

Wisconsin Energy Corporation: Case Study Of Corporate Social Responsibility

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ABSTRACT

Increasing by approximately 32% a year globally over the last five years, wind energy has proven to be a clean, abundant, and cost effective renewable source of energy. Wind energy is an important part of the strategy to replace fossil fuel electricity generation. Fossil fuels such as coal, oil, and natural gas currently generate over 70% of the power consumed in North America. The dramatic increase in the cost for fossil fuels and the growing pressure on the world's nations to reduce greenhouse gas emissions have combined to position wind power as the world's fastest growing new source of electricity generation. This case study discusses a major producer of America's wind energy, Wisconsin Energy Corporation (WEC), and their strategies and commitments to alternative energy and a more sustainable future. The company's "triple bottom line" including economic, social, and environmental benefits will also be evaluated.

Keywords: Sustainable Energy; Wind Power Turbine generators; Greenhouse Gas; Clean Coal Power

COMPANY HISTORY

Wisconsin Energy Corporation was founded in 1981 and is based in Milwaukee, Wisconsin. The Corporation engages in the generation, distribution, and sale of electric and steam energy. The company is also involved in the purchase, distribution, and sale of natural gas to retail customers, as well as in the transportation of customer-owned natural gas in Wisconsin. It generates electricity from coal, natural gas, wind, and hydro sources. The company offers its services under We Energies name. It serves approximately 1,120,200 electric customers in Wisconsin and the Upper Peninsula of Michigan; approximately 1,064,500 gas customers in Wisconsin; and approximately 460 steam customers in metropolitan Milwaukee, Wisconsin. In addition, the company invests and develops in real estate properties, including business parks and other commercial real estate projects primarily in southeastern Wisconsin. It provides electric utility service to industries, such as mining, paper, foundry, food products, and machinery production, as well as to retail chains. Other subsidiaries are We Power, which designs, builds and owns electric generating plants and Wispark, LLC, which develops and invests in real estate, industrial/office buildings and urban redevelopment projects (10).

The majority of We Energies' electricity is generated by its coal-fueled power plants in Oak Creek, Pleasant Prairie, and Marquette, Michigan. The natural-gas is supplied from Port Washington Generating Station in Port Washington and from the Point Beach Nuclear Generating Station north of Manitowoc, Wisconsin. We Energies also operates natural-gas-fueled peaking plants, which are used to produce electricity during periods of peak demand, several hydroelectric dams located on rivers in northeast Wisconsin, and from various renewable energy sources, including wind and biomass. We Energies transmission system interconnections are with Commonwealth Edison in northern Illinois, Wisconsin Public Service in northeast and north central Wisconsin and Xcel Energy in western Wisconsin and most of Minnesota and Upper Peninsula Power Company in Michigan's Upper Peninsula (9).

MISSION

Wisconsin Energy Corporation's (WEC) mission statement is "to create brighter futures for the communities in which we do business, enhancing the growth and success of our company". WEC's vision is to "achieve maximum community benefit and business value per dollar invested". The company's goals are to "pursue a sustained, consistent approach to funding within our focus areas, better enabling the organizations to achieve lasting results, to foster mutually beneficial relationships between Wisconsin Energy Corporation subsidiaries and community organizations, and lastly to fully leverage company resources". Wisconsin Energy Corporation's Environmental Commitment, according to their published 2011 CSR Report, is "committed to improving the quality of life in the areas we serve and the compatibility of our operations with the environment. They pledge environmental accountability for our business activities. "They will lead by example in the communities they serve" (7).

WEC's SUSTAINABLE STRATEGIES

As principles to guide its actions, the company includes environmental factors as an integral part of its planning and operating decisions, recognizes the contribution every employee can make to improve the company's environmental performance.

1. The company communicates and reinforces environmental values throughout the company and practices responsible environmental stewardship of all company-owned properties and natural resources entrusted to its management.
2. WEC minimizes adverse environmental impacts of operations by meeting or surpassing environmental standards, investing in energy efficiency measures, and supporting company recycling and waste reduction programs.
3. The company supports research and implements new technologies for emissions control, energy efficiency, renewable energy resources, and other environmental and health concerns associated with utility operations.
4. WEC accepts accountability for its operations by responding to environmental incidents quickly and effectively and by promptly informing the appropriate parties.
5. They provide public participation opportunities and welcome communication from stakeholders on environmental issues; and continue to foster constructive working relationships with environmental organizations, community leaders, and media.
6. By participating with government in creating responsible laws and regulations to safeguard the environment, community and workplace

Above all, WEC periodically reviews performance to ensure those programs and practices are consistent with these principles (8).

WEC SUSTAINABLE PRACTICES - WIND POWER

WE Energies currently operates over 80 wind turbines throughout Wisconsin. Wind power is seen as a solution to the environmental problems caused by nuclear, hydroelectric, natural gas, and coal power plants. For example, coal and natural gas power plants cause air pollution. Nuclear plants create dangerous waste, hydroelectric plants block rivers lastly emissions from carbon dioxide fossil-fuel plants are a significant source of greenhouse gases which is a leading cause of global climate change. Wisconsin gets 75 percent of its power from coal plants which cause 48 million tons of greenhouse gas emissions (carbon dioxide), 206,000 tons of acid rain emissions (sulfur dioxide), and 107,000 tons of smog emissions (nitrogen oxides) each year.

Wind turbines capture the kinetic energy in surface winds and convert it into useable energy in the form of electricity. It operates on simple principle--energy in the wind turns two or three propeller-like blades around a rotor which is connected to the main shaft. This spins a generator to create electricity. Wind turbines are mounted on elevated towers to capture the energy in the most efficient manner. At 100 feet (30 meters) or more above ground, wind strengths are typically stronger and less turbulent than at ground levels. Wind turbines can be used to produce

electricity for a single home or building. More typically, they are connected to a large scale electrical transmission grid for more widespread distribution of the power to consumers (1).

Bigger turbines generate electricity at a lower cost per kilowatt-hour. Taller is also better because wind speed and consistency increase with altitude turbines that are offshore can have bigger turbine rotors that will run longer. The size of turbines face onshore, constrained such as the size of roads and bridges over which the turbine parts will have to be transported. Trends point to a growing importance of the offshore wind energy segment. Most of the highest goals on renewable energy production are based on offshore wind systems, involving large numbers of mega-turbines and large scale resources and investments. Onshore wind energy represents more than 10% of the electricity consumed in some regions of Denmark, Spain, Germany or Sweden. Its growth over the last decade has been spectacular. Generating electricity produced by large turbines. Onshore wind farms are often subject to restrictions and objections such as their negative visual impact or noise, restrictions associated with obstructions (buildings, mountains, etc.), land-use disputes, or limited availability of land. Onshore turbines are most often cheaper than offshore ones because of cheaper foundations and installation costs (1).

EMPLOYEES

Employee health is fundamental to the success of a business and quality of life in any company. We Energies is committed to keeping employees safe. Since 2003, the company has improved its safety record by reducing the number of Occupational Safety and Health Administration (OSHA) recordable cases by 63 percent. The company's success of employee safety can be attributed to increasing employee accountability at all levels, improving injury case management, and improving employee engagement. The company's management team uses weekly safety conference calls to focus on safety for the high-risk field occupations. To help improve the safety culture, management is expected to provide daily information and communication about safety topics. Additionally, they are responsible for implementing and evaluating safety programs and conference call outcomes (4).

In 2010, the company recorded its best year for employee safety in terms of Occupational Safety and Health Administration recordable and lost-time injuries. These results continued each year for the past six years and indicated that We Energies employees have the resources to work safely. OSHA recordable injuries finished the year at 2.2, better than the stretch goal of 2.42. The result is a 33 percent reduction from 2009 results and a 60 percent reduction from 2005. Lost-time injuries finished at 0.43, better than the stretch goal of 0.46. The result is a reduction of 15 percent from 2009 and 48 percent from 2005.

We Energies believe that employee training and development gives a sustainable competitive edge for the future. The average hours of training per year per employee are more than 40 hours. Employee development through performance reviews takes place on a regular basis. Training is a key element in improving the performance levels of employees and therefore improving customer service and corporate performance. In 2010, We Energies employees completed nearly 50,000 assessments through e-learning. Some of these courses included annual ethics training, safety refreshers, operator qualification training, and other job skill training. E-learning has allowed the business to increase the efficiency in training employees. Employees have become experienced in e-learning and now spend less time completing the same training as they had in past years. Employees also have access to online training that ranges from learning software programs to leadership competencies. Employees can set up learning roadmaps for specific topics or take individual courses based on their needs. Employees also are provided with access to portals that include topical references, online books, job aids and simulations (4).

INDUSTRY STANDARDS & REGULATIONS

Greenhouse gas regulations will be a particular focus for the energy industry in 2012 as the mandatory reporting became affective in and the EPA moves to include greenhouse gas requirements in permits issued under the Clean Air Act. Cap and trade is an environmental policy tool that delivers results with a mandatory cap on emissions while providing sources flexibility in how they comply. Successful cap and trade programs reward innovation, efficiency, and early action and provide strict environmental accountability without inhibiting economic growth.

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of five percent against 1990 levels over the five-year period 2008-2012.

The U.S. Department of Energy's Wind Program leads the nation's efforts to improve the performance, lower the costs, and accelerate the deployment of wind technologies. The program works with national laboratories, industry, universities, and other federal agencies to conduct research and development activities through competitively selected, cost-shared projects. Greater use of the nation's abundant wind resources for electric power generation will help stabilize energy costs, enhance energy security, and improve our environment.

In Wisconsin, any value added by a solar-energy system or a wind-energy system is exempt from general property taxes. A solar-energy system is defined as "equipment which directly converts and then transfers or stores solar energy into usable forms of thermal or electrical energy, but does not include equipment or components that would be present as part of a conventional energy system or a system that operates without mechanical means." A wind-energy system is defined as "equipment which converts and then transfers or stores energy from the wind into usable forms of energy, but does not include equipment or components that would be present as part of a conventional energy system" (5).

The We Energies Blue Sky Green Field Wind Energy Center located in Fond du Lac County, Wisconsin, is capable of generating up to 145 MW of electricity with 88 wind turbines – enough to power more than 36,000 homes annually. The Glacier Hills Wind Park is located in the towns of Randolph and Scott in Columbia County, Wisconsin. The wind project is expected to accommodate 90 wind turbines with a total generating capacity of 162 MW of electricity – enough capacity to power approximately 45,000 homes annually. Construction began in May 2010 with 2012 expected to be the first full year of operation (6).

While there are no current federal, Michigan or Wisconsin state regulations limiting Green House Gas (GHG) emissions, WEC has taken a proactive approach to working with governmental agencies and other groups to address climate change policy. Virtually all of the company's electric operations are potentially impacted by regulatory risks related to climate change. Most industry power plants are carbon emitting. The exceptions are the industry wind and hydro power facilities. The company also has a long-term agreement for purchased power from Point Beach Nuclear Plant which is in effect until 2030 for Unit 1 and 2033 for Unit 2. Customers are, or in the future may be exposed to legislation and/or regulation regarding energy efficiency, conservation and reduction of GHG emissions.

The company believes that future governmental legislation and/or regulation would require the company to either limit GHG emissions from operations or to purchase allowances for such emissions. However, the company cannot currently predict with any certainty what form these future regulations will take, the stringency of the regulations, or when they will become effective. The company expects the U.S. Congress to consider legislation that would compel GHG emission reductions. Legislation to regulate GHG emissions and establish renewable and efficiency standards also has been considered at the state level (2).

The state of Michigan has enacted legislation that calls for the implementation of a renewable portfolio standard by 2015 and energy optimization (efficiency) targets up to 1 percent annually by 2015. The state of Wisconsin has adopted its own renewable portfolio standard and energy optimization targets. During its 2010 legislative session, the Wisconsin legislature considered, but ultimately did not pass, a proposal to increase Wisconsin's renewable portfolio standard and energy optimization targets. There is no guarantee the legislature will not consider similar legislation in the future.

In addition to these federal and state legislative efforts, the U.S. Environmental Protection Agency (EPA) is pursuing regulation of GHG emissions using its existing authority under the Clean Air Act (CAA). In December 2009, the EPA issued its endangerment finding related to GHG emissions, which set in motion a regulatory process that is leading to regulation of GHG emissions from stationary sources, including electric generating units. In March 2010, the EPA finalized its determination of when the CAA's acceptable requirements for emissions from facilities,

including electric generating units, would apply to GHG emissions. The regulation of stationary sources will occur in multiple steps in the coming years, beginning with the first step that became effective January 2, 2011. This initial step covers sources that are already subject to EPA regulations for emissions other than GHG.

The second step, which covers new construction projects and modifications at existing power plants, became effective on July 1, 2011. Additionally, in December 2010, the EPA reached an agreement with several states and environmental groups to propose and finalize rules regulating GHG emissions from certain new or modified coal-fueled power plants and guidelines addressing GHG emissions from certain existing power plants by May 26, 2012. Regulation of GHG emissions from power plants will impact the company's ability to do maintenance or modify its existing facilities and permit new facilities. Several parties have filed for judicial review of some of the EPA's new GHG rules. In December 2010, the federal court denied a motion to stay the GHG rules pending judicial review, so the rules will continue in effect unless overturned by the court (5).

COMPANY ENERGY CONSUMPTION & EMISSIONS

Since 2000, the company has spent more than \$3 billion constructing new generating facilities increasing its total generation capacity by 31 percent. At the same time, the company is significantly reducing its annual emissions of SO₂ (sulfur dioxide) and NO_x (nitrogen oxide) by installing air quality control systems on its two largest existing coal plants. The We Energies Pleasant Prairie Power Plant (PPPP) was selected as one of POWER Magazine's top coal-fueled plants in 2007 for its air quality control system project. As part of an agreement between Wisconsin Electric Power Company and the U.S. Environmental Protection Agency, PPPP was retrofitted with selective catalytic reduction systems for NOX emission removal and wet flue-gas desulfurization units (scrubbers) for SO₂ emission removal. With these environmental control technology installations, PPPP has among the lowest SO₂ and NOX emission rates of any coal-fueled power plant in Wisconsin. A new air quality control system also is being constructed at Oak Creek Power Plant units 5-8 and is expected to cut SO₂ emissions by 80-90 percent and NOX emissions by 60-70 percent. The company expects the installation to be completed during 2012. Once completed, these projects, along with additional measures taken at other facilities, are expected to result in more than 85 percent reduction in SO₂ and more than 70 percent reduction in NOX by the end of 2012 compared to 2000 emission levels. The units added in the Oak Creek Power Plant expansion, part of the PTF strategy, are equipped with state-of-the-art emission-control technology (7).

As part of the Clean Coal Power Initiative, a mercury removal demonstration project was installed at the We Energies Presque Isle Power Plant in 2006. The \$53 million project, co-funded by the U.S. Department of Energy and We Energies, works to reduce mercury emissions by 70-90 percent through the Electric Power Research Institute's (EPRI) patented TOXECON process. This process uses a fabric filter in conjunction with sorbent injection to remove mercury and other emissions downstream of the plant's existing particulate control device. This mercury removal project is one of the largest of its type, currently treating flue gas from Western sub-bituminous coal-fueled units with a total generating capacity of 270 MW. We Energies hosted a first-of-its-kind project at PPPP, demonstrating a chilled-ammonia scrubber technology to separate and capture up to 90 percent of the CO₂ emissions from a portion of the flue gas from one of the boilers. The technology has the potential to dramatically reduce the cost of removing CO₂ from pulverized coal-fueled power plants and to bring the cost of removing CO₂ from these power plants in line with the estimated cost of removal from proposed integrated gasification combined cycle power plants (2).

This was the first step in developing a commercial scale technology to capture CO₂ emissions from existing coal fueled power plants. The pilot project confirmed the predicted performance of the chilled ammonia carbon capture system at an operating power plant and achieved key research metrics around hours of operation, ammonia release, CO₂ removal levels and CO₂ purity. Results of this research were incorporated into a larger scale project at an electric generating plant in West Virginia owned by an unaffiliated utility. We Energies also helped to fund this project. This phase involved injecting the captured CO₂ deep underground into saline aquifers to demonstrate long-term CO₂ storage. Through We Energies' sponsorship in EPRI, the company also is investigating the technical feasibility for the electric utility sector to achieve large-scale CO₂ emissions reductions and the economic impact of realizing emissions reduction targets (9).

COMMUNITY INVOLVEMENT

The Wisconsin Energy Foundation, established in November 1982 as a separate, nonprofit, tax-exempt corporation, has invested more than \$100 million in communities in Wisconsin and Michigan over the past 25-plus years. Funding for initiatives supported by the Wisconsin Energy Foundation is derived from the shareholder portion of earnings and dividends paid by Wisconsin Energy Corporation. Grants do not affect the profitability of Wisconsin Energy Corporation nor are they reflected in the prices customers pay for services from the utility subsidiaries of Wisconsin Energy. The Foundation issued grants to 851 organizations in 2011, totaling more than \$9.0 million. In 2011, the employee matching gift program directed more than \$1 million to non-profit arts/cultural organizations and educational institutions. The Foundation asset base as of December 31, 2011 was \$31.4 million. The foundation is funded by WEC shareholders. The foundation supports initiatives promoting economic health, arts and culture, education, and the environment. As an extension of the foundation's outreach, employees of WEC and its subsidiaries serve on a number of nonprofit boards. The foundation also conducts annual workplace giving campaigns for the arts and United Way (8, 10).

FUTURE OF THE INDUSTRY

Today, the increasing energy demand and the need for clean power generation lead to the concept of renewable energy sources. With highly efficient and reliable wind turbine offer a solution to meet energy needs and environmental awareness. Wind energy is vital in the future of alternative energy. Wind energy produced worldwide: 65,000,000,000 kWh per year (enough power for 6 million U.S. homes). Wind energy produced in the U.S.: 16,000,000,000 kWh per year (enough power for 1.6 million homes). Potential U.S. wind energy production by 2020 will produce enough power for 25 million homes yearly. Yearly emissions eliminated by generating energy from a 1 MW wind turbine instead of 1 MW of conventional sources: over 1,500 tons of carbon dioxide, 6.5 tons of sulfur dioxide, 3.2 tons of nitrogen oxides, and 60 pounds of mercury in one year. Wind power farms generate between 17 and 39 times as much power as they consume, as compared to 16 times for nuclear plants and 11 times for coal plants, according to a study of Midwestern wind farms by the University of Wisconsin (2).

The future is very bright when it comes to wind power. The technology is growing exponentially with the current power crisis that hit the Northeast in 2003 and California's constant strive for energy efficiency. Today, the U.S. wind industry represents not only a large market for wind power capacity installations, but also a growing market for American manufacturing. Over 470 manufacturing facilities across the U.S. make components for wind turbines and dedicated wind facilities that manufacture major components such as towers, blades, and assembled nacelles can be found in every region.

Today wind turbines are becoming more efficient and are able to produce more electricity given the same factors. Electric Utility companies are starting to jump on board with the cost per kilowatt dropping substantially with less expensive equipment. This is also a result of the latest technological breakthroughs. Before long, we may see a huge increase of small scale systems for homeowners as these systems lower in price and also rise in efficiency. The uncertainty of energy prices has more people across the world becoming more involved in using solar and wind power to produce electricity. In the future we will have no other option but to make better use of our natural energy resources. The advantages of using natural energy as a means of producing clean and renewable energy can no longer afford to be ignored (9).

AUTHOR INFORMATION

Gayle Marco, Ph.D. received her Ph.D. degree from the University of Pittsburgh. (Major: Marketing Education and Vocational Education) Her research interests include various areas of consumer decision making, buyer behavior and the various areas of sustainability. She has consulted for numerous companies in the Pittsburgh area. The consulting areas include product repositioning, market development for new products, needs assessments, and market plan development. Professor Marco integrates "real" marketing projects for area businesses in her teaching at the undergraduate and graduate level. She has published in the *Journal of Global Business*, *The Journal of American Academy of Business*, *American Journal of Business Education*, and *Journal of Business Case Studies* as well as

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