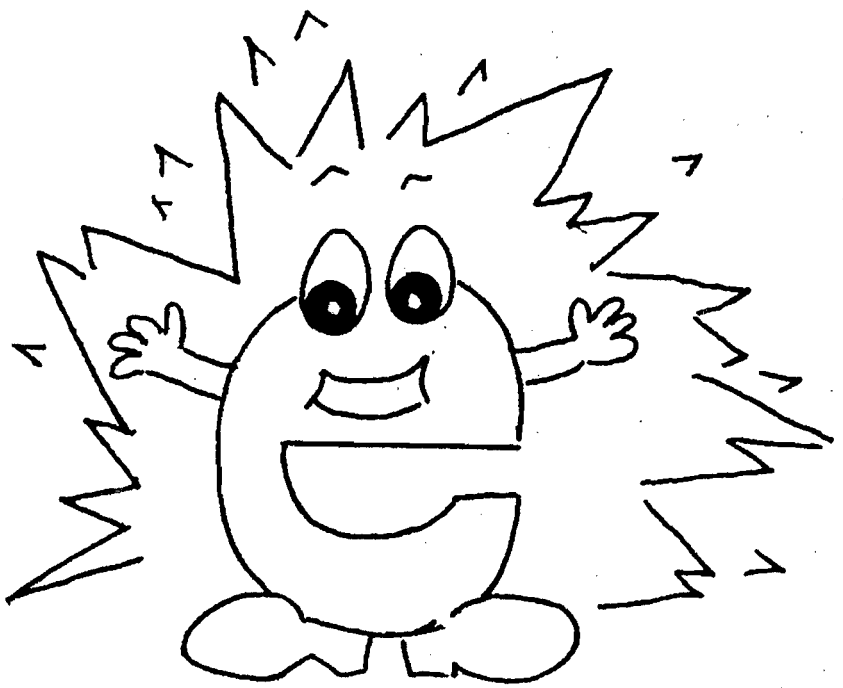
Environmental Quality Council
Energy Subcommittee
September 13, 2004
Exhibit 2

The Electricity Law Handbook: A Montanan's Guide to Understanding Electricity Law



2004

The Electricity Law Handbook: A Montanan's Guide to Understanding Electricity Law

TABLE OF CONTENTS

Members and Staff i

Acknowledgments iii

Disclaimer v

Foreword vi

Chapter 1: Introduction: Electricity and Montanans--How Does It All Work?
- A simplified primer on electricity: What is electricity? How is it generated, transmitted, and measured? . . . . . .
- What is electricity law? . . . . . .
- Who are the electricity players in Montana? What role do they play? . . . . . .

Chapter 2: The Montana Electricity Consumer . . . . . .
- Who and what is a "Montana electricity consumer"?
- Which electricity laws protect you as a Montana consumer? How do they work? . . . . . .
- Who is the Montana Consumer Counsel? What is the Montana Consumer Counsel's Role? . . . . . .
- Are there laws and programs that help low-income Montana consumers? . . . . . .

Chapter 3: The Fuels That Feed Montana's Energy Engine . . . . . .
- What are the fuels or processes that produce electricity in Montana? . . . . . .
- What are the laws that regulate, tax, and provide incentives for electricity production fuel sources? . . . . . .

Chapter 4: Generating Electricity in Montana . . . . . .
- How is electricity generated in Montana? . . . . . .
- Who generates electricity in Montana? . . . . . .
- What laws regulate the generation of electricity in Montana? . .
- What laws tax the generation of electricity in Montana? . . . . . .
- What laws provide incentives for the generation of electricity in Montana? . . . . . .

Chapter 5: Transmitting and Distributing Electricity in Montana . . . . . .
- Who transmits and distributes electricity in Montana? . . . . . .
- How do our neighboring states and the federal government impact our electricity transmission? . . . . . .
- What state laws regulate the transmission and distribution of electricity in Montana? . . . . . .
- What laws provide incentives for the transmission and distribution of electricity in Montana? . . . . . .

Chapter 6: Conserving Electric Energy . . . . . .
- What is electric energy conservation? . . . . . .
- How can conserving electricity save Montanans money? . . . . .
- What laws provide incentives for electricity conservation in Montana? . . . . . .
- Who can you contact about energy conservation in your home, school, or business? . . . . . .

Chapter 7: Pricing Electricity Supply, Transmission, and Distribution . . . . .
- Who sets our retail electricity supply prices in Montana? How is this done? . . . . . .
- Who sets our transmission and distribution costs in Montana? How is this done? . . . . . .

Chapter 8: Montana's Electric Industry Restructuring Laws . . . . . .
- What is electric industry restructuring? . . . . . .
- Why did Montana decide to restructure its electric industries? .
- What is the status of electric restructuring today? . . . . . .

Glossary of Basic Electricity Terms . . . . . .

Appendix A: State Energy Information Resources

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ACKNOWLEDGMENTS

This Electricity Law Handbook was developed by the legislative Environmental Quality Council in an effort to help Montana citizens better understand our electricity laws. The information contained in this handbook is a result of input and review from legislators, consumers, public interest groups, industry representatives, state regulators, and interested citizens.

DISCLAIMER

The Electricity Law Handbook should not be used as a legal reference. This handbook was developed to serve solely as an educational tool. When in doubt, always refer to the applicable statutes, case law, or the agency's administrative rules.

FOREWORD

Electricity. Shockingly, we can't do without it. It has become a necessity in our daily lives. We take it for granted until we receive our monthly power bill. Most of us don't think about where our electricity comes from or who delivers it to us unless the power goes out. The only time that we seem to stand up and take notice is if the price of electricity rises. However, Montana's electricity laws, especially those concerning deregulation of our energy supply prices and environmental considerations regarding electricity generation, have evoked a lot of public attention and scrutiny over the past several years.

The morass of laws governing electricity generation, transmission, distribution, conservation, price, and consumption is complicated, sometimes conflicting, very voluminous, full of technical jargon, and downright tough to understand. We continually receive countless inquiries from Montana legislators, citizens, and businesses seeking understandable and usable information on our electricity laws.

The purpose of this handbook is to explain in a straightforward, easy to understand manner how electricity law works in Montana and, more importantly, how those laws impact Montana's consumers. Our goal is to encourage thoughtful, effective involvement in Montana's electricity law development and implementation.

The Legislative Environmental Quality Council, Fall 2004.

Chapter 1: Introduction: Electricity and Montanans--How Does It All Work?

A simplified primer on electricity: What is electricity? How is it generated, transmitted, and measured?

What is electricity?

Montanans, like most Americans, do not stop to think about the electricity that powers our computers, lights our houses, washes our clothes, cooks our meals, heats our houses, powers the tools that we use in our jobs, directs traffic around town, and profoundly touches all facets of our lives. Electricity is easy to take for granted because we do not see it, smell it, taste it, or feel it. Electricity is just there at our beck and call. What would life be like without electricity? The only time that we don't seem to take electricity for granted is when we pay our power bills. So what is electricity? Electricity is a form of energy. If you get down to the very basics, electricity is the flow of little charged particles, called electrons, that were separated from atoms by some outside force (see figure 1). The free movement of those electrons constitutes an electric current. Visualize the flow of these electrons as analogous to the flow of water through a garden hose.

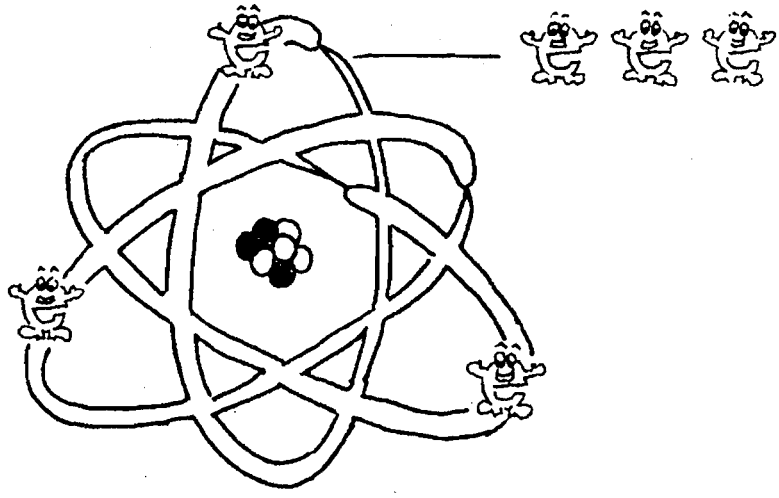


Figure 1.

The pressure in the garden hose is the voltage, and the amount of electrons flowing through the hose is the current or amperage. The product of the current and the voltage is the energy available to do work--watts.

How is electricity generated?

Electricity is considered a secondary source of energy. In order to produce electricity, we need to convert other sources of energy, like water, coal, oil, natural gas, geothermal heat and steam, biomass, wind, and solar, called primary sources, into electricity (see figure 2). The process of converting primary sources of energy to electricity is called electricity generation. When the wind blows, the water flows, the sun shines, or coal and natural gas are burned to heat water to create pressurized steam, any of these primary sources of energy creates what is called chemical or mechanical (or working) energy. This workhorse energy drives a generator that

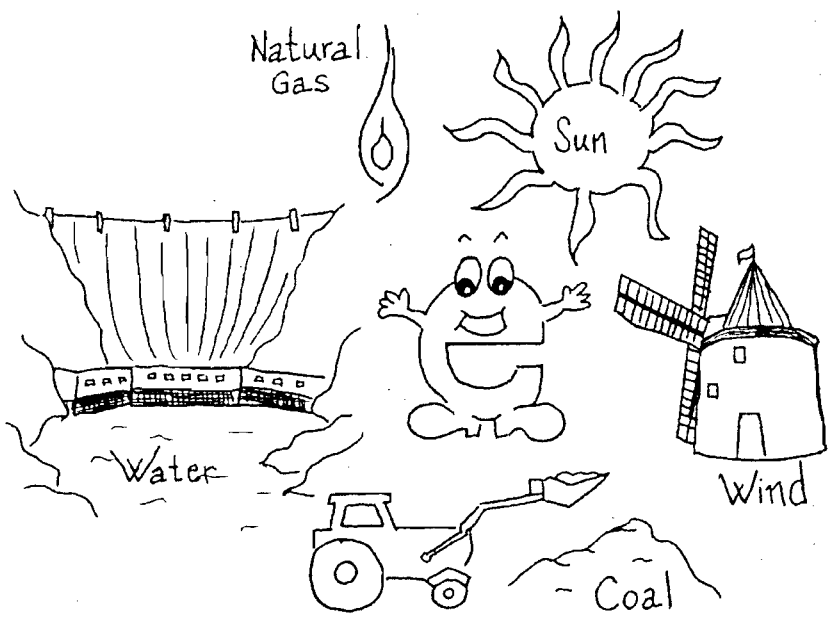


Figure 2.

converts chemical or mechanical energy to electricity by forcing electrons to separate from atoms and begin flowing over wires (see figure 3). Electric generators include steam turbines, wind turbines, water turbines, gas combustion turbines, photovoltaics, fuel cells, and internal combustion engines.

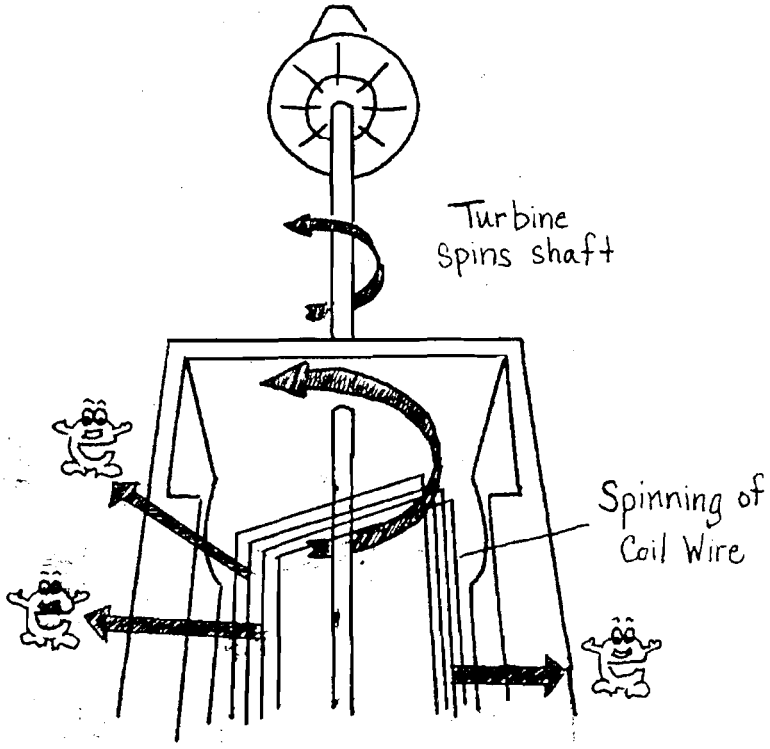


Figure 3.

Once electricity is generated, how does it get to my house or business?

When a generator produces electricity, the electricity moves along cables to a substation that has transformers. A transformer is a device that converts electricity from high voltage to low voltage. It is more efficient to move electricity over long distances using high voltage. High-voltage electricity is transported over transmission lines to other substations that convert high-voltage electricity into lower-voltage electricity. From there, the lower-voltage electricity moves over distribution lines to our homes and businesses (see figure 4).

The physical operation of transporting electricity gets complicated when you think in terms of multiple generators pouring electricity onto transmission and distribution systems owned by multiple entities and then

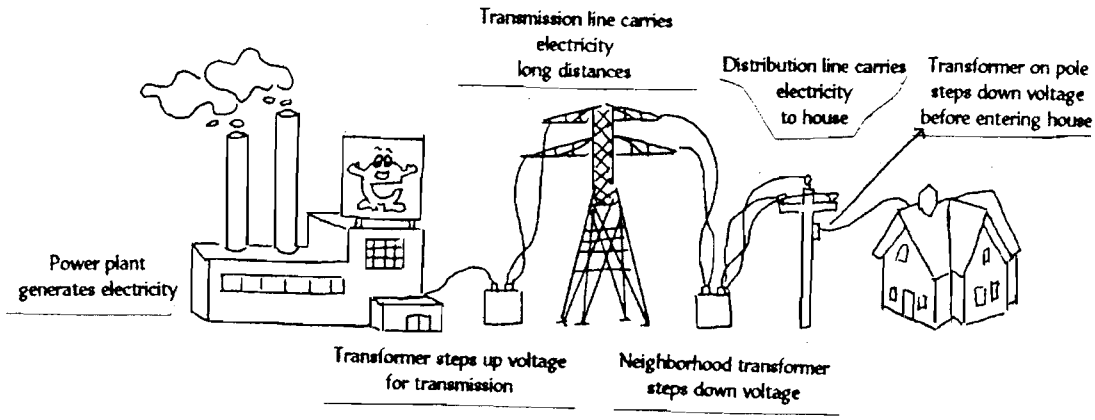
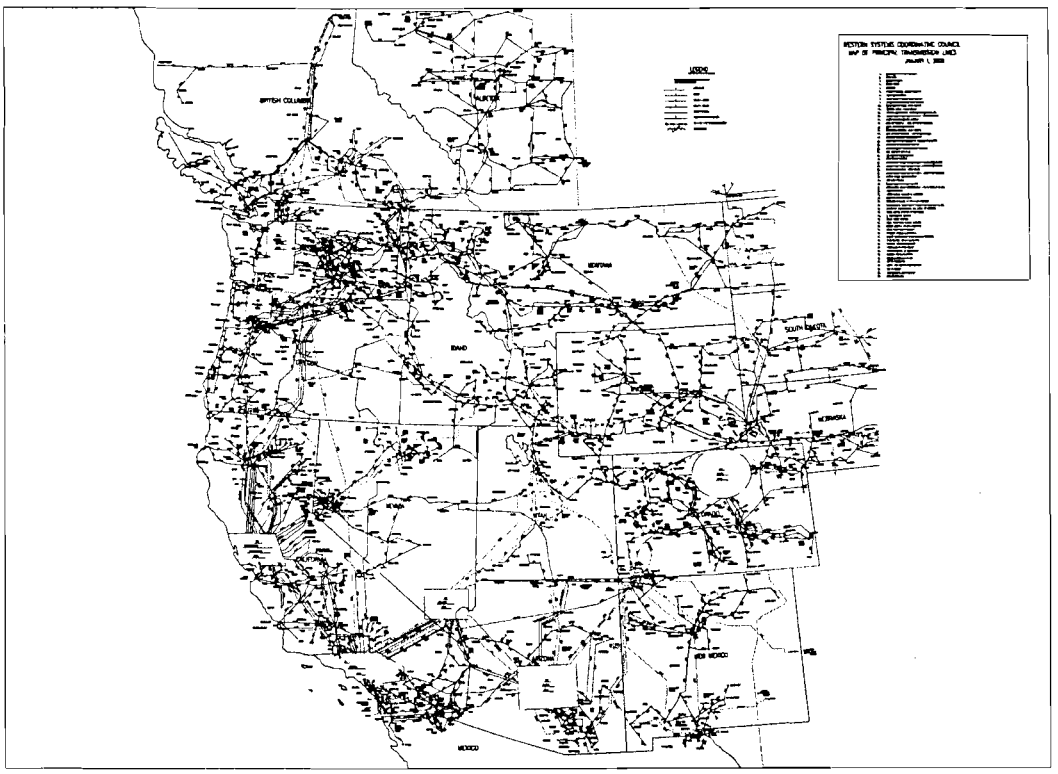


Figure 4.

delivering that electricity to millions of customers throughout the system. How does it all work? Think of the transmission systems as interstate highways and the distribution systems as your typical two-lane roads. The interconnection of this electrical highway and road system makes up what is known as the power grid.

Montana's transmission and distribution system is a small part of what is known as the Western Interconnection Transmission System, which, in turn, is a part of a three-region system of interconnections that transmits and distributes electricity across the United States as well as parts of Canada and Mexico (see figure 5). The key point here is that we don't produce, consume, or transmit electricity in Montana in isolation of our neighboring western states. Because Montana is interconnected, we are interdependent, and whatever happens in Washington, Oregon, or California, for example, could potentially impact us here in Montana. Being a part of the western interconnection also increases reliability in Montana.

Figure 5. Western Interconnection Transmission System



How does electricity flow over this spider web network of transmission and distribution lines? Visualize the flow of electricity as pressurized water flowing down the transmission and distribution lines. When electricity is generated at a point on the system and sent to a distant point on the system, the electricity flows over all of the connected network of roads. Like water, electricity flows and distributes itself over the paths with the least amount of resistence (or impedance). It is difficult to constrain the flow of electricity to any given path. Unlike water, electricity can flow in opposite directions at the same time and over the same cable or wire. Also unlike water, electricity cannot be easily stored, so entities that generate and transmit electricity must coordinate and plan production and transmission of electricity very carefully. The amount of available energy in a particular load center (an area where the electricity is being consumed) depends on the amount of electricity generated and where it's generated, as well as the amount of electrical energy that the transmission and distribution lines can carry.

The flow of electricity on the entire transmission and distribution network is really like one big giant swimming pool of electricity produced from thousands of generators (see figure 6). This giant swimming pool has millions of spigots that funnel the electricity to electricity users or loads (see figure 6). Once electricity has been produced and dumped into the giant transmission and distribution swimming pool, you can't tell a Montana-produced electron from a Canadian-produced electron--you can't paint a label on an electron that says something like "produced in Montana". Sometimes this swimming pool of transmission lines becomes physically congested--meaning that the lines (or the pool) are fully loaded with electrons or that the contractual rights to a particular line are fully allocated.

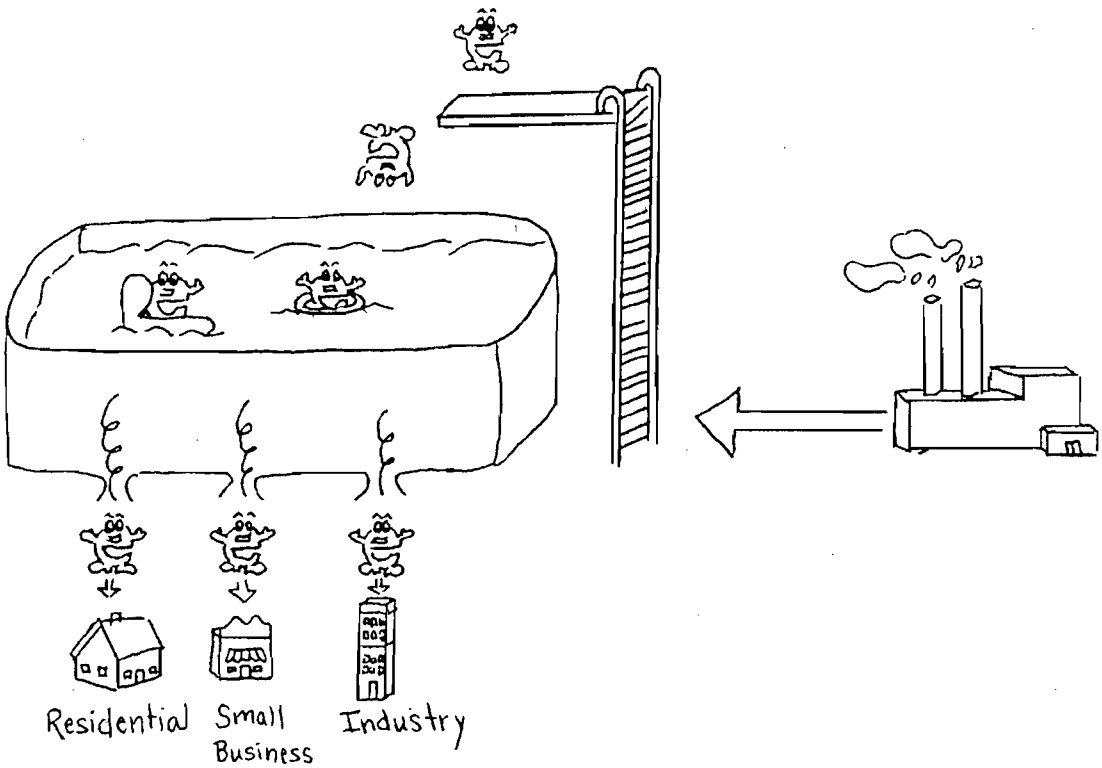


Figure 6.

The physical realities of electricity transmission do not necessarily reflect the way that electricity is bought, sold, and transmitted. Typically, if you want to transmit electricity produced at point A to point B, you must

purchase capacity (if available) on any transmission or distribution path that connects the two points (see figure 7). This is called a "contract path". Physically, a substantial portion of that electricity may flow from point A to point B, but some of the electricity may inadvertently flow across other paths (see figure 7). The contract must account for inadvertent flows. If you want to guarantee that your electricity gets from point A to point B, you must contract for "firm" scheduled flows of electricity over the power lines. In getting your power from point A to point B, you may have to contract with multiple transmission or distribution owners for firm transmission access.

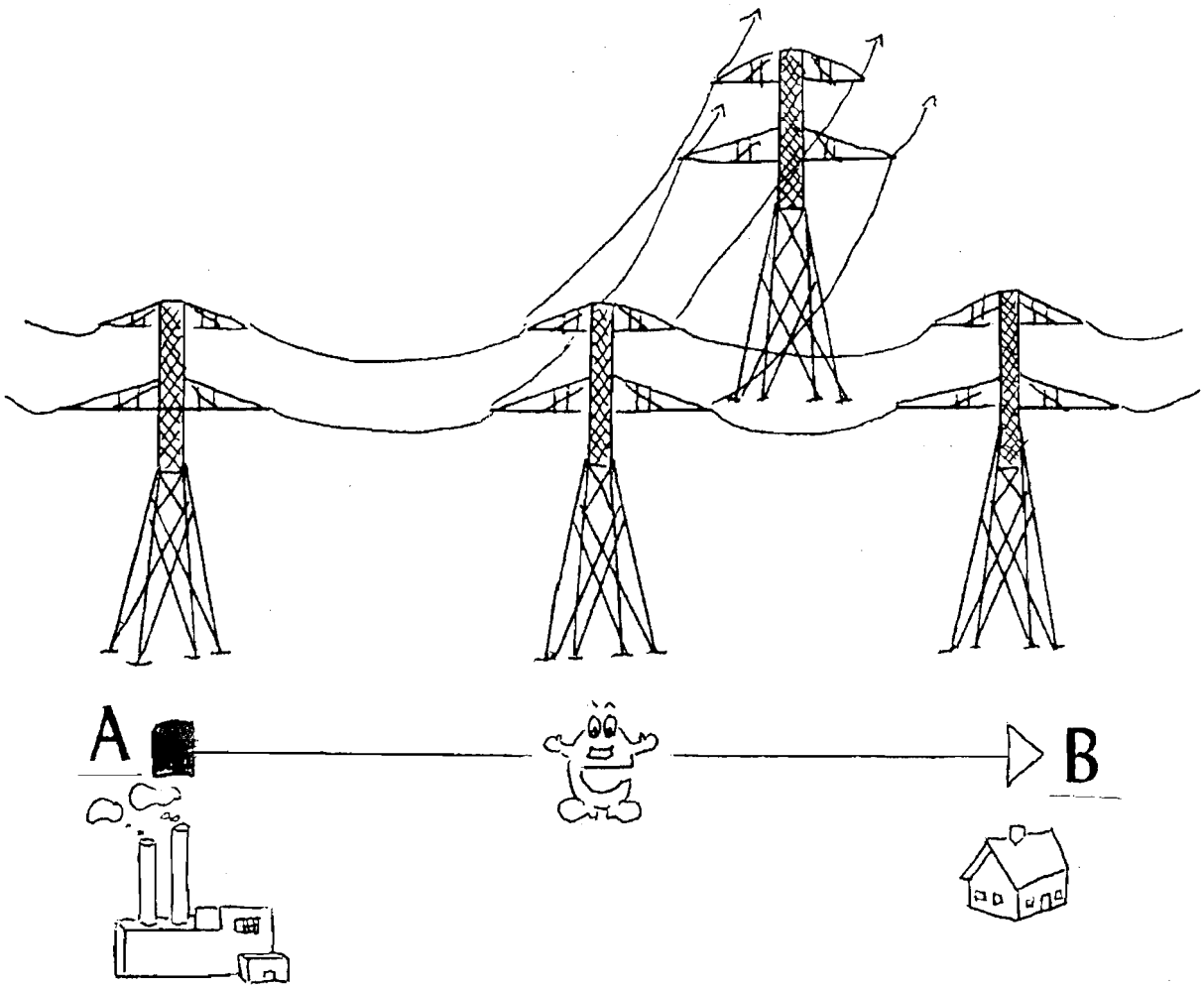


Figure 7.

How is electricity measured?

If you are a typical consumer, you receive a monthly bill that quantifies the amount of electricity that you use each month. The utility installs a meter at your home or business that measures your electricity use. Electricity is measured in units of power called "watts", named after the inventor of the steam engine, James Watt. One watt is a small unit of power. One unit of horsepower is about 750 watts. The typical units of electricity measurement include:

1 kilowatt (kW) = 1,000 watts

1 kilowatt hour (kWh) = the energy of 1,000 watts working for 1 hour

1 megawatt (MW) = 1,000,000 watts

1 megawatt hour (MWh) = the energy of 1,000,000 watts working for 1 hour

Figure 8 illustrates what these measurements mean in the real world.

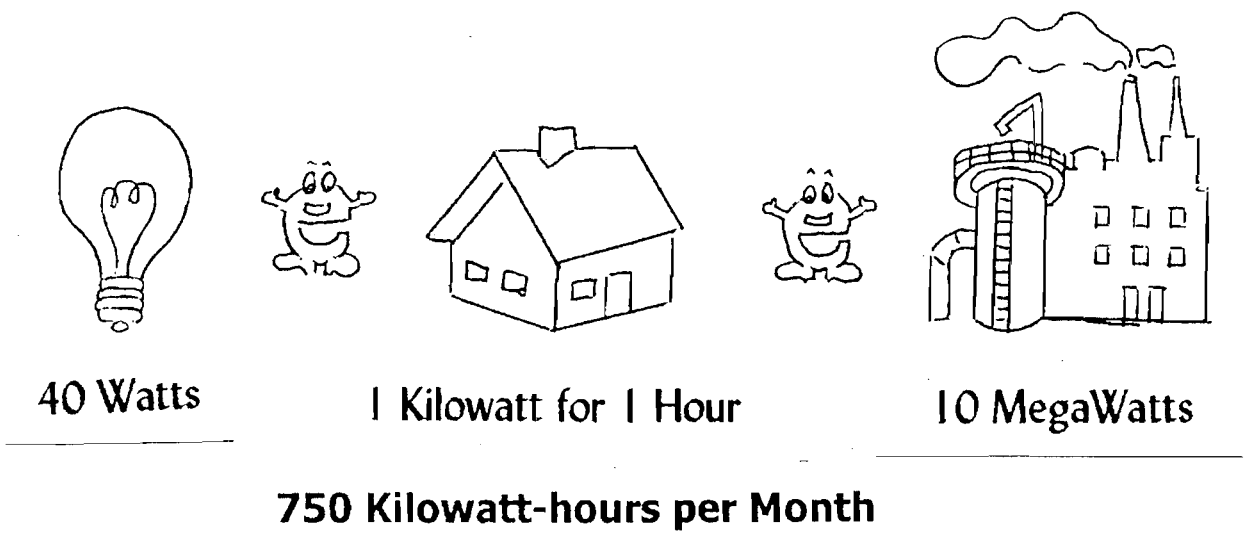


Figure 8.

2. What is electricity law?

As discussed above, there are the physical laws governing electricity, but there are also statutory, administrative, and judicial laws that govern electricity. Given the large infrastructure involved in delivering such an essential service, it is no surprise that electricity law covers many different and very diverse activities that either directly or indirectly involve electricity. Broadly speaking, electricity law can be organized into four areas:

1. statutes that articulate state and federal energy policy;

2. statutes, rules, orders, or local ordinances that regulate or tax primary fuels, electrical generation, service, service territories, transmission, and price;

3. statutes, rules, orders, or local ordinances that provide incentives for primary fuels, electrical generation, service, transmission, and price; and

4. court cases that provide legal opinions on the regulation and taxation of primary fuels, electrical generation, service, service territories, transmission, and price.

In addition to these four organizational electricity law areas, there are three governmental sources of energy law:

1. the federal government;

2. Montana state government; and

3. local governments in Montana.

This handbook's primary focus is on Montana state government electricity law. When possible, this handbook will explain the interrelationships between federal, state, and local laws and the impact that those laws have on Montanans.

3. Who are the electricity players in Montana? What role do they play?

Some of the chapters of this handbook explain in more detail the electricity players in Montana, but a quick overview of all the players is helpful here. Table 1 summarizes who the electricity players are in Montana and the role that they play in electricity law.

Table 1. Electricity Players in Montana

Type of Electricity Player	Electricity Role and Function
GOVERNMENTAL ENTITIES	
State Government:	
⇨ Montana State Legislature	Sets state electricity policy by passing legislation. The Energy and Telecommunications Interim Committee was established by the 2003 Legislature to provide legislative oversight over the Public Service Commission and to provide policy direction on energy and telecommunications issues. The legislative Environmental Quality Council also has general energy policy statutory authority.
⇨ Montana Governor's Office	Provides direction on implementation of state policies regarding electricity and energy development. Montana's Northwest Power and Conservation Council members and the Economic Development Office are entities attached to the Governor's Office that are heavily involved in electricity and energy policy issues.
⇨ Montana Public Service Commission	Regulates public electric utility service, transmission, and default supply; licenses competitive suppliers.
⇨ Montana Consumer Counsel	Represents Montana consumers in electric utility proceedings before the Public Service Commission.
⇨ Montana Department of Environmental Quality	Issues air and water permits for electrical generation facilities and regulates those facilities; conducts Montana Environmental Policy Act reviews; is responsible for the

	Montana Major Facility Siting Act review process for certain transmission facilities; provides assistance with energy efficiency projects; maintains an energy library facility.
⇨ Montana Department of Natural Resources	Issues water right permits for electrical generation facilities and other energy developments; manages state trust lands that have mineral rights including coal, oil, and natural gas; qualifying facility owner.
⇨ Montana Department of Public Health and Human Services	Operates the low-income energy assistance program.
⇨ Montana Department of Commerce Board of Investments	Offers low-interest loans for energy generation and transmission projects.
⇨ Montana District Courts and Supreme Court	If initiated through a lawsuit, judicially reviews and provides legal opinions on state law electricity issues in Montana.
Federal Government:	
⇨ United States Congress	Sets federal electricity policy by passing federal legislation.
⇨ Federal Energy Regulatory Commission (FERC)	Regulates transmission and wholesale sales of electricity in interstate commerce and licenses hydroelectric projects.
⇨ Bonneville Power Administration (BPA)	Is a federal agency headquartered in Portland, Ore., that markets wholesale electricity and transmission to the Pacific Northwest's public and private utilities as well as to some large industries. BPA provides about half the electricity used in the Northwest and operates over three-fourths of the region's high-voltage transmission.
⇨ Northwest Power and Conservation Council	Created by federal legislation to give the citizens of Idaho, Montana, Oregon, and Washington a stronger voice in determining the future of key resources common to all four states--namely, the electricity generated at and fish and wildlife affected by the Columbia River Basin hydroelectric dams.

➪ Regional Transmission Organizations (RTO)	Currently being formed under a FERC order to manage the transmission of electricity in a specific region of the United States.
➪ Western Area Power Administration (WAPA)	Markets and delivers reliable, cost-based hydroelectric power and related services within a 15-state region of the central and western U.S. In Montana, WAPA generates electricity from Canyon Ferry, Fort Peck, and Yellowtail hydrofacilities.
➪ U.S. Federal District Courts, Court of Appeals	If initiated through a lawsuit, judicially review and provide legal opinions on federal electricity law issues.
Local Government:	
➪ Montana cities, towns, and counties	Can impact electrical generation through local taxation and zoning. Local governments are also consumers of electricity. One municipality (the city of Troy) is its own public utility.
ELECTRIC UTILITIES	
➪ Montana Electric Cooperative Utilities	There are 26 nonprofit distribution electric cooperatives in the State of Montana that are locally owned and operated by their cooperative members and serve approximately 400,000 people in Montana. The elected board of each cooperative makes electricity policy and pricing decisions. Electric cooperatives are not regulated by the Montana Public Service Commission.
➪ NorthWestern Energy LLC Utility	An investor-owned, nonvertically integrated public utility that provides electricity transmission, distribution, and default supply services to over 285,000 customers in Montana. This utility is regulated by the Public Service Commission.
➪ Montana-Dakota Utility	An investor-owned, vertically integrated public utility that provides electricity supply, transmission, and distribution services to 23,555 customers in Montana. This utility is regulated by the Public Service Commission.
➪ City of Troy Municipal Electric Utility	Montana's only municipal electric utility.

Rate and policy decisions are made by the city's governing body.

ELECTRICITY SUPPLIERS THAT PROVIDE ELECTRICITY TO MONTANANS

⇨ PPL Montana	An exempt wholesale generator in Montana that owns and operates 11 hydroelectric plants along the Missouri River, the Flathead River, the Clark Fork River, Rosebud Creek, and the Madison River. In an average water year, these (PPL) dams have 474 megawatts of generating capacity. PPL Montana also has ownership interests in Colstrip and J. E. Corrette coal-fired electrical generation plants, totaling about 683 megawatts of generating capacity. PPL Montana is regulated by FERC.
⇨ Qualifying Facilities	Federal legislation facilitated the emergence of small, nonutility electricity generating companies called qualifying facilities. In Montana, we have 13 qualifying facilities that produce about 100 megawatts of electricity.
⇨ Montana Electric Buying Cooperative	A statewide cooperative created under state law to act as an electrical energy supplier and promoter of renewable energy and conservation. This cooperative is not currently supplying electricity to Montanans.
⇨ Montana Electric Cooperative Utilities	There are three nonprofit electric cooperatives in the State of Montana that generate electricity for their customers.
⇨ Federal Agencies	BPA, Mission Valley Power, and Western Area Power Administration account for 16% of the electricity sold in Montana.
⇨ Other Energy Suppliers	Other investor-owned utilities supplying Montana customers with electricity include Avista, Black Hills Power, and Energy Northwest. For a list of other competitive energy suppliers, see the Montana Public Service Commission website.

MONTANA CONSUMERS (End Users)

⇨ Residential Consumers	Montana residential consumers are private households.

⇨ Commercial Consumers	Montana commercial consumers are nonmanufacturing business establishments, including motels; restaurants; wholesale businesses; retail stores; health, social, and educational institutions; and local, state, and federal governments.
⇨ Industrial Consumers	Montana industrial consumers are manufacturing, construction, mining, agriculture, fishing, and forestry establishments.

Chapter 2: The Montana Electricity Consumer

1. Who and what is a "Montana electricity consumer"?

Montana electricity consumers come in all shapes and sizes. Typical Montana electricity consumers include residential, small commercial, large industrial, local schools, cities, towns, hospitals, agricultural operations, large retail outlets, universities, and state and federal government operations and buildings. Montana consumers are divided into classes based on factors such as volume of electricity use, transformer and voltage needs, when and how the consumer uses electricity, the location of the consumer, the timing of electricity consumption, etc. Consumers in Montana are typically divided into the following classes (see figure 9):

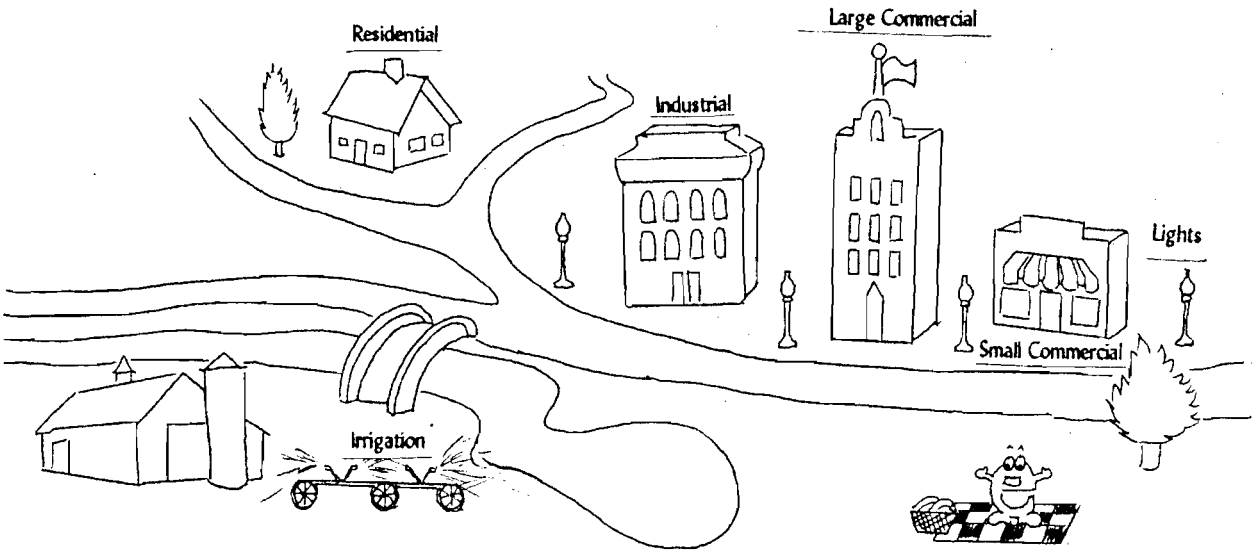


Figure 9.

The type of consumer that you are dictates your share of the electricity transmission, distribution, and supply costs that you pay.

2. Which electricity laws protect you as a Montana consumer? How do they work?

Electricity has become one of modern life's basic necessities. Power outages not only can cause extensive economic damage, but can result in physical harm and death. Electricity prices can dramatically impact almost every facet of Montana's economy.

Most of Montana's electricity consumers do not have a choice of who provides them with electricity or who transmits and distributes that electricity. Electricity potentially impacts the health, safety, and welfare of every single Montanan. For all of these reasons, electricity transmission, distribution, generation, reliability, metering, billing, etc., have traditionally been highly regulated activities in Montana and the United States generally. These regulations are designed to protect Montana consumers while ensuring that the entities that serve those customers recover their legitimately incurred costs or receive a reasonable rate of return for their electricity services. The type of consumer protection laws that apply to you depend on what type of entity you receive your electricity and electricity services from.

Public Utility Customers

If you are a customer of a Montana public utility, such as NorthWestern Energy or Montana-Dakota Utility, you can look to the Montana Public Service Commission (PSC) and the Montana Consumer Counsel as the state statutory and constitutional entities that are charged with ensuring that Montana public utility electricity customers are adequately protected.

The PSC has very broad regulatory, supervisory, and investigative powers over public utilities. The PSC can investigate the management of the business of all public utilities. It can investigate and inspect the books, accounts, papers, records, and memoranda of any public utility and can examine under oath any officer or employee of a public utility. The PSC is charged with investigating accidents at public utilities. It may formally investigate complaints filed against a public utility. The PSC sets standards for electricity products and services, including discontinuation and reestablishment of service. The PSC is charged with encouraging efficient utility operations, effective use of utility services, and efficient rates. It ensures that every public utility furnishes reasonably adequate electricity services and facilities at reasonable and just prices. The PSC sets the rates that public utilities charge for distribution of electricity. For a public utility like NorthWestern Energy that has opted for deregulating energy supply, the PSC still regulates the cost recovery and to some extent the price of electricity supplied to default customers (customers that have not chosen an alternative electricity supplier). The PSC still sets electricity supply rates for Montana-Dakota Utility customers.

When the PSC sets rates for electricity distribution and electricity supply, it must provide public notice of the proposed changes and conduct a hearing on those proposed changes. This allows those electricity customers affected by the proposed change in rates to petition the PSC and testify on the rate change. The Montana Consumer Counsel (an entity of state government created by the Montana Constitution) may also represent Montana consumers' interests in front of the PSC.

Electric Cooperative Customers

If you are a customer of a Montana electric cooperative, you are considered a part owner of that cooperative. Electric cooperatives are nonprofit entities that are democratically controlled (one person/one vote) by the members of the cooperative. Electric cooperatives are not regulated by the PSC. The electric cooperatives are self-regulated by their members. Electric cooperative members elect a board of directors that sets customer protection policies and establishes the rates for electricity distribution and supply.

Municipal Utility Customers

A municipal electric utility has the power and authority to regulate, establish, and change, as it considers proper, rates, charges, and classifications imposed for electricity services to its citizens. Rates and charges must be reasonable and just. If a municipality proposes a change in electricity rates, it must hold a public hearing. A municipal electric utility is required to adopt rules with the concurrence of the governing body of the municipality for the operation of the utility that protects municipal customers.

3. Who is the Montana Consumer Counsel? What is the Montana Consumer Counsel's Role?

The Montana Consumer Counsel is a state office created by the Montana Constitution. Under Article XIII, section 2, of the constitution, the Consumer Counsel is charged with the "duty of representing consumer interests in hearings before the public service commission or any other successor agency". The Consumer Council office is made up of five individuals. There is a Consumer Counsel committee made up of four legislators that appoints and advises the Consumer Counsel. The goals of the Consumer Counsel are to:

- represent Montana consumers in utility and transportation proceedings before the PSC;
- represent Montana consumers in appropriate proceedings before the Federal Energy Regulatory Commission, Federal Communications Commission, and other federal administrative agencies;
- represent Montana consumers in appropriate state and federal court proceedings;
- monitor proposed legislation and participate in the legislative process for Montana consumers before the Montana Legislature and U.S. Congress; and
- participate in activities that will help develop competitive markets in restructured utility industries.

If you have any questions or concerns regarding the activities that the Consumer Counsel is involved in or should be involved in, contact the Consumer Counsel by telephone at (406) 444-2771 or by e-mail at robnelson@state.mt.us.

4. Are there laws and programs that help low-income Montana electricity consumers?

There are private and governmental programs in Montana that assist low-income electricity consumers. Mechanisms for assisting low-income consumers include bill discounts, deferred or delayed payment, direct financial assistance, and home weatherization programs. Many of the low-income electricity programs are funded either through federal money allocated to the state or through a universal system benefits program (USBP) charge assessed to electricity consumers. The entities that provide these low-income electricity assistance services are described below.

Low Income Energy Assistance Program (LIEAP)

LIEAP is a federal program administered by the State of Montana that pays a portion of eligible households' winter heating costs. In most cases, payments are made directly to utility companies and fuel vendors. With the exception of Montana's seven Indian reservations, the state Department of Public Health and Human Services (DPHHS) administers LIEAP throughout Montana. LIEAP is administered by DPHHS and operated by 10 private, nonprofit Human Resource Development Councils (HRDCs) and one Area Agency on Aging. Eligibility for LIEAP funds is limited to those at or below 150% of the federally defined poverty level. For a family of four to be eligible for LIEAP funds in 2002, it cannot earn more than $26,475.

LIEAP also provides funding for low-income household weatherization. Weatherization includes heating system tuneups, air infiltration reduction, and attic, wall, and floor insulation. The weatherization program is operated statewide by 10 private, nonprofit HRDCs and two tribal governments.

For LIEAP contact information, see Appendix A.

Energy Share of Montana

Energy Share of Montana is a nonprofit organization funded by USBP dollars and private donations. Energy Share helps Montanans faced with energy emergencies to meet their needs by providing bill assistance and furnace safety services. Energy Share works with HRDCs to determine eligibility. In order to receive assistance from Energy Share, an individual or family must meet the following guidelines:

- Annual income must be at 150% of the defined poverty level or less, or exceptions must be documented.
- The household's source of heating is threatened.

The recommended maximum amount of financial assistance from Energy Share is $500. Assistance from Energy Share is provided only once in a lifetime, unless there

are unusual or extreme circumstances or a portion of assistance is repaid.

For Energy Share contact information, see Appendix A.

Local Human Resource Development Councils

Local HRDCs are private, nonprofit local organizations that play a critical role in operating LIEAP programs and determining LIEAP and Energy Share eligibility. The HRDCs also operate the low-income weatherization programs across the state.

For HRDC contact information, see Appendix A.

Public Utilities and Electric Cooperatives

Public utilities and electric cooperatives assist low-income Montanans by providing their LIEAP customers with an additional discount on their electric bills. Discounts range from 13% to 15%. Some utilities and cooperatives also provide flexible payment options and make every effort to avoid discontinuing electric service. Public utilities and electric cooperatives also help fund low-income weatherization.

For public utility and electric cooperative contact information, see Appendix A.

Chapter 3: The Fuels That Feed Montana's Electric Energy Engine

1. What are the fuels or processes that produce electricity in Montana?

As explained in Chapter 1, electricity is considered a secondary source of energy. It takes another source of energy to produce electricity. In Montana, we have such primary sources of energy as water, coal, petroleum, natural gas, geothermal heat and steam, biomass, wind, and the sun that are converted into a useable form of working energy that drives an electric generator. Primary sources of energy can be further broken down into renewable and nonrenewable sources. Renewable energy is obtained from sources that are essentially sustainable, unlike, for example, fossil fuels such as coal and natural gas, of which there are a finite supply. Renewable energy sources include falling water, geothermal steam or heat, biomass, wind, and the sun. In Montana, we are endowed with an abundance and a variety of primary sources of energy. Montana's coal reserves total 119,919 million tons, roughly 25.2% of the United States' total reserves. Montana has also been described as the Saudi Arabia of wind. We have an extensive system of hydroelectric dams. We are a resource-rich state when it comes to fuels that can and do feed Montana's electric energy engines.

2. What are the laws that regulate, tax, and provide incentives for electricity production fuel sources?

A variety of state laws have evolved over time to regulate, tax, and provide incentives for the extraction of primary sources of energy used in the production of electricity. The list of these laws is voluminous and will not be recited in its entirety in this handbook. Generally, Montana law allows for controlled energy resource extraction and allocation. The regulatory controls are usually in the form of environmental restrictions. Incentives for energy resource extraction and development are in the form of tax incentives or low-interest state loans. Set out below is a very abbreviated, noninclusive summary of state laws, organized by energy source, that regulate the extraction and development of the energy source, tax that energy source, and provide incentives for the extraction and development of the energy resource.

COAL

Regulatory State Laws Impacting Coal Extraction and Development:

1. **Article II, section 3, of the Montana Constitution:** Provides that all persons are born free and have certain inalienable rights, including,

among other rights, the right to a clean and healthful environment.

2. **Article IX, section 1, of the Montana Constitution:** Requires that the state and each person maintain and improve a clean and healthful environment in Montana for present and future generations, requires the Legislature to administer and enforce this duty, and requires the Legislature to provide adequate remedies for the protection of the environmental life support system from degradation and provide adequate remedies to prevent unreasonable depletion and degradation of natural resources.

3. **Article IX, section 2, of the Montana Constitution:** Requires that all lands that are disturbed by the taking of natural resources be reclaimed and requires the Legislature to provide effective requirements and standards for reclamation of these disturbed lands.

4. **"Montana Coal Mining Code":** Imposes certain duties regarding safety requirements to be administered by the Department of Labor and Industry. (Title 50, chapter 73, MCA)

5. **"Clean Air Act of Montana":** Provides for a permitting process administered by the Department of Environmental Quality (DEQ) to ensure compliance with air emission standards that may apply to coal mining operations. (Title 75, chapter 2, parts 1 through 4, MCA)

6. Statutes known as the **"Montana Water Quality Act":** Implement a policy of conserving water resources and protecting water quality, establish a permitting process administered by DEQ for discharge of mining and industrial waste water, and provide for enforcement, appeals, and penalties for violation of standards. (Title 75, chapter 5, MCA)

7. **"The Strip and Underground Mine Siting Act":** Authorizes DEQ to review and regulate new strip-mine and underground mine site location and reclamation plans, imposes permit requirements for strip and underground mines, and provides for the termination and suspension of permits for noncompliance. (Title 82, chapter 4, part 1, MCA)

8. **"The Montana Strip and Underground Mine Reclamation Act":** Creates a permitting process for strip and underground coal mining administered by DEQ, requires permit applications to contain comprehensive reclamation plans for all affected lands, and gives investigative and enforcement powers to DEQ. (Title 82, chapter 4, part 2, MCA)

9. **Coal Impact Abatement Funding for Local Governments:** Establishes a special fund to provide grants and loans to assist local governments in dealing with the impacts of large-scale development of coal mines and coal-burning energy facilities. (Title 90, chapter 6, part 2, MCA)

10. **"Montana Environmental Policy Act (MEPA)":** Is not a regulatory act but requires the State of Montana to conduct an environmental review of the impacts of permitting a coal mine. An environmental review document is required before an agency may issue a permit. (Title 75, chapter 1, parts 1 through 3, MCA)

Taxation of Coal:

1. **Article IX, section 5, of the Montana Constitution:** Provides for the creation of the coal severance tax trust fund and requires the Legislature to dedicate not less than one-fourth of the coal severance tax to the trust, from which interest and income may be appropriated. This provision also requires that the trust principal remain intact unless appropriated by three-fourths of the members of each house of the Legislature. One-half (50%) of the severance tax has been dedicated to the coal severance tax trust fund since December 31, 1979.

2. **Coal severance tax:** Imposes a severance tax on coal mine operators that is computed on each quarter year's worth of production as shown on forms provided by the Department of Revenue. Statutes contain the formula by which the tax is to be computed, with rates based on the heating quality of the coal and the amount of coal produced. (Title 15, chapter 35, MCA)

3. **"The Montana Resource Indemnity Trust and Ground Water Assessment Act":** Indemnifies the citizens of Montana for the loss of long-term value resulting from the depletion of Montana's mineral resource base and for environmental damage caused by mineral development. This Act establishes a permanent resource indemnity trust, funded through revenue generated from a tax levied on mineral extraction. Proceeds from the trust are to be expended for the purpose of protecting and restoring the environment from damages resulting from mineral development and for supporting a variety of economic development programs to benefit Montana and its citizens. The Act contains provisions that specify the amount of tax to be paid on different types of mineral production. (Title 15, chapter 38, MCA)

4. **Coal gross proceeds tax:** Provides for a system of reporting by producers and allocation of the tax by the Department of Revenue to local

governments and directs the Department of Revenue to tax coal gross proceeds at 5% of reported value. (Title 15, chapter 23, part 7, MCA)

Incentives for Coal Production:

1. **Property tax exemption**: Provides an exemption from property taxation of one-half the contract sales price of coal sold by a coal producer who extracts less than 50,000 tons of coal each year. (15-6-208, MCA).

2. **"Reclamation and Development Grants Program Act":** Authorizes the Department of Natural Resources and Conservation (DNRC) to fund projects that will indemnify the people of Montana against the effects of coal and other mineral development. The purposes of the program are to repair and mitigate environmental damage resulting from the extraction of nonrenewable resources. (Title 90, chapter 2, part 11, MCA)

NATURAL GAS

Regulatory State Laws Impacting Natural Gas Extraction and Development:

1. Like coal, the following laws discussed above apply to natural gas extraction and development: Article II, section 3, and Article IX, sections 1 and 2, of the Montana Constitution, the Clean Air Act of Montana, statutes known as the Montana Water Quality Act, and the Montana Environmental Policy Act.

2. **"Montana Major Facility Siting Act":** Administered by DEQ, requires that any new natural gas pipeline that is greater than 25 inches in diameter and 50 miles in length go through a siting certification process. (Title 75, chapter 20, MCA)

3. **Underground gas storage reservoirs**: Provides that it is the policy of the state that the conservation of natural gas by means of underground storage and the creation of reserves of stored natural gas are in the public interest, gives natural gas public utilities the power of eminent domain in order to develop underground reservoirs, and outlines a certification procedure administered by the Board of Oil and Gas Conservation. (Title 82, chapter 10, part 3, MCA)

4. **Abandoned gas wells and reclamation:** Requires that notice be given to the surface owner before any oil or gas well can be plugged or abandoned and requires the Board of Oil and Gas Conservation to maintain a record of plugged and abandoned oil and gas wells in the state. (Title 82, chapter 10, part 4, MCA)

5. **Surface owner damage and disruption compensation:** Establishes a procedure for the compensation by means of "surface damage disruption payments" to the surface owner of lands disturbed by gas drilling operations, imposes liability on the part of the oil and gas developer or operator for damages to property, and provides a procedure for the settlement of surface damage claims. (Title 82, chapter 10, part 5, MCA)

6. **Regulation of gas wells by the Board of Oil and Gas Conservation:** Provides for the regulation of oil and gas development by the Board of Oil and Gas Conservation, sets forth the powers and duties of the Board, establishes requirements for oil and gas operations, and authorizes the Board to establish well spacing units and plans for unit operations. The State of Montana is directed to become a member of the Interstate Compact to Conserve Oil and Gas, and provisions of the Compact are set forth. (Title 82, chapter 11, MCA)

7. Statutes known as the **"Montana Water Use Act":** Establish an application and permitting process administered by DNRC for the appropriation of water. (Title 85, chapter 2, parts 3 and 4, MCA)

Taxation of Natural Gas:

1. See discussion of Article IX, section 2, of the Montana Constitution and the Montana Resource Indemnity Trust and Ground Water Assessment Act above.

2. **"Montana Oil and Natural Gas Production Tax Act":** Provides for state and local government production taxes on the gross value of petroleum and other mineral crude oil and natural gas and for the allocation of tax revenue to state and local governments with certain exemptions and incentives for new production. (Title 15, chapter 36, part 3, MCA)

3. **Oil and gas privilege and license tax:** Authorizes the imposition of a privilege and license tax for the purpose of funding the operations of the Board of Oil and Gas Conservation. The tax is to be collected by the Department of Revenue in the same manner as the Department collects the oil and gas production tax under Title 15, chapter 36, part 3, MCA. The tax may not exceed 3/10 of 1% of the market value of each barrel of crude petroleum or each 10,000 cubic feet of natural gas produced. (82-11-131, MCA)

GEOTHERMAL

Regulatory State Laws Impacting Geothermal Development:

1. Like coal and natural gas, the following laws discussed above apply to geothermal development: Article II, section 3, and Article IX, sections 1 and 2, of the Montana Constitution, the Clean Air Act of Montana, statutes known as the Montana Water Quality Act, and the Montana Environmental Policy Act.

2. **"Montana Major Facility Siting Act":** Administered by DEQ, requires that any use of geothermal resources capable of producing power equivalent to 25 million Btu's per hour or more go through a siting certification process. (Title 75, chapter 20, MCA)

3. **Geothermal exploration:** Directs the Board of Environmental Review to regulate geothermal exploration. (75-20-1001, MCA)

4. Statutes known as the **"Montana Water Use Act":** Establish an application and permitting process administered by DNRC for the appropriation of water. (Title 85, chapter 2, parts 3 and 4, MCA)

Incentives for Geothermal Development:

1. **Tax credit:** Provides for a credit against individual income tax liability for taxpayers who install in their principal residence a geothermal energy generation system. A credit of up to $1,500 against the taxpayer's income tax liability is authorized. (15-32-115, MCA)

2. **Tax credit**: Provides an income tax credit for individual taxpayers who install in the taxpayer's principal dwelling an energy system using a recognized nonfossil form of energy generation. The credit may not exceed $500. (15-32-201, MCA)

3. **"Reclamation and Development Grants Program Act":** Implements a legislative policy of funding projects designed to indemnify Montana citizens for the impact of mineral development. (Title 90, chapter 2, part 11, MCA)

4. **Property Tax Exemption:** New generating facilities built in Montana with a nameplate capacity of less than 1 MW and using alternative renewable energy sources are exempt from property taxes for 5 years after start of operation.

5. **Property Tax Reduction:** Generating plants using alternative fuels greater than 1 MW (50% taxable value during first 5 years after the construction permit is issued).

6. **Alternative Revolving Loan Program:** Provides loans to individuals and small businesses to install alternative energy systems that generate energy for their own use. Loans up to a maximum of $10,000 must be repaid within 5 years. (Rate for 2003 of 5.5%.)

7. Geothermal projects are eligible for economic development bonding via the Board of Investments (17-5-1501).

8. **Research and development:** Implements a program administered by DEQ designed to promote research and development of energy conservation and renewable energy sources and provides funding to meet this objective. DEQ must allocate the funds to five statutory loan and grant categories, but has the discretion to reallocate to ensure that the program offers the greatest possible benefits during a particular fiscal year. (Title 90, chapter 4, part 1, MCA)

WIND

Regulatory State Laws Impacting Wind Development:

1. **Easements:** Imposes certain conditions on easements created for the purpose of ensuring the flow of wind across real property in connection with the generation of wind energy. Wind energy easements are required to be in writing and must include, among other things, a description of both the servient and dominant tenements and a description of the dimensions of the easement, both horizontally and vertically. The easements must specify the restrictions imposed on the servient tenement and the terms, if any, under which the easement may be modified or terminated. (70-17-303, MCA)

2. Associated activities surrounding wind development that affect air or water quality may require permits from DEQ. MEPA may apply. The federal endangered species and migratory bird acts may be triggered with commercial wind development.

Incentives for Wind Development:

1. **Tax credit**: Provides an income tax credit for individual taxpayers who

install in the taxpayer's principal dwelling an energy system using a recognized nonfossil form of energy generation. The credit may not exceed $500. (15-32-201, MCA)

2. **Wind tax credit:** Provides for an investment tax credit to any individual, corporation, partnership, or small business corporation that makes an investment of $5,000 or more for a commercial system that generates electricity by means of wind power. With certain limitations, a credit against individual or corporate income tax of up to 35% of the eligible costs of the system may be taken as a credit against taxes on taxable net income produced by certain specified activities related to wind energy. (15-32-402, MCA)

3. **Property Tax Exemption:** New generating facilities built in Montana with a nameplate capacity of less than 1 MW and using alternative renewable energy sources are exempt from property taxes for 5 years after start of operation.

4. **Property Tax Reduction:** Generating plants using alternative fuels greater than 1 MW (50% taxable value during first 5 years after the construction permit is issued).

5. **Alternative Revolving Loan Program:** Provides loans to individuals and small businesses to install alternative energy systems that generate energy for their own use. Loans up to a maximum of $10,000 must be repaid within 5 years. (Rate for 2003 of 5.5%.)

6. **Net Metering:** For NorthWestern Energy customers, net metering is allowed for alternative energy systems of 50 kilowatts or less to offset customer requirements for electricity.

7. **Universal System Benefits Programs:** Supports renewable energy resources including wind energy generation.

8. Wind projects are eligible for economic development bonding via the Board of Investments (17-5-1501).

9. See the research and development incentives under geothermal resources.

SOLAR

Regulatory State Laws Impacting Solar Development:

1. **Easements**: Imposes certain conditions on easements created for the purpose of ensuring the unencumbered exposure of solar energy devices across real property in connection with the generation of solar energy. Solar energy easements are required to be in writing and must include, among other things, the vertical and horizontal angles, expressed in degrees, at which the solar easement extends over the servient tenement and any terms or conditions under which the solar easement is granted or may be terminated. (Title 70, chapter 17, part 3, MCA)

Incentives for Solar Development:

1. **Tax credit**: Provides an income tax credit for individual taxpayers who install in the taxpayer's principal dwelling an energy system using a recognized nonfossil form of energy generation. The credit may not exceed $500. (15-32-201, MCA)

2. **Tax deduction:** Allows a deduction from gross corporate income for computation of net income for expenditures for capital investments in buildings for energy conservation purposes in accordance with a specific schedule set forth in the statute. (15-32-103, MCA)

3. **Tax credit:** Provides a resident individual taxpayer with a credit not to exceed $500 against state income tax for expenditures for capital investments in a building for energy conservation purposes. (15-32-109, MCA)

4. **Property Tax Exemption:** New generating facilities built in Montana with a nameplate capacity of less than 1 MW and using alternative renewable energy sources are exempt from property taxes for 5 years after start of operation.

5. **Property Tax Reduction:** Generating plants using alternative fuels greater than 1 MW (50% taxable value during first 5 years after the construction permit is issued).

6. **Alternative Revolving Loan Program:** Provides loans to individuals and small businesses to install alternative energy systems that generate energy for their own use. Loans up to a maximum of $10,000 must be repaid within 5 years. (Rate for 2003 of 5.5%.)

7. **Net Metering:** For NorthWestern Energy customers, net metering is allowed for alternative energy systems of 50 kilowatts or less to offset customer requirements for electricity.

8. **Universal System Benefits Programs:** Supports renewable energy resources including wind energy generation.

9. Solar projects are eligible for economic development bonding via the Board of Investments (17-5-1501).

9. See the research and development incentives under geothermal resources.

FALLING WATER (HYDROELECTRIC FACILITIES)

Regulatory State and Federal Laws Impacting Hydroelectric Development:

1. Nonfederal hydroelectric power plants on navigable waters of the United States, those that occupy federal land or use water power from a government dam, or those that, under certain circumstances, affect the interest of interstate or foreign commerce must be licensed by the Federal Energy Regulatory Commission (FERC). Navigable waters of the United States include virtually all waters in Montana and the other 49 states. As a result, FERC is the lead agency in the licensing of new hydropower facilities and in the relicensing of existing facilities. FERC, acting under federal statutory authority, processes and evaluates the federal applications required for all hydropower dams, diversions, and other hydropower developments; reviews and analyzes environmental impacts of hydropower projects and determines appropriate mitigation and enhancement measures; and sets requirements governing the sale of the hydropower generation at the wholesale level.

2. There are five primary subject areas in which state regulation of hydroelectric power must be considered in addition to the federal requirements under FERC. These areas are:

   (a) water rights permits;
   (b) 310 permit for altering a perennial stream;
   (c) water quality certification under Section 401 of the federal Clean Water Act;
   (d) fish and wildlife impact evaluation (no permit required); and
   (e) Montana Major Facility Siting Act state filing with FERC for hydrofacilities over 50 megawatts.

3. In addition, a 404 permit is required from the U.S. Department of the Army, Corps of Engineers, for any dredge and fill activity or other work affecting United States' waters or wetlands.

Incentives for Hydroelectric Facility Development:

1. See incentives in Chapter 4.

BIOMASS

Regulatory State Laws Impacting Biomass Development:

1. Associated activities surrounding biomass development that affect air or water quality may require permits from DEQ.

Incentives for Biomass Development:

1. **Property tax abatement:** Provides for the classification of gasohol production facilities, during construction and for the first 3 years of operation, as class five property, taxable at 3% of market value. (15-6-135, MCA)

2. **Property tax exemption:** Provides a property tax exemption for all property used in the production of ethanol from grain during the course of construction of an ethanol manufacturing facility and for 10 years after initial production of ethanol from the facility. (15-6-201, MCA)

3. **Tax credit**: Provides an income tax credit for individual taxpayers who install in the taxpayer's principal dwelling an energy system using a recognized nonfossil form of energy generation. The credit may not exceed $500. (15-32-201, MCA)

4. **Tax incentive:** ("Alcohol Tax Incentive and Administration Act of 1983") Establishes various tax incentives for the production of alcohol to be blended for gasohol and provides for a system of recordkeeping. (Title 15, chapter 70, part 5, MCA)

5. See the research and development incentives under geothermal resources.

COGENERATION:

Regulatory State Laws Impacting Cogeneration Development:

1. The PSC regulates "qualifying small power production facilities" and authorizes cogeneration by qualifying small power production facilities and the sale of the electricity produced under rates and conditions prescribed by the PSC. (Title 69, chapter 3, part 6, MCA)

2. Associated activities surrounding cogeneration development that affect air or water quality may require permits from DEQ. MEPA may apply.

Incentives for Cogeneration:

1. **"Federal Public Utility Regulatory Policies Act of 1978"**, Pub. L. 95-617: Establishes requirements for the participation by qualifying small power production facilities and arrangements for purchases and sales of electric power with electric utilities under the regulation of the PSC. See also state laws concerning small power production facilities. (Title 69, chapter 3, part 6, MCA)

2. See incentives in Chapter 4.

HYDROGEN

Regulatory State Laws Impacting Hydrogen Development:

1. Associated activities surrounding hydrogen development that affect air or water quality may require permits from DEQ. MEPA may apply.

Incentives for Cogeneration:

1. Alternative Energy Revolving Loan Program: provides loans of up to $10,000 to individuals and small businesses to install alternative energy systems (including fuel cells), which must be paid back within 5 years.

2. Property tax reduction: generating plants using alternative fuels (including fuel cells) producing 1 MW or more of power get a 50% reduction of taxable value for the first 5 years after the construction permit is issued.

3. Property tax exemption: generating plants using alternative fuels (including fuel cells that don't require hydrocarbon fuel) producing greater than 1 MW are exempt from property taxes 5 years after the start of operation.

4. Property tax exemption for renewable energy systems (including fuel cells) can be claimed for 10 years after installation of the property. Up to $20,000 is exempt for a single-family residential dwelling and $100,000 for a multifamily or nonresidential building.

5. Residential alternative energy system tax credit: up to $500 tax credit for installation of an alternative energy system (including fuel cells).

6. Income tax credit for an individual or business (up to $500 for vehicle weight of 10,000 pounds or $1,000 for heavier vehicles) for conversion of a vehicle to use alternative fuels including hydrogen.

7. Fuel cells and hydrogen electricity generation generally are eligible for economic development bonding via the Board of Investments and industrial development bonding via local government.

Chapter 4: Generating Electricity in Montana

1. How is electricity generated in Montana?

Montana currently has 45 generating facilities located across the state with an average generating capacity of 3,000 megawatts (DEQ, 2004). Coal-fired generation makes up 62% of Montana's generation capacity for 1999-2002. Hydrofacilities account for 37%, petroleum coke makes up less than 2%, and natural gas and wind account for the remainder for 1999-2002 (DEQ, 2004). See figure 10.

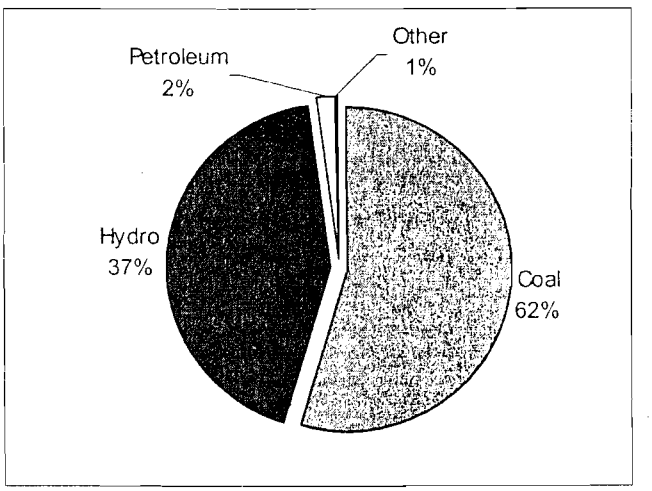


Figure 10.

2. Who generates electricity in Montana?

Electricity is generated by a variety of companies and governmental entities in Montana (see table 2). Montanans use an amount equivalent to 56% of the electricity generated in the state, making Montana a net exporter of electricity. Obviously, the policy question arises that if Montana is a net exporter, why should additional generation facilities be built in the state? Much of Montana's power is obligated through contracts to other customers, most of whom are out of state. Utilities from Oregon and Washington own 31% of Montana's power production. The Bonneville Power Administration (BPA) and the Western Area Power Administration (WAPA) own plants that generate 18.4% of Montana's power production, some of which goes to electric cooperatives in state, and the rest is moved out of state. Seven percent of NorthWestern Energy electricity production is committed to out-of-state customers. The bulk of the remaining power in the state (30.5%) is owned by PPL Montana. The 2001 and 2003 Legislatures opted for creating statutory incentives to build additional electricity generation in the state, but

the debate continues.

Table 2. Average Generation by Company or Governmental Entity in Montana 1999-2003

Average Generation by Company, 1999-2003

Company	aMW	Percent
PPL Montana[1,2]	914	30.5%
Puget Sound Power & Light[2]	546	18.2
Avista[2]	360	12.0
Bonneville Power Administration[3]	312	10.4
Western Area Power Administration[3]	239	8.0
Portland General Electric[2]	197	6.6
NorthWestern Energy[2,4]	181	6.0
PacificCorp[2]	122	4.1
Yellowstone Energy Partnership	47	1.6
Other	77	2.6
TOTAL	2,994	100.0%

[1] PPL Montana plants were owned by MPC until mid-December, 1999.
[2] Public data on output for Colstrip 1-4 are reported for the entire facility, not individual units. In this table, the output was allocated among the partners on the basis of their ownership percentages. NWE actually leases its portion of Colstrip.
[3] Distributes power generated at U.S. Corps of Engineers and U.S. Bureau of Reclamation dams.

3. What laws regulate the generation of electricity in Montana?

Chapter 3 inventories those laws that regulate primary fuel sources for electricity in Montana. Many of those regulatory laws in Chapter 3 apply to the operation of electrical generation facilities. Generation facilities typically require air and water quality permits from DEQ. Some facilities may require a water use permit from DNRC. Those permits trigger the Montana Environmental Policy Act, which requires the State of Montana to conduct an environmental review of a proposed generation facility. Electrical generation facilities are no longer required to go through a state siting certification process. Local governments may regulate the siting of a generation facility through land use and zoning restrictions.

For a public utility in Montana that has not restructured and is planning to construct a

generation facility, the utility must undertake a planning process that looks at low-cost alternatives to the proposed generation facility. The PSC must also determine whether a nonrestructured utility's generation facility is used and useful at just and reasonable prices (is a smart investment). Depending on the outcome of this planning process and the PSC's used and useful determination, the PSC has the authority to deny or approve the utility's cost recovery for the generation plant. See Title 69, chapter 3, part 12, MCA, and 69-3-109 and 69-3-201, MCA.

4. What laws tax the generation of electricity in Montana?

There are a variety of property taxes, corporate licence and income taxes, and equipment taxes that the state and local governments assess energy generating facilities (see Title 15, MCA, generally). The Legislature, in grappling with the changes brought about by the restructuring of Montana's electric industry, found it necessary to make changes to the existing system of property taxation that included reducing the property tax rate applied to electrical generation facilities and imposing a replacement tax called a wholesale energy transaction tax. (Title 15, chapter 72, part 1, MCA)

5. What laws provide incentives for the generation of electricity in Montana?

In addition to the incentives identified in Chapter 3, the following incentives for electrical generation facilities also apply:

1. **Property tax exemption for electrical generation facilities:** With certain exceptions, exempted an electrical generation facility and related facilities constructed after May 5, 2001, from property taxation. In order to qualify for the exemption, the owner of the facility must offer contracts to sell at least 50% of the facility's net generating output to Montana customers at a cost-based rate plus a rate of return not to exceed 12% for a 20-year period from the date of the completion of the facility. The property tax exemption is limited to 5 years for a generation facility powered by oil or natural gas turbines. (Title 15, chapter 24, part 30, MCA)

2. **Qualifying facility tax exemptions:** The machinery and equipment used in qualifying facilities built and operated after July 1, 2001, are exempt from taxation. A generation facility that has a capacity of less than 1 megawatt of electrical energy is exempt from taxation for 5 years after generation of electricity begins. (Title 15, chapter 6, part 2, MCA)

3. **Noncommercial electrical generation machinery and equipment tax exemption:** Subject to certain conditions, noncommercial electrical generation machinery and equipment that are owned or leased by a person and that are used for the production of electrical energy for use by the person in the person's business are exempt from taxation. (Title 15, chapter 6, part 2, MCA)

4. **Exempted** electrical generation facilities from the Montana Major Facility Siting Act.

5. **Revenue bonds:** Allowed electrical energy generation facilities, regardless of size or fuel source, to be eligible for county or municipal revenue bonds issued to finance economic development projects. (Title 90, chapter 5, part 1, MCA)

6. **Tax credit:** A new or expanding corporation manufacturing energy by means of an alternative renewable energy source may be eligible for a license tax credit. (Title 15, chapter 31, part 1, MCA)

7. **Commercial or net metering investment tax credit for alternative energy systems:** An individual, corporation, partnership, or small business corporation that makes an investment of $5,000 or more for property qualifying as a commercial system or a net metering system that is located in Montana and that generates energy by means of an alternative renewable energy source is entitled to a tax credit. (Title 15, chapter 32, part 4, MCA)

8. **"Federal Public Utility Regulatory Policies Act of 1978",** Pub. L. 95-617: Establishes requirements for the participation by qualifying small power production facilities and arrangements for purchases and sales of electric power with electric utilities under the regulation of the PSC. See also state laws concerning small power production facilities. (Title 69, chapter 3, part 6, MCA)

Chapter 5: Transmitting and Distributing Electricity in Montana

1. Who transmits and distributes electricity in Montana?

Chapter 1 provided an overview of how electricity is transmitted and distributed in Montana. Under Montana law, an entity that transmits or distributes electricity is called a distribution services provider (69-8-103, MCA). Transmission and distribution wires seem to criss-cross the state in a haphazard manner, but there is an imposed organization scheme for distribution placement. The State of Montana is divided up into service territories (see figures 11 and 12). As a Montana customer of electricity, you are assigned to a distribution company by virtue of your geographic location. All 26 electric cooperatives, Montana-Dakota Utility, city of Troy, and NorthWestern Energy have their own distribution service territories. State law strictly protects the territorial integrity of each service territory (Title 69, chapter 5, part 1, MCA). NorthWestern Energy, PacificCorp, BPA, and WAPA all own transmission lines in Montana.

ELECTRICITY DISTRIBUTION UTILITIES
NOT REGULATED BY THE PUBLIC SERVICE COMMISSION

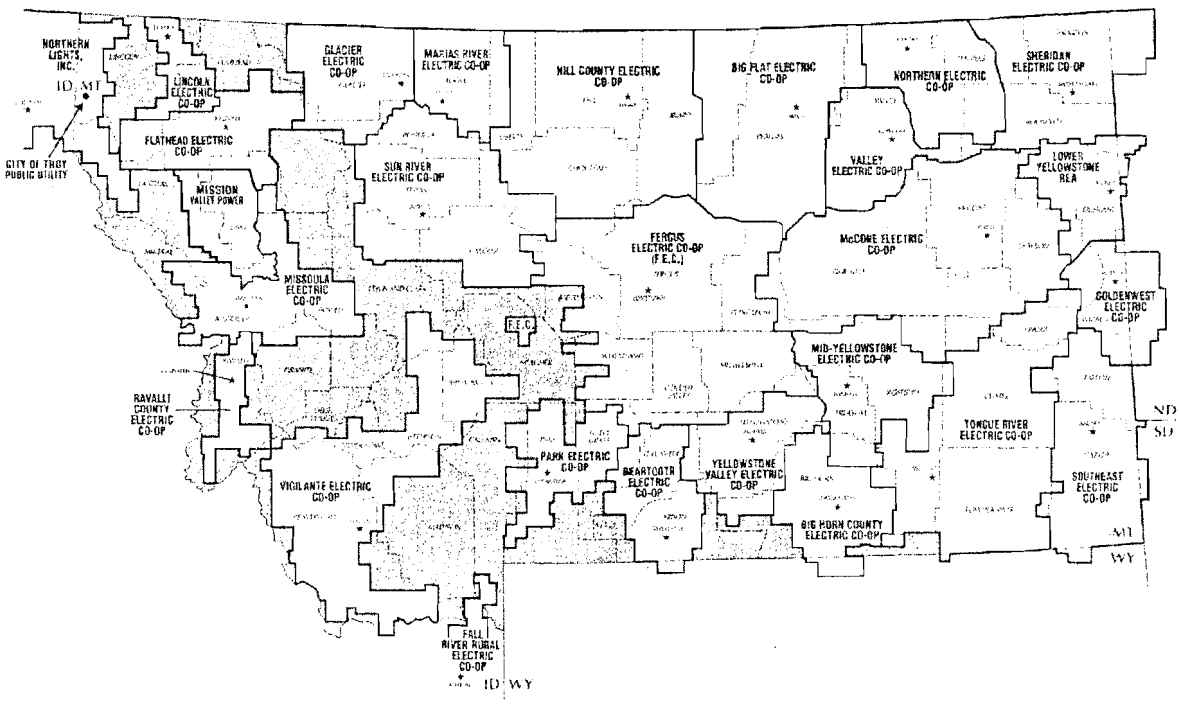


Figure 11

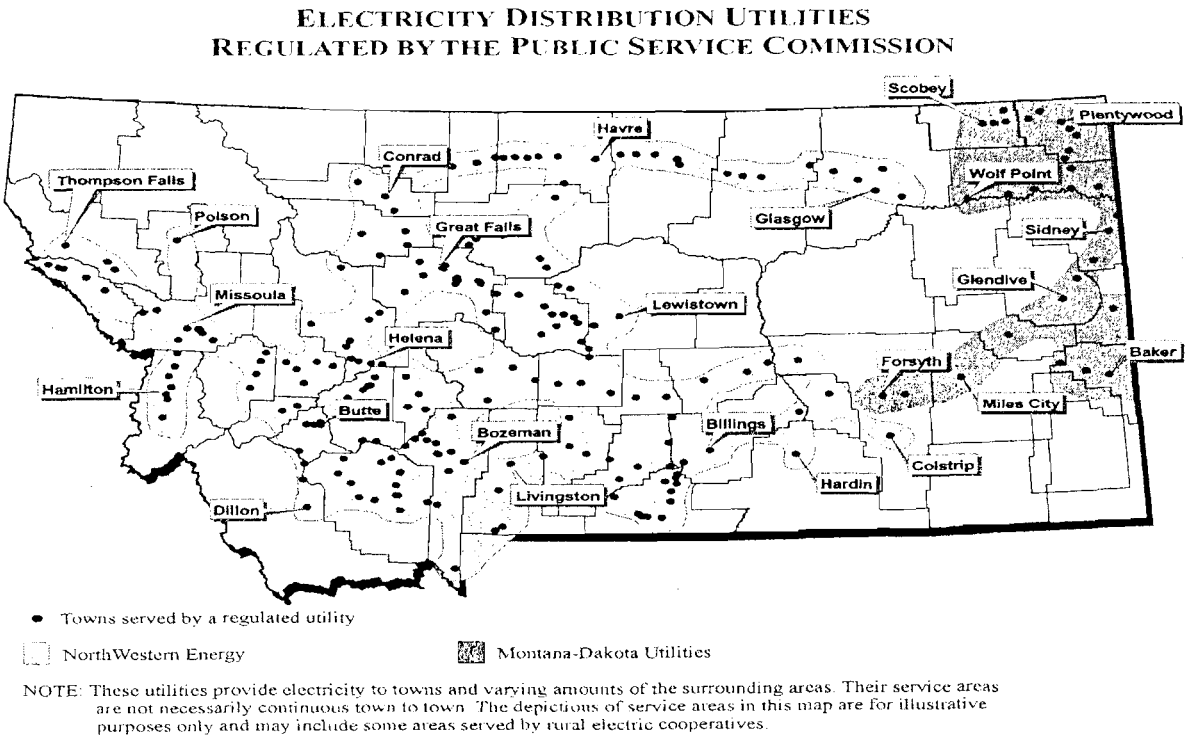


Figure 12.

2. How do our neighboring states and the federal government impact our electricity transmission?

As discussed in Chapter 1, Montana's transmission system is a small part of what is known as the Western Interconnection Transmission System, which, in turn, is a part of a three-region system of interconnections that transmits and distributes electricity across the United States as well as parts of Canada and Mexico. We do not transmit electricity in Montana in isolation of our neighboring western states. Because Montana is interconnected, we are interdependent with our neighboring western states.

Because transmission lines cross state boundaries, the federal government, through FERC, has primary regulatory jurisdiction. FERC sets policies and adopts regulations for the management of transmission systems. FERC also establishes transmission rates for transmission customers. In recent years, FERC has been increasingly active in trying to boost the efficiency of the transmission system. The interstate transmission system is made up of multiple owners that control access to their piece of transmission wire on the system. Think of these owners as having toll bridge booths at both ends of their transmission wire (see figure 14). There are literally hundreds of toll booths on the western transmission system. Each toll booth demands a contractual payment before an owner can transmit electricity. Some transmission facility owners historically owned power marketing operations, allowing themselves to charge higher prices for transmission services to other power marketers. In 1997, FERC issued Order 888 requiring transmission owners to functionally separate their power marketing operations. Under Order 888, the transmission owners must allow open access to their systems that does not discriminate against other parties that use their systems. In addition, FERC issued Order 2000 requiring that an independent regional transmission organization (RTO) take over

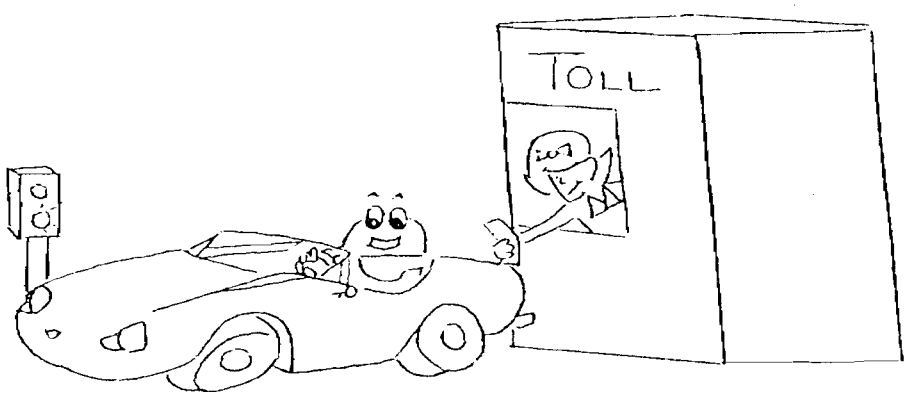


Figure 14.

operation and control of the transmission system. The transmission owners and various stakeholders are currently in the process of formulating an organizational and operational structure for

RTO West and made a filing with FERC in March 2002.

3. What state laws regulate the transmission and distribution of electricity in Montana?

Although FERC has primary jurisdiction over transmission pricing and policy, Montana regulates transmission siting through the Montana Major Facility Siting Act (MMFSA) (Title 75, chapter 20, MCA). MMFSA requires that any proposed transmission line receive siting certification before it is constructed. MMFSA supersedes local zoning and land use laws, making siting strictly a state decision. Other water quality, air quality, and stream crossing permits would apply. The Montana Environmental Policy Act would require an environmental review on any proposed transmission line.

The PSC has broad regulatory authority over public utility distribution services providers (see Chapter 2 for a complete discussion of the PSC's authority). The PSC not only has the ability to set distribution rates for customers, but also approves the acquisition or construction of new distribution facilities and regulates reliability and facility maintenance. Montana electric cooperatives self-regulate their distribution services. State law protects the territorial integrity of each service territory (Title 68, chapter 5, part 1, MCA) and prohibits duplication of distribution services.

4. What laws provide incentives for the transmission and distribution of electricity in Montana?

The PSC is required by statute to include in distribution rates a reasonable rate of return for the public utility distribution services provider. This rate of return gives the public utility an incentive to maintain and expand its services. Electric cooperatives are nonprofit, customer-owned entities that recoup their distribution costs in membership rates.

Chapter 6: Conserving Electric Energy

1. What is electric energy conservation?

Energy conservation refers to activities that reduce the amount of electricity used by a consumer. Examples of energy conservation include efficient appliances and lighting fixtures, high efficiency heating and cooling systems, efficient building design, weatherization of buildings, and the use of advanced electric motors and heat recovery systems.

2. How can conserving electricity save Montanans money?

Conservation is really a very simple concept--if you use less electricity, you lower your electricity bill. If a large block of customers use less electricity, it reduces the overall demand on the transmission and generation system, it reduces customer exposure to volatile fuel and electric market prices, and it eliminates the need to purchase or construct new and very expensive generation and transmission facilities. Conservation saves consumers money, and it conserves natural resources.

3. What laws provide incentives for electricity conservation in Montana?

There are a variety of state law incentives for electricity conservation:

1. **Universal system benefits programs (USBP)**: Among other things, provides for the continued funding of and new expenditures for cost-effective local energy conservation and low-income weatherization. When Montana restructured its electric industry, it created a USBP charge and fund to ensure funding for these types of electricity conservation. Public utilities, cooperatives, and large customers can self-direct and receive credit for cost-effective local energy conservation and low-income weatherization. (69-8-402, MCA)

2. **Tax deduction:** Allows a deduction from gross corporate income for computation of net income for expenditures for capital investments in buildings for energy conservation purposes in accordance with a specific schedule set forth in the statute. (15-32-103, MCA)

3. **Tax credit:** Provides a resident individual taxpayer with a credit not to exceed $500 against state income tax for expenditures for capital investments in a building for energy conservation purposes. (15-32-109,

MCA)

4. **"Montana In-State Investment Act of 1983":** Expresses legislative policy and purposes of the permanent coal tax trust fund, which are to: (1) compensate future generations for the depletion of resources caused by coal development; and (2) develop a strong economy for Montana. The Act states that the Board of Investments shall endeavor to invest up to 25% of the fund in the Montana economy, with special emphasis on local enterprises. Title 17, chapter 6, part 3, MCA, also sets forth authorized investments, limitations on investments, and preferences for investments of revenue from the coal tax trust fund, which, under section 17-6-309(1)(d), expressly includes energy efficiency investments.

5. **Montana state building code:** Designed to accomplish several objectives, including the following: encourage, to the fullest extent feasible, the use of modern technical methods, devices, and improvements for the purpose of reducing the cost of construction, consistent with the conservation of energy and the efficient use of energy; encourage efficient design and installation that will result in consumption of the least possible quantities of energy and reduce the need for heating in the winter and air conditioning in the summer; encourage efficient design of building envelopes with high thermal resistance and low air leakage; and require design and selection practices that will promote the efficient use of energy. The Department of Labor and Industry is responsible for adopting rules relating to the construction of, installation of equipment in, and standards for materials to be used in all buildings subject to the code. (Title 50, chapter 60, part 2, MCA)

6. **Purchase of conservation:** Authorizes utilities to purchase conservation or directly engage in conservation investments that have been approved by the PSC, with the cost-effective conservation measures to be at the customer's discretion, installed by either a private firm, the customer, or the utility. The statutes also authorize the PSC to make onsite audits to ensure compliance with the criteria set out in Title 69, chapter 3, part 7, MCA, and prohibit a utility that has placed the conservation in its rate base from claiming a conservation tax credit. (Title 69, chapter 3, part 7, MCA)

7. **Research and development of energy conservation:** Implements a program administered by DEQ designed to promote research and development of energy conservation and renewable energy sources and provides funding to meet this objective. DEQ must allocate the funds to five statutory loan and grant categories, but has the discretion to reallocate to ensure that the program offers the greatest possible benefits during a particular fiscal year. (Title 90, chapter 4, part 1, MCA)

8. **Low-income weatherization:** Appropriates to DPHHS all federal funds and grants available under the U.S. Department of Energy low-income weatherization assistance program, U.S. Department of Health and Human Services low-income home energy assistance program, or any similar federal program designed to increase the energy efficiency of dwellings inhabited by low-income individuals. DPHHS is directed to allocate at least 5% of funds received from the U.S. Department of Health and Human Services low-income home energy assistance program, if federal law allows. (90-4-201, MCA)

9. **Energy supply emergency powers**: Establishes the necessary planning, information gathering, and energy emergency powers for the Governor and defines the conditions under which these powers are to be exercised. The regular monitoring of energy supplies and demand is provided for. Title 90, chapter 4, part 3, MCA, is intended to enable the Governor and other state agencies to deal with possible energy shortage emergency situations. The Governor is granted emergency powers that are intended to enable the Governor's Office to gather information, to regularly monitor energy supplies and demand, to formulate plans, and to institute appropriate emergency measures designed to reduce or allocate the usage of energy. (Title 90, chapter 4, part 3, MCA)

10. **Participation in the Pacific Northwest Electric Power and Conservation Planning Council:** Expresses legislative agreement to participate in the Pacific Northwest Electric Power Planning and Conservation Act and the Pacific Northwest Electric Power and Conservation Planning Council. The governor is authorized to appoint two members to the Council. (Title 90, chapter 4, part 4, MCA)

11. **"State Building Energy Conservation Act":** Requires DEQ to work with state agencies to identify buildings that have potential for energy savings, based on age, energy use, function, and condition of the building. DEQ is required to compile a report to be submitted to the Governor before September 1 of each even-numbered year. The Governor is required to submit proposed projects to be funded as a part of the budget. If two-thirds of the Legislature approves, energy conservation bonds may be issued to finance energy conservation projects. (Title 90, chapter 4, part 6, MCA)

4. Who can you contact about energy conservation in your home,

school, or business?

For local conservation programs, contact your public utility or local electric cooperative. If you have questions about state building energy conservation programs, contact DEQ at (406) 444-6778.

Chapter 7: Pricing Electricity Supply, Transmission, and Distribution

1. Who sets our retail electricity supply prices in Montana? How is this done?

The process for determining retail electricity supply prices in Montana depends on whom you receive utility services from and, in some circumstances, what type of customer you are. If you are a member of most Montana electric cooperatives, the elected board of the cooperative sets the rates for electricity supply. If you are a member of the Flathead or Mission Electric Cooperative, your electricity supply prices are market-based and approved by the elected board. If you are a customer of Montana-Dakota Utility, the PSC sets the rates for electricity supply. If you are a small customer served by NorthWestern Energy who has not chosen an alternative electricity supplier, then you are part of the default supply load that is regulated by the PSC. Because NorthWestern Energy is a distribution services provider that does not currently own sufficient generation assets to cover the default supply load, NorthWestern must purchase electricity from the market. The PSC must determine whether those purchases were prudently incurred. If you are a large or small NorthWestern customer who has chosen an alternative electricity supplier, the price of your electricity supply is negotiated between you and your electricity supplier.

2. Who sets our transmission and distribution costs in Montana? How is this done?

FERC has jurisdiction over transmission pricing. FERC sets transmission rates that transmission owners can charge, and those charges are passed on to customers. For NorthWestern and Montana-Dakota Utility customers, the PSC regulates the distribution costs. A public utility may request a distribution rate increase, but that rate increase must be approved through a formal PSC rate hearing process. If you are a Montana electric cooperative member, distribution costs are set by an elected governing board for that particular cooperative .

Chapter 8: Montana's Electric Industry Restructuring Laws

1. What is electric industry restructuring?

Montana's electricity laws and polices have received significant public attention and scrutiny since 1997 when Montana decided to deregulate electricity supply and eventually allow all Montana consumers to choose, given a competitive market, their own electricity supplier. This was, and continues to be, a fundamental policy shift for the State of Montana from regulating the price of electricity supply to allowing competitive markets to set the price of electricity supply. Competitive choice has not yet developed for small residential and commercial customers in the state.

Specifically, if you are a NorthWestern customer or a member of an electric cooperative that has opened itself up to competition, electricity industry restructuring is the mechanism that allows a competitive market to determine electricity prices and allows the customer to choose an electricity supplier that gives the best service. If you are member of a cooperative that has not opened up to competition or a Montana-Dakota Utility customer, the price of your retail electricity supply is set by either the cooperative board or the PSC, respectively. The original Montana electricity restructuring law set up a transition period for all NorthWestern customers to choose an electricity supplier by July 1, 2002. Market volatility and the lack of significant small-customer retail competition forced the 2001 Montana Legislature to delay full customer choice until July 1, 2007. Subsequent changes made by the 2003 Montana Legislature further extended the date for full customer choice until July 1, 2027.

2. Why did Montana decide to restructure its electric industries?

The fundamental premise of Montana's restructuring law is that competition will provide greater benefits to consumers than they would otherwise have received under a historically regulated environment. One of the driving forces behind restructuring was FERC's decision in 1996 to deregulate electricity supply markets at the wholesale level. Wholesale transactions involve the sale of electricity from large suppliers (i.e., power producers) to large electricity buyers and sellers (utilities, power marketers, etc.).

Therefore, in January 1997, the Montana Power Company (now NorthWestern Energy) and a number of Montana's large customers brought forward a legislative proposal (Senate Bill No. 390) to deregulate retail electricity supply. The reasons stated in the testimony before the Montana Legislature to pass Senate Bill No. 390 were:

- Competitive markets would provide Montana electricity consumers with cheaper prices over the long term.

- Congress was seriously contemplating national deregulation legislation, and Montana should take a leadership position so that the federal government would grandfather in our policy choices.

- Montana's large industrial customers were looking at an electricity supply market that was cheaper than the traditional regulated utility supply. If they could get better prices, it would enhance plant profitability and promote economic development in Montana.

- Montana Power Company needed to be proactive in a competitive environment that was emerging, as opposed to reactive.

- Competition is here, wholesale power supply markets are competitive, and large customers are demanding retail access.

In passing Senate Bill No. 390, the 1997 Legislature noted that competitive markets exist, that Montana customers should have the freedom to choose their electricity supplier, that Montana consumers should be protected, and that the financial integrity of Montana utilities should be maintained. (69-8-102, MCA)[1]

3. What is the status of electric restructuring today?

Market volatility and the lack of significant small-customer retail competition forced the Montana Legislature to effectively put full customer choice on hold until July 1, 2027. If you are a small customer of NorthWestern who has not chosen an alternative electricity supplier, you are part of the default electricity supply load that is regulated by the PSC. Because NorthWestern Energy is a distribution services provider that does not currently own sufficient generation assets to cover the default supply load, NorthWestern must purchase electricity from the competitive wholesale market. The PSC must approve those purchases. Small NorthWestern customers will pay market-based rates for their electricity supply starting July 1, 2002. For the most part, competitive markets have developed to serve large industrial electricity customers, and most of those customers have chosen alternative electricity suppliers. Small NorthWestern Energy customers also have the opportunity to purchase a separately marketed product composed of electricity from renewable resources.

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[1] For text of testimony in support and in opposition, see the committee minutes of Senate Bill No. 390 during the 1997 legislative session.

GLOSSARY OF ELECTRICITY TERMS

Ampere: The unit of measurement of electrical current produced in a circuit by 1 volt acting through a resistance of 1 ohm.

Average Megawatt: A unit of energy output over a specified time period. It is equivalent to the total energy in megawatt-hours divided by 8,760 (the number of hours in a year).

Capacity: The amount of electric power that a generator, turbine, transformer, transmission circuit, station, or system is capable of producing or delivering.

Circuit: A conductor or a system of conductors through which electric current flows.

Class of Service: A group of customers with similar characteristics (e.g., residential, commercial, industrial, sales for resale, etc.) identified for the purpose of setting an electric rate structure.

Coal: A black or brownish-black solid combustible substance formed by the partial decomposition of vegetable matter without free access to air and under the influence of moisture and, often, increased pressure and temperature. The rank of coal (anthracite, bituminous, subbituminous, and lignite) is determined by its heating value.

Cogeneration: A process that sequentially produces useful energy (thermal or mechanical) and electricity from the same energy sources.

Contract Path: A path across portions of the interconnected grid, owned by two or more different owners, for which a transaction has gained contractual permission from the owners or other rights holders with transferable rights.

Current (Electric): A flow of electrons in an electrical conductor. The strength or rate of movement of the electricity is measured in amperes.

Demand: The rate at which electric energy is delivered to a system, part of a system, or piece of equipment at a given instant or during a designated period of time (see Load).

Demand-Side Management: Electric utility activities designed to reduce customer use of electricity or change the time pattern of use in ways that will produce desired changes in the utility load.

Distribution: Relatively small, low-voltage wires used for delivering power from the transmission system to the local electric substation and to electric consumers.

End-Use Sectors: Energy use assigned to the major end-use sectors according to the following guidelines as closely as possible:

Residential sector:	Energy consumed by private household establishments primarily for space heating, water heating, air conditioning, cooking, and clothes drying.
Commercial sector:	Energy consumed by nonmanufacturing business establishments, including motels, restaurants, wholesale businesses, retail stores, laundries, and other service enterprises; by health, social, and educational institutions; and by federal, state, and local governments.
Industrial sector:	Energy consumed by manufacturing, construction, mining, agriculture, fishing, and forestry establishments.
Transportation sector:	Energy consumed to move people and commodities in both the public and private sectors, including military, railroad, vessel bunkering, and marine uses, as well as the pipeline transmission of natural gas.
Electric utility sector:	Energy consumed by privately and publicly owned establishments that generate electricity primarily for resale.

FERC: Federal Energy Regulatory Commission (formerly the Federal Power Commission). The federal agency that regulates interstate and wholesale power transactions, including power sales and transmission services, as well as licensing of dams on rivers under federal jurisdiction.

Fossil Fuel: Any naturally occurring fuel of an organic nature, such as coal, crude oil, and natural gas.

Fuel: Any substance that, for the purpose of producing energy, can be burned, otherwise chemically combined, or split or fused in a nuclear reaction.

Generation (Electric): The production of electric energy from other forms of energy; also, the amount of electric energy produced, expressed in kilowatt-hours (kWh).

Gross:	The total amount of electric energy produced by the generating units in a generating station or stations, measured at the generator terminals.
Net:	Gross generation less the electric energy consumed at the generating station for station use. (Energy required for pumping at

pumped-storage plants is regarded as plant use and is subtracted from the gross generation and from hydroelectric generation.)

Gigawatt (GW): One billion watts.

Gigawatthour (GWh): One billion watthours.

High voltage: Voltage levels generally at above 69 kV. Some utilities also count 50 and 69 kV lines as transmission lines. Transmission lines in Montana are built at voltage levels of 100 kV, 115 kV, 161 kV, 230 kV, and 500 kV. In other states, lines have also been built at 345 kV and 765 kV. Canadian utilities build at still other voltage levels. Direct current transmission lines have been built at +/- 400 kV, which may sometimes be described as 800 kV.

Horsepower: A unit of power equal to 746 watts.

Hydroelectric Power Plant: A plant in which the turbine generators are driven by falling water.

Inadvertent Flows: Portions of power transactions that flow over portions of the interconnected grid that are not on the contract path for the transaction.

Kilowatt (kW): One thousand watts.

Kilowatthour (kWh): One thousand watthours.

Load (Electric): The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the energy-consuming equipment of the consumers.

Megawatt (MW): One million watts.

Megawatthour (MWh): One million watthours.

Natural Gas: A mixture of hydrocarbon compounds and small quantities of various nonhydrocarbons existing in the gaseous phase or in solution with crude oil in natural underground reservoirs at reservoir conditions. The principal hydrocarbons usually contained in the mixture are methane, ethane, propane, butane, and pentanes.

Ohm: The unit of measurement of electrical resistance. The resistance of a circuit in which a potential difference of 1 volt produces a current of 1 ampere.

Power: The rate at which energy is transferred. Electrical energy is usually measured in watts. Also used for a measurement of capacity.

PURPA: Public Utility Regulatory Policies Act of 1978. This act first required utilities to buy power from qualifying independent power producers.

Public Utility: any investor owned utility that is regulated by the Montana Public Service Commission.

Qualifying Facilities: Small power producers or cogenerators that meet the Federal Energy Regulatory Commission's or the Montana Public Service Commission's size, fuel source, and operational criteria as authorized by PURPA.

Renewable Energy: Energy obtained from sources that are essentially sustainable (unlike, for example, the fossil fuels, of which there is a finite supply). Renewable sources of energy include wood, waste, solar radiation, falling water, wind, and geothermal heat.

Steam-Electric (Conventional) Plant: A plant in which the prime mover is a steam turbine. The steam used to drive the turbine is produced in a boiler by heat from burning fossil fuels.

Transmission: High-voltage electric wires used for bulk movement of large volumes of power across relatively long distances. Compare with distribution, which is composed of relatively smaller, lower-voltage wires used for delivering power from the transmission system to the local electric substation and to electric consumers.

Volt: A unit of electromotive force. It is the amount of force required to drive a steady current of 1 ampere through a resistance of 1 ohm. Electrical systems of most homes and offices have 120 volts.

Watt: The electrical unit of power or rate of doing work. A watt is the rate of energy transfer equivalent to 1 ampere flowing under pressure of 1 volt. It is analogous to horsepower or foot-pound-per-minute of mechanical power. One horsepower is equivalent to approximately 746 watts.

Watthour (Wh): An electrical energy unit of measure equal to 1 watt of power supplied to, or taken from, an electric circuit steadily for 1 hour.

Western Interconnection: The interconnected, synchronous transmission grid extending from British Columbia and Alberta in the north to the U.S.-Mexican border in the south and from the Pacific Coast to a line extending from the Alberta-Manitoba border through eastern Montana, eastern Wyoming, western Nebraska, and the extreme west part of Texas.

Appendix A: State Energy Information Resources

Consumer Counsel	(406) 444-2771
Department of Commerce, Board of Investments	(406) 444-0001
Department of Environmental Quality	(406) 444-6697
Legislative Services Division	(406) 444-3064
Department of Public Health and Human Services Low Income Energy Assistance Program	(406) 447-4260
Northwest Power Planning and Conservation Council	(406) 444-3952
Public Service Commission	(406) 444-6199
Energy Share of Montana	(406) 442-4900
Human Resource Development Councils	(406) 586-1572
Montana-Dakota Utility	(800) 638-3278
NorthWestern Energy	(888) 467-2669
Montana Electric Cooperatives' Association	(406) 761-8333

**** Bill No. ****

Introduced By **********

By Request of the *********

A Bill for an Act entitled: "An Act clarifying that an alcohol distributor may not submit concurrent written plans for the same production facility location; clarifying the meaning of "construction or remodeling" of a facility; amending section 15-70-522, MCA; and providing an immediate effective date."

Be it enacted by the Legislature of the State of Montana:

Section 1. Section 15-70-522, MCA, is amended to read:

"15-70-522. Tax incentive for production of alcohol -- written plan required -- reservation of incentives -- rules. (1) (a) If the alcohol was produced in Montana from Montana agricultural products, including Montana wood or wood products, or if the alcohol was produced from non-Montana agricultural products when Montana products are not available, there is a tax incentive payable to alcohol distributors for distilling alcohol that:

(i) is to be blended with gasoline for sale as gasohol in Montana;

(ii) was exported from Montana to be blended with gasoline for sale as gasohol; or

(iii) is to be used in the production of ethyl butyl ether for use in reformulated gasoline.

(b) Payment must be made by the department out of the amount collected under 15-70-204.

(2) Except as provided in subsections (3) and (4), the tax incentive on each gallon of alcohol distilled in accordance with subsection (1) is 30 cents a gallon for each gallon that is 100% produced from Montana products, with the amount of the tax incentive for each gallon reduced proportionately, based upon the amount of agricultural or wood products not produced in Montana that is used in the production of the alcohol. Beginning July 1, 2010, there is no tax incentive.

(3) Regardless of the alcohol tax incentive provided in subsection (2), the total payments made for the incentive under this part may not exceed $6 million in any consecutive 12-month period.

(4) An alcohol distributor may not receive tax incentive payments under subsection (2) that exceed $3 million in any consecutive 12-month period.

(5) An alcohol distributor may not receive tax incentive payments under subsection (2) unless the distributor has provided a written business plan to the department of transportation at least 24 months before the distributor's anticipated collection of the tax incentives and has complied with the schedule provided for in subsection (6). The plan must contain the following information:

(a) the source or sources of financing for the acquisition of the plant, land, and equipment used for the production of alcohol for use in gasohol;

(b) the anticipated source of agricultural products used in the production of alcohol for use in gasohol; and

(c) the anticipated time, quantity, and duration of production of alcohol for use in gasohol.

(6) An applicant that has provided the department with a written business plan shall meet the following schedule to be able to receive alcohol tax incentive payments:

(a) start ~~building~~ construction or remodeling within 24 months of the date on which the department received the business plan;

(b) complete 50% of construction or remodeling of a production facility, AS VERIFIED BY AN INDEPENDENT THIRD PARTY SELECTED BY THE DEPARTMENT AND PAID FOR BY THE APPLICANT, within 36 months of the date on which the business plan was received; and

(c) complete 100% of construction or remodeling of a production facility and be in production of alcohol for use in gasohol for distribution within 48 months of the date on which the business plan was received.

(7) If the applicant does not adhere to the schedule in subsection (6), the applicant loses its priority for receiving incentive payments.

(8) After the department has verified production, the department shall begin payments of the alcohol tax incentives based on actual production according to the terms of subsection (2).

(9) ~~The~~ (a) Except a provided in subsection (9)(b), the

department shall reserve, in the order that written plans required under subsection (5) are received by the department, alcohol tax incentives based on the anticipated time, quantity, and duration of production.

(b) There may not be more than one written plan as required under subsection (5) concurrently for the same production facility location.

(10) A new tax incentive payment may not be made if the total tax incentive established in subsection (3) has been reserved or paid. If an alcohol tax incentive has been reduced or canceled, the amount by which the tax incentive has been reduced or canceled is available for reservation as provided in subsection (9).

(11) The department shall prescribe rules necessary to carry out the provisions of this section.

(12) FOR PURPOSES OF THIS SECTION, "START CONSTRUCTION OR REMODELING" MEANS: THE ON-SITE DEVELOPMENT, CONSTRUCTION, ALTERATION, REPAIR, OR REMODELING OF A FACILITY TO PRODUCE ALCOHOL."

{*Internal References to 15-70-522: None.*}

NEW SECTION. **Section 2. {standard} Effective date.** [This act] is effective on passage and approval.

- END -

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Agency : LSD
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E-Mail : teverts@state.mt.us}

Service Date: August 17, 2004

DEPARTMENT OF PUBLIC SERVICE REGULATION
BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MONTANA

* * * * *

IN THE MATTER of the Submission	)	
Of Northwestern Energy's Default	)	UTILITY DIVISION
Electricity Supply Resource	)	
Procurement Plan	)	DOCKET NO. N2004.1.15

WRITTEN COMMENTS IDENTIFYING CONCERNS REGARDING NORTHWESTERN ENERGY'S COMPLIANCE WITH A.R.M. 38.5.8201-8229

Background

1. On January 29, 2004 NorthWestern Energy (NWE), pursuant to § 69-8-420(1), MCA, and ARM 38.5.8226(1), filed its default electricity supply resource procurement plan. Section 69-8-420, MCA, reads:

> **Default supply resource procurement plans - comment on plans.**
>
> (1) The default supplier shall develop default supply resource procurement plans. The plans must be submitted to the commission at intervals determined in rules adopted by the commission pursuant to 69-8-419.
>
> (2) A default supply resource procurement plan must demonstrate the default supplier's achievement of the objectives provided in 69-8-419 and compliance with the rules adopted pursuant to 69-8-419.
>
> (3) The commission shall:
>
> (a) review the default supply resource procurement plan;
>
> (b) provide an opportunity to the public to comment on the plan; and
>
> (c) issue written comments that identify;
>
> (i) any concerns of the commission regarding the default supplier's compliance with the rules adopted pursuant to 69-8-419; and
>
> (ii) ways to remedy any concerns.

2. Section 69-8-420 is generally self explanatory, but is somewhat ambiguous on certain points; however, those ambiguities are resolved either by reasonable interpretation or reference to other parts of the law. The process established by § 69-8-420 is not a contested case. "Contested case" is defined as, "a proceeding before an agency in which a determination of legal rights, duties, or privileges of a party is required by law to be made after an opportunity for hearing. The term includes but is not restricted to rate making, price fixing and licensing." § 2-4-102(4), MCA. Section 69-8-420 does not require or authorize Commission approval of the NWE plan or of any specific resource acquisition; the section does not require a hearing and, even if it did, the comments the Commission is required to make do not constitute a determination of legal rights, duties or privileges. Furthermore, the § 69-8-420 process is neither rate making, price fixing nor licensing.

3. Pursuant to Procedural Order 6532, the Commission provided participants in this proceeding an opportunity to submit written discovery questions to NWE beginning March 16, 2004. On March 16, and again on April 14, the Commission held workshops to allow participants to informally discuss NWE's plan, planning methods and model inputs and assumptions. In May 2004 individual commissioners conducted public meetings in various Montana cities and towns to take comments from members of the public regarding NWE's plan. On or around June 1, 2004 participants submitted written comments on the plan. Written comments were submitted by Rocky Mountain Power, Inc. (RMP), PPL Montana, LLC. (PPL), Montana Consumer Counsel (MCC), AARP Montana (AARP), Montana Environmental Information Center (MEIC), Renewable Northwest Project and Natural Resources Defense Council (RNP/NRDC), and the Montana office of the Northwest Power and Conservation Council (NWPCC). On July 15, 2004 Quantec, LLC, a consultant hired by the Commission to help review the plan, submitted its report (Appendix A). In addition, 12 public comments were posted to the internet website NWE developed at www.montanenergyforum.com.

4. On August 2, 2004, NWE submitted its response to the written comments from other participants. Such response comments were not contemplated by the Procedural Order in this docket and are not required by § 69-8-420, MCA. NWE's response comments are not reflected in these written comments. The Commission recommends NWE use its response comments as a foundation for continued dialogue with its Advisory Committee.

Strengths

5. NWE's plan reflects an earnest effort to undertake a thorough planning process and procure resources in a manner that serves the best interests of its default supply customers. NWE worked hard to identify candidate portfolios that minimize costs and risks, create diversity, stabilize rates and incorporate benefits from Montana's under-utilized wind resources. The four preferred portfolios NWE identified appear to represent a reasonable and balanced mix of resources over the short to intermediate term. The plan is transparent in most respects, is readable and understandable, and comprehensively documents the Company's approach to addressing the Commission's default supply planning and resource procurement guidelines as well as the reasoning behind most of the Company's decisions. The plan's appendices, and the charts and graphs included within the text, are well designed and facilitate understanding the plan. It is clear that NWE made a concerted effort to work with its stakeholder advisory committee and to incorporate input from the committee. NWE's efforts to involve the general public in the planning process are especially noteworthy. The internet website NWE developed to facilitate public discussion of the plan was well designed and easy to use. Overall, NWE's plan demonstrates a substantial step forward in establishing adequate, reliable and reasonably priced default electricity supply service.

Concerns

6. Although NWE's plan represents substantial progress, there is still room for improvement. The first and most fundamental concern is that NWE's plan does not reflect a long-term resource planning analysis and, as a result, does not adequately implement a primary objective of the Commission's guidelines. A.R.M. 38.5.8201 states the purpose of the Commission's guidelines: to provide the utility policy guidance on long-term resource planning and procurement. NWE's plan, on the other hand, is focused on demonstrating the reasonableness of a general resource mix for the period prior to July 2007. NWE did not attempt to optimize specific types and quantities of resources within the portfolio or the timing of resource procurements before or after July 2007. NWE readily acknowledged the short to intermediate term focus of its recent planning activities.

> "...in the context of this Report and the DSP planning process, the function being modeled is the portfolio's resource mix (for the purpose of identifying which resource mixes perform at lowest cost and least risk). Book 1, p. 121.
>
> "...the modeling performed in conjunction with the current planning process centered on the analysis of resource mixes within candidate default supply portfolios, as opposed to optimization of the individual portfolio's component resources." Book 1, p. 134
>
> "NWE determined that portfolios should be modeled, in light of existing base load forward contracts that expire at midnight on June 30, 2007, around pre-2007 data and assumptions." Book 1, p. 143
>
> "Hundreds of models were run with generic resources in order to identify the risk drivers of the portfolio prior to 2007..." Book 1, p. 150.

NWE's near-term action plan (see p. 3 of the cover letter to the plan) appears reasonable and supportable in the shorter term. But, to the extent elements of the action plan involve long-term decisions, such as advanced approval for specific long lived resources/contracts, NWE effectively expects the Commission and stakeholders to extrapolate the results of its pre-2007 analysis into the future. NWE's plan, however, did not adequately demonstrate the reasonableness of this expectation.

7. Integrally related to this fundamental concern is a concern that NWE devoted an inordinate amount of time and process to assessing candidate resource mixes using pre-2007 data and assumptions. NWE asserted that optimizing each resource within the multi-portfolio modeling process would have been too time intensive, but acknowledged that such an analysis is theoretically desirable (Book 1, p. 135, footnote 34). A.R.M. 38.5.8226 requires NWE to file a "comprehensive, long-term portfolio management and resource procurement plan" every two years. But NWE devoted almost two years to what is essentially an initial step in a comprehensive resource planning process. NWE should be able to accomplish more during each planning cycle in order to comply with the Commission's procurement guidelines. As several written comments pointed out, NWE needs to follow through from planning to resource acquisition.

8. SB 247, codified at § 69-8-421 MCA, limited the time the Commission may spend evaluating an application for advanced approval, in part, on the theory that suppliers cannot endure the length of a traditional regulatory proceeding given the market environment in which they operate. Yet several bidders endured NWE's on-going analysis of candidate resource mixes

long after their specific bids were selected from RFPs in 2002 and 2003. To date, NWE has submitted only one resource to the Commission for advanced approval. Some of the delay was due to things not entirely in NWE's control, such as transition issues related to the purchase of the utility operations from Montana Power Company; bankruptcy/credit issues; expiration of the federal wind production tax credit; and re-establishing a stakeholder advisory committee. Nevertheless, the delays are concerning and hard to reconcile with NWE's advocacy for SB 247.

Modeling and Analysis – NWE Plan Section 6

9. In Section 6 of its Plan, NWE described the GenTrader® energy optimization software it uses for modeling the default supply portfolio. Although the GenTrader® software appears to be a powerful analytical tool, it does not appear to be the best tool for the type of long-term portfolio assessments envisioned by the Commission's procurement guidelines. This does not necessarily mean that the GenTrader® software cannot contribute to such assessments or that GenTrader® is not a useful tool for managing the default supply portfolio's resources. But by itself, GenTrader® does not appear to be capable of evaluating and comparing dynamic resource portfolios over long periods of time (more than 10 years), at least without excessive time and effort.

10. As stated in several of the written comments, NWE's portfolio modeling focuses on ranking portfolios with pre-determined resource mixes. The ranking flows from an analysis of each portfolio's costs using the Monte Carlo simulation programs within GenTrader®. Probabilistic techniques, such as Monte Carlo simulation, are appropriate because they incorporate explicit assessments of uncertainty and, therefore, help to identify and evaluate risks and interrelationships between variables. The input assumptions and associated probability distributions used in a Monte Carlo analysis are critical, as the Regulatory Assistance Project has pointed out:

> "[The] ability to give a definitive answer is also one of the tool's most serious drawbacks...The subjective assumptions made early on in the analysis are submerged, so that a final outcome's appearance of objectivity is false."[1]

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[1] *Integrated Resource Planning for State Utility Regulators*, Regulatory Assistance Project, June 1994.

With this in mind, the Commission has several concerns with NWE's overall application of the GenTrader® model and input assumptions.

Modeling

11. Several participants correctly commented on the short-comings of NWE's single-year analysis. NWE's approach eliminated an important dimension from industry standard, long-term integrated resource planning. Default supply resource portfolios are not static, nor are the underlying cost drivers. NWE's approach seems flawed because it does not allow the Company and stakeholders to understand the costs and risks of portfolio alternatives that evolve differently over time. NWE's approach effectively assumes that the type and quantity of each resource in each alternative portfolio remains fixed over time. In reality, procurement options will vary not just in terms of the type and quantity of resources acquired, but also in terms of when resources become part of the portfolio and the duration of their existence within the portfolio. NWE might be able to use the GenTrader® software to analyze these dynamics, but the time involved in running the model and processing the results appears to be impractical. The idea that the stochastic analyses, using probability distributions NWE developed for various model inputs, captured nearly all possible futures is not entirely convincing for two reasons: 1) NWE acknowledged using pre-2007 data and assumptions not expected values and probability distributions based on forecasts beyond 2007, and 2) as discussed more below, NWE did not model uncertainty for some inputs, such as default supply loads. While NWE validly pointed out that long-term forecasts are speculative, the future should not be ignored on that basis. Ultimately, the single-year analysis constrained the scope of alternative resources and portfolios that were studied contrary to the recommendations in A.R.M. 38.5.8212 (1)(b) and 38.5.8213 (1)(f).

12. MCC expressed concerns with the way NWE's pre-2007 portfolio analysis failed to consider alternatives to the existing PPL base load and heavy load resources, which expire in 2007. NWE maintained that resources very similar to those provided by the PPL contracts will continue to be part of the portfolio; the primary issue is the price of those resources. In some ways NWE's approach was reasonable given the Commission's order on Montana Power Company's proposed default supply portfolio (Docket D2001.10.144). That order, while clearly justified, put NWE in the position of serving a large portion of the load, including peak loads,

from short-term markets immediately following an unprecedented experience with high wholesale market prices. NWE focused its resources on quickly addressing this exposure. However, MCC correctly pointed out that the lead time needed to pursue certain resource options, for example a new coal plant, requires that these options be studied well in advance of the expiration of current contracts. The Commission agrees with MCC that a bifurcated planning process is not preferred and that NWE needs to immediately begin evaluating options for replacing existing PPL contracts.

13. The Commission agrees with RMP's and NWPCC's comments that NWE needs a planning tool that facilitates analyzing the best timing and quantity of various resources within a portfolio as well as the types of resources. But, Quantec correctly observed that utility resource plans are rarely the result of mathematical optimization alone. And the Commission's planning and procurement guidelines impose a number of policy constraints on the optimization process, some of which conflict. For example, the Commission's guidelines urge NWE to procure a portfolio that represents both the lowest cost and lowest risk possible with the understanding that there are usually trade-offs between cost and risk. Similarly, the guidelines advocate reliability, resource diversity, environmental responsibility and price stability. The Commission is not convinced that NWE must have a planning tool that relies on mathematical optimization to identify portfolio strategies that are consistent with the procurement guidelines. NWE does need planning tools that allow it to quickly and flexibly assess numerous dynamic portfolios over a long-term planning horizon. Ultimately the selected portfolio strategy will be the result of NWE's portfolio assessment and judgment, informed by on-going input from the Commission and stakeholders.

14. NWE stated that the portfolios it analyzed were designed to evaluate "resource mixes that were representative of existing contracts, projects, or loads and that also permitted level based comparisons [of base load/coal-based portfolios]." This is not sufficient. While it may be useful to demonstrate that, for example, base load products or a coal plant-based contract would not efficiently serve the upper-most twenty-five percent of the load curve, at some point NWE needs to determine more specifically the best mix of natural gas dispatchable resources, short-term market purchases, exchanges, variable load products, etc., to serve this load over the long-term, given the expected costs of each. Similarly, since requests for proposals should identify a host of different opportunities and actual price information, NWE needs planning tools that can

combine various offers with various quantities, on-line dates, and durations along with various constraints into candidate "optimal" long-term portfolios.

15. Again, GenTrader® is a powerful analytical tool, and NWE's analysis is not without value. However, to remedy the concerns just described related to the short-term, static nature of NWE's planning process, NWE should explore, with its Advisory Committee, the spreadsheet-based planning tools referenced by Quantec and used by other regional utilities to see if such tools would enhance NWE's long-term analytical capabilities.

Model inputs and assumptions

16. NWE developed high, medium and low load forecasts. The low load forecast reflects maximum movement of large customers to retail choice allowed under current law. The high load forecast envisions return of all choice loads and slightly higher load growth. However, NWE did not develop a probability distribution for loads based on these forecasts which was then used in the Monte Carlo analyses. Thus, it does not appear as though NWE incorporated load uncertainty into the planning process despite explicitly recognizing that such uncertainty exists. This may be a function of the Company's decision to focus on analyzing resource mixes in the pre-2007 planning period when annual loads are much more certain. Or NWE may have determined that the probability of experiencing the high and low forecast loads were so small that modeling load uncertainty was not necessary. In any case, A.R.M 38.5.8213 recommends using modeling and analysis to evaluate load uncertainty. NWE's next planning cycle should incorporate load uncertainty, or more thoroughly document its conclusion that such modeling is not necessary.

17. NWE used historical data to develop load shapes for forecast annual energy consumption. Although this approach should provide some indication of potential future peak demand, NWE's plan and supporting material did not provide a separate forecast of peak load. A.R.M 38.5.8210 recommends that NWE assess peak loads as well as seasonal and daily load shapes and trends. This assessment is a necessary aspect of evaluating long-term peak supply options, including demand response programs, energy efficiency programs and rate design alternatives. In its next plan, NWE should present a long-term forecast of peak loads broken down by customer class. In the interim, NWE should explore with its Advisory Committee

whether an independent peak load forecast should be developed or whether deriving peak loads from forecast annual energy load is sufficient.

18. NWE's decision to use the Northwest Power and Conservation Council's electric and natural gas price forecasts was reasonable. The Commission does not agree with RMP's suggestion that NWE needs a planning tool that generates wholesale electricity prices endogenously (within the model). The NWPCC's electric price forecast is based on a comprehensive study of wholesale market dynamics in the Western region. As Quantec noted, NWE is a price-taking purchaser of wholesale power within the region. Similarly, the NWPCC's natural gas price forecast is based on a comprehensive analysis of regional, national and international fuel markets. The NWPCC's medium natural gas price forecasts are reasonably comparable to forecasts by others, including the U.S. Energy Information Administration, PacifiCorp and the California Energy Commission. The Commission is more concerned with how NWE applied these long-term forecasts in its own modeling, as discussed above.

19. In its next plan NWE should make sure that all model inputs and assumptions are provided and explained. In the current plan, NWE provided adequate information related to the development of inputs for wholesale electricity and natural gas prices and annual energy loads. However, NWE did not provide sufficient information on wind generation profiles, the costs of transmission associated with market purchases and sales, assumptions about transmission constraints, derivation of price volatility factors which underlie the probability distributions and derivation of natural gas-electricity price correlation. Additionally, as Quantec noted, wholesale prices are affected by regional hydro conditions, but NWE did not explicitly analyze hydro risk and the interaction between the hydro system, loads and power prices.

20. NWE did not explicitly incorporate environmental costs into its portfolio analysis, asserting that until laws and regulations are enacted that enable impacts to be measured or quantified it is unable to model such impacts. Explicit treatment of environmental costs is appropriate from a societal perspective. A.R.M. 38.5.8204 recommends assembling and maintaining an environmentally responsible default supply portfolio and A.R.M. 38.5.8202 says environmentally responsible means explicitly incorporating into portfolio planning the policy of the state of Montana to encourage utilities to acquire resources that help ensure a clean, healthful, safe and economically productive environment. NWE's plan does not adequately implement these recommendations. The plan does not qualitatively or quantitatively discuss or

analyze the environmental trade-offs associated with the various modeled portfolios despite significant literature on potential ranges of environmental damage costs related to electricity generated by various methods and existing regulatory policies in various states. Uncertainty about future electricity and natural gas prices did not prevent NWE from modeling portfolio impacts associated with these variables. Environmental costs are just as real, even if their values are less certain. Although NWE believes that generation developers and energy suppliers will assume the risk of future environmental regulation and incorporate such risks into their prices, it is unclear to what extent that is currently occurring. Additionally, residual risk to the default supply portfolio may exist to the extent inaccurate risk assessments by developers and suppliers threaten the long-term viability of contracts. Finally, taxes and regulations do not necessarily internalize all environmental damage costs. The Commission agrees with RNP/NRDC and MEIC that NWE should consider environmental costs in its next portfolio planning cycle. The Commission also agrees with RNP/NRDC that NWE should devise a plan for disseminating information to customers on the fuel mix and emissions associated with the default supply portfolio as recommended by A.R.M. 38.5.8204.

21. Finally, RMP appears to have correctly pointed out that NWE was somewhat loose with the terminology it used in its plan. The Duke Energy *Energy Desk Book* NWE included as Appendix C appears to corroborate RMP's concerns with the way NWE used the term "forward prices." Although NWE's intended meaning can be ascertained from the context in which it is used, NWE should use proper terminology to avoid any confusion.

Demand side resources – Plan Section 5

22. NWE's assessment of demand-side resources represents a praise-worthy improvement over the initial Montana Power Company portfolio plan presented in docket no. D2001.10.144. NWE contracted with KEMA-XENERGY to thoroughly assess the demand-side resource potential on NWE's system. The assessment identified a maximum achievable resource equal to 102 MW, acquired over a 20 year period. NWE plans to develop programs that will implement constant and sustainable year-over-year additions of 5 MW of cost-effective energy efficiency and conservation after an initial ramp-up period. NWE will also maximize the extent to which program participants share in the cost of the demand-side measures, subject to achieving the

planned 102 MW. Overall, NWE reasonably implemented the Commission's guidelines on treating demand- and supply-side resources equivalently.

23. NWE screens individual demand-side measures for cost effectiveness. Quantec suggested a more appropriate way to procure demand-side resources would be to allocate total market potential into cost-based bundles of demand-side resources and evaluate the bundles on equal terms as supply-side resources in the context of portfolio assessment. This approach, which is used by other utilities in the Northwest, would recognize potential synergies among groups of demand-side measures. AARP made a similar recommendation. NWE should research the approach described by Quantec and consider using that approach in its next planning cycle.

24. The 10% environmental benefit factor NWE applied to its cost effectiveness evaluation is comparable to the cost advantage recommended in the Commission's traditional integrated resource planning guidelines, although the focus is slightly different (environmental vs. market failures and barriers). NWE's environmental benefit factor approach was reasonable in this planning cycle. In future planning cycles NWE should assess how the 10% factor compares to using the forecast of long-term avoided costs adjusted to reflect environmental externalities as the cost-effectiveness threshold.

25. The Commission, NWE and other stakeholders are interested in addressing disincentives to procuring cost-effective demand-side resources. NWE has encouraged progress on this issue by developing its proposed lost revenue recovery mechanism. However, implementing such a mechanism requires formal Commission action, which is not the purpose of this docket. NWE has formally proposed that the Commission adopt the cost recovery mechanism in Docket D2004.6.90 and it is in that docket that the Commission will consider the merits of the mechanism.

26. AARP noted that NWE did not explain how the demand-side resource acquisition plan will be coordinated with universal system benefits programs (USB). Both AARP and NWPCC believe it is possible that implementing and paying for demand-side resources within the default supply portfolio may allow NWE to reallocate demand-side resource-related USB program dollars to other qualifying USB programs, such as low-income programs. AARP acknowledged that a reallocation of USB funds is premature in this docket, but recommended that the Commission affirm the likely result of moving the funding of demand-side resources to portfolio

costs and establish a process to address the resulting impact on NWE's USB programs. The Commission agrees that procuring demand-side resources as part of the default supply portfolio, and recovering related costs through default supply rates may affect current universal system benefits programs and, therefore, the overall allocation of universal system benefits funds. NWE has already recognized this issue in its 2004 default supply cost tracking filing (D2004.6.90). The Commission intends to expand the scope of issues in that docket to include the USB allocation issues raised by AARP and NWPCC.

27. AARP questioned NWE's decision to expense the entire cost of its demand-side resource acquisitions each year when some of these resources represent long-lived capital investments. AARP also suggested that the Commission explore the risk-reward system under which NWE operates and consider switching from a monthly default supply tracking approach to an alternative that provides more price stability and provides incentives for NWE to keep costs low. While these are legitimate default supply-related regulatory policy issues, they go beyond the scope of this docket and require specific Commission actions. Such issues are more appropriate in a default supply cost recovery proceeding such as D2004.6.90.

Load forecasting – Plan Section 4

28. As explained above in the discussion of modeling, NWE should develop peak load forecasts to facilitate evaluation and design of long-term peak supply strategies including demand response programs, energy efficiency and conservation programs, and economically efficient rate designs.

29. NWE determined that price was not a significant explanatory variable in its load forecast model. In its next plan, NWE should include more technical detail on the forecast model and its results which support this conclusion. NWE also stated that the effect of sustained price increases on the purchase of appliances would be lagged, which suggests that current prices might be a significant determinant of future loads. However, it is not clear whether NWE tested a lagged price variable in the forecast model. NWE should address this issue in its next planning cycle.

Resource procurement process – Plan Section 8

30. NWE should better document linkages between its resource needs assessment and resource procurement activities. While the variable nature of the upper-most portion of the load curve was clearly demonstrated, the reasoning which lead NWE to determine that the August 2002 RFP should specifically request combustion turbine offers in order to fill this need was not as clear. The plan did not explain why NWE chose not to solicit variable and/or dispatchable market products or if there was a relationship between the decision to procure wind resources and the decision to solicit combustion turbine offers.

31. Aside from the above noted concern about supporting the decision to restrict the August 2002 RFP to natural gas-fired combustion turbine proposals, the two competitive solicitations NWE conducted during its planning cycle appear to reasonably comply with the Commission's guidelines.

Miscellaneous issues

32. In Section 3 of its plan, NWE discusses a need for further public policy guidance from the Commission. The Commission's guidelines prioritize the goals of lowest long-term portfolio cost and stable prices. NWE maintains that these goals are not natural allies. The importance of achieving the lowest cost portfolio relative to the importance placed on achieving stable prices will determine which portfolios are pursued and which are discarded. NWE and its Advisory Committee believe that determining the weight to assign to competing objectives comes down to a public choice and, therefore, requires Commission input.

33. The Commission's guidelines do not specify how NWE should weigh trade-offs between the lowest possible portfolio cost and price stability. To date, the Commission has not addressed in a formal public proceeding the issue of acceptable variability in prices such that the Commission could tell NWE, for example: "pursue the lowest possible portfolio cost but ensure that month-to-month rate adjustments do not exceed X%." And there is no record basis in this docket to establish a risk standard in this proceeding.

34. In general, the portfolio perspective NWE applied in its plan is reasonable. NWE evaluated how an individual resource with its unique costs and risks, when added to the mix of resources in the portfolio, affects the over all portfolio cost/risk position. The preferred portfolios NWE identified are closer than other portfolios to the point where both cost and risk

are zero. From this information, NWE drew conclusions about beneficial resource procurement strategies. Consideration of other planning objectives should also help identify preferred portfolios. To the extent NWE encounters a situation where dramatically different portfolio structures fall on a possibilities frontier of cost-risk outcomes, and other planning objectives do not "tip the scales," its should seek Commission guidance.

Recommended remedies for PSC concerns

1. NWE should research the spreadsheet-based tools being used by other regional utilities for long-term planning purposes, as referenced in Quantec's analysis, to see if acquiring such tools would enhance NWE's ability to flexibly model dynamic resource portfolios over a long-term planning horizon. The Commission has not determined that a mathematical optimization tool is necessary for NWE to develop portfolio strategies that balance the multiple objectives identified in the Commission's guidelines. However, several participants, including the Northwest Power and Conservation Council indicated that such a tool is desirable. NWE should attempt to resolve this issue in consultation with its Advisory Committee.
2. NWE should immediately begin assessing a variety of long-term portfolios and evaluating comprehensive long-term resource procurement strategies that address the pending expiration of base load and shaped heavy load contracts in 2007. NWE's next default supply plan, and, to the extent possible, the status report included with its 2005 annual default supply cost tracking filing, should present strategies for future resource acquisition in terms of the best type, size, timing and duration.
3. NWE should reevaluate how it models default supply loads. NWE identified uncertainty related to default supply loads by developing high, medium and low load forecasts because current law allows migration of loads into and out of default supply. But NWE did not assign probabilities to the high, medium and low loads for input to the stochastic modeling. If NWE determined that choice impacts on load have virtually no chance of occurring for the foreseeable future, this judgment should be more thoroughly explained. Additionally, NWE described how day-to-day and seasonal weather uncertainty substantially affects loads and, as a result, resource needs. Yet weather uncertainty and

its effect on loads were incorporated into the model. NWE should consider including this source of uncertainty in its modeling, or more fully explain why the results are not negatively affected if this source of uncertainty is not explicitly modeled.

4. In its next planning cycle NWE should develop a forecast of peak loads broken down by customer class for use in evaluating peak supply strategies, including demand response programs, demand-side management programs and economically efficient rate designs. NWE should explore with its Advisory Committee reasonable methods for forecasting peak loads.
5. In its next plan NWE should more thoroughly document model inputs for: a) wind generation profiles, b) the costs of transmission associated with market purchases and sales, c) transmission constraints, d) electricity and natural gas price volatility factors which underlie the probability distributions, and e) natural gas-electricity price correlation. NWE should also consider explicitly analyzing hydro risk and the interaction between the hydro system, loads and power prices.
6. In its next planning cycle NWE should explicitly incorporate environmental costs into its portfolio analyses.
7. NWE should properly use industry standard terminology when documenting its planning activities.
8. NWE should research the approach described by Quantec for assembling cost based bundles of demand-side measures as an alternative to measure-by-measure screening in its next planning cycle.
9. NWE should assess how the 10% environmental benefit factor compares to forecasts of NWE's long-term avoided costs adjusted to include a range of environmental externalities as the basis for a demand-side resource cost effectiveness threshold.
10. NWE should develop a method for disclosing default supply portfolio fuel mix and emissions information to default supply customers.

35. These concerns and suggested remedies are offered as open and effective communication between the Commission and NWE related to on-going default supply planning and resource procurement. Consistent with the Commission's guidelines, the comments should

facilitate planning and procurement processes that benefit the public and maintain NWE's financial health.

Done and dated on this 13th day of August, 2004, by a 4 to 1 vote.

BY THE MONTANA PUBLIC SERVICE COMMISSION

BOB ROWE, Chairman
TOM SCHNEIDER, Vice Chairman
MATT BRAINARD, Commissioner
GREG JERGESON, Commissioner
JAY STOVALL, Commissioner

APPENDIX A

quantec

Date: July 15, 2004

To: Will Rosquist, Montana Public Service Commission
From: Hossein Haeri
Re: Assessment of Northwestern energy's Default Supply Procurement Plan

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The Montana Public Service Commission (Commission) has engaged Quantec, LLC, an energy consultancy in Portland, Oregon, to conduct an independent and impartial assessment of NorthWestern Energy's (NWE) methodology in preparing its 2004 Electric Default Supply Resource Procurement Plan (Plan) filed under Docket N2004.1.15. This report presents our findings.

Focus of Independent Assessment

Quantec was asked to focus on two primary aspects of the Plan:

1. Consistency with the resource planning objectives and requirements outlined in the Commission's Default Electric Supplier Procurement Guidelines (Guidelines)
2. Methodology, including the overall approach and NWE's specific application of the GenTrader® resource portfolio assessment model

In its solicitation, the Commission further made specific inquiries relating to several particular aspects of NWE's approach and methodology.
This document presents the results of our assessment based on our review of NWE's filings, including the Plan and the supporting documents; interview of NWE's representative for the purpose of obtaining further clarification of the Company's planning process and objectives, and interviews with a technical representative of Power Cost, Inc., which developed the GenTrader® model. In addition, we were supplied with third-party comments/data requests and the Company's responses.[2]

Commission Guidelines

The Commission Guidelines, which were adopted in 2003, specify several objectives for default supply utilities (DSU) in developing resource portfolios, including:

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[2] Third-party comments included filed comments from the American Association of Retired People (AARP), the Montana Consumer Counsel (MCC), the Montana Environmental Information Center (MEIC), the Natural Resources Defense Council (NRDC), PPL Montana, LLC (PPL-MT), and Rocky Mountain Power, Inc (RMP).

- Acquisition of adequate and reliable resources that are both low cost and provide stable rates
- Promotion of economic efficiency and environmental responsibility
- Maintenance of a balanced, optimized, and environmentally responsible portfolio of supply and DSM resources
- Dissemination of information to customers regarding the mix of resources, costs, prices, and environmental impacts

In addition to these general objectives, the Guidelines stipulate specific elements to be addressed by the DSU in the default supply portfolio resource needs assessment and analysis:

- Projections of customer counts and associated loads
- Types of resources including supply resources, demand-side resources, and distributed generation
- Disaggregating resource products into base load, heavy load, peak, dispatchable, curtailable, and other loads
- Resource diversity with respect to generation technologies and fuels

Responses to Commission Inquiries

A. An assessment of the overall transparency and coherence of NWE's resource planning and analysis approach, as documented by its Plan

Based on our assessment, the Plan is a rigorous effort on the part of NWE to comply with and follow the requirements of the Guidelines. It attempts to balance competing objectives of resource cost and risks; incorporates diversity into the resource portfolio with a mix of supply, demand-side, and renewable resources; and presents the information with sufficient transparency so that it is accessible to both industry professionals and the public.

In our judgment, the general methodology of the Plan, as described in Section 6, is reasonable and its choice and utilization of modeling tools are consistent with practices of several other major utilities. However, it is important to recognize that the resulting portfolio represents only a ***short-term*** resource portfolio and not a ***long-term*** plan. Moreover, its outcomes with respect to quantities of each resource are the results of a portfolio screening and ranking process, rather than a formal "optimized" solution, where such quantities are determined endogenously.

Given its short-term horizon, the Plan's consideration of alternative options and scenarios appears adequate in light of the existing resource contracts (542 MW PPL and QF) and policy constraints such as resource diversity, under which it was developed. In our view, the Plan does adequately address immediate peaking and reliability needs in the short-run.

Supplements to the Plan provide adequate information on its methodology but are lacking detail in several areas:

- ***Time horizon***. It is clearly noted that all resource portfolios are developed for the pre-2007 time frame. Yet the Plan does not clearly describe the basis for this choice of

horizon and how a longer-term plan (10-20 years) would differ from the analysis conducted.

- ***Modeling of Market Prices***. Although spot market prices and natural gas markets were appropriately modeled using GenTrader's Geometric Brownian Motion (GBM) probability distributions, the Plan does not provide adequate documentation of these probability distributions or the correlations between them. In addition, market data provided in the Plan are for 2005 only, yet it is implied that modeling was extended to 2006. The Plan does not offer a justification for the appropriateness of assuming 2005 prices for subsequent years.
- ***Treatment of Risk***. The Plan provides the "risk adjusted mean" value as the key parameter used to rank the candidate portfolios. The illustration provided on page 116 of the Plan indicates the calculation of the risk-adjusted mean is based on 70% of the stochastic mean and 30% of the 5th percentile portfolio cost. The Plan does not provide a justification for the choice of these parameters, nor does it explain why other risk metrics were not used.

B. An assessment of NWE's application of the PCI GenTrader® Monte Carlo planning and analysis model for reasonableness and consistency with the Commission's Default Electric Supplier Procurement Guidelines (ARM 38.5.8201-8227), particularly whether the model and NWE's use of it reasonably facilitates long-term resource planning consistent with the Commission's Guidelines and industry standards.

GenTrader® is an asset management and planning tool developed by Power Costs, Inc. (PCI). The model includes optimization routines for short-term asset management and, separately, long-term portfolio ranking routines. Currently, about 15 utilities use the model for planning purposes.

For short-term asset management and planning, the tool provides the capability to optimize operation, dispatch and maintenance of multiple plants, and complex resource portfolios, including generation, contracts, options, and ancillary services. For purposes of long-term portfolio development, GenTrader relies on a conventional "Monte Carlo" simulation technique to enable modeling of stochastic properties of factors such as fuel prices, spot market prices, availability, projected loads, and environmental risks. As discussed further below, NWE's application of GenTrader utilizes some, but not all, of these capabilities. The application of the model for long-term planning is complex and time-consuming. Indeed, based on the information provided by the vendor, each annual simulation requires approximately one-half hour of computational time for each portfolio scenario.

Formally, "optimization" refers to a family of planning models that rely on mathematical programming techniques to determine the optimal quantities of resources subject to their prices and other characteristics. Strictly speaking, GenTrader is not an "optimization" tool. Although it does contain optimization algorithms for asset management, it is not tailored for long-term portfolio optimization, hence its capabilities for long-term planning are restricted in that they do not allow for selecting an "optimal" mix of resources based on size, timing and cost.

We do not, however, object to the NWE's application of GenTrader on the basis of its shortcomings as an "optimization" model, for we do not think that this technique is necessarily appropriate for long-term portfolio planning for at least two important reasons. First, optimization models rely on complex algorithms, which are not easily accessible even to all planning professionals. Second, and more important, optimization models utilize deterministic or fixed, rather than stochastic (probabilistic), values for inputs such as prices. Stochastic modeling utilizes distributions of risk to model various outcomes, thereby explicitly integrating uncertainty into the planning process. Optimization models, though useful for short-term planning, are not able to simultaneously model risks and optimize a portfolio of resources.

We interpret the term "optimal" in the Guidelines not in the strictly formal sense of relying on an "optimization" technique. In our view, an "optimal" portfolio of resources can be developed through testing of multiple resource scenarios to determine the optimal levels (quantities).

In our view, the complexity of GenTrader limits the number of scenarios and portfolios that may be analyzed. Portfolio assessment could have been accomplished via simpler and more flexible means, such as the spreadsheet-based tools being used by several regional utilities such as Puget Sound Energy, Snohomish Co. PUD, and Eugene Water and Electric Board. Well-designed spreadsheet tools are advantageous in that they are more transparent, easier to use, and are more flexible. A spreadsheet model focused on portfolio development will integrate the dynamic nature of resources (e.g., size and existence of resources over time) and of the markets (e.g., risks associated with various markets and correlations between them). Flexibility is also key for policy-makers; a spreadsheet model can be easily adjusted for various scenarios and explicit consideration of random variables. Spreadsheet models may be used as a complement to short-term asset management tools to construct long-term portfolio scenarios.

Based on our review, it appears that GenTrader® is best suited for short-term planning and management of generating facilities; but it does provide the most of the necessary tools for longer-term portfolio assessment. GenTrader offers the necessary analytic capabilities for meeting some of the requirements of the Guidelines – specifically, section 38.5.8219 – which were not explicitly addressed in the Plan. These are as follows:

- ***Environmental Emissions***. There are industry-accepted calculations of emissions based on natural gas and coal generation, which are available for analyzing the tradeoffs between cost and emissions of key greenhouse gases such as CO_2, SO_X and NO_X. In this case, market purchases and bi-lateral contracts may be categorized by fuel type in order to estimate emissions.

- ***Environmental Risks***. The risk-mitigation guidelines specify that the Plan address the risks of environmental regulations and taxes. The Plan notes that, "until such laws and regulations are enacted and the impacts can be quantitatively estimated or measured, NWE is unable to model or otherwise estimate impacts to fuel and energy prices." We agree that there is uncertainty about the timing and level of either a tax or an emission cap. Arguably, such risks are to be assumed by suppliers and not NWE. Yet, we submit that explicit treatment of such risks is appropriate from a societal point of view.

- ***Transmission Constraints***. Import and export transmission constraints are considered in the Plan, but the Plan does not explain how this was accomplished. Therefore, it is

not clear whether the proposed portfolios were constructed subject to such constraints or were the potential congestion costs assigned to individual resources.

- ***Weather Risks***. Weather affects customer loads and the hydro system, which in turn will have an impact on regional market prices. Although it may not be necessary to directly assess weather risks, future modeling should consider incorporating the load and hydro system risks and the interactions between the two.
- ***Load Fluctuations***. Possible fluctuations in future loads and their associated risks are not explicitly taken into account. However, these risks may not produce an appreciable effect on the outcomes if historical evidence suggests that loads tend to be relatively stable. Moreover, peak loads were not forecast independently. Rather, they were "derived" from energy forecasts by applying 8,760 load shapes. The main problem with this approach is that it assumes that load shapes are constant over time. Although the Plan does discuss the effects of extreme weather and super peaks (p. 128), it is not clear whether and how this information was used in the Plan.

C. An assessment of NWE's approach to specifying exogenous variables input into the GenTrader planning and analysis model, including associated probability distributions, for reasonableness including but not limited to wholesale market price forecasts for electricity and natural gas, costs associated with alternative resources, operating characteristics and performance of alternative resources, transmission costs, ancillary services costs.

Key assumptions relating to electric spot market prices and gas prices were based on 2005 projections made by the Northwest Power and Conservation Council (NWPCC). Although the use of 2005 data for 2006 is unlikely to have a dramatic effect on the outcomes, it is important that future prices be modeled explicitly for longer- term planning.

The Plan's treatment of prices as exogenous appears an appropriate practice for a price-taker such as NWE. The modeling is based on NWPCC prices, which is a well-accepted source in the region. As stated above, spot market prices and natural gas markets were appropriately modeled within GenTrader using Geometric Brownian Motion (GBM) probability distributions. The main characteristic of the assumed GBM probability distribution is that variance in prices tends to increases over time, and they capture the "skewedness" associated with very high price outcomes.

Several of the variables in the model do not utilize a probability-based approach to assess associated uncertainty and risk such as coal prices, load forecasts, and hydro system output. A long-term plan must review and explicitly take into account the correlations among these factors.

D. An assessment of the scope of alternative resource portfolios analyzed by the utility for adequacy in the context of the goals and objectives of the Commission's Default Electric Supplier Procurement Guidelines

In general, the scope of alternative resources met the goal of diversifying the resource portfolio by including a balanced mix of wind, dispatchable resources, and DSM. Sizing of most resources such as base load, wind, and DSM, are, however, exogenously determined and did not result

from an, strictly speaking, integrated process. Nor is it explained why other renewables (e.g., biomass) were not considered in the plan

The Plan treats DSM as a "must take" option by first screening the technical potential of this resource for cost effectiveness using a total resource cost (TRC) test and subtracting the amount from the projected load requirements. In our view, this approach is not appropriate in an integrated planning process and can lead to sub-optimal results.

The average cost of DSM resources included in the Plan is estimated at $18 per MWh, which stands significantly below the cost of other resources. This average cost is clearly below the cost of other resources. A more appropriate alternative to pre-screening, which has been adopted by several other utilities in the Northwest and elsewhere, would be to first allocate total "market potential" into cost-based "bundles" of conservation resources and treat these bundles on equal terms as supply alternatives within the context of a portfolio assessment approach. In the analysis of DSM options, it is also necessary to fully take into account the relative risks associated with changes in avoided supply costs and performance of DSM measures. Arguably, the cost-based bundles of conservation resources may consist of measures that may or may not be individually cost-effective, yet the average cost of the bundle would be.

In our view, NWE's reliance on an RFP process to acquire particular resources to serve specific portfolio needs, such as dispatchable resources to provide enhanced reliability, ancillary services, wind integration and peak supplies are reasonable.

E. An assessment of the scope and reasonableness of scenario and sensitivity analyses performed by NWE to evaluate the performance of alternative resource portfolios and the risks associated with alternative resource acquisition paths.

The scenario and sensitivity analysis included some, but not all, of the relevant factors. As explained under section C, above, NWE appropriately considered spot market price risks but did not explicitly address how load and gas prices affect market electricity prices. The Plan considered eight scenarios for sensitivity and "stress" tests, as described in the Plan (page 190). These scenarios also included actual extreme market price conditions prevailing during 2000 and 2001.

In our view, these scenarios represent an adequate set of stress tests. However, it is not clear how the results of these test scenarios influenced the choice of portfolios or resource levels within them.

F. An assessment of NWE's determination of its resource portfolio needs and preferred resource acquisition paths in terms of whether such determinations are reasonably supported in light of the foregoing assessments; and Recommendations for improving NWE's methodological and analytical approach to portfolio modeling and risk analysis.

In our experience, the outcomes of utility resource planning processes are rarely the results of mathematical optimization alone. More often than not, they are "compromise" solutions subject to physical, contractual, and public policy constraints. They are also products of attempts to accommodate and to balance the often-conflicting interests of multiple stakeholders. NWE's plan is no exception.

In light of these considerations and the exceptions we have noted earlier notwithstanding, we find that NWE's approach is consistent with industry practices and results in a balanced short- to medium-term plan. In our view, NWE's general strategy for acquisition of the proposed resources is reasonably supported by the analysis provided in the Plan. Yet, as 2007 quickly approaches, there is a need for a long-term integrated resource planning process. This should

incorporate resource size, availability, timing, prices and their associated risks for at least a ten-year horizon. Results should reflect various tradeoffs such as resource diversity and costs, as well as the full set of risks associated with load uncertainty, price, performance, reliability, and environmental impacts.

CERTIFICATE OF SERVICE

I hereby certify that a copy of **WRITTEN COMMENTS IDENTIFYING CONCERNS REGARDING NORTHWESTERN ENERGY'S COMPLIANCE WITH A.R.M. 38.5.8201 - 8229** issued in N2004.1.15 in the matter of NorthWestern Energy's Default Electricity Supply Resource Procurement Plan has today been served on all parties listed on the Commission's most recent service list updated 4/16/04 by mailing a copy thereof to each party by first class mail, postage prepaid.

Date: August 17, 2004

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For The Commission

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For the purposes of the Alcohol Tax Incentive Program, the definition of "start building construction or remodeling" is:

"the awarding of a contract to a company to start and complete construction, alteration, repair, or remodeling of a structure to produce ethanol. The physical construction or remodeling of the building must start within 120 days of the day the contract was awarded."

For the purposes of the Alcohol Tax Incentive Program, the definition of "completion of 50% of building construction or remodeling" is:

"50% of the physical construction or remodeling of the structure to produce ethanol must be completed. This is to be verified by a third party of the department's choosing and paid for by the applicant."

For the purposes of the Alcohol Tax Incentive Program, the definition of "~~start building construction or remodeling~~ construction or remodel of facility" is:

"the awarding of a contract ~~to~~ for a company ~~to start and complete~~ and construction, alteration, repair, or remodeling of ~~a structure~~ facility ~~to~~ produce ethanol. The physical construction or remodeling of the ~~building must start within 120 days of the day the contract was awarded.~~ facility"

For the purposes of the Alcohol Tax Incentive Program, the definition of "completion of 50% of ~~building~~ facility construction or remodeling" is:

"50% of the physical construction or remodeling of the structure to produce ethanol must be completed. This is to be verified by a third party ~~of the~~ selected by department ~~choosing and~~ paid for by the applicant."

Elzey & McGee