrepreneurs in Wisconsin has been propelled by the Clean Tech Thought Leader Community Forum sponsored by the Business, Environment, and Social Responsibility Program at the Wisconsin School of Business. The series, which began in 2007, seeks to educate business students, investors, and the general public about investment opportunities by giving Wisconsin-based clean-tech entrepreneurs a forum to present their ideas.

In May of 2010, Governor Doyle announced the formation of the Clean Energy Generation, Transmission, and Storage Systems (CEGTS) consortium, creating a singular statewide energy research organization. The CEGTS is a public-private partnership connecting universities and industry along the Madison-Milwaukee corridor. Anchoring this venture is the Center for Renewable Energy Systems at the University of Wisconsin-Madison and the Southeastern Wisconsin Energy Technology Research initiative in Milwaukee. The consortium has a broad charge to take a systems approach to developing clean technologies including energy efficiency, wind, solar, smart grid, biofuels, fuel cells, and energy storage. Moreover, the

consortium will train workers in new technologies as they come on line. The University of Wisconsin-Madison, University of Wisconsin-Milwaukee, Milwaukee School of Engineering, and Marquette University will all host consortium activities. The hub of the consortium will be the Center for Renewable Energy Systems, which will relocate to the new \$50 million Wisconsin Energy Institute, alongside the Great Lakes Bioenergy Research Center. The Wisconsin Office of Energy Independence will provide \$300,000 in seed capital, while \$37 million over a ten-year period is expected from a combination of public and private sources (Content 2010a; U.S. Department of Energy 2010; Wisconsin Department of Commerce 2010b).

Biofuels. Executive Order 141, issued in 2006, established state vehicle fleet goals that would reduce gasoline consumption by 50 percent by 2015 and diesel by 25 percent by the same date (EPA 2008). The state government has a broad strategy of supporting the “bioproducts” industry, which includes electricity from biomass, bioplastics, and biofuels. As of 2010 the state was the ninth largest producer of ethanol in the country, and it had a half dozen large (over 2 million gallons per year) biodiesel refineries (State of Wisconsin 2009a). Although Forward Wisconsin, a public-private partnership that engages in industry recruiting, did not list biofuels among the state’s leading industrial clusters, the state has invested strongly in the industry (Forward Wisconsin 2009). For example, the government developed incentives for new biodiesel and ethanol pumps, provided a production tax credit for large biodiesel producers, and allocated \$4 million in grants for a soybean crushing facility (State of Wisconsin 2008b).

In 2007 the Wisconsin Bioenergy Initiative at University of Wisconsin-Madison College of Agriculture and Life Sciences received a \$125 million grant from the Department of Energy for the Great Lakes Bioenergy Research Center (GLBRC). The bioenergy research cluster includes over 250 affiliated researchers and staff charged with breaking the “cellulosic bottleneck” and developing second- and third-generation biofuels. The GLBRC collaborates closely with other DOE funded Bioenergy Research Centers and Oak Ridge and Lawrence Berkeley National Laboratories.

The Wisconsin Bioenergy Initiative has also identified biogas as an untapped “opportunity fuel” for the state. With nearly 13,000 licensed dairy herds, there is significant room for growth for anaerobic digesters, which convert the methane from manure and waste water to energy and convert the manure to saleable products such as fertilizer. As of 2009, there were thirty-one operating anaerobic digester systems on twenty-two farms in the state. In comparison, Germany currently has over 4,000 anaerobic digesters in operation. Some barriers to the adoption of anaerobic digesters by Wisconsin dairy farmers include the cost of the equipment, the scale of the dairy operation and the speed of the digestion process, and the low electricity buy-back rate offered by utilities (Wisconsin Bioenergy Initiative 2010).

Solar. Despite the popularity of distributed solar power in Wisconsin, as evidenced by the 70-80 percent growth per year since 2002 (Content 2009a), solar power does not play a significant role in the state’s future energy plans. According to Governor Jim Doyle’s Plan for Energy Independence, solar power currently accounts for about 5 percent of the state’s renewable-energy production and in 2025 when 25 percent of the state’s energy use is expected to come from renewable sources there is not an increase in the projected percentage of power from solar (State of Wisconsin 2008b). Currently, the state offers no significant tax credits for

developers of large-scale solar power projects; instead, the state government opts to subsidize smaller projects (less than 20 kilowatts capacity) by individual businesses and municipalities through the Focus on Energy program.

Without much support from the state, construction of the largest solar project in Wisconsin began in May of 2010 on a remediated landfill in urban Milwaukee at a cost of \$6.9 million. The Photovoltaic Educational Farm will employ 150 people and provide 510 kilowatt-hours of electricity per year to power the television transmitter for Milwaukee Public Television (Milwaukee Area Technical College 2010). Moreover, the farm will be a leading training center for students at Milwaukee Area Technical College, Milwaukee School of Engineering, Marquette University, and the University of Wisconsin—Milwaukee (Content 2010b).

Transportation and Energy Storage. Wisconsin has a budding rail industry thanks to \$823 million dollars in ARRA funding allocated to improve rail service in the state. About \$810 million is dedicated to the initial construction costs of a high-speed rail line between Madison and Milwaukee, and about \$12 million of that will be used to improve the existing rail infrastructure connecting Milwaukee and Chicago. The remaining \$1 million will be used to study the extension of the line from Madison to Minnesota's twin cities. In March of 2010, the Spanish manufacturer of high-speed trains, Talgo, agreed to establish its North American assembly plant in Milwaukee. The plant is expected to generate about 125 jobs. Additionally, the seven-county Milwaukee-area regional economic development group, Milwaukee 7 (M-7), has worked to put together financing packages with local, state, and federal tax credits and other incentives to support a burgeoning energy storage industry cluster developing rechargeable energy storage systems for wind and grid technologies as well as vehicles (Content 2009b).

Wind. Legislation approved in 2009 (SB 185) facilitates wind siting by developing uniform standards. In June of 2010, the Public Service Commission held public hearings in hopes of resolving issues such as minimum set-backs and maximum noise standards. There is a manufacturing cluster in the northeastern section of the state, and the eighteen counties in the region have grouped together to promote the industry under the banner of the "New North." In 2010, the regional economic development organization New North, Inc., transitioned its Wisconsin Wind Works Supply Chain Directory and its members into a formal trade organization. Tower Tech Systems Inc. of Manitowoc, a member of the New North, has recently been awarded significant contracts with Denmark-based Vestas and the Spanish firm Gamesa to supply the tall towers for wind farms operated by Wisconsin-based utility We Energies (Content 2010c). The state claims that over seventy-five companies work in the wind supply chain, and wind energy is identified as one of the state's leading industrial clusters (Forward Wisconsin 2009). Additionally, there is a wind energy technician training program at Lakeshore Technical College, and the Energy Institute at the University of Wisconsin-Madison, which was founded in 2000 and includes over fifty researchers in 2010, supports wind energy researchers throughout the state. In 2009 Vestas, the largest wind turbine manufacturer in the world, also announced a partnership with the College of Engineering (Mattmiller 2009). The college hosts an industry consortium, the Wisconsin Electric Machines and Power Electronics Consortium, and wind energy curriculum.

Milwaukee

Milwaukee regularly wins high acclaim on urban sustainability rankings, and it has won special acclaim for storm-water management, energy-efficiency improvements in city buildings, alternative fuels in city vehicles, and city planning. Since 2007, Milwaukee has hosted the Green Energy Summit, put on by Milwaukee Area Technical College, connecting Wisconsin businesses, government agencies, academic researchers, and civil society organizations through panels, presentations, workshops, and exhibits. The city also hosts Wisconsin's Solar Decade Conference.

Sustainability Plans. In 2004, Mayor Tom Barrett convened the Milwaukee Green Team to develop a sustainability plan for the city. In 2005, Barrett established the Office of Environmental Sustainability to direct efforts to improve Milwaukee's water quality, increase energy efficiency, and stimulate the economy by fostering green industries. These initiatives were outlined in the Milwaukee Green Team's Report to Mayor Barrett (City of Milwaukee 2005).

Green-Building Initiatives. Since 2005, Milwaukee has had a green building goal of reducing energy consumption for city buildings by 15 percent by 2012. The city has added green rooftops to its buildings both for energy-efficiency purposes and for stormwater run-off control. The city also developed sustainable design guidelines for the Menomonee River Valley redevelopment effort.

In April of 2010, the cities of Milwaukee, Madison, and Racine were jointly awarded \$20 million in federal funding for the Wisconsin Energy Efficiency (We2) program through the Department of Energy's "Retrofit Ramp-up" program. Milwaukee's portion of the money was allocated to the launch of the Milwaukee Energy Efficiency (Me2) Program, which was developed by the city and the Center on Wisconsin Strategy. The Me2 Program supports building efficiency improvements paid for through PACE financing (Center on Wisconsin Strategy 2010b). The city government plans to implement a Community Workforce Agreement (see the discussion for Portland, Oregon) and to partner with the Wisconsin Regional Training Partnership to ensure that city residents benefit from the new jobs (City of Milwaukee 2010a). Racine's program, which focuses on commercial properties, is already running and was the first operational PACE program in the Midwest. Prior to the federal delay on PACE financing, Madison's share of the grant was planned to be used to implement a PACE program that covers both commercial and residential retrofits. In June of 2010, the state's Office of Energy Independence submitted a grant application for the Whole Wisconsin Energy Efficiency (WWe2) program, based on We2, which intends to cover the rest of the state. An additional aspect to WWe2 includes plans to help hospitals increase energy efficiency.

Green Jobs Training. In 2009, the Milwaukee Area Workforce Investment Board was awarded a \$1 million grant for green jobs training to expand Milwaukee Builds, a program to train low-income people to work in solar and weatherization fields (Barrett 2010; Content 2009b). Milwaukee was also awarded \$1,075,000 for green jobs training through the

Department of Labor's Pathways Out of Poverty program, which targets high poverty areas (Content 2010c). A joint effort between Milwaukee Area Technical College and the University of Wisconsin—Milwaukee received \$330,184 in May of 2009 to develop the Wind Energy Education Collaborative to train students for the wind industry (Content 2009c). And in 2010 Milwaukee began the construction of the Photovoltaic Educational Farm training center, a partnership mentioned above.

Green Business Initiatives. Milwaukee is also known for its redevelopment of old industrial brownfields. The Menomonee Valley redevelopment project was developed with sustainable design guidelines, and the “30th Street Industrial Corridor” program uses tax increment financing to attract new businesses, retain old ones, and recruit new “green” businesses (City of Milwaukee 2007). In February of 2010, Spanish renewable energy firm Ingeteam agreed to locate its first U.S. manufacturing plant in Milwaukee's Menomonee Valley, basing its decision on a combination of tax credits and the skilled workforce (Sandler 2010). Ingeteam will be building wind turbine generators and power converter and control systems for the wind and solar supply chains. In July of 2010, Helios USA, a start-up photovoltaic module manufacturer, became the most recent company to sign a lease within the Canal Street Commerce Center in Milwaukee's Menomonee Valley. Helios USA anticipated providing over 100 jobs by 2015. The agreement with Helios USA ensures that 96 percent of the Canal Street Commerce Center's 146,000 square feet are occupied (Weiland 2010).

In March, 2008, Milwaukee was designated as a “Solar America City” by the U.S. Department of Energy. In October of 2009, the “Milwaukee Shines” initiative was awarded \$660,000 to make solar mainstream in the city through education, outreach, training and the installation of over 100 solar-electric and fifty solar-thermal systems, resulting in 1 megawatt of energy production by 2012 (State of Wisconsin 2009b). In March of 2010, the Milwaukee Shines Solar PACE loan program was signed into law, creating a revolving fund allowing homeowners to attach solar installation expenses to their property tax bill (City of Milwaukee 2010b). The program contracted with the Midwest Renewable Energy Association to provide solar electric and solar hot water installation training workshops in Milwaukee. That same month, the Solar Hot Water Business Council developed as an offshoot of Milwaukee Shines. The Solar Hot Water Business Council seeks to create a manufacturing cluster for solar hot water components many of which are already being produced in the area or require only minor retooling by existing manufacturers. Part of the Council's plan is to tap into the cluster of businesses in freshwater technologies that has been fostered by the Milwaukee 7 regional economic development alliance and supported with research at the University of Wisconsin-Milwaukee School of Freshwater Science (Luecke 2010). To date, it is the only solar hot-water initiative in the nation (Content 2010e).

City Society Organizations and Policy

Wisconsin and Milwaukee have benefited greatly from the work of the Center on Wisconsin Strategy (COWS). While their scope is not limited to the state, COWS partners with many municipalities and Wisconsin-based organizations to develop multi-sector approaches to healthy economic development. Additionally, COWS is the Wisconsin convener of the Apollo Alliance, a coalition of labor, business, environmental, and community groups seeking to advance the clean-energy industry and the creation of high-quality, green-collar jobs.

The Wisconsin Bioenergy Initiative is convened by the University of Wisconsin but includes stakeholders from industry, governments, and civil society. The initiative plays a significant role within state, Midwest, and federal policy circles with regard to biomass and biogas. Current foci include looking to improve upon the federal Biomass Crop Assistance Program through the regional Biomass Working Group and creating Advanced Renewable Tariffs in Wisconsin that are beneficial to all stakeholders.

Other important organizations with respect to clean-energy policy include RENEW Wisconsin and the Midwest Renewable Energy Association. RENEW Wisconsin is a network of clean-energy businesses, educators, farmers, builders, environmental advocates, and citizens who seek to identify and overcome barriers to renewable energy development. Currently, the organization's focus is on fighting for Advanced Renewable Tariffs that support smaller-scale renewable-energy projects and helping to standardize the state's wind energy permitting process. The Midwest Renewable Energy Association (MREA) hosts the nation's premier energy education event, the annual Energy Fair located in Custer, Wisconsin. Additionally, MREA is a national leader in developing training and certification for renewable energy site assessment and installation.

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