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IMPACT OF COMPETITION ON THE GENERATION, TRANSMISSION, AND DISTRIBUTION OF ELECTRIC ENERGY STUDY - BACKGROUND MEMORANDUM

The Electric Industry Competition Committee was created by House Bill No. 1237 (1997) to study the impact of competition on the generation, transmission, and distribution of electric energy within this state. The bill was codified as North Dakota Century Code (NDCC) Sections 54-35-18 through 54-35-18.3. Section 54-35-18 states that the Legislative Assembly finds that the economy of North Dakota depends on the availability of reliable, low-cost electric energy and that there is a national trend toward competition in the generation, transmission, and distribution of electric energy, and the Legislative Assembly acknowledges this competition has both potential benefits and adverse impacts on the state's electric suppliers as well as on their shareholders and customers and citizens of this state.

North Dakota Century Code Section 54-35-18.1 outlines the composition of the committee and directs the committee to study the impact of competition on the generation, transmission, and distribution of electric energy within this state and on this state's electric suppliers. Electric suppliers include public utilities, rural electric cooperatives, municipal electric utilities, and power marketers.

North Dakota Century Code Section 54-35-18.2 outlines the study areas that the committee is to address in carrying out its statutory responsibilities. This section provides that the committee is to study the state's electric industry competition and electric suppliers and financial issues, legal issues, social issues, and issues related to system planning, operation, and reliability and is to identify and review potential market structures.

ELECTRIC INDUSTRY RESTRUCTURING Background

House Bill No. 1237 (1997) reflected the Legislative Assembly's concern that the electric industry is changing rapidly and if competition is to be introduced into North Dakota, it should be done in a fair and equitable manner. Nationally, builders of new technology generating plants, the natural gas industry, and states with high electric rates or excess generating capacity are promoting electric industry restructuring. Arguments put forward for restructuring or implementing competition in the electric industry include greater customer choice, the possibility that open competition may lower costs, encourage generating efficiency, and

allocate capital. However, risks and challenges of retail competition include maintaining reliability of supply, pricing outcomes in which some customers may benefit at the expense of others, and allocating stranded costs. The impetus for electric industry restructuring has also come from large industrial and commercial energy users that are opposed to subsidizing residential electricity users. For example, some industrial users are paying 150 percent of the actual cost of providing energy to those users, while residential customers are paying only 60 to 70 percent of the actual cost of providing energy to them.

Traditional Rationale for Regulation

Under the current industry structure, electricity is provided to retail customers by utilities that have geographic monopolies on the provision of electric service within their service territories. Customers within a utility's service territory must purchase all their electric services from that utility. These services include generation, transmission, distribution, customer service, meter reading, demand-side management, and aggregation and ancillary services.

Generally, three major types of electric utilities exist--investor-owned utilities, municipal and other government-owned utilities, and rural electric cooperatives. States regulate investor-owned utilities regarding their profits, operating practices, and pricing to end-use retail customers, while the Federal Energy Regulatory Commission (FERC) governs the pricing of wholesale bulk power sales and transmission services. Although House Bill No. 1237 (1997) directs the committee to study the impact of competition on the generation, transmission, and distribution of electric energy, nationwide the restructuring debate is over whether and how to separate the generation of electricity from other electric services in order to allow retail customers to shop for the electricity supplier of their choice.

In North Dakota, the Public Service Commission regulates electric utilities engaged in the generation and distribution of light, heat, or power. North Dakota Century Code Section 49-02-03 grants to the Public Service Commission the power to supervise and establish rates. This section provides:

The commission shall supervise the rates of all public utilities. It shall have the power, after notice and hearing, to originate, establish, modify, adjust, promulgate, and enforce tariffs,

rates, joint rates, and charges of all public utilities. Whenever the commission, after hearing, shall find any existing rates, tariffs, joint rates, or schedules unjust, unreasonable, insufficient, unjustly discriminatory, or otherwise in violation of any of the provisions of this title, the commission by order shall fix reasonable rates, joint rates, charges, or schedules to be followed in the future in lieu of those found to be unjust, unreasonable, insufficient, unjustly discriminatory, or otherwise in violation of any provision of law.

Concerning electric utility franchises, NDCC Section 49-03-01 provides that an electric public utility must obtain a certificate of public convenience and necessity from the Public Service Commission before constructing, operating, or extending a plant or system. Similarly, the state's Territorial Integrity Act, Sections 49-03-01.1 through 49-03-01.5, requires an electric public utility to obtain a certificate of public convenience and necessity before constructing, operating, or extending a public utility plant or system beyond or outside the corporate limits of any municipality. However, Section 49-03-01.3 exempts electric public utilities from the requirement to obtain a certificate of public convenience and necessity for an extension of electric distribution lines within the corporate limits of a municipality in which it has lawfully commenced operations provided the extension does not interfere with existing services provided by rural electric cooperatives or another electric public utility within the municipality and that any duplication of services is not deemed unreasonable by the Public Service Commission.

Traditionally, an electricity customer must purchase all its electric services from the utility serving that customer's service territory, including the three primary services--generation, transmission, and distribution. Generation refers to the actual creation of electricity, which may be generated using a number of methods and fuel such as nuclear, coal, oil, natural gas, hydro, or wind. Transmission refers to the delivery of electricity over distances at high voltage from a generation facility through a transmission network usually to one or more distribution substations, where the electricity is stepped down for distribution to residential, commercial, and industrial customers. For the retail customer, the costs for these functions are bundled into retail rates, along with the cost of distribution. Distribution involves the retail sale of electricity directly to consumers.

Other functions traditionally provided by vertically integrated utilities include customer service, billing, meter reading, demand-side management, research and development, and aggregation and ancillary services. Aggregation is the development and management of both a power portfolio, combining power from a variety of sources in order to match the demand for

power with adequate power supply, and a portfolio of customers with combined demands in order to economically serve those customers. Ancillary services are those services necessary to effect a transfer of electricity between a seller and a buyer and to coordinate generation, transmission, and distribution functions to maintain power quality and system stability.

Under the current industry structure, the utility serving a service territory provides all these services and functions selling them as a single bundle. Nationwide, the restructuring debate centers on whether or how the generation function should be separated from the bundle allowing retail customers to choose their electricity supplier. If generation is unbundled from transmission and distribution, these services may remain regulated functions.

The Regulatory Compact

The provision of electric service traditionally has been considered to exhibit the characteristics of a natural monopoly. According to economic theory, a natural monopoly exists in a market if one service provider in the market can serve customers more efficiently than many competing service providers. A common explanation for electricity provision as a natural monopoly is that allowing competitors to string duplicate transmission and distribution lines and construct excess generation capacity would waste resources and increase electric rates for customers. Generally, the characteristics of a natural monopoly include a high, upfront capital investment in technology; limited storability of a provided service or goods; limited transportability, requiring operations near the end users; and cost advantages of large and integrated systems as a result of better utilization of existing capacity or economies of scale and scope.

In markets exhibiting the characteristics of a natural monopoly, government intervention in the form of regulation over a single firm is considered necessary to provide the market discipline competition cannot provide. In exchange for this monopoly, each utility is required to serve all customers within its service territory and to provide quality service at just and reasonable rates. The utility is permitted to recover reasonable and prudent expenses associated with its provision of service plus a reasonable rate of return on its investment made to serve customers. This exchange is known as the regulatory compact.

Under the regulatory compact, the traditional method of rate determination has been rate of return regulation. This type of regulation is designed to ensure that utilities offer their services at prices that are based on the cost of the services rather than on the value customers place on those services. In traditional rate of return regulation, the regulating entity determines the revenue requirement (the reasonable and prudent cost of providing a utility service), allocates the

requirement among customer classes, and translates the allocated revenue requirement into rates.

Traditional rate of return regulation has been criticized for allowing a utility and its shareholders to pass on all the utility's costs and risks to ratepayers and because the utility faces minimal risks, the utility has little or no incentive to increase its operating efficiency or to minimize its expenses. One critic has stated that rate of return regulation fails to penalize inefficient producers or reward efficient ones.

As an alternative to traditional rate of return regulation, some commentators have advocated and some states have implemented various forms of incentive regulation, including flexible regulation, targeted incentive plans, external performance indexing, price and revenue caps, and performance-based regulation. However, these forms of incentive-based regulation also have their critics. Performance-based regulation opponents have argued that this type of regulation may result in the selection of inappropriate performance benchmarks; incorporation of too many, or contradictory, societal or regulatory goals into the performance-based regulation plan; unreasonable returns to shareholders; or exacerbation of the information asymmetry between utilities and regulators.

Federal Actions to Promote Competition

In 1978 Congress enacted the Public Utility Regulatory Policy Act. The goals of this Act were to make the United States self-sufficient in energy, increase energy efficiency, and encourage the use of renewable alternative fuels. The Act intended to achieve these goals by abandoning the use of natural gas to make electricity, mandating conservation of oil, and encouraging industry to cogenerate electricity using waste heat. The Act required utilities to purchase bulk power produced from cogeneration facilities to ensure that it was financially attractive. However, states were allowed to determine the avoided costs (the amount of money an electric utility would need to spend for the next increment of electric generation that it instead buys from a cogenerator) and quantity of such power. Some states capped the price at the utility's avoided costs and limited the obligation to purchase to the capacity of the utility. Other states allowed prices above the utility's avoided costs and ordered purchases of additional generation whether needed or not.

In 1992 Congress enacted the Energy Policy Act to encourage the development of a competitive, national, wholesale electricity market with open access to transmission facilities owned by utilities to both new wholesale buyers and new generators of power. In addition, the Act reduced the regulatory requirements for new nonutility generators and independent power producers. The Federal Energy Regulatory Commission initiated rulemaking to encourage competition for generation at the wholesale level by assuring that bulk power could

be transmitted on existing lines at cost-based prices. Under this legislation and rulemaking, generators of electricity, whether utilities or private producers, could market power from underutilized facilities across state lines to other utilities.

Finally, the Federal Energy Regulatory Commission has taken a number of steps to encourage competition in the wholesale market. These actions include authorizing market-based rates, issuing Section 211 wheeling orders, ordering open-access transmission tariffs, and issuing the open-access transmission rule (FERC Order No. 888). Market-based rates are those set by willing buyers and sellers of power. This method may be used instead of the more traditional method of rate-setting by regulators pursuant to administrative hearings, with rates based on the cost of producing power. On April 24, 1996, the Federal Energy Regulatory Commission issued Order Nos. 888 and 889, which require all utilities that own, control, or operate transmission lines to file nondiscriminatory open-access transmission tariffs that offer competitors transmission service comparable to the service that the utility provides. In addition, FERC Order No. 888 recognizes the right of utilities to recover legitimate, prudent, and verifiable costs stranded by opening the wholesale electricity market, i.e., stranded costs. Finally, FERC Order No. 888 requires public utilities to unbundle their power and services for wholesale power transactions by requiring the internal separation of transmission from generation marketing services.

ELECTRIC INDUSTRY RESTRUCTURING INITIATIVES IN OTHER STATES

Arizona, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas, and Virginia have either enacted enabling legislation or issued a regulatory order to implement retail access. Retail access is either currently available to all or some customers or will soon be available in these states. Some states are running pilot programs, and they will begin to implement retail access in the near future. Arkansas, Montana, Nevada, New Mexico, Oklahoma, and Oregon have either enacted legislation or issued regulatory orders to delay implementing retail access. Although West Virginia has enacted legislation that approved that state's Public Service Commission's plan to restructure and implement retail access, the process is being delayed until a bill for tax reform is enacted. Alabama, Alaska, Colorado, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, South Carolina, South Dakota, Tennessee, Utah, Vermont, Washington, Wisconsin, and Wyoming have not enacted enabling legislation to

restructure their electric power industries or implement retail access. California has suspended direct retail access.

The National Conference of State Legislatures reports that seven states have recently pulled back from or postponed their original restructuring plans. These states are Oregon, Nevada, Montana, New Mexico, Oklahoma, Arkansas, and West Virginia. The National Regulatory Research Institute has also classified the status of electric deregulation in the United States. This study divides the states into four categories, i.e., retail access proceeding, law passed but delayed or delay likely, studying restructuring, or no action likely. This study classifies Arizona, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, and Texas as states where retail access is proceeding. The study classifies Arkansas, California, Nevada, New Mexico, and Oklahoma as states where legislation has been enacted but where it is delayed or likely to be delayed. The study classifies Florida, Georgia, Kentucky, Louisiana, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Tennessee, Vermont, and Washington as states studying electric industry restructuring. Finally, the study classifies Alabama, Alaska, Colorado, Hawaii, Idaho, Indiana, Iowa, Kansas, North Carolina, South Carolina, South Dakota, Utah, Wisconsin, and Wyoming as states where electric industry restructuring is not likely. A summary of the *Status of State Electric Industry Restructuring Activity as of November 2001* prepared by the United States Department of Energy's Energy Information Administration is attached as Appendix A.

California discontinued retail access indefinitely in October 2001. In the National Conference of State Legislatures' publication *California's Power Crisis - What Happened? What Can We Learn?* by Matthew H. Brown, the author discusses the electricity restructuring experience in California. The author identifies several major factors as contributing to California's problems and making risk management a crucial step for the power industry. These include:

- For a decade, no company--utility or nonutility--had made a major investment in a new power plant in California.
- For some years, no major investment was made in power plants in the geographical region surrounding California.
- The supply of power diminished in the Pacific Northwest, another area that traditionally had exported power to California.
- Demand for electricity increased somewhat in California and soared in the region surrounding California.

- Emissions trading markets in southern California saw a steep price increase.
- Natural gas prices skyrocketed in 2000.
- Customers have available only crude tools to help them manage their own demand and to respond to price increases in the wholesale power markets.
- Some analysts claim that generators may have charged unreasonably high prices at times of peak loads.

The report concludes by suggesting nine lessons from California's experience:

- Properly functioning retail markets require properly functioning wholesale markets.
- To function properly, wholesale markets need an active demand side, as well as supply side, competition.
- Wholesale markets need adequate generating capacity (supply) complemented by cost-effective end-use energy efficiency.
- Power markets can benefit from a diversity of fuel supplies for generation. Heavy reliance on a single fuel can push wholesale prices up quickly if the price of that fuel increases.
- Power suppliers must be able to manage their own--and their customers'--price risks.
- In states that have vibrant retail markets--or that currently are almost nonexistent--customers will have an opportunity to manage their own price and supply risks.
- Some kind of state oversight of power markets may be required to evaluate energy needs and the ability of the system to meet those needs.
- Some kind of regional oversight and collaboration in power markets also may be required.
- Capping or freezing rates offers important consumer protection in markets where a commodity is competitively procured but also can affect how quickly a competitive market develops and, absent some flexibility, may affect the financial health of market participants.

FEDERAL RESTRUCTURING INITIATIVES

Nine bills relating to electric industry restructuring were introduced during the 105th Congress. However, none became law. At least 14 bills relating to electric industry restructuring were introduced in the 106th Congress, however, some dealt with taxation and other issues and only related tangentially to electric industry restructuring. None became law. To date, at least 48 bills relating directly or indirectly with the issue of restructuring the United States electric power industry have been introduced in the 107th Congress. A summary of federal restructuring legislation prepared by the United States Department of Energy's Energy Information Administration is attached as Appendix B.

2001 PROPOSED LEGISLATION

The 57th Legislative Assembly considered four bills relating to the electric energy industry. House Bill No. 1265 would have increased the transmission line mile tax from \$225 per mile to \$225 per mile for transmission lines of 230 kilovolts and \$325 per mile for transmission lines of more than 230 kilovolts owned by cooperatives and carrying electrical energy subject to a gross receipts tax. House Bill No. 1387 would have placed rural electric cooperatives with respect to irrigation electric rates and service under the general jurisdiction of the Public Service Commission. Senate Bill No. 2410 would have placed rural electric cooperatives that have 2,500 or more members served under the general jurisdiction of the Public Service Commission. Senate Bill No. 2418 would have amended the Territorial Integrity Act to provide that after July 31, 2001, an electric public utility providing electric service within a municipality of more than 2,500 people would be required to provide electric service to all customer locations within the corporate limits of the municipality if authorized by franchise. Under this bill, a rural electric cooperative could continue to provide electric service to existing customer locations it was serving within the municipality on July 31, 2001, if allowed by the municipality pursuant to a limited franchise but would be ineligible to apply for or accept a new or continued franchise that would allow the rural electric cooperative to provide electric service to a new customer location within the corporate limits of the municipality after July 31, 2001. However, the proposed legislation provided that a public utility and a rural electric cooperative may mutually agree to the sale or trade of customer locations and electric facilities within the corporate limits of a municipality to promote efficient provision of electric service and to minimize duplication of facilities if the agreement is approved by the governing body of the municipality. None of the proposals was enacted by the 57th Legislative Assembly.

WIND ENERGY

In addition to the committee's study of the impact of competition on the generation, transmission, and distribution of electric energy within this state, the Legislative Council has directed the committee to review wind energy as part of its study of electric industry competition and electric suppliers.

The National Wind Coordinating Committee estimates that the United States could meet 10 to 40 percent of its electricity demand with wind power. Areas of the United States identified as having significant wind energy potential include areas near the coasts, along ridges of mountain ranges, and in a wide belt that stretches across the Great Plains, including North Dakota. The Great Plains is an especially

attractive area for wind energy development because many coastal areas and mountain ridges are unsuitable for wind energy development because of rocky terrain, inaccessibility, environmental protection, or population density. Wind energy can be converted to electricity by using wind turbines. The amount of electricity created depends on the amount of energy contained in wind that passes through a turbine in a unit of time. This energy flow is referred to as wind power density. Wind power density depends on wind speed and air density, with air density being dependent on air temperature, barometric pressure, and altitude. Wind speed, wind shear, and turbine costs determine a site's wind energy potential.

A continued interest in wind energy development in the United States and worldwide has produced steady improvements in technology and performance of wind power plants. In addition to being cost-competitive, wind power projects may offer additional benefits to the economy and the environment. The National Wind Coordinating Committee has indicated that wind energy development carries the economic benefits of job and business creation while supporting local economies and reducing reliance on imported energy. Wind energy may also protect utilities and energy consumers from the economic risks associated with changing fuel prices, new environmental regulations, uncertain load growth, and other cost uncertainties. In addition, the National Wind Coordinating Committee has found the environmental benefits of wind energy development to be substantial by reducing a utility's pollutant emissions, thus easing regulatory pressure and meeting the public's desire for clean power sources. The National Wind Coordinating Committee summarizes the benefits of wind energy as being cost-competitive, creating no air pollution, and benefiting the public health, environment, and the economy. In addition, wind power does not require fuel, create pollution, or consume scarce resources.

Concerning the effect of wind energy development on state and local economies, the National Wind Coordinating Committee has identified several direct economic effects on the economy. Direct effects include increased revenues to local governments and landowners, creation of jobs and demand for local goods and services during construction and operation, and additional property tax revenues to local governments. Secondary or indirect effects identified by the National Wind Coordinating Committee include increased consumer spending power, economic diversification, and use of indigenous resources.

Rural landowners can reap substantial economic rewards from wind energy development. Rent to landowners is paid because land rights for a wind energy project must be secured in advance by purchase or lease. The National Wind Coordinating Committee estimates that rural landowners may receive \$50 to

\$100 per acre from wind energy development projects. In addition, in most cases, farming operations may continue undisturbed. Thus, a landowner is recognizing significant increased income while retaining full use of that person's land.

Wind power plants can generally be constructed in less than a year. The National Wind Coordinating Committee estimates that for a 50-megawatt wind project, 40 full-time jobs may be created. Operation and maintenance of wind power plants generally require between two and five skilled employees for each 100 turbines. In addition, construction and operation of a wind project creates demand for local goods and services such as construction materials and equipment, maintenance tools, supplies and equipment, and accounting, banking, and legal assistance. These economic benefits are not weakened by heavy demands on state and local infrastructure, and wind projects require little support from public services such as water and sewer systems, transportation networks, and emergency services. Wind energy projects also contribute to economic diversification in a local economy, thus ensuring greater stability by minimizing high and low points of business cycles. The National Wind Coordinating Committee indicates this effect may be particularly important in rural areas that generally have one-dimensional economies.

2001 WIND ENERGY LEGISLATION

The 57th Legislative Assembly enacted three bills concerning wind energy. House Bill No. 1223 allows installations on property leased by the taxpayer to qualify for long-form income tax credit for installation of geothermal, solar, or wind energy devices. To qualify for the credit, the device must be installed before January 1, 2011. For a device installed before January 1, 2001, the credit is equal to 5 percent per year for three years, or for a device installed after December 31, 2000, is equal to 3 percent per year for

five years, of the actual cost of acquisition and installation of the device.

House Bill No. 1221 provides a sales and use tax exemption for production equipment and tangible personal property used in construction of a wind-powered electrical generating facility before January 1, 2011, if a facility has an electrical energy generation unit with a nameplate capacity of 100 kilowatts or more.

House Bill No. 1222 reduces the taxable valuation of centrally assessed wind turbine electric generators from 10 percent of assessed value to 3 percent of assessed value if the generation unit has a nameplate generation capacity of 100 kilowatts or more and construction is completed before January 1, 2011.

POSSIBLE STUDY APPROACH

In carrying out its statutory and study responsibilities, the committee may wish to monitor federal electric industry restructuring initiatives, review electric industry restructuring efforts in other states, and follow electric industry restructuring developments in other states. In conducting this study, the committee could solicit testimony from a number of sources. These include the Public Service Commission and its staff, representatives of the state's investor-owned utilities, representatives of the state's generation and transmission cooperatives, representatives of the state's distribution cooperatives, the North Dakota Association of Rural Electric Cooperatives, the state's municipal power systems, power marketers, and large commercial and industrial power users. In conducting its study of wind energy, the committee could solicit testimony from wind power proponents and interest groups and monitor the effect of legislation enacted by the 2001 Legislative Assembly.

ATTACH:2