ENERGY AND ECONOMIC DEVELOPMENT

by

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Introduction

For the past century, economical and reliable energy supplies spurred the development of the goods and services that we take for granted. Electrical energy has made possible many of the technological advances that have improved our quality of life---from washing machines and televisions to computers and medical diagnostic tools. Clean-burning natural gas has largely replaced coal and fuel oil for home heating use and is the critical component in a host of manufacturing processes.

Affordable and reliable energy is especially important to Wisconsin as a major manufacturing state. The state ranks second only to Indiana in the percentage of employment devoted to manufacturing. Energy is a necessary input in a wide range of production and consumption activities.

For many years, Wisconsin utilities provided stable and affordable energy for residential, commercial and industrial use. Over the past several years, however, this picture has changed. The state's industrial customers have experienced power interruptions, and brownouts have been a real threat to residential customers. This paper will offer an overview of current energy conditions in Wisconsin and their potential impact on economic development.

Overview

Historically, electric utilities were vertically integrated monopolies. In other words, a utility generally owned its generation, transmission, and distribution equipment. When each utility served only a small geographic area, and power was not marketed on a national level, this made sense. Today, however, electric power is a nationwide commodity, and can be transmitted to where it is needed almost instantaneously. Electricity is also a time-fragile commodity, meaning that it cannot be stored. Therefore, for both reliability and cost reasons, power must be easy to transmit nationally.

Wisconsin's energy situation includes both generation and transmission issues. If all generating units in eastern Wisconsin are operating, they produce enough power to meet consumers' needs on peak demand days. If even one generating unit is down and power cannot be obtained from elsewhere, however, blackouts or brownouts can occur.

Also contributing to the problem is Wisconsin's inadequate transmission capacity. Electrical power is produced in a national market; in order to be used in Wisconsin, power does not have to be produced in Wisconsin. The state does, however, require a transmission system that is capable of getting power where it is needed. Partly because Wisconsin faces the natural barrier of the Great Lakes to the north and east, Wisconsin has only four transmission lines bringing power here from other states, and only one line serving the entire northern part of the state. Other states have as many as 18 such lines.

In addition, Wisconsin has no fossil or nuclear fuel resources for generating electricity. We have to import these fuels. Their cost and availability can be affected by events outside our control.

Increasing demand and rising costs

Since 1985, Wisconsin's population has increased by 10 percent and the number of businesses in Wisconsin has grown by 38 percent. Electricity use rose by more that 25 percent per capita between 1970 and 1997. The Public Service Commission of Wisconsin, in its 1998 Advance Plan proceeding, forecasted a 2-percent energy growth rate for the ensuing decade. Actual demand, however, has risen by 3.5 percent annually.

A 3.5-percent increase in electricity demand in Wisconsin translates into a need for 300 megawatts (MW) annually of new generating capacity. Plants currently planned or under construction can meet that demand through 2003. After that, Wisconsin will need to site additional generating capacity in-state or buy more power over the transmission system to meet both demand as well as the 18-percent reserve margin required by the Public Service Commission of Wisconsin (PSC). By 2010, unless Wisconsin adds both generating and transmission capacity, demand will outstrip supply by 4,000 MW. That shortfall represents almost one-third of the state's current electrical load of 13,000 MW.

California's energy situation during the summer of 2000 reveals what can happen when supply and reliability are at issue. California has experienced not only rolling blackouts but also a 270-percent increase in the cost of electricity over 1999.

Like California, Wisconsin has followed a buy-not-build policy for the last 20 years to meet its electricity demands. Currently, Wisconsin buys about 15 percent of its power from out of state. The more Wisconsin is dependent on power from other states, the more we will be subject to price fluctuations. On hot summer days when there's little or no surplus electricity in populous area, generators can charge prices far in excess of production costs. Utilities pass on these increased costs to their customers. During July 1999, prices in the Midwest hit $9,000 per megawatt hour. To put that price in perspective, imagine that a gallon of gas priced at $1.89 suddenly sold for $567.00.

For purposes of transmission, Wisconsin is divided into two sectors--the eastern Wisconsin sector and the western Wisconsin sector. The PSC maintains that the state needs increased transmission capabilities both into and within Wisconsin. Otherwise, the state's utilities will find it difficult to either buy or sell power. Yet the Midwest's bulk power transmission system was largely built in the period from 1950 to the early 1970s. Since then, no significant expansions or upgrades have been added. More than half the energy generated in Wisconsin comes from plants that are more than 25 years old. During the summers of 1997-99, inclusive, we saw firsthand that this aging system cannot meet demand, as industrial customers sustained costly interruptions and other consumers was warned of impending brownouts.

Currently, the PSC does not foresee any shortfall in natural gas availability. Many large industrial customers with process gas needs buy their gas directly from wholesalers, but use the utility distributions system to receive the product.

Gas-fired peaker plants--such as the SkyGen plant in De Pere--have gained favor because they cause less environmental impact than conventional generating plants. But these plants cost five to ten times more to operate than do coal-fired plants. Coal plants built today would also benefit from technological advances that reduce environmental impact from the levels of 20 years ago.

As gas-fired plants come on line, they increase Wisconsin's needs both for natural gas and its transmission facilities. In addition, natural gas prices have historically been much more volatile than coal prices. As demand for natural gas increases, its price increases. This summer, forecasters expected natural gas to sell for $3.00/ billion Btu. In fact, the price quickly rose to $5/billion Btu.

Energy and economic development

Over the past decade, Wisconsin has enjoyed strong economic growth and nearly full employment. Our strong economy attracted national attention. The Corporation for Enterprise Development, in its annual Development Report Card for the States, awarded Wisconsin A grades for economic performance and development throughout the 1990s. From 1997-2000 inclusive, *Industryweek* magazine named at least five Wisconsin communities in its top 50 world class manufacturing cities.

But uncertainties about energy costs and availability pose a significant threat to Wisconsin's continued economic growth. Economic development is a dynamic process. The global economy has intensified competitive pressures on businesses. As companies restructure operations and undertake mergers and consolidations, some industries leave and others appear.

In such a climate, economic development practitioners must be alert for new opportunities to diversify our local economies. Inevitably, some businesses will be lost as market preferences change. We must create a climate that encourages existing businesses to expand and attracts new firms to the area.

States and regions with all the necessary economic development components in place--sound infrastructure, skilled workers, quality education and training resources, carefully targeted incentives, and stable, affordable energy---will do better in their start-up, retention, and recruitment efforts than those that have not maintained these resources. Energy issues are extremely important both to Wisconsin's traditional businesses and its emerging New Economy firms.

Traditional businesses

It is often said that the most important factor in business success is location. Energy conditions are a critical factor in the location decision. According to Mike Schatz, economic development administrator of the City of Eau Claire, "Most of the manufacturing prospects that contact me have detailed questions concerning the availability, dependability, and cost of energy. It's a part of their location analysis that is very important in determining their cost of doing business, so the reliability of the energy source strongly influences their decision to locate or remain in a particular community."

Businesses are concerned about energy with good reason. It affects every aspect of their operations. "From the use of computers to the running of every machine on our production floor, affordable and available energy will continue to be a most significant factor in our continuing competitiveness," said Mark Patenaude, vice president of sales and operations, Artech Printing, Inc., Sturtevant.

Power not only must be affordable, it must also be reliable. Perhaps we think first of energy-intensive manufacturers, such as paper mills and metal fabricating plants, when we consider those most affected by energy reliability. Indeed, manufacturers have reported the loss of hundreds of thousands of dollars of product due to an unscheduled electrical interruption. But all businesses need reliable energy in order to be successful. If the power goes off, they lose money and customers. Randy Peterson, Lands' End's director of Facilities Management and Engineering Services, put it this way: "If our phone centers are down, we have lost that all-important contact with our customers; if our distribution centers are off-line, we can not fulfill the orders of our customers."

Businesses also make expansion decisions on the basis of energy availability. Lands' End recently expanded to Stevens Point. In commenting on the expansion, Randy Peterson said that "the decision to expand in Stevens Point is supported by our trust that the state's energy suppliers can continue to provide ample, reliable electrical energy to meet our expanding business needs now and into the future. Lands' End is known for its outstanding customer service. Electrical energy is a critical component throughout

our business, starting with the support of our main computers and customer files, the electronic creative design, the Internet, and the telephone orders right through to our fulfillment process."

Conversely, unreliability and high prices can cause companies to consider locations in other states. Companies are under numerous cost pressures to remain competitive in a global economy. Marty Muenzmaier, Kimberly Clark Corporation's Regional Director of State Government Relations, offered the following perspective:

"Kimberly-Clark's manufacturing and administrative presence is far greater in Wisconsin than in any other single state. The availability of reliable, low-cost energy in Wisconsin is vital for Kimberly-Clark to remain competitive in our marketplace. In our view, Wisconsin's energy infrastructure faces unique constraints, particularly in the areas of electricity generation and transmission. Failure to relieve these constraints will result in escalated costs and diminished quality of power. Maintaining reliable and cost-efficient supplies of natural gas is also in Wisconsin's and Kimberly-Clark's interests."

Tari Emerson, P.E., Procurement Manager for Charter Steel, Saukville, added that "the quality, reliability and cost of energy are major considerations when locating a new facility or expanding an existing facility. We are under constant pressure to make continuous improvements and reduce our operating costs. When making operational decisions between different facilities, energy costs play a key role in determining operating levels."

The quality, cost, and reliability of energy are major issues to labor as well. "Industry has taken controlled outages, which have not yet affected jobs," said Joseph Helmuth, president/business manager for the international Brotherhood of Electrical Workers Local 1147. "But if the frequency of the outage increases, how long will it be before it starts to affect the way industries schedule their workers? And how can any business justify expansion when it doesn't have a reliable energy source?"

Most of Wisconsin's businesses are small companies with fewer than 100 employees. They form the backbone of our economy, and provide jobs and investment in communities across the state. Energy price hikes threaten their existence and place in jeopardy the jobs they maintain. As Mark Patenaude observed, "The recent doubling and tripling of energy rates in the San Diego region has seen the untimely demise of many small business and the loss of employment opportunities for their workers."

New Economy businesses

In Wisconsin, we face the immediate challenge of fostering the start-up and recruitment of high-technology firms. Many other states are also working to develop a strong technology sector. Technology firms tend to be environmentally-clean and offer well-paying jobs. But these firms require absolutely reliable and stable sources of electricity. In addition, they can create huge demand.

"A very reliable power source is absolutely key to biotechnology growth," said Richard Willson, University of Houston associate professor of chemical engineering and biotechnology and co-author of a national biotechnology study for Business Facilities Magazine. "Because when you are dealing with living microorganisms you can't risk having power outages, even short-term ones. All of your research can die very quickly when not kept at the right temperature and in the right environment."

The Internet is changing the way America does business. Its growth continues to be not only explosive but also unprecedented. When electricity became publicly available in the U.S., 46 years passed before it reached 30 percent of American homes. The telephone reached 30-percent market penetration after 38 years. The Internet required only seven years.

In 1997, 19 million Americans were using the Internet. The number doubled in 1998 and passed 100 million in 1999. The Internet's ability to carry information doubles every 100 days. The number of electronic mailboxes worldwide increased by 84 percent to 570 million in 1999. In 1998, the number of electronic mail messages reached 4 trillion---compared to the U.S. Postal Service output that year of 101 billion pieces of mail.

It takes a lot of power to manage this volume of commerce. To take one new economy sector as an example, the market for 24-hour-per-day, seven-days-per-week data services is growing rapidly---and no company that manages data can afford unplanned interruptions. Zama Networks and Exodus, both of Tukwila, WA, operate data centers for other companies and guide digital traffic through the fiber-optics networks that wind around the globe. Zama Networks, with 60,000 square feet and 60 employees, requires 2 MW to operate---as much electricity as a typical office with 2,400 employees. Exodus is expanding its operations and will require an average of 105 MW by 2002.

If we want to develop firms like this in Wisconsin, we will have to meet their energy needs.

State efforts to create a positive energy climate

There are five components to a stable, reliable, affordable electricity system: transmission, generation, energy efficiency, distribution, and renewable energy.

Under the leadership of Gov. Tommy G. Thompson, the Legislature has addressed these component energy issues in each of the last two biennia. The Reliability 2000 package in the 1999-2001 budget relaxed the asset cap on utilities, provided for weatherization and energy assistance to low-income households, and required utility reliability reports on an ongoing basis. Most important, it authorized the creation of a transmission company to plan, construct and operate transmission facilities that it owns in order to provide an adequate and reliable transmission system.

In 1997, Act 204 streamlined the PSC's advance planning process for future generation and transmission needs, and also restricted the requirement for a PSC Certificate of Public Convenience and Necessity to facilities generating in excess of 1000 MW or transmission line operating at more that 230 kV. In addition, it authorized the creation of wholesale merchant plants to sell power on a competitive basis, and directed eastern Wisconsin utilities to construct or produce 50 MW from renewable energy sources. In addition, the PSC is working closely with utilities to manage a careful transition to deregulation.

Forces militating against a positive energy climate

These changes improve the climate for energy availability, reliability, and affordability and therefore economic development. Ultimately, however, Wisconsin can realize these benefits only by building improved transmission systems and add generating capacity.

It is clear that any attempt to build new transmission or generating facilities will be met with strong, well-organized, heavily-funded opposition. Opposition groups have stopped many energy development projects over the past 25 years. They focus on the "not in my back yard" issue to the exclusion of any other considerations, such as long-term energy availability and affordability, continuing viability of local businesses, and job and investment retention. Frequently, the groups use innuendo and misinformation to exploit fear and ignorance. For example, they claim that the new facilities will cause irreparable harm to the environment--even though power plants and transmission systems have to meet rigorous environmental standards or they do not receive approval to operate. They claim that the new facilities are not needed, even though reliable demand forecasts clearly show need. They claim that power lines cause cancer, despite studies by the US National Academy of Science and the US National Institutes of Health

that found no conclusive or consistent evidence. Each time these groups successfully block a development project, they demonstrate their organizational strength, political influence, and hold on public opinion. Another trend that has recently surfaced is opposition to development regardless of where it is located. For example, various groups of environmental activists have publicly and explicitly linked their opposition to the following four initiatives: a business relocation to central Wisconsin; the establishment of a dairy farm in southeastern Wisconsin; the siting of the RockGen power plant in Cambridge; and the revision of the state code governing private septic systems. This trend suggests that various groups will work together to stop projects regardless of their location. They have gone beyond "not in my back yard" and now seek to set the agenda statewide for land use, development and energy decisions.

Wisconsin's investor-owned utilities have responded to the state's impending electric energy shortfall by announcing plans to build generating facilities to meet demand. But, again, there is no certainty that these proposed plants will actually come on line. The mere announcement that power plants were being considered for Edgerton and Sturtevant generated huge public outcry, causing both projects to be shelved immediately. The RockGen project in Dane County is tied up in litigation. Strong opposition has already surfaced to the proposed Duluth-Wausau 345-kV line, which is essential to the reliability and continued growth of Wisconsin's electrical system.

Even so-called "green" energy attracts opposition. A proposal to install 28 wind turbines on the Niagara Escarpment in the town of Addison, Washington County, drew complaints from residents about the way the fans looked and their noise level---even though the company has agreed to locate the turbines a minimum of 1,000 feet from any residence. The escarpment, which runs from Door to Washington Counties, generates the state's highest average wind speeds. A similar project in 1999 along the escarpment in Kewaunee County drew complaints about shadows forming in the afternoon sunlight and a noise level that is no louder than a conversation between two persons. It is important to note that these complaints received a sympathetic treatment in newspaper articles. The articles did not, however, mention Wisconsin's tight energy supplies or the PSC's requirement that eastern Wisconsin utilities derive 50 MW from alternative sources.

Conclusion

We in the economic development, community development, business, and higher education communities must meet this challenge. We must develop a concerted effort to inform both the public and policymakers of the state's energy needs and the consequences of not meeting these needs. We must also develop alliances to promote the development of sufficient energy capabilities to meet Wisconsin's needs now and into the future, or we risk losing the well-paying jobs that have brought Wisconsin families a high standard of living and growing opportunities for the next generation. It is no exaggeration to assert that Wisconsin's economic future depends on reliable and affordable energy supplies.

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