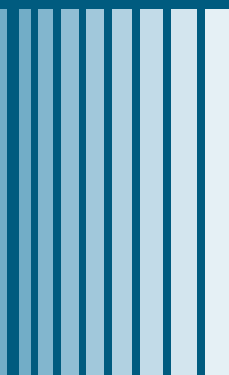


Renewables

REWARDS AND RISKS



A LOOK AT THE
IMPACTS OF
MONTANA'S
RENEWABLE
PORTFOLIO
STANDARD

A REPORT TO THE 64TH LEGISLATURE

ENERGY AND TELECOMMUNICATIONS INTERIM COMMITTEE 2013-2014 COMMITTEE MEMBERS

Before the close of each legislative session, the House and Senate leadership appoint lawmakers to interim committees. The members of the ETIC, like the members of most other interim committees, serve one 20-month term. Members who are reelected to the Legislature, subject to overall term limits and if appointed, may serve again on an interim committee. This information is included in order to comply with 2-15-155, MCA.

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This report is a summary of the work of the Energy and Telecommunications Interim Committee, specific to the ETIC's 2013-2014 renewable portfolio standard review as outlined in the ETIC's 2013-2014 work plan and Senate Joint Resolution No. 6. Members received additional information and public testimony on the subject, and this report is an effort to highlight key information and the processes followed by the ETIC in reaching its conclusions. To review additional information, including written minutes, exhibits, and audio minutes, visit the ETIC website:

<http://leg.mt.gov/etic>

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PREFACE

In the past decade, one of the most significant new policies affecting the energy industry in the United States has involved state initiatives requiring electric utilities and other retail electric providers to supply a specified minimum amount of customer load with electricity from renewable resources.

Renewable portfolio standard requirements or renewable portfolio goals have been established in 37 states.¹ The Legislature enacted the Montana Renewable Power Production and Rural Economic Development Act in 2005, with the first compliance requirements beginning in 2008.

The 2013 Montana Legislature passed and approved Senate Joint Resolution No. 6. The resolution, included in Appendix A, requested that the appropriate interim committee of the Legislature spend time analyzing the Montana Renewable Power Production and Rural Economic Development Act, focusing on the economic impacts of the renewable portfolio standard (RPS), the environmental impacts of the standard, and the impacts the RPS has had on Montana consumers. In a poll of legislators to gauge interest in the study,

SJ 6 ranked third among 17 study resolutions.² The Legislative Council assigned the study to the Energy and Telecommunications Interim Committee (ETIC). The information included in this report provides an overview of the ETIC's investigation of mechanisms related to the standard, the impact of the standard on utility and supplier portfolios, and customer impacts.

The ETIC worked closely with the public and stakeholders to design this report discussing Montana's RPS. Public comment was sought on each portion of the study over the interim. After completing the interim study tasks as outlined in Appendix B, ETIC members agreed to issue a final report on the subject that includes a series of findings.

¹ See <http://www.epa.gov/lmop/publications-tools/funding-guide/state-resources/index.html>.

² *The Interim* newsletter, <http://leg.mt.gov/content/Publications/Interim-Newsletter/2013-Interim-Newsletters/2013/June/Poll%20Results.pdf>.

FINDINGS

General findings

- The RPS should remain static at the requirement of 15 percent renewable energy generation by 2015. The standard should not be reduced or increased.
- The ETIC notes that the work in SJ 6 does not represent a discussion of fossil fuel generation versus renewable generation.
- The committee recognizes ambiguity and difficulty in compliance with the existing community renewable energy project (CREP) standard which needs to be examined.

Economic impact findings

- The RPS has contributed to some, new electrical generation in Montana. The RPS has had a positive economic impact on some rural communities during the construction process and beyond. It has increased the tax base in some counties.
- The RPS as it exists, although beneficial, has not led to the replacement of existing power generation facilities. Environmental regulations imposed on existing energy generation facilities will continue to offer opportunities for new renewable energy generation that will fall into the existing requirements of the RPS.

Environmental impact findings

- There was disagreement on the committee about the RPS's contribution to air quality. Some members feel strongly that the use of renewable generation offsets the use of fossil fuel-based energy and contributes to cleaner air; other members feel strongly that the review of air quality impacts of renewable generation is inconclusive or that the air quality effects of renewable generation are negligible.
- To meet the RPS most utilities have added wind generation to their portfolios.
- The primary environmental disadvantages specific to wind generation are mostly increased bird and bat mortality.
- The primary environmental benefit of wind generation is that it involves zero direct emissions of air pollutants.

Consumer impact findings

According to survey responses provided by utilities and an analysis by the Montana Consumer Counsel, the RPS has had a negligible impact on ratepayers in Montana. The ETIC had difficulty quantifying integration costs and other variables. The ETIC encourages the PSC and regulated utilities to better account for the costs and benefits of Montana's RPS and to provide for greater transparency.

INTRODUCTION

Why an RPS?

The Renewable Power Production and Rural Economic Development Act, typically referred to as "Montana's RPS" or "the standard," was brought to the Montana Legislature as Senate Bill No. 415 (Chapter 457, Laws 2005), as a request from former, and at the time newly elected, governor Brian Schweitzer. The proposal aimed to ensure that renewable resources would supply an increased share of Montana's electricity and to encourage the view that renewable energy development and use are welcome in Montana.

Enactment of the legislation reflected a policy shift from requiring utilities or other suppliers to simply obtain sufficient electricity to meet customer loads at the best price to instead requiring that certain types and amounts of electrical generation be developed or purchased by utilities and suppliers serving Montana customers. As oil and natural gas prices increased at the time, interest grew in renewable energy and the supply security, environmental benefits, and economic development goals that accompanied it.

Although renewable energy had been used for many

years in Montana, proponents of the legislation, as illustrated in the title of the act, argued that additional renewable resources were needed in Montana to diversify electricity supply, to reduce greenhouse gases and other air emissions to improve public health, and to support local renewable projects that would bring jobs and revenue to Montana's economy.³ Montana's RPS includes specific procurement requirements to stimulate rural economic development. In addition, public utilities must enter into contracts that include a preference for Montana workers.

Proponents said that the bill included mechanisms to hold down costs for Montana families and businesses that pay monthly electric bills. Public utilities could seek preapproval from the Montana Public Service Commission (PSC) to protect customers from excessive costs and to protect utilities from the risk of disallowance of the costs of meeting the renewable standard. The legislation also included specific cost caps for the acquisition of renewable resources by public utilities. Utilities would have the ability to petition the PSC for a short-term waiver from full compliance. The cost caps would limit the additional cost utilities must pay for renewable energy and allow cost recovery from ratepayers for contracts preapproved by the PSC.

Testimony in favor of the bill noted that one principal barrier facing wind development in Montana had been the absence of established markets. "To remedy this problem, 18 other states have adopted renewable energy standards requiring utilities to incorporate a certain percentage of renewable power into the mix by a certain date."⁴ A look at the RPS requirements in other western states, prepared for the ETIC in September 2013, is included in Appendix C.

Utilities largely opposed the legislation. Montana's two largest utilities, NorthWestern Energy and Montana-Dakota Utilities Co. (MDU), however, had differing concerns.

At the time, NorthWestern Energy (formerly Montana Power Company) had sold its generating facilities following electric utility deregulation in Montana.

³ For the text of testimony in support and in opposition, see the committee minutes of Senate Bill No. 415 during the 2005 legislative session.

⁴ Testimony provided by the Montana Environmental Information Center on April 11, 2005, before the House Federal Relations Energy and Telecommunications Committee of the Montana Legislature.

Montana-Dakota did not deregulate because of an exemption included in the 1997 deregulation legislation. Because MDU owned its own generation, the utility argued that renewable energy would be competing against the cost of running MDU's existing generation stations, which were quite inexpensive. In the NorthWestern Energy portfolio, on the other hand, renewables would be competing, at the time, against higher-priced wholesale market power. NorthWestern Energy raised specific concerns about community renewable energy project requirements (CREPs), or requirements for the integration of smaller, locally owned renewable resources. Concerns about arranging sufficient regulating, or load-following, resources were also voiced by utilities. Additional reliability concerns, mostly specific to wind, were raised.

Opponents largely argued against a mandate or a static requirement from year to year, noting that tax breaks would encourage more development as opposed to an RPS. The potential cost of mandating that certain resources be included in a utility portfolio was a point repeatedly raised. Opponents felt that "if it didn't cost more, a mandate wouldn't be needed."⁵

With the passage of SB 415, a number of legislators in favor of the legislation noted that an RPS could create jobs, reduce reliance on foreign oil and gas, diversify portfolios, provide environmental benefits, and conserve fossil resources for the future. They stated that although implementation of the standard might be painful to utilities at the time, down the road an RPS would provide tangible benefits to Montana citizens.

Who meets the Montana standard?

The bill, as originally passed and approved, required public utilities to obtain a percentage of their retail customer sales from renewable resources. Starting in 2008, a public utility was required to acquire renewable energy equal to 5 percent of its retail sales of electricity in Montana. That percentage bumped up to 10 percent in 2010 and to 15 percent beginning in 2015. If a utility or competitive supplier exceeded the standard in any year, it could carry forward the amount by which the standard was exceeded to comply with

⁵ Testimony provided by the Montana Large Customer Group on April 11, 2005, before the House Federal Relations Energy and Telecommunications Committee of the Montana Legislature.



the standard in either or both of the two subsequent compliance years.

Before diving into the details, it is important to review what entities are subject to Montana's RPS. The original legislation captured only public utilities and defined those utilities to include any electric utility regulated by the PSC on January 1, 2005, and its successors or assignees. Rural electric cooperatives were specifically exempted from the bill, with one exception: A cooperative that has 5,000 or more customers is responsible for implementing and enforcing a renewable energy standard that "recognizes the intent of the legislature to encourage new renewable energy production and rural economic development."⁶

In 2007, the Montana Legislature passed and approved House Bill No. 681 (Chapter 246, Laws 2007), which, in addition to public utilities, required competitive electricity suppliers to meet the standard. Competitive electricity suppliers include any person, corporation, or governmental entity that is selling electricity to small customers at retail rates in the state of Montana and that is not a public utility or cooperative. In 2009, the Legislature once again revisited competitive electricity suppliers. With passage of House Bill No. 179 (Chapter 118, Laws 2009), governmental entities that sell electricity produced only by facilities generating fewer than 250 kilowatts and that were in operation prior to 1990 were exempted from the RPS.

In 2013, the Montana Legislature passed and approved two additional pieces of legislation that change what entities are subject to Montana's RPS. Senate Bill No.

164 (Chapter 73, Laws 2013) exempted public utilities serving 50 or fewer retail customers in Montana on December 31, 2012, from Montana's RPS. In addition, Senate Bill No. 327 (Chapter 197, Laws 2013) exempted competitive electricity suppliers serving 4 or fewer customers from Montana's RPS. Appendix D shows the evolution of the entities subject to the standard from 2008 through 2012. The impact of the 2013 legislation on the entities subject to the RPS is also noted throughout this document.

SB 164 exempted Avista and Black Hills from the RPS. Since 2008, Avista has not met the RPS requirements in Montana. The utility instead has paid a fine for not procuring the necessary renewable energy credits (RECs). Montana's RPS requires a public utility or competitive electricity supplier to pay an administrative penalty, assessed by the commission, of \$10 for each megawatt-hour of RECs that the public utility or competitive electricity supplier fails to procure. A public utility may not recover the penalty in electricity rates, and money generated from the penalties is provided to the Montana Low Income Energy Assistance Program (LIEAP). Since 2008, Avista has paid a total of \$1,403 in fines. In addition, SB 327 exempted ConocoPhillips from the Montana RPS.

Electric City Power (ECP), the electric utility arm of the City of Great Falls, is no longer operational. ECP, however, previously was subject to the RPS. In 2008, ECP was fined roughly \$23,000 for failure to meet Montana's RPS, and in 2010, ECP faced fines of \$99,120 for failure to purchase RECs. In 2009 and 2012, ECP met the standard by acquiring credits from the Klondike III wind farm in Sherman County, Oregon.

⁶ 69-3-2008, MCA.



ETIC members visit a wind farm in Wheatland County in September 2013.

The standard was met in 2011 with credits from the Happy Jack wind farm in Laramie County, Wyoming. In December 2013, the Great Falls City Commission repealed ordinances that had been in place to establish and operate an electric utility—bringing an end to the city’s experiment as an electricity supplier.

As a result of these legislative changes and industry changes, in 2014 two utilities (MDU and NorthWestern Energy) and one competitive electricity supplier (PPL Treasure State) are subject to Montana’s RPS.

What is renewable?

To meet the standard, utilities and competitive electricity suppliers are required to procure renewable energy from renewable resources along with RECs. Before entering into a long-term contract to purchase

RECs, with or without the associated electricity, a utility must petition the PSC to certify that the RECs were produced by an eligible renewable resource. RECs are discussed in more detail later in the economic impacts section of this report.

The RPS also includes specific requirements for utilities to use CREPs, which were defined, originally, as renewable energy projects less than or equal to 5 megawatts in which local owners had a controlling interest. Beginning in 2010, public utilities would have been required to purchase both the RECs and the electricity from CREPs totaling at least 50 megawatts in nameplate capacity. Beginning in 2015, that would increase to at least 75 megawatts in nameplate capacity.

In 2009, the definition of a CREP was altered by the passage of House Bill No. 207 (Chapter 30, Laws 2009), which increased the size of CREPs from 5 megawatts to 25 megawatts. House Bill No. 208 (Chapter 31, Laws 2009) extended the deadline for meeting the CREP requirement from 2010 to 2012. The third change was included in House Bill No. 343 (Chapter 232, Laws 2009), which allowed public utilities to own CREPs.

What is determined to be a renewable resource under Montana law has also changed over time. Originally, the legislation included facilities either located within Montana or delivering electricity from another state into Montana that commenced commercial operation after January 1, 2005. Facilities must produce electricity from wind; solar; geothermal; water power, in the case of a hydroelectric project that does not require a new appropriation, diversion, or impoundment of water and that has a nameplate rating of 10 megawatts or less; landfill or farm-based methane gas; gas produced during the treatment of wastewater; low-emission, nontoxic biomass; hydrogen derived from any of the sources noted above for use in fuel cells; and the renewable energy fraction from the sources identified above of electricity production from a multiple-fuel process with fossil fuels.

In 2013, the Legislature also revised the definition of a renewable resource. Senate Bill No. 45 (Chapter 361, Laws 2013) was passed and approved, allowing expansions of an existing hydroelectric project that commence construction and increase existing generation capacity after April 2013 to be included in the RPS. Senate Bill No. 106 (Chapter 259, Laws 2013)

was passed and approved, adding flywheel storage, hydroelectric pumped storage, and batteries to the mix. Senate Bill No. 325 (Chapter 328, Laws 2013) made one additional change, allowing wood pieces that have been treated with chemical preservatives, such as creosote, pentachlorophenol, or copper-chrome arsenic, and that are used at a facility that has a nameplate capacity of 5 megawatts or less to be included in Montana’s RPS.

Figure 1 shows the renewable resources used by public utilities and competitive electricity suppliers to meet the Montana RPS requirements. This report examines the generation resources individually and analyzes their relationship to the specific requirements of

Montana’s RPS.

The definition of a renewable resource first changed in 2009 with the passage of House Bill No. 343 (Chapter 232, Laws 2009). The legislation made a number of changes in the administration of the standard and also revisited the definition of a renewable resource. The legislation allows up to 15 megawatts installed at an existing reservoir or on an existing irrigation system that did not have hydroelectric generation as of April 16, 2009, and compressed air derived from renewable resources and forced into an underground storage reservoir and later released, heated, and passed through a turbine generator to be considered a renewable resource for meeting the RPS.

Eligible Renewable Resources and Community Renewable Energy Projects (CREPs)							
Project	Type	Size (MW)	Location	Owner	Certified	CREP	Qualifying Facility (QF)
Diamond Willow I	Wind	19.5	Fallon County, MT	MDU	2007	Yes	No
Happy Jack	Wind	30	Laramie County, WY	Duke Energy	2009	No	No
Judith Gap	Wind	135	Wheatland County, MT	Invenergy	2009	No	No
Wastewater Treatment Plant	Cogen	.35	Great Falls, MT	City of Great Falls	2009	No	No
Turnbull	Hydro	13	Teton County, MT	Turnbull Hydro, LLC	2010	Yes	No
Klondike III	Wind	200	Sherman County, OR	Klondike Wind Power III, LLC	2010	No	No
Gordon Butte	Wind	9.6	Meagher County, MT	Gordon Butte Wind	2011	Yes	Yes
Spion Kop	Wind	40	Judith Basin County, MT		2012	No	No
Silver Sage	Wind	42	Laramie County, WY	Silver Sage Windpower	2012	No	No
Cedar Hills	Wind	19.5	Bowman County, ND	MDU	2012	Yes	No
Lower South Fork	Hydro	.455	Carbon County, MT	Lower South Fork Hydro	2012	Yes	Yes
Diamond Willow II	Wind	10.5	Fallon County, MT	MDU	2013	Yes	No
Musselshell 2	Wind	10	Wheatland County, MT	Musselshell Wind Project	2013	No	Yes
Musselshell 1	Wind	10	Wheatland County, MT	Musselshell Wind Project	2013	No	Yes
Flint Creek	Hydro	2	Granite County, MT	Flint Creek Hydroelectric	2013	Yes	Yes

Figure 1. Source: Montana Public Service Commission.

SURVEYS

In September 2013, the ETIC approved two surveys to be sent to energy producers and suppliers as part of its study of the RPS. One survey was provided to renewable energy generators certified as resources that can be used to meet Montana's RPS. The second survey was provided to utilities and electricity suppliers required to meet Montana's RPS. The surveys were sent out electronically in September 2013, and most were returned by early January 2014. As directed by SJ 6, the study and associated survey focus on the economic impacts of the RPS, the environmental benefits of the standard, and the impacts the standard has had on Montana consumers.

The first survey was sent to 13 renewable generators. These generators have all been certified as eligible renewable resources or CREPs by the Montana PSC. With the exception of 3 renewable generators located out of state, all of the renewable generators provided a response to the ETIC. However, whereas some entities answered all of the questions posed by the committee, most chose to only answer certain questions.

The second survey was sent to eight utilities or competitive electricity suppliers that have been in the past, or are currently, subject to the requirements of Montana's RPS. Only one competitive electricity supplier did not respond to the survey. The other seven entities responded at least in part.

The surveys offer much information from the perspectives of both renewable developers and the utilities and suppliers required to meet the standard. The survey results are included in Appendix E. With the help of the legislative communications office, staff also has developed an interactive map, so legislators and the public can view the survey results. To view the map, visit the committee's website at <http://leg.mt.gov/etic>. Click on a location to view those survey results. For example, clicking on Butte makes available the survey response provided by NorthWestern Energy. Survey responses are provided throughout this document to provide a snapshot of the responses provided by those entities closest to the requirement.

ECONOMIC IMPACTS OF MONTANA'S RPS

Montana's RPS has created jobs, notably during construction, and has contributed to an increase in the tax base of a number of Montana counties. As discussed above, the RPS has contributed to new electrical generation in Montana. SJ 6 set out the parameters for the ETIC to analyze in its review of the economic impacts of the RPS. Those parameters include:

- the standard's contribution to new electrical generation in Montana;
- the short-term and long-term jobs created by the standard;
- the industries working in Montana due in part to the standard;
- the use of renewable energy credits in Montana by the renewable energy industry; and

- how the standard has been used to leverage Montana's competitive advantages in developing new electric transmission.

Appendix F provides an overview of the taxes paid by the generators used to meet the Montana standard. Land leases are also paid to property owners, including the state. Facility impact fees for local government units and school districts in Montana (15-24-3004, MCA) are also paid by some wind farms.

In addition to property taxes, renewable generation, like other electric generation in Montana, in some cases also pays an electrical energy license tax and a wholesale energy transaction tax. An electrical energy producer's tax also is imposed on each person or organization engaged in generating, manufacturing, or producing electrical energy in Montana (15-51-101, MCA). The tax of \$0.0002 per kilowatt-hour (or \$0.20 per megawatt-hour) is levied against all electrical energy produced within the state. A wholesale energy

Eligible Renewable Resources and Community Renewable Energy Projects Certified by the PSC in Montana

Economic Impacts

Project	Project Investment	Construction Jobs (Montana)	Full-time Permanent Jobs (Montana)
Judith Gap	\$184 million	120 ¹	11
Diamond Willow I	\$39.4 million	50	1
Diamond Willow II	\$25.4 million	25	1
Gordon Butte	\$23 million	50	3
Spion Kop	\$84 million	100 ²	5
Musselshell I & II	\$48 million	100	3
Flint Creek	\$1 million	5	.5
Lower South Fork	\$4 million	12	1
Turnbull	\$13.8 million	20	1
Total	\$423 million	482	26.5

Figure 2. Source: ETIC surveys; information provided by facilities. For notes 1 and 2, see the “Figure Notes” section on page 33.

transaction tax is imposed on electricity transmitted within the state (15-72-104, MCA). The tax is imposed at a rate of 0.015 cent per kilowatt-hour of electricity transmitted by a transmission services provider in the state. The revenue from both taxes is paid to the general fund. Those taxes are considered confidential by the Montana Department of Revenue. Some producers, however, shared that information, which is included in Appendix F.

Figure 2 shows the capital investments made by the eligible renewable resources and CREPs certified by the PSC and used to meet the Montana standard. The construction jobs and full-time permanent jobs created are also noted.

As an example of taxes paid, the Judith Gap Wind Energy Center pays about \$1.5 million to Wheatland County in yearly property taxes and more than \$400,000 in annual lease payments to landowners. Judith Gap provides average annual revenue to the Common School Trust in the amount of \$55,000.⁷ Judith Gap also has paid about \$2.4 million in impact fees in Wheatland County. The money is used for road maintenance and other county services. The county has put the money in a trust fund to assist with community development. The interest is awarded in the form of community grants. “As you look around town, keep in mind wind is good for rural counties,”

Wheatland County commissioner Richard Moe told the ETIC in September 2013 during a meeting held in Harlowton.

In another example, Diamond Willow Wind I and II in Fallon County paid about \$167,000 in property taxes, \$11,000 in wholesale energy transaction taxes, and \$15,000 in electrical energy transaction taxes.

The ETIC in November 2013 also requested information from the Department of Revenue on taxes paid by wind facilities and coal-fired generation plants. An analysis prepared by the Department of Revenue is included in Appendix G. The department notes that the taxes paid by the owner of a power plant would depend on the plant’s location, ownership, and financing for the facility. A range of taxes per megawatt-hour of electricity produced by hypothetical new wind facilities and coal-fired power plants is included in the analysis. According to the department’s analysis: “Applying the same assumptions to both power plants, the coal plant would generally pay about \$3 per megawatt-hour more in state and local taxes.”

Survey says . . .

Of the 10 generators that responded to the ETIC survey, half indicated that the RPS was a reason for construction. The Judith Gap Wind Energy Center, the largest generator used to meet the standard, did not respond to the question. Discussions continue about

⁷ See https://dnrc.mt.gov/Trust/Reports/AnnualReport/2013_TLMDAnnualReport.pdf.

Economic Impact of Montana RPS Wind Farms Using NREL Formula

Project	Capacity (megawatts)	Construction Jobs	O&M Jobs	Lease Payments	Property Tax Revenue
Judith Gap	135	95-135	8-11	\$472,500-\$675,000	\$675,000-\$1,350,000
Diamond Willow I & II	30	21-30	2	\$105,000-\$150,000	\$150,000-\$300,000
Gordon Butte	9.6	7-10	.5-1	\$33,600-\$48,000	\$48,000-\$96,000
Spion Kop	40	28-40	2-3	\$140,000-\$200,000	\$200,000-\$400,000
Musselshell I & II	20	14-20	1-2	\$70,000-\$100,000	\$100,000-\$200,000
Two Dot	9.72	7-10	.5-1	\$34,020-\$48,600	\$48,600-\$97,200
Lower Total		172	14	\$855,120	\$1,221,600
Upper Total		245	20	\$1,221,600	\$2,443,200

Figure 3. Source: Department of Commerce.

the reasons for the project. NorthWestern Energy had signed a contract to purchase power from Judith Gap before the enactment of Montana’s RPS. However, RPS discussions had been ongoing in the state for years. Regardless, the project is now being used to meet Montana’s RPS.

The wind farms used by MDU to meet Montana’s RPS—Diamond Willow Wind I and II and Cedar Hills—were not constructed because of the RPS, according to the company’s response to the survey. MDU noted: “MDU’s addition of 57 MW of renewable generation resources to its portfolio was not made solely in response to the Montana RPS but in conjunction with the company’s integrated resource plan, which included the costs and consideration of other forms of generation. The standard probably accelerated the acquisition of renewable generation resources.”

Spion Kop and Musselshell Wind I and II both indicated that the RPS contributed to their decisions to build. Musselshell Wind was awarded a 20-year power purchase agreement by NorthWestern Energy to cover a portion of its RPS requirements. When NorthWestern Energy sought approval from the PSC to include Spion Kop as an electric resource, the company noted that without Spion Kop, NorthWestern would fail to comply with the 10 percent RPS requirement in 2013 and 2014. Spion Kop would help the utility meet both the 10 percent requirement and the 15 percent standard, which takes effect in 2015.⁸

The three hydroelectric facilities used by NorthWestern to meet the standard (all of which are CREPs) indicated that the RPS contributed to their construction. Turnbull, a 13-megawatt hydroelectric facility in Teton County, was the most outspoken, noting, “We are grateful to the Legislature for passing the program and are hopeful it will continue to allow rural communities to develop small hydro resources associated with irrigation systems.”

An economic model

In an effort to extrapolate the economic impact of Montana’s RPS, the Department of Commerce’s Business Resources Division used RPS resources and a model provided by the National Renewable Energy Laboratory (NREL) to evaluate the contributions of RPS-certified wind generation in Montana. In 2012, NREL provided estimations for examining the impacts of 100 megawatts of wind. In general, 100 megawatts of wind translated into 70 to 100 construction jobs, 6 to 8 operations and maintenance jobs, \$350,000 to \$500,000 in lease payments, and \$500,000 to \$1 million in local property taxes, based on the NREL model.

A direct comparison between NREL’s estimated impact formula and Judith Gap’s actual job and revenue numbers shows that the NREL calculation is conservative compared to the actual contributions the 135-megawatt Judith Gap has made in Wheatland County. As discussed, Judith Gap indicated 120 to 150 construction jobs, 11 full-time maintenance jobs, \$400,000 in lease payments, and \$1.5 million in property taxes. Figure 3 provides a look at the

⁸ Montana Public Service Commission, “Final Order in the Matter of Application for Approval to Purchase and Operate the Spion Kop Wind Project,” Docket No. D2011.5.41, Order No. 71591, page 4.

economic impacts of wind facilities used to meet the Montana RPS derived from the NREL formula. It also includes a new 9.7-megawatt wind facility in Two Dot, which is expected to be used as an RPS resource. A more detailed look at the Department of Commerce analysis, including all completed wind projects in Montana, is included in Appendix H.

Economic driver

The title of Montana's RPS, the Renewable Power Production and Rural Economic Development Act, clearly identifies one of its goals as boosting the economy of rural communities in Montana. The RPS is intended to stimulate the economy in communities where renewable projects are located. "The possibility for economic development has been particularly salient in rural areas of the country where new investment, earnings growth, and employment opportunities have, in many cases, otherwise trended downward for some time."⁹ NREL continues to develop models to address questions about investments in renewable energy projects and their ability to spur economic growth and employment over the long term.

NREL joined the Economic Research Service (an agency of the U.S. Department of Agriculture) and the Lawrence Berkeley National Laboratory to complete a study that quantifies the annual impact on county-level employment and personal income resulting from wind power development in 130 counties across 12 states. The study included most of the Rocky Mountain region but focused largely on impacts from 2000 to 2008, prior to the uptick in Montana's wind industry. On average, the study noted that wind power installations resulted in an increase in total county-level personal income of about \$11,000 per megawatt. "On average, the impact of these same wind power installations on total county-level employment was .5 jobs per megawatt. The median increase in county-level employment was estimated at .4 percent."¹⁰

In many states an RPS also sets the stage to support renewable energy industries. About 550 facilities in 42 states manufacture components for the wind industry, according to the American Wind Energy Association (AWEA). Eight of the 10 largest wind

⁹ "The Impact of Wind Development on County-Level Income and Employment: A Review of Methods and an Empirical Analysis," U.S. Department of Energy, Energy Efficiency and Renewable Energy, 2012.

¹⁰ Ibid.



Members of the ETIC look at the Judith Gap Wind Energy Center in September 2013.

turbine manufacturing firms have facilities in the U.S., and in 2011, the domestically sourced content of U.S. wind projects was estimated at 67 percent, up from 35 percent in 2006.¹¹ According to the AWEA, one facility located in Montana supplies wind tools. In 2011, Transcat acquired the assets of Wind Turbine Tools Inc. in Lincoln. It is an alternative energy tool supplier. A number of businesses support renewable energy projects throughout Montana, including more than 40 small-scale renewable energy dealers and installers, according to the Montana Renewable Energy Association.

Central Montana wins

Members of the ETIC traveled to the Judith Gap Wind Energy Center in September 2013 to learn firsthand about the impacts of the facility on Wheatland County.

Company representatives reported that the Judith Gap wind farm has resulted in more than \$28 million

¹¹ "2011 Wind Technologies Market Report," U.S. Department of Energy, Energy Efficiency and Renewable Energy, August 2012.

of Montana tax and landowner royalty payments since the plant began operation in 2005. The Montana Department of Revenue showed that in 2010 the Judith Gap wind farm paid \$1.4 million in property taxes. By 2015, a new and expanded industry tax credit that was granted to the project will expire and annual Montana property tax payments will increase to about \$2.3 million.

The environmental assessments for the project estimated more than \$1 million in local taxes and \$660,000 in state taxes—for the first year. School trust lands also benefited from a one-time installation fee of \$1,000 per megawatt, or about \$20,000 for the 13 turbines on state land. The company now pays an estimated annual rent of about \$55,000.

When construction of Montana's then-largest wind farm began in 2005, contractors and subcontractors set out to dig trenches and pour the foundations for 90 turbines. The project investment was estimated at \$184 million, and many of those millions are estimated to have gone to central Montana counties. At the peak of construction, the Judith Gap wind farm was estimated to employ about 120 workers. All of those workers needed somewhere to eat and somewhere to live. Local newspapers reported workers staying in Lewistown, Judith Gap, Harlowton, Big Timber, and even Billings.

The bulk oil dealer in Wheatland County was one of the contractors on that project. Cement trucks rolled in from Lewistown. The hotels and motels were booked, and vacant houses were rented. During the ETIC's September 2013 visit to Wheatland County, a panel that included the Harlowton mayor, a county commissioner, and a business representative voiced support for the RPS and noted the impacts previously discussed.

At Judith Gap, Brian Goddard, operations and maintenance manager of the wind farm, indicated that 56 different vendors within 50 miles of the wind farm and more than 180 vendors within 100 miles support the operation. Examples include \$80,000 to a farm implement business, another \$80,000 in oil to local vendors, and hefty power bills to the local rural electric cooperative. Although the wind farm generates power, it still requires a great deal of electricity to operate. Goddard said his motto is to "always use the local

vendor."

NorthWestern Energy bought its first large-scale wind farm in Montana, the 40-megawatt Spion Kop Wind Project near Raynesford, and began commercial operation in November 2012. Spion Kop, built by Colorado-based Compass Wind, helps NorthWestern Energy meet its RPS obligations. The project investment is about \$84 million. Spion Kop was responsible for \$255,684 in 2013 property taxes paid in Judith Basin County. NorthWestern is also paying a facility impact fee in the county, which includes \$209,753 in 2013 and \$104,876 in 2014 and 2015. NorthWestern also donated \$10,000 to the Geysers school for the purchase of iPads.

Renewable energy credits

The 2011 Montana Legislature passed and approved Senate Bill No. 7, which created a new form of reporting on renewable energy certificates or credits, also known as RECs, in Montana. The law requires public utilities, rural electric cooperatives, competitive electricity suppliers, and owners of a renewable electrical generation facility to file a report with the Department of Revenue each interim concerning the purchase or sale of RECs within Montana. The ETIC reviews the reports and, if necessary, submits recommendations regarding the use of RECs in Montana. The 2013 Legislature approved SB 52, which clarified the entities required to report credits. In 2014, only certain public utilities, cooperatives, competitive electricity suppliers, and electrical generators were required to report the purchase of renewable energy credits. The first REC reports were due in March 2013. The 2014 reports are included in Appendix I.

Utilities and competitive suppliers meet Montana's RPS by entering into long-term purchase contracts for electricity bundled with RECs, by purchasing the RECs separately, or by a combination of both. For utilities operating in Montana within the geographic boundaries of the Western Electricity Coordinating Council, all RECs used to comply with the standard are tracked and verified through the Western Renewable Energy Generation Information System (WREGIS). For public utilities operating in Montana within the geographic boundaries of the Midwest Reliability Organization, all RECs used to comply with the standard must be tracked and verified through the

Midwest Renewable Energy Tracking System (MRETS). Montana also allows two years of carry-over for the amount by which a utility or supplier exceeds the standard.

One REC is equivalent to 1 megawatt-hour of electricity generation. A renewable energy credit can be traded for cash, and the value of credits fluctuates with market conditions. Basically, a REC is a form of renewable energy currency. Renewable generators create two products: electricity and RECs. Those products can be sold together or separately, referred to as “bundled” or “unbundled.” When electrons enter the grid, “green” electrons can’t be tracked. Renewable generators, however, produce one REC for every megawatt-hour of electricity placed on the grid. If the electricity and its associated REC are sold to different buyers, the electricity portion is no longer considered renewable. The REC conveys the renewable attributes of the electricity, not the electricity itself. The REC is intended to embody the environmental benefits, such as a reduction in the need for fossil fuel-based energy, to the owner of the REC.

The price of a REC depends on different factors: the technology used, the year it was generated, the volume of RECs purchased, the region where a REC is located, and whether the REC is purchased to meet a requirement—like an RPS. The price is largely a matter of negotiation between the buyer and the seller. The demand is set by voluntary green power purchases and state mandates, like an RPS, and the price is determined by the supply. REC prices can be difficult to determine, especially using publicly available data. Maryland, Pennsylvania, and the District of Columbia specifically require REC prices to be disclosed.

Renewable energy credit reporting in Montana is intended to provide transparency. The Legislature also recognized that REC transactions are often negotiated and potentially proprietary transactions. According to Montana law (69-3-2010, MCA): “If a public utility, a competitive electricity supplier, a cooperative utility, or an owner of a renewable electrical generation facility required to file the report pursuant to 69-3-2009 buys or sells a renewable energy credit in a market where the price of a renewable energy credit is not publicly disclosed, the public utility, competitive electricity supplier, cooperative utility, or owner of a renewable electrical generation facility is not required to disclose the price.”

Because in most markets the price is not disclosed, limited opportunity exists for Montana to gather price information specific to a REC that is bought or sold in the state. However, the entities that completed the REC reports in many cases disclosed the price. Other entities did not disclose the price, citing the use of WREGIS and MRETS. These two systems are for tracking and verifying RECS, but they, arguably, are not a platform that makes markets or facilitates the sale of RECs.

The 2012 REC report filed by NorthWestern Energy indicates that credits were purchased as both bundled and unbundled products. The unbundled price listed for RECs purchased was \$12.50. The bundled price for energy and RECs (with no value assigned specifically to the REC) varied from \$24.63 per megawatt-hour to \$68.21 per megawatt-hour. MDU indicated that in 2012 it sold \$80,000 worth of electric energy credits in unbundled transactions. Additional information about those sales was not provided.

Black Hills provided information that it purchased bundled RECs and sold unbundled RECs. The purchase price for the bundled RECs varied from \$43.90 presumably per megawatt-hour to \$51.76 per megawatt-hour. Unbundled RECs were sold for \$1.45. Because Avista paid a fine as opposed to meeting the RPS, the utility did not acquire RECs and filed a report indicating that no credits were purchased. PPL Treasure State filed a report indicating that it purchased 40,000 unbundled RECs. The price of the RECs was not publicly disclosed, in accordance with 69-3-2010, MCA. PPL Treasure State indicated that it would not disclose the price of the RECs. In filings with the PSC, PPL Treasure State stated that it was required to purchase 20,406 RECs to meet the 2012 standard in Montana. Those credits were purchased from MDU’s Diamond Willow Wind.

Electric City Power filed a report indicating that it purchased 9,587 RECs for \$0.95 each. Those RECs all came from the Klondike III wind farm. ConocoPhillips indicated that 41,550 unbundled RECs were purchased. The price of the RECs was privately negotiated, and in accordance with 69-3-2010, MCA, ConocoPhillips indicated that it would not disclose the price of the RECs. In filings with the PSC, ConocoPhillips indicated that it was required to purchase 12,347 RECs to meet the 2012 RPS requirement, and that those credits were purchased from the Klondike III wind farm.

The ETIC requested that the Department of Revenue revise the form used for collecting REC data from suppliers and generators. The revised form should provide for more uniform data collection in 2015. The proposed revisions, along with a series of frequently asked questions to help suppliers and generators complete the form, are attached in Appendix J.

Transmission contributions

To meet the requirements of Montana's RPS, Montana utilities have largely focused on developing renewable resources close to their service areas. Using resources closer to load has not required new high-voltage transmission and has allowed those projects to be incrementally developed since the time the RPS requirements came online. In-state resources also align more closely with the stated goals of the RPS—to encourage rural economic development. Using these resources also may allow for easier siting, quicker cost recovery, and shorter timelines for developing projects.

Renewable generators who responded to the ETIC survey indicated that the Montana RPS has not helped leverage Montana's competitive advantage in developing new electric transmission. The RPS, however, has contributed to upgrades and improvements to the electric transmission system in Montana. The upgrades have focused on accommodating specific projects, rather than allowing

for additional renewable generation to be tapped or exported, as noted in the survey response provided by Oversight Resources.

MDU indicated that new transmission was not built in conjunction with its projects. Turnbull indicated that it built 4.5 miles of new transmission line to bring hydroelectric generation online.

The last 10 years, however, have brought strong interest in developing additional transmission to export Montana's generation potential to other markets. The Montana-Alberta Tie-Line (MATL) came online in September 2013. It is the first direct interconnection between the Alberta and Montana balancing areas and is capable of carrying 300 megawatts in either direction.

In 2008, NorthWestern applied for Major Facility Siting Act certification for the Mountain States Transmission Intertie (MSTI), which would have been a 500-kilovolt line running from Townsend to Midpoint, Idaho. This line would have been capable of carrying up to 900 megawatts south to north and 1,500 megawatts north to south. In 2012, the MSTI line was put on hold.

New lines connecting Montana to the rest of the western grid would lead to new generation resources and could potentially increase competition among Montana energy suppliers, but it is difficult to relate this potential to the current impacts of Montana's RPS requirements.

ENVIRONMENTAL IMPACTS OF MONTANA'S RPS

Quantifying the environmental impacts of renewable energy requirements in Montana must be examined in terms of short-term and long-term impacts, perspectives, and goals. SJ 6 set out the parameters that the ETIC was to analyze in its review of the environmental impacts of the RPS. Those parameters include:

- the standard's contribution to diversified generation in Montana and to reduced dependence on fossil fuels;
- the types of renewable energy generation used in meeting the standard; and
- potential contributions to air quality improvements attributable to the standard.

Any widely installed technology can be accompanied by environmental challenges. In Montana, wind generation, as an example, brings additional environmental policy matters ranging from wildlife and habitat impacts to land use changes. Many studies have weighed the costs and benefits of state renewable portfolio standards, but beyond analysis of carbon reduction costs, studies attempting to quantify the environmental impacts are limited. Environmental impacts can vary depending on the mix of renewable technologies used in meeting a standard and the proportion of in-state versus out-of-state renewable generation used. Environmental impacts were a source of much ETIC discussion during three meetings. The ETIC heard presentations on the subject from the

Montana Department of Environmental Quality (DEQ) and the National Renewable Energy Laboratory of the U.S. Department of Energy. A report on environmental benefits prepared by the DEQ is included in Appendix K.

Survey says . . .

The ETIC asked utilities and electricity suppliers questions about how the RPS has led to the diversification of their portfolios, reduced dependence on fossil fuels, and assisted in hedging against the volatility of fossil fuel markets. Utilities largely indicated that Montana's RPS has not led to a reduction in dependence on fossil fuels.

NorthWestern Energy indicated that because of its dependence on market purchases, a reduction in the use of fossil fuels could not be precisely determined. The company added: "On one hand, resources acquired to meet the RPS standards provide a partial hedge against volatility of fossil fuel markets by reducing market purchases, which include a thermal (gas/coal) component. On the other hand, the inclusion of RPS resources caused NWE to invest in additional gas-fired resources to integrate/regulate those resources. These offsetting effects cannot be precisely determined."

Black Hills and Avista also indicated no change in their reliance on fossil fuel resources. PPL Treasure State indicated that the addition of intermittent resources to meet the RPS resulted in operating complexities and additional costs of regulation, such as the construction of the Dave Gates Generating Station. The company added: "In addition, the market impact of the intermittent resources has resulted in increased cycling of thermal units. This is expected to have a long-term effect of higher maintenance costs and lower commercial availability."

MDU, however, indicated that the standard has reduced the utility's dependence on fossil fuels "to a minor degree." The company continued: "It did not reduce the need for MDU's thermal generation. However, the energy produced by the renewable

resources reduced the need to purchase energy from Midcontinent Independent System Operator (MISO), in which thermal resources still dominate."

In terms of diversification of energy portfolios, none of the utilities or electricity suppliers indicated that Montana's RPS contributed to the diversification of their Montana energy portfolio. NorthWestern Energy said the company was already focused on renewable resources prior to enactment of the RPS, noting that "a minimal amount of NorthWestern's resource portfolio can be attributed to the standard." MDU offered a

In looking at the big picture, renewable energy generation in Montana has increased, and fossil fuel-based generation has declined. But it is difficult to determine whether the increases and declines are related to changes in state and federal policy, to changes in energy markets and prices, or to new technology development.

similar response, adding that the RPS likely accelerated the company's acquisition of renewable generation resources. Black Hills stated that the company received a waiver from the PSC to not have to meet the CREP requirement of the RPS, so it did not add to its renewable portfolio. Avista has simply paid a fine since 2008, as opposed to meeting either the overall RPS or CREP requirement. The idea of diversification, however, was widely disputed. Although the utilities stated in the survey that the RPS was not the driving factor in terms of diversification, other entities representing renewables disagreed. Those entities argued that the utilities' acquisition of renewable

resources approved by the PSC to be included in the utility mix demonstrates the power of the RPS in driving diversification.

Diversified generation and reduced dependence on fossil fuels

In the least complex view of long-term environmental impacts, renewable resources have less of an impact on the environment than nonrenewable resources, simply because they use a renewable fuel rather than a fossil fuel.

"The point of an RPS is to replace fossil fuel generation with generation obtained from renewable resources. Therefore, most straightforward measures of RPS effectiveness are the degree to which renewable energy capacity and generation have grown, and the degree to which fossil fuels have declined as a share of

the state's electric-generation fuel mix."¹²

In Montana, wind power generation grew by 34 percent in 2011 and supplied 4.2 percent of the state's net electricity generation.¹³ All of the state's renewable energy growth, however, cannot be attributed solely to Montana's RPS. Of the 647 megawatts of wind generated in Montana (operational as of September 2013), about 400 megawatts, or 62 percent, was generated by the Rim Rock and Glacier wind farms in northern Montana. The renewable energy attributes of those wind farms are used to meet California's RPS rather than Montana's.

Another portion of wind generated in Montana is from qualifying facilities (QFs), which in some cases are not used by utilities or suppliers to meet the Montana RPS. (This is decided in the contract agreed to by the generator and the utility.) QFs are renewable generating facilities that receive special rate and regulatory treatment in accordance with the federal Public Utility Regulatory Policies Act of 1978. About 234 megawatts of wind, located in Montana, are certified to meet the Montana standard, or about 36 percent of the wind generation total.

In 2009, coal-fired generation made up about 59 percent of Montana's generation capacity. In 2011, it declined to about 50 percent of Montana's capacity. Figure 4 outlines generation in Montana by fuel type.¹⁴ However, throughout this report, note that Montana is a net exporter of electricity. In general, Montana usage and transmission losses account for slightly more than half of production.

Net Electric Generation by Type of Fuel Unit				
Year	Hydroelectric %	Coal %	Natural Gas Petroleum %	Wind %
2005	34	64	1	0
2006	36	61	1	2
2007	33	64	2	2
2008	34	62	1	2
2009	36	59	2	3
2010	32	63	1	3
2011	42	50	3	4

Figure 4. Source: U.S. Energy Information Administration and Montana DEQ

12 David Hurlbut, "State Clean Energy Practices: Renewable Portfolio Standards," National Renewable Energy Laboratory, U.S. Department of Energy, July 2008.

13 See <http://www.eia.gov/state/?sid=MT>.

14 Montana's RPS, as originally passed and approved, starting in 2008 required public utilities to acquire renewable energy equal to 5% of their retail sales of electricity in Montana.

In looking at the big picture, renewable energy generation in Montana has increased and fossil fuel-based generation has declined. It is difficult to determine whether the increases and declines are related to changes in state and federal policy, to changes in energy markets and prices, or to new technology development. It is likely that the changes result from a combination of all factors. To make the numbers more relevant to Montana's RPS, the portfolios of Montana's two largest regulated electric utilities provide a better look at patterns in energy generation.

Every two years, NorthWestern Energy files an Electric Supply Resource Procurement Plan and Montana-Dakota Utilities files an Integrated Resource Plan with the PSC. The plans outline the actions the utilities will take to meet their anticipated customer needs. The plans outline the needs of customers, the existing electricity supply resource portfolios of the utility, and options for the future, including an evaluation of the costs and risks associated with various alternatives.

Because NorthWestern Energy has only been acquiring generation assets since 2007, its portfolio provides a mix of contract power and utility-owned generation. In 2007, NorthWestern Energy's procurement plan included 325 megawatts of firm on-peak power and 175 megawatts of off-peak power from PPL Montana under a contract that expired in June 2014. The contract provided about 37 percent of the total portfolio's energy requirements for 2007.

NorthWestern Energy's 2007 procurement plan also included 100 megawatts of QF energy; of that QF total, hydroelectric supplied 13 percent, wind supplied 4 percent, and the remainder was fossil fuel-based. In 2006, NorthWestern began receiving power from Judith Gap amounting to 135 megawatts of wind energy. The utility also had a 6-megawatt contract with Tiber Montana, a small hydroelectric facility. Finally, NorthWestern had a contract with Basin Creek Equity Partners for a 52-megawatt gas peaking facility. NorthWestern also entered into a contract with Montana Generation (Colstrip Unit 4) for the purchase of 90 megawatts of unit power.¹⁵ (By the close of 2007, NorthWestern Energy had acquired an interest in 222 megawatts total in Colstrip 4.) NorthWestern's 2007 report also discussed overall renewable portfolio

15 NorthWestern Energy 2007 Electric Supply Resource Procurement Plan, December 2007, pages 19-25.

requirements. “In order to be in compliance with the Renewable Act through 2011, NorthWestern does not anticipate needing any additional renewable resource beyond the quantities necessary to meet the community renewable energy project (CREP) standard.”¹⁶

The 2013 NorthWestern Energy Resource Procurement Plan also outlines a portfolio resource mix that includes coal, natural gas, hydroelectricity, wind, and qualifying facilities. “The supply portfolio is evolving and changing in order to continue to satisfy multiple objectives such as low cost, low risk, renewable portfolio standards, demand-side management energy savings, Public Utilities Regulatory Policy Act of 1978 (PURPA) contracting obligations, and more.” In the 2013 report, NorthWestern Energy notes it has 361 megawatts of renewable generation by nameplate capacity in its portfolio.

In addressing Montana’s renewable portfolio standard, the 2013 report includes the addition of the 40-megawatt Spion Kop Wind Project and several new QF projects. In the report, NorthWestern notes that it expects to have adequate RECs to meet RPS requirements through 2028, assuming additional CREPs are acquired. “The projected shortfall in 2013 is about 140,000 MWh, roughly equivalent to the production from a 47 MW wind facility.”¹⁷

In comparing the 2007 and 2013 reports for NorthWestern Energy, the amount of renewable generation in the portfolio has greatly increased. With the acquisition of an increased interest in Colstrip and construction of the Dave Gates Generating Station at Mill Creek, the amount of fossil fuel-based generation has also increased in the NorthWestern portfolio. Overall, however, renewables are contributing much more to the portfolio than in the past. In June 2013, NorthWestern reported about 1,162 megawatts of total nameplate capacity, including contracts. If, as noted earlier, the portfolio contains 361 megawatts of renewable generation, about 32 percent of the total portfolio is renewable generation. In 2007, renewables likely covered 10 to 15 percent of the total portfolio.

When MDU filed its 2007 Integrated Resource Plan, the company was constructing the 20-megawatt Diamond

Willow wind farm near Baker to meet the first two phases of the Montana RPS and announced plans to install an additional 10 megawatts to meet future requirements. Figure 5 shows MDU’s expectations for 2012, based on the 2007 report.¹⁸ Similar to NorthWestern Energy, the 2007 and 2013 MDU plans show an increase in renewable generation as a portion of the portfolio. The plans do not demonstrate a decrease in coal or natural gas generation. In the MDU plan, there is a strong commitment to update fossil fuel-based generation and to keep it in the mix.

MDU Expected Generation for 2012		
Generation	Megawatts	Percentage
Natural Gas/Oil Glendive 1 and 2 Miles City Williston	110.8	17%
Wind Diamond Willow	20	3%
Coal Heskett 1 and 2 Lewis and Clark Big Stone 1 and 2 Coyote	488.3	77%

Figure 5: Source: Montana-Dakota Utilities

In its 2013 plan, MDU notes that it now has 50 megawatts of installed wind generation capacity at two locations, providing about 7 percent of its customers’ electric energy requirements. (MDU is meeting the 10 percent RPS requirement in Montana but is utilizing additional means to meet the standard.) The report concludes that the optimal resource mix includes the commercial operation of Heskett 3 (natural gas) by 2015, three additional 36.6-megawatt internal combustion engine projects, contracting for 50 to 100 megawatts of wind generation, and adding 200 megawatts of combined cycle unit in 2020.¹⁹

Types of generation used in meeting the standard

The PSC has certified about 542 megawatts as eligible renewable resources, some of which are CREPs that

¹⁶ Ibid., page 33.

¹⁷ NorthWestern Energy 2013 Electric Supply Resource Procurement Plan, pages 2-20.

¹⁸ MDU Integrated Resource Plan 2007, May 2007, executive summary, page iii.

¹⁹ Ibid., page iv.

can be used to meet Montana’s RPS. Utilities and electricity suppliers petition the PSC for certification of eligible renewable resources to verify that the power produced at a facility meets Montana’s definition of “renewable.” At the time of this report’s publication, two additional wind projects have petitioned the PSC for certification. Those dockets remain open.

Renewable “electricity,” however, is not necessarily used to meet the overall standard. In order to meet the standard, a public utility or competitive electricity supplier may use electricity from an eligible renewable resource in which the associated RECs have not been sold separately, RECs created by an eligible renewable resource purchased separately from the associated electricity, or a combination of the two. In many cases, a utility or supplier is procuring RECs while not necessarily procuring energy itself.

In addition, of the total renewable generation, about 292 megawatts of renewable energy projects certified to meet the Montana standard are not located in Montana. A renewable resource can be used to meet Montana’s standard if it delivers electricity from another state into Montana and commenced commercial operation after January 1, 2005. At various times since 2010, for example, Klondike III, a 200-megawatt wind farm located in Sherman County, Oregon, and owned by Iberdrola Renewables, has been used by PPL Treasure State, Electric City Power, and ConocoPhillips in meeting the Montana requirements. Black Hills, which with the passage of Senate Bill No. 164 by the 2013 Legislature is no longer subject to Montana’s RPS or the CREP requirements, has exclusively used renewable energy attributes from the Happy Jack wind farm, owned by Duke Energy and located in Laramie County, Wyoming, in meeting the Montana standard. (Only about 2 percent of Black Hills’ utility sales are to end users in Montana, and Black Hills has about 35 Montana consumers.)

The remaining 250 megawatts of certified eligible renewable resources for meeting the Montana standard come from wind, hydroelectric, and one cogeneration facility, all located in Montana.

Wind is clearly the predominant resource used in meeting Montana’s standard. In September 2013, the PSC certified the Flint Creek Hydroelectric Project as an eligible renewable resource that also meets CREP requirements. Flint Creek is a 2-megawatt

hydroelectric project in Granite County. With the addition of Flint Creek, there are 15.8 megawatts of nonwind resources certified as eligible renewable resources for meeting Montana’s renewable portfolio requirements. Of those 15.8 megawatts, about 15.5 megawatts are certified as CREPs. A little more than 20 percent of all CREPs are nonwind resources.

Domination by wind is not unexpected. In 2007, a Lawrence Berkeley National Laboratory study, funded in part by the U.S. Department of Energy, conducted an analysis of 28 state-or utility-level RPS programs in 18 different states (Montana was not included). The study found that wind was the dominant technology used in meeting the requirements, and that prevalence was expected to continue.

“Perhaps not surprisingly, wind is expected to be the dominant technology, representing an aggregate 62 percent of incremental state RPS generation across all of these studies combined.”²⁰

Air quality improvements

Wind generation, which is primarily used in meeting Montana’s RPS, is zero-emission generation. A publication by the National Renewable Energy Laboratory noted: “One of the obvious benefits of wind energy is that the production of electricity from this source involves zero direct emissions of air pollutants. In contrast, fossil fuel-fired electric generation from coal, oil, or natural gas results in substantial direct emissions of numerous air pollutants that have adverse impacts on public health and the environment.”²¹

Air quality improvements generally result when renewable generation reduces fossil fuel combustion at an existing plant or reduces or eliminates the need to build or operate new fossil-fueled power plants.²²

20 Cliff Chen, Ryan Wiser, and Mark Bolinger, “Weighting the Costs and Benefits of State Renewables Portfolio Standards: A Comparative Analysis of State-Level Policy Impact Projections,” Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, March 2007, executive summary, page ii.

21 D. Jacobson, “Wind Energy and Air Emission Reduction Benefits: A Primer,” National Renewable Energy Laboratory, February 2008.

22 Chen, Wiser, and Bolinger, “Weighting the Costs and Benefits of State Renewables Portfolio Standards,” March 2007, page 6.

Emissions Displaced by RPS Resources (Natural Gas)			
Resource	Carbon Dioxide	Sulfur Dioxide	Nitrogen Oxides
542 megawatts ³	1.1 million tons	95 tons	1,615 tons
250 megawatts ⁴	499,320 tons	43.8 tons	788 tons
Emissions Displaced by RPS Resources (Coal)			
542 megawatts ⁵	2.1 million tons	13,300 tons	5,700 tons
250 megawatts ⁶	963,600 tons	6,132 tons	2,628 tons

Figure 6. Source: EPA emissions data. For notes 3 through 6, see the “Figure Notes” section on page 33.

Electricity produced by a renewable resource, such as wind, is matched by an equivalent decrease in electricity generation at another resource—simply because a utility must balance supply with demand at all times. In most cases, the generation that is displaced is that of a fossil-fueled plant because of higher fuel costs. Increased renewable generation, in general, means reduced fossil fuel generation, reduced emissions, and improved air quality. In the larger context, that equation is apparent in Montana, but the details deserve a closer look.

Figure 6 quantifies the emissions potentially displaced by certified eligible renewable resources used to meet the Montana RPS based on generation.²³

Montana is also a net exporter of energy, largely due to the four privately owned coal-fired units at Colstrip, which have a combined capability of 2,100 megawatts. NorthWestern Energy’s share of Colstrip accounts for about 6 percent of the total generation in the state. There is no direct correlation between Montana’s RPS and generation activity at the Colstrip facility—an important factor when examining air emissions in Montana. The RPS is localized to Montana, whereas Colstrip is an extremely large baseload facility serving a geographically diverse area.

In 2007, the Center for Climate Strategies (CCS), a nonprofit organization that works with organizations to design and implement policies that address climate mitigation, prepared a greenhouse gas inventory under a contract with the DEQ. The inventory provided a thorough look at emissions in Montana. The findings showed that emissions associated with electricity consumption in Montana were much lower than (about half of) those associated with electricity

generation. To put air quality issues into perspective, it is important to distinguish whether the emissions reflect the state’s electricity consumption or its generation. In most cases, the emissions reported by the U.S. Energy Information Administration or tracked by the U.S. Environmental Protection Agency (EPA) are based on electricity generated in Montana. The emissions include Colstrip, which cannot be correlated with Montana’s RPS.

Concerns also have been raised that reducing the output of a fossil-fueled plant in response to adding renewable energy to the grid can reduce the efficiency of that fossil-fueled power plant. In September 2013, the NREL released a report calculating the emissions and costs of power plant cycling needed to accommodate increased renewable generation. The report spells out a “high-wind” scenario, with one-fourth of the energy in the entire western grid coming from wind and solar resources, thereby reducing the carbon footprint in the western grid by about one-third.

The NREL report also found that “carbon emissions induced by more frequent cycling are negligible (<0.2 percent) compared with the carbon reductions achieved through the wind and solar power generation evaluated in the study.”²⁴ Sulfur dioxide emissions were found to be 5 percent less than they would be if cycling of fossil-fueled generators wasn’t necessary, and nitrogen oxide emissions would be 2 percent less.

Health impacts

The health benefits of a renewable portfolio standard are mainly associated with the benefits of avoiding the

²³ See <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html> and Appendix N.

²⁴ Debra Lew and Greg Brinkman, “The Western Wind and Solar Integration Study Phase 2: Executive Summary,” National Renewable Energy Laboratory, September 2013.

use of fossil fuel generation, which emits regulated air pollutants. Concerns about the health impacts of renewable generation were discussed in some detail by the ETIC members. Some members were concerned with the EPA's findings and the actual experiences of people living near fossil fuel-based electric generation. ETIC members asked for information concerning the impacts on air quality and health, for example, in Colstrip, where a 2,200-megawatt coal-fired power plant is located.

In 2011, the American Lung Association commissioned Environmental Health and Engineering Inc. in Boston to analyze the public health and environmental impacts of emissions from coal-fired power plants. The report looked at the impacts of criteria air pollutants, including sulfur dioxide, nitrogen oxides, and particulate matter. Emissions rates from coal-fired power plants can vary, depending on the control technologies used at the facility to remove pollutants from exhaust gases. With prevailing winds that generally flow from west to east, emissions travel across state lines and potential health impacts occur on a regional basis.²⁵ The report notes a 2002 study finding: "Analysis of coal-fired power plants has found that public health damages per person were two to five times greater for communities near the facilities than those for populations living at a greater distance from the plants."²⁶

The Montana Department of Public Health and Human Services (DPHHS) routinely collects health data and assesses the health status of Montanans—usually down to the county level. The department has not specifically studied the health status of Rosebud County residents and surrounding counties with regard to the coal-fired power plant in Colstrip.

25 "Emissions of Hazardous Air Pollutants from Coal-Fired Power Plants," prepared for American Lung Association, Environmental Health and Engineering, Inc., March 7, 2011.

26 "The Importance of Population Susceptibility for Air Pollution Risk Assessment: A Case Study of Power Plants near Washington, D.C.," *Environmental Health Perspectives*, December 2002.

The department noted that the health outcomes, including asthma, heart attacks, stroke, and cancer, that may be attributable to coal-fired power plants also have many other risk factors that cause the diseases. Cigarette smoking, for example, is known to cause up to 90 percent of all lung cancers and 30 percent of all cardiovascular disease. Considering that one in five adults in Montana still smokes, it is difficult to distinguish the health outcomes that may be attributable to a power plant versus those that would be attributable to smoking, according to Laura Williamson, an epidemiologist and program manager for Montana Cancer Control Programs within the department. Other disease risk factors include age, race, access to health care, tobacco use, and obesity.

The department, however, reviewed data from death records, the hospital discharge data system, and the Montana Central Tumor Registry to provide an idea of the general health status of residents in the counties near the Colstrip plant, including Rosebud, Custer, Powder River, Treasure, and Big Horn Counties.

Death record data for two time periods, 1990-1999 and 2000-2009, showed that the age-adjusted death rate from asthma, cardiovascular disease, lung cancer, and all cancers in the counties noted above was equal to

the rest of Montana. According to the Montana Central Tumor Registry for two time periods, 1990-1999 and 2000-2009, cancer diagnosis among residents of the selected counties was equal to that of the overall state. The age-adjusted rate of lung cancer diagnosed among residents of the selected counties was higher than the overall state for the time period 1990-1999. However, from 2000 to 2009, the age-adjusted lung cancer rate among residents of the selected counties was equal to the overall state rate. Historically, zero cancer clusters have been identified in Rosebud County or the surrounding counties, according to DPHHS.

Hospital discharge data for two time periods, 2000-2004 and 2005-2009, showing inpatient hospitalizations only (the patient has at least one overnight stay in the hospital) showed that the age-adjusted rate of hospitalizations because of asthma

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The age-adjusted hospitalization rate because of heart disease was greater per capita for the selected counties compared to the rest of Montana. Note that duplicate patients are likely included in the data system. Most heart attack patients go first to the local hospital to be stabilized and then are transferred to a higher-level hospital. These patients would be counted twice in the data system, which may contribute to the higher rates.²⁷

In national analysis, health impacts also are commonly linked to climate change activities. The electric power sector accounted for 33 percent of U.S. total greenhouse gas emissions and 60 percent of U.S. stationary-source greenhouse gas emissions in 2011. Fossil-fueled power plants are the largest source of U.S. carbon dioxide emissions. Significant changes in climate can create public health risks, including increased smog, heat waves and drought, and increasingly intense extreme weather events. This information attempts to focus more directly on the health effects of emissions from power generation and the potential benefits of reducing those emissions.

Health impacts related to renewable energy also are examined as economic impacts as opposed to environmental impacts. A recent study titled “Economic Value of U.S. Fossil Fuel Electricity Health Impacts,” published online in Environment International, found that replacing fossil fuels with renewable energy reduces premature mortality and lost workdays and reduces overall health care costs. The aggregate national economic impact associated with these health impacts of fossil fuels is between \$361.7 and \$886.5 billion, or between 2.5 percent and 6 percent of gross domestic product (GDP).²⁸ The

economic value was based on premature mortality, lost workdays, and other direct costs to the health care system as a result of emissions of fine particles, nitrogen oxide, and sulfur dioxide. Impacts resulting from extraction and transportation of fossil fuels and impacts on climate change and human welfare were not included.

Climate change

The Environmental Quality Council (EQC) dedicated the largest portion of its time during the 2007-2008 interim to a study of issues related to climate change. The study required examination of the overall subject

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of climate change and how other states, at the time, were addressing the issue. A large portion of the study focused on a review of the Montana Climate Change Advisory Committee (CCAC) report released by the DEQ at the same time the EQC was conducting its review.

The CCAC report, titled “Montana Climate Change Action Plan,” included a greenhouse gas inventory prepared for the DEQ by the Center for Climate Strategies (also discussed in the earlier section on air quality improvements). It provides a thorough look at emissions in Montana.²⁹

The inventory showed that activities in Montana account for about 37 million metric tons of carbon dioxide equivalent emissions, or 0.6 percent of all greenhouse gas emissions in the United States. Electricity use, transportation, and agriculture are the principal emissions sources. The combustion of fossil fuels for generating electricity used in Montana combined with the transportation sector accounted for about 50 percent of the gross greenhouse gas emissions in the state.³⁰ Agricultural emissions are primarily methane and nitrous oxide from manure management, fertilizer use, and livestock. Other types of emissions are from households, large

27 Montana information provided by Laura L. Williamson, MPH, Epidemiologist and Program Manager, Montana Cancer Control Programs, Montana Department of Public Health and Human Services, April 2014.

28 Sarah Rizk and Ben Machol, “Economic Value of U.S. Fossil Fuel Electricity Health Impacts,” Clean Energy and Climate Change Office, U.S. Environmental Protection Agency Region 9, San Francisco, CA, 2013, pages 75-80.

29 The full CCAC report is available at <http://deq.mt.gov/ClimateChange/default.mcp>. The EQC’s final report to the 2009 Legislature is available here: http://leg.mt.gov/css/Committees/interim/2007_2008/environmental_quality_council/staff_reports/reports.asp#climate.

30 Alison Bailie, Stephen Roe, Holly Lindquist, and Alison Jamison, *Montana GHG Inventory and Reference Case Projections 1990-2020*, Center for Climate Strategies, September 2007, page 5.

**Montana Gross Greenhouse Gas Emissions by Sector,
1990-2020: Historical and Projected Under Reference Case Assumptions**

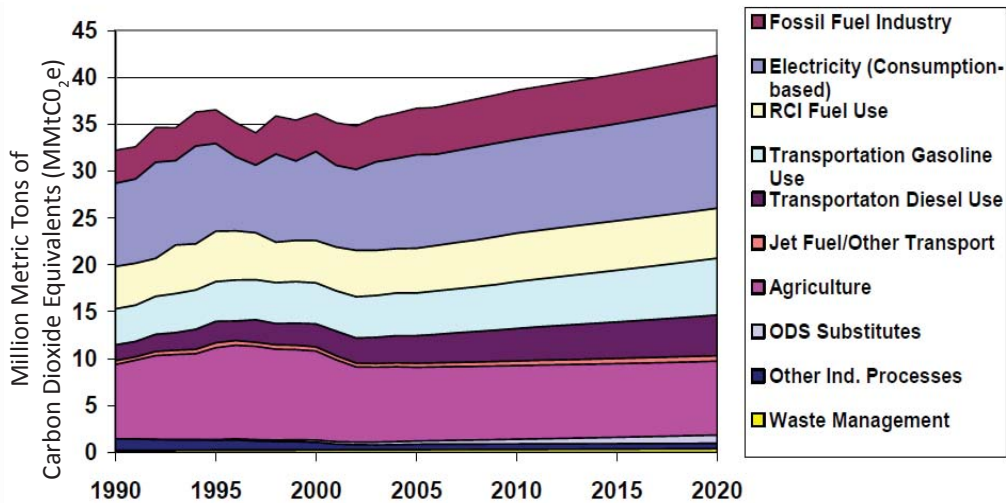


Figure 7. Source: Center for Climate Strategies

industry, commercial business, wastewater treatment operations, and the oil and gas industry.

A look at greenhouse gas emissions by sector is included in Figure 7.

The inventory included projections that show reference case emissions increasing to 42 million metric tons by 2020, about 30 percent above 1990 levels. The majority of the increase is expected to come from the transportation sector. The report also reviewed carbon sinks or sequestration, such as forests and soil, decreasing the gross estimates annually by about 25 million metric tons of carbon dioxide equivalent. With the sinks calculation, the net increase by

2020 is estimated at 16.3 million metric tons, in the reference case projections. The CCAC unanimously recommended that Montana extend the existing RPS to include requirements for 2020 and 2025.

Using the inventory data, the CCS helped the CCAC identify a range of greenhouse gas mitigation options, using a combination of more than 250 existing state actions from across the country and Montana-specific actions, as determined by the CCAC. The CCAC concluded its work in 2007, and final recommendations were released in November 2007. The CCAC offered 54 recommendations broken down into five categories: Residential, Commercial, Institutional, and Industrial (RCII); Energy Supply (ES); Transportation and Land Use (TLU); Agriculture, Forestry, and Waste Management (AFW); and Cross-Cutting Issues (CC).

Forestry, and Waste Management (AFW); and Cross-Cutting Issues (CC).

The CCAC's overall recommendations document the opportunities for the state to continue strong economic growth by being more energy efficient, using more renewable energy sources, and increasing the use of cleaner transportation modes, technologies, and fuels. Some of the recommendations would have been implemented administratively, and some would have required legislation. Since the report was published, however, there has been limited action in implementing the recommendations, with a general focus on the need for legislation.

The 54 CCAC policy recommendations also did not reduce greenhouse gas emissions from electricity that is generated in Montana and exported out of state. Rather, the focus was based on consumption. Reductions in greenhouse gases based on consumption show the following reductions:

- 34.5 percent would come from the energy supply sector;
- 29 percent would come from the residential, commercial, industrial, and institutional sectors;
- 26.9 percent would come from the agriculture, forestry, and waste sectors; and
- 9.6 percent would come from the transportation and land use sectors.³¹

³¹ Ibid., page EX-4.

This summary focuses on the CCAC recommendations related to electricity supply and renewable energy requirements. The report noted that in addition to an RPS, Montana provides tax incentives and financing mechanisms for conservation and renewable energy and the opportunity for consumers to purchase green power from utility companies. The report, again focusing on the consumption rather than production scenario, notes, “Fortunately, there are significant opportunities to reduce GHG emissions growth attributable to energy production and supply. The GHG emissions of electricity generation can be addressed through: greater use of renewable energy; recapture of waste energy through combined heat and power; carbon capture and storage; and other technologies.” The Energy Supply (ES) recommendations included efforts to increase the supply of renewable energy (ES-1 and ES-2), decrease the emission intensity of fossil fuel-generated electricity (ES-5), reduce the average emissions of new utility resource acquisitions (ES-10), increase distributed generation (ES-4), and reduce demand. If all of the CCAC’s recommendations were fully implemented, the ES recommendations could result in cumulative greenhouse gas emissions reductions of about 16 million metric tons of carbon dioxide equivalents through 2020 at a cumulative net present value cost of about \$270 million.³²

The CCAC unanimously recommended that Montana extend the existing RPS to include requirements for 2020 and 2025 and require utilities to pursue cost-effective end-use energy conservation (both electricity and natural gas). The CCAC report found that each investor-owned and public utility (including member-owned electric cooperatives) should:

- meet 20 percent of its load using renewable energy resources by 2020, increasing to 25 percent by 2025;
- implement a plan to obtain 100 percent of achievable cost-effective energy conservation by 2025;
- by 2010, identify its achievable cost-effective energy conservation for the subsequent 10 years; and
- update these energy-efficiency assessments and plans regularly, possibly every 2 years.

32 Ibid., pages 4-5.

As part of its interim work, the EQC reviewed all 54 recommendations included in the CCAC report. In conducting its 2007-2008 study and gathering public opinion on the subject, the EQC hosted a climate change survey, inviting the public to rank and comment on the CCAC’s 54 recommendations. The survey garnered nearly 2,000 responses, and using that information, the EQC selected 15 of the recommendations for further study and discussion.

The 15 recommendations reviewed further by the EQC did not include any energy supply recommendations from the report. The committee did look at an RCII recommendation (RCII-8) to support renewable energy applications. The recommendation would have provided for 470 megawatts of combined heat and power, 4.5 megawatts of solar PV, and 30 megawatts of small wind by 2020. It included improving incentives and removing barriers to interconnection rules and net metering arrangements for combined heat and power and clean distributed energy.

After a thorough review of the 15 recommendations, EQC members reached a consensus on a series of topics to review even more in depth, but those topics did not include a focus on renewable energy or small renewable applications. EQC members focused on topics that included enhancing solid waste recovery or recycling opportunities; promoting local food and fiber; improving transportation system management or efforts to enhance mass transit and ensure adequate transportation planning; providing additional opportunities for low-income and rental housing energy efficiency and weatherization; expanding biomass opportunities; and reviewing requirements that new state buildings exceed current building codes or standards.

Environmental disadvantages

All energy generation has some impact on the environment, including wind generation. Because wind is the predominant resource used in meeting Montana’s standard, with about 234 megawatts of wind located in Montana used to meet the RPS, the information in this overview focuses on wind. Additional wind resources outside the state, including Klondike III, a 200-megawatt wind farm located in Sherman County, Oregon, and owned by Iberdrola Renewables, are also used to meet the standard.

One environmental concern is bird and bat mortality. Flight patterns may lead birds and bats into wind turbines and towers. For example, when birds are hunting, they keep their eyes on the ground and do not see the turbines. Most bats migrate at night, increasing potential collisions with wind turbines. Bats, in some cases, have also been shown to be attracted to the moving blade of a wind turbine. "Wildlife mortality from collisions with wind turbines is the most direct, visible, and well-documented impact of wind energy development. However, conclusions about rates and impacts of collisions on bird populations are tentative because most of the mortality data is in industry reports that are not subjected to scientific peer review or available to the public."³³

Studies estimate between 10,000 and 573,000 annual fatal bird collisions with wind turbines in the United States. A 2013 study conducted by researchers from the Migratory Bird Center and the U.S. Fish and Wildlife Service (USFWS), estimates that between 140,000 and 328,000 birds are killed annually by collisions with monopole turbines in the contiguous United States.³⁴

In November 2013, Duke Energy Renewables pleaded guilty to the deaths of more than 15 protected birds, including golden eagles, at two of its wind farms in Wyoming. The company faces \$1 million in fines. It was the first time a wind company was prosecuted under the Migratory Bird Treaty Act. The eagle deaths are a violation of the federal Bald and Golden Eagle Protection Act. Between 2008 and 2012, 14 golden eagles and 149 other birds, including hawks, larks, sparrows, wrens, and blackbirds, were killed at the two facilities.³⁵

A September 2013 report published in the *Journal of Raptor Research* found that since 1997 wind farms in 10 states have killed at least 85 eagles. The majority of the deaths occurred between 2008 and 2013 in 10 states. Montana was not included in the study, which was conducted by USFWS researchers.

33 Scott Loss, Tom Will, and Peter Marra, "Estimates of Bird Collision Mortality at Wind Facilities in the Contiguous United States," *Biological Conservation* 168 (2013): 201-209.

34 Ibid.

35 See <http://www.duke-energy.com/news/releases/2013112203.asp>.

The report notes: "Our findings of the reported mortalities likely underestimate, perhaps substantially, the number of eagles killed at wind facilities in the United States. Given the projected growth in wind resource development in habitat frequented by bald eagles and golden eagles, estimation of total mortality and better understanding of factors associated with injury and death at wind facilities through robust and peer-reviewed research and monitoring should be a high priority."³⁶

The U.S. Department of the Interior has recently proposed a rule that would grant wind farms 30-year permits to take golden and bald eagles if companies take additional steps to protect raptors. Permit holders are exempt from prosecution under the Bald and Golden Eagle Protection Act. The rule previously allowed for 5-year permits.

A 2007 study prepared by TRC Solutions in Laramie, Wyoming, found that 1,206 bats and 406 birds were killed by the turbines at Judith Gap.³⁷ The study was the first post construction avian and bat fatality monitoring and grassland bird displacement surveys conducted at the site. The study indicated between 7 and 13 bat fatalities per turbine per year. Environmental studies done before construction had predicted 4 bat fatalities per turbine per year. The higher than expected findings were followed by a study released in 2010 by WEST, Inc. The earlier study focused on fatalities over a seven-month period in late summer and fall and again in spring. The later study was conducted during five months in summer and fall. During the 2006-2007 study, bat fatalities were estimated at 8.9/MW/study period, and in the 2009 study, the fatality rate was at 4.80 fatalities/MW/year. "The estimated bird fatality rate was 3.01/MW/period of study in 2006-2007 and 2.22/MW/period of study in 2009. These bird fatality rates are similar to other wind energy facilities in the Plains states and Midwest."³⁸

Wind development has been a consideration as Montana examines greater sage-grouse habitat.

36 Pagel, Kritz, Millsap, Murphy, Kershner, and Covington, "Bald Eagle and Golden Eagle Mortalities at Wind Energy Facilities in the Contiguous United States," *Journal of Raptor Research*, 47, no. 3 (2013): 311-315.

37 "Post-Construction Avian and Bat Fatality Monitoring and Grassland Bird Displacement Surveys at the Judith Gap Wind Energy Project, Wheatland County, Montana", TRC Environmental Corporation, January 2008.

38 "Post-Construction Bat and Bird Fatality Study Judith Gap Wind Farm Wheatland County, Montana", WEST, Inc., March 2010.

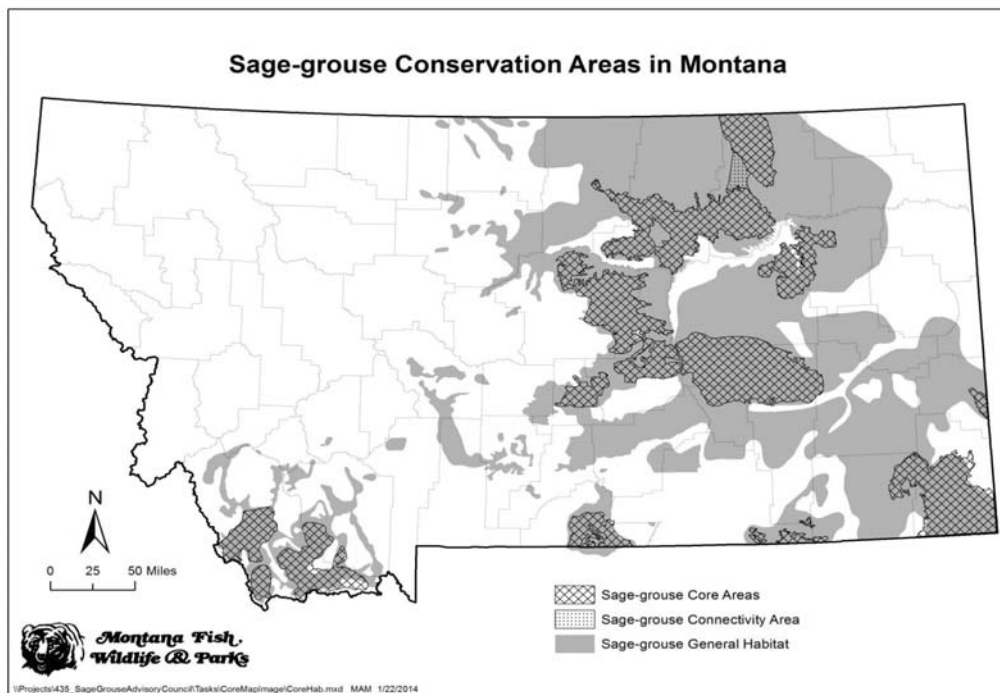


Figure 8. Source: Fish, Wildlife, and Parks

In 2013, Governor Bullock established the Greater Sage-grouse Habitat Conservation Advisory Council “to gather information, furnish advice, and provide to the Governor recommendations on policies and actions for a statewide strategy to preclude the need to list the Greater Sage-grouse under the Endangered Species Act.” There are two statements specific to wind development in the conservation strategy prepared by the council and submitted to the governor in January 2014.

- In sage-grouse habitat identified as core areas, wind energy development would not be allowed. The strategy states that this provision would be reevaluated on a continual basis as new science, information, and data emerge. The core areas were delineated by the Department of Fish, Wildlife and Parks in cooperation with federal and nongovernmental partners to include areas with the greatest number of displaying male sage-grouse and their associated habitat.
- In general habitat, new wind energy facilities would not be recommended within 4 miles of the perimeter of active sage-grouse leks. The strategy states that the following efforts should be undertaken in these areas:

- “Work cooperatively with agencies, utilities, and landowners to use topography, vegetative cover, site distance to protect identified sage-grouse habitat.”
- “Adhere to the U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines.”³⁹

For nonregulated activities, such as wind development, the strategy says: “State agencies shall adhere to the stipulations and management recommendations outlined in this strategy when providing consultation, technical, financial, or other assistance for those non-regulated activities.”⁴⁰ Figure 8 provides additional detail.

Environmental concerns can also include different aspects of land use, including aesthetics, location, and size. The National Renewable Energy Laboratory examined the land use associated with modern, large wind power plants constructed after 2000. According to NREL: “Continued growth is anticipated due to renewable portfolio standards and expected constraints on carbon emissions in the electric sector. One of the concerns regarding large-scale deployment

³⁹ Montana Greater Sage-grouse Habitat Conservation Advisory Council, “Greater Sage-Grouse Habitat Conservation Strategy,” January 29, 2014, page 24.

⁴⁰ *Ibid.*, page 33.

of wind energy is its potentially significant land use.”⁴¹ The study evaluated 172 existing or proposed projects, representing about 26 gigawatts of capacity. It looked at both direct impact area (the land disturbed by plant construction and infrastructure) and the total area of the wind power plant.

The study found that direct impacts were mostly caused by road development, as opposed to the turbine pads and electrical support equipment. A total direct impact area (both temporarily and permanently disturbed land) was found to be about 1 to 0.7 hectares per megawatt, but with a wide variation depending on the project. The average value for the total project area was about 34 to 22 hectares per megawatt.⁴² This translates to between 30 and 141 acres per megawatt of power output capacity, with less than 1 acre per megawatt disturbed permanently.

The study results also provided some caveats: “A wind plant in an agricultural area with low population and minimum avian impacts would have a much lower damage function than an area mined for coal or flooded by a hydropower project, for example. As a result, using the total area metric with qualifications may significantly overstate the land impacts of wind power compared to other sources. Alternatively, wind power projects should consider the impacts associated with habitat disruption, avian impacts, and aesthetics. Ultimately, the actual quality of impacts, captured in a damage function, is needed to compare the land impacts of wind to other sources.”⁴³

A similar study conducted by Rutgers University researchers took a closer look at alternative energy sources and land use. They examined an overall

footprint that would include transportation routes, including transmission, mined resources, and waste depositories. They looked at how much land would be needed to generate all of the world’s current energy demand with one type of energy source and how much land would be needed to meet 10 percent of that demand. They then placed energy resources into three categories.

They found that geothermal and solar thermal belong in the same “small-footprint” land impact category as nuclear, coal, and natural gas. The “medium-footprint” land impact category included petroleum, hydropower, solar photovoltaics, and wind. The report noted: “Wind needs twice as much land area to generate the same amount of energy as solar photovoltaics and varies even more by location . . . In sum, rooftop solar panels can make a contribution to the global energy supply, but both solar and wind technologies will more often be deployed in remote locates where the resources are better, more land is available, and siting conflicts are less severe. Getting the energy back to consumers is the looming challenge.” The third category with the greatest footprint was bioenergy.⁴⁴

... it is difficult to compare land use, in terms of acres per megawatt, for different types of energy generation. Land requirements go far beyond onsite infrastructure. In determining land use, it is important to consider geographic variations, land suitability, extraction activities, potential for conflicts, distances between energy supply and demand, and the long-lasting footprint.

As noted in the examples above, it is difficult to compare land use, in terms of acres per megawatt, for different types of energy generation. Land requirements go far beyond onsite infrastructure. In determining land use, it is important to consider geographic variations, land suitability, extraction activities, potential for conflicts, distances between energy supply and demand, and the long-lasting footprint.

41 Paul Denholm, Maureen Hand, Maddalena Jackson, and Sean Ong, “Land-Use Requirements of Modern Wind Power Plants in the United States,” National Renewable Energy Laboratory, August 2009, page 1.

42 Ibid., page 22.

43 Ibid., page 4.

44 Clinton J. Andrews, Lisa Dewey-Mattia, Judd M. Schechtman, and Mathias Mayr, “Alternative Energy Sources and Land Use,” in Lincoln Institute of Land Policy, *Climate Change and Land Policies: Proceedings of the 2010 Land Policy Conference*, pages 91-100.

CONSUMER IMPACTS OF MONTANA'S RPS

Montana's renewable portfolio standard has minimally affected retail customer rates, according to information provided by Montana's largest utilities. Utilities, however, raise concerns about their ability to maintain a balance between customer needs and available resources if the standard is increased. NorthWestern Energy also notes that its highest-cost RPS resources are currently more costly, on a dollar-per-megawatt basis, than the market purchases that they displace. SJ 6 set out the parameters that the ETIC was to analyze in its review of the consumer impacts of the RPS.

Those parameters include:

- whether the standard has mitigated or contributed to higher energy costs for consumers;
- how the standard has been used to hedge against volatility in fossil fuel prices; and
- whether the standard complements or hinders other efforts to help consumers.

Anecdotal evidence suggests limited rate impacts for most Montana customers. A detailed determination of the overall customer cost of Montana's RPS varies depending on the parameters used to arrive at a specific cost. Those parameters are highly flexible and can include federal production tax credits, fossil fuel and wholesale market price uncertainty, the value of reducing carbon dioxide emissions, resource eligibility, treatment of renewable power and credits imported from other states, load growth, integration needs, and portfolio risks. With such a wide range of parameters, it is difficult to reach a conclusion about the overall impact of each of those parameters.

Survey says . . .

The ETIC asked utilities and competitive electricity suppliers subject to Montana's RPS a series of questions based on SJ 6 related to customer impacts. The questions covered whether the standard has increased or decreased customer rates and whether

the standard has been beneficial to or a drawback for customers.

Only one competitive electricity supplier surveyed stated that Montana's RPS has increased customer costs. As with most cost questions in the electricity industry, however, the survey responses came with a number of caveats. Because of those caveats and because only a limited number of utilities and suppliers are required to meet Montana's RPS, it is most useful to look at the unique circumstances of each entity and its response.

Montana's renewable portfolio standard has minimally affected retail customer rates, according to information provided by Montana's largest utilities. Utilities, however, raise concerns about their ability to maintain a balance between customer needs and available resources if the standard is increased.

MDU indicated the impact to customers to be neutral. MDU added that the renewable resources acquired by the company were cost competitive with other forms of electric generation available at the time of their investment. The company did not identify any benefits or drawbacks to the standard but wrote: "However, the introduction of renewables into Montana-Dakota's generation portfolio has reduced the cost of fuel and purchased power for its customers. This has also reduced the amount of market purchases from others and/or reduced the amount of generation from other higher cost resources that the company has available to it. The introduction of

renewables into MDU's generation portfolio has also diversified the types of resources that the company utilizes to meet its customers' requirements."

NorthWestern Energy also said that customer impacts were neutral. It added: "However, NWE's highest cost RPS resources are currently much more costly, on a \$/MWh basis, than the market purchases that they displace." The company also said that both benefits and drawbacks were minimal.

Black Hills indicated that if the company had not been granted a waiver by the PSC, compliance with the CREP requirement would have resulted in higher costs to customers. It also stated: "We do not believe the standard is beneficial to our Montana customers, given the economics associated with our small number of customers."

PPL Treasure State indicated that the standard contributed to higher costs for its customers: “The RPS has resulted in higher costs to customers due to both the cost of the RECs and the increased regulation cost from the transmission provider.” PPL Treasure State noted no benefits and stated that the requirement is a drawback because of the additional costs.

Cost caps

Most RPS requirements include “cost caps” to protect consumers from rate spikes and unfair utility bills. Montana is no exception. The cost caps for Montana’s RPS are included in 69-3-2007, MCA. As discussed previously, the caps are unique to different operations in Montana and include three different options. Montana’s cost caps are as follows:

- A utility that has restructured (such as NorthWestern Energy) does not have to take renewable energy to meet the standard unless, using a competitive bidding process, the total cost of electricity from the renewable resource, including the cost of ancillary services needed to “firm” that power, is less than or equal to bids for the equivalent quantity of power over the same contract term from other electricity suppliers.
- A public utility that has not restructured (such as MDU) does not have to take renewable energy to meet the standard unless the cost per kilowatt-hour of the generation from the renewable resource does not exceed by 15 percent the cost of power from any other alternate generating resource available to the utility.
- A competitive electricity supplier (such as PPL Treasure State) does not have to take electricity from a renewable energy to meet the standard unless the total cost of electricity from the renewable resource, including the cost of ancillary services needed to firm that power, is less than or equal to the cost of alternate power supplies available to the supplier and the cost

caps applicable to other utilities.

Although cost caps are in place, regulatory requirements can translate into additional costs. An RPS typically has multiple goals, including promoting renewable technologies, reducing air emissions, and, in Montana, promoting economic development. Numerous studies have examined the overall costs and benefits of state renewable portfolio standards in the United States, and most recognize that each RPS is unique, as are its multiple goals.

One of the largest reviews of renewable portfolio standards was completed by the Lawrence Berkeley National Laboratory and published in 2007. The study looked at data from 28 state- or utility-level renewable

policies enacted since 1998. The estimated impact on electricity rates varied by state, but 70 percent of the state RPS cost studies in the sample projected a base-case retail electricity rate increase that was no greater than 1 percent in the year that each RPS policy reached its peak percentage requirement.⁴⁵ The median bill impact across all of the studies in the sample was an increase of \$0.38 per month. The study also indicated that the cost factors are particularly sensitive to the availability of the federal production tax credit, renewable technology costs, fossil fuel prices, and wholesale market

price uncertainty. The study noted: “The large diversity of modeling methodologies and assumptions used to estimate state RPS costs demonstrates that state RPS cost analysis is still an evolving process, and that a standard template has not yet emerged.”⁴⁶

In 2012, the Lawrence Berkeley National Laboratory study was revisited. A status update indicated that RPS requirements applied to about 54 percent of total retail electricity sales in 2012 in the United States. In Montana, about 62 percent of total customers are part of a utility that is or has been subject to the RPS. Most states have capped rate impacts well below 10 percent, and in 13 states, including Montana, the impacts are capped below 5 percent. The graph in

Most RPS requirements include “cost caps” to protect consumers from rate spikes and unfair utility bills. Montana is no exception. The cost caps for Montana’s RPS are included in 69-3-2007, MCA.

45 Chen, Wisner, and Bolinger, “Weighing the Costs and Benefits of State Renewables Portfolio Standards.”

46 Ibid., page v.

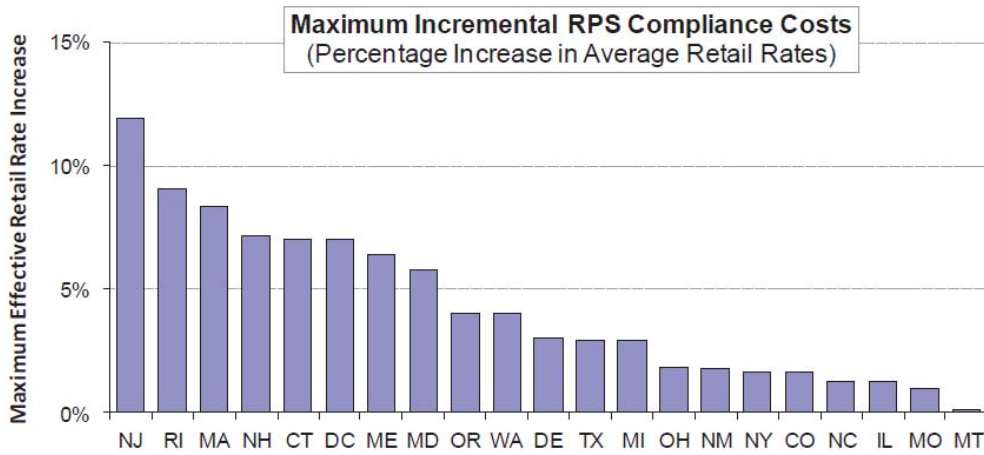


Figure 9: Source: Lawrence Berkeley National Laboratory and National Renewable Energy Laboratory

Figure 9 indicates impacts in Montana to be on the lowest end of the spectrum.⁴⁷

In May 2014, the National Renewable Energy Laboratory released its most extensive survey of cost and benefit estimates for state RPS policies. The study noted that varying methods and assumptions are used in estimating costs and benefits, which put some limits on the study. The study looked at regulated states and restructured states. Montana was not examined specifically but could align with the regulated states because the two largest entities that are required to meet the Montana RPS are regulated utilities. According to the report: “Among traditionally regulated states (excluding California), estimated incremental compliance costs varied from -0.2 percent (i.e. net savings) to 3.5 percent of average retail rates.”⁴⁸

In determining RPS benefits, the 2014 NREL report noted the differences in how states quantify benefits and their relation to costs: “In many cases, these assessments are required by the legislature or public utilities commission (PUC), filed as part of an integrated resource plan (IRP) docket, and prepared for regulatory commissions, energy boards, or public benefit corporations.”⁴⁹

For example, the Michigan Public Utility Commission is statutorily required to file a report with the Legislature

examining the cost of renewable resources procured under the state RPS compared to the cost of a new, coal-fired power plant. In Colorado, state law requires that utilities estimate the incremental cost of the RPS through modeling work. In North Carolina, a hybrid of modeling and a proxy generator method is used to determine incremental RPS costs. Minnesota requires each electric utility to submit a report containing an estimation of the rate impact of activities of the electric utility necessary to comply with an RPS to the PSC and to the legislative committees with primary jurisdiction over energy policy. The report must be updated with a utility’s biennial resource plans and must discuss the costs incurred from complying with Minnesota’s RPS, which requires 25 percent of electricity to come from renewable sources by 2025.⁵⁰ The Wisconsin Legislature requires its PSC to biennially submit a report that evaluates the impact of the RPS on the rates and revenue requirements of electric providers and compares that impact with the impact that would have occurred if renewable energy practices had been subject to market forces in the absence of an RPS.⁵¹

The ETIC reviewed draft legislation requiring utilities and suppliers to track the costs and benefits of Montana’s RPS and to provide a report each interim to the committee. The committee did not pursue the draft proposal. It is included in Appendix L.

The EIA also completed a study in 2009 that examined the potential impact of a 25 percent nationwide

47 See <http://www.cleanenergystates.org/assets/2012-Files/RPS/RPS-SummitDec2012Barbose.pdf>.
 48 Jenny Heeter, Galen L. Barbose, Lori Bird, Samantha Weaver, Francisco Flores, Ksenia Kuskova-Burns, and Ryan H. Wiser, “A Survey of State-Level Cost and Benefit Estimates of Renewable Portfolio Standards,” National Renewable Energy Laboratory and Lawrence Berkeley National Laboratory, May 2014, page vi.
 49 Ibid.

50 Minnesota Statute 216B.1691 subd.2e.
 51 Wisconsin Statute 196.378 (4r).

renewable electricity standard. The study states: “Electricity price impacts vary from region to region, with renewable–resource-rich regions like the northern Great Plains States and the northwest states potentially seeing prices decline from reference case levels, while other regions see price increases ranging from 1 percent to 6 percent above reference case levels between 2025 and 2030.”⁵²

Other studies reach very different conclusions about Montana’s RPS. The Beacon Hill Institute at Suffolk University was commissioned by the American Tradition Institute and the Montana Policy Institute to estimate the costs of the RPS and its impact on the economy. Beacon Hill used its State Tax Analysis Modeling Program to reach its conclusions. It found that “in the aggregate, the state’s electricity consumers will pay \$225 million in 2015, within a range of \$141 million and \$348 million, because of the RPS. Montana’s electricity prices will increase by an average of 1.33 cents per kilowatt-hour (kWh), or by 18 percent in 2015, within a range of \$0.83 cents per kWh, or by 11 percent, and 2.06 cents per kWh, or by 28 percent.” Similar studies were completed by Beacon Hill in other states. Some concerns were raised in other states about the use of a model based on analyzing city taxes and the failure of the model to adequately recognize cost caps.

Consumer Counsel analysis

Disparities in determining the impacts of an RPS on customers are not unique to Montana. “Little consensus has emerged among analyses of policies for renewable energy, particularly with respect to consumer impacts.”⁵³ In an effort to take a closer look at customer impacts, the ETIC requested the Montana Consumer Counsel to conduct an analysis of RPS impacts, including the CREP, to Montana ratepayers. The analysis is included in Appendix M.

The Consumer Counsel examined the impacts of the RPS, CREPs, and QFs. Although QFs aren’t specifically part of the ETIC’s study, the Consumer Counsel notes, “any analysis of rate impacts that are attributable to the RPS and the CREP standard must account

for QFs and remove them from the impact because even though they may help satisfy the RPS and CREP standards, Federal law requires Montana utilities to purchase from them if they fall below the 3 MW threshold.”

The analysis also discusses regulation costs and the difference between NorthWestern Energy and Montana-Dakota Utilities in meeting the standard. In its examination, the analysis reviews various projects and specific impacts. For example, at Turnbull, the rate for electricity paid by NorthWestern Energy is \$65.75 per megawatt-hour, with bundled RECs. The estimated additional cost to ratepayers, compared with the spot market, was estimated at \$1,352,872 for the 2012–2013 tracking year. Using a 50/50 assumption—a mix of Mid-C market prices and a surrogate measure of long-term contracts—the analysis noted an additional cost for Turnbull of \$1,020,813.

Ultimately in its review, the Consumer Counsel study notes: “The RPS and accompanying CREP legislation in Montana has had relatively minimal rate impact on NorthWestern Energy’s customers. This is mainly due to the fact that almost all the resources that NorthWestern uses to comply with both standards were either purchased before the implementation of the RPS (Judith Gap), or they are QFs that can take advantage of the standard offer rate which NorthWestern is required to extend to them under federal law.”

Case study: Spion Kop

In February 2012, the PSC approved NorthWestern Energy’s request to purchase and operate the Spion Kop wind farm in Judith Basin County. The 40-megawatt wind farm is certified as an eligible renewable resource that can be used to meet Montana’s RPS. The application provides details on the cost of the facility and Montana’s RPS. Spion Kop had a total capital cost of about \$86 million, including about \$7 million for an associated substation and transmission facilities. Spion Kop was selected as the result of a competitive bidding process conducted by NorthWestern in 2009. In testimony before the PSC, NorthWestern Energy indicated that Spion Kop’s \$53.78-per-megawatt-hour, 25-year levelized cost was \$11 per megawatt-hour less than the next best offer NorthWestern received in response to its market

52 See [http://www.eia.gov/analysis/requests/2009/acesa/pdf/sroiaf\(2009\)04.pdf](http://www.eia.gov/analysis/requests/2009/acesa/pdf/sroiaf(2009)04.pdf).

53 Carol Fischer, “Renewable Portfolio Standards: When Do They Lower Energy Prices?” International Association for Energy Economics, *The Energy Journal* 31, no. 1 (2010).

solicitation.⁵⁴

NorthWestern Energy indicated that without additional renewable resources, the utility would not comply with the 10 percent renewable standard in 2013 and 2014. NorthWestern provided further testimony that Spion Kop's effect on electricity supply tracker costs would be a decrease of \$0.70 per megawatt-hour in market purchase costs, no change in Colstrip 4 fixed and variable costs, no change in fixed costs at Dave Gates, and an increase of \$0.03 per megawatt-hour in variable costs at Dave Gates to integrate Spion Kop.⁵⁵

Ultimately, the PSC found that "the rates resulting from the procurement of Spion Kop will be just and reasonable."

The Consumer Counsel estimated the first year of production at Spion Kop at a cost of \$43.92 per megawatt-hour and at \$45.22 per megawatt-hour, including the cost of regulation. The additional cost attributable to the RPS, compared with the spot market alternative, was \$2,739,714 for the 2012-2013 tracking year and \$1,156,405 using the 50/50 spot market and long-term contract comparison.

Question of integration

Wind's variability can increase the day-to-day operating costs of a utility system. Concerns abound that large, utility-grade wind turbines cannot be installed on the distribution grid without upgrades, resulting in higher costs being passed on to ratepayers. The cost of wind integration also can grow as the percentage of wind increases on the interconnected system. Overall, however, the economics of wind energy are largely a function of a project's size, the wind resource, policy incentives, and financing. Cost recovery can be a threshold issue that varies among areas and utilities.

"Integration" is a term used in describing the economic impact wind has on a utility because of variability and uncertainty. Wind integration can lead to additional utility costs because additional generation capacity that is controllable is added to manage the incremental variability of wind. The uncertainty is attributed to operations planning required to accommodate wind.

54 Montana Public Service Commission, "Final Order in the Matter of Application for Approval to Purchase and Operate the Spion Kop Wind Project," Docket No. D2011.5.41, Order No. 71591, page 4.

55 *Ibid.*, page 12.

Utilities purchase regulatory reserves to balance out the variability of wind. The Federal Energy Regulatory Commission (FERC) sets generation integration rules that require a utility to balance supply and demand.

Wind integration costs are often driven by the need to "secure additional operating flexibility on several time scales to balance fluctuations and uncertainties in wind output."⁵⁶ A 2007 study by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy found that wind integration costs were about \$5 per megawatt-hour, or less, for wind capacity penetrations up to 15 percent of the peak load where the power is delivered.⁵⁷

NorthWestern Energy, in a July 2006 presentation to the Northwest Power and Conservation Council, identified wind integration issues, including within-hour regulation issues, forecast issues, forced outage notification issues, increased regulation cost, and increased penetration levels for wind generation. Limited resource availability for regulation services and concern that present regulation resources may not be available in the future because of increased penetration of wind in other control areas also were raised.⁵⁸ In addition, transmission issues relative to load following services when purchased outside the control area were pointed out by NorthWestern.

NorthWestern encountered some challenges in integrating the 135-megawatt Judith Gap wind farm, which came online in late 2005. For example, in April 2006, the Western Electricity Coordinating Council notified NorthWestern that its transmission system may have fallen 3 percent short of minimum control performance standards of 90 percent. The lapse did not bring sanctions, but it illustrates some of the difficulty associated with managing the ups and downs of wind—particularly when it is new to a system.

In January 2011, the Dave Gates Generating Station started operating and is used by NorthWestern to provide regulation services for balancing authority, including regulation for wind projects in the supply portfolio. In approving NorthWestern's request to construct Dave Gates, the PSC noted: "The

56 *The Northwest Wind Integration Action Plan*, March 2007, page 27.

57 *Annual Report on U.S. Wind Power Installation, Cost, and Performance Trends: 2006*, U.S. Department of Energy, Energy Efficiency and Renewable Energy, May 2007, page 20.

58 NorthWestern Energy Wind Integration, Northwest Power and Conservation Council Meeting, PowerPoint presentation, July 11, 2006.

NorthWestern balancing authority requires 60 MW of traditional regulation service, used by both retail and wholesale customers, to comply with reliability standards . . . An additional 45 MW of Dave Gates' capacity is allocated to the integration of wind and borne by retail ratepayers exclusively."⁵⁹ Much discussion by the PSC concerned how much of the costs of Dave Gates to attribute to wind. NorthWestern, in filling out the ETIC survey, indicated that both renewable and integration resources would have been added to their portfolio even if there was not a standard in Montana. However, they did note that the company would have acquired and constructed those resources at a different size. The company also attributed about 50 percent of the cost of Dave Gates to the Montana RPS.

Although Dave Gates has assisted with integration issues, it has not resolved all issues. In August 2012, NorthWestern issued a request for proposals for up to 45 megawatts of CREPs. NorthWestern received 30 responses, including 24 wind projects. The scoring of projects included transmission criteria based on project location, because NorthWestern was concerned that individual CREP proposals might require transmission upgrades, which could increase customer costs. Ultimately, NorthWestern was not able to move forward with any of the proposals—largely because of concerns about transmission and integration issues. The concerns were based on Western Area Power Administration's decision not to integrate those upgrades into their system, but they still fall into the category of integration issues.

In NorthWestern Energy's 2013 Resource Procurement Plan, existing wind resources are shown in the resource stack at their average annual energy production, which is equal to about 38 percent of generation at full capacity. However, NorthWestern noted that in any one hour, cumulative wind may vary between 0 percent and 91 percent of total installed capacity. The company wrote: "This band of variability represents uncertainty that NorthWestern must manage when procuring resources to serve loads."

The costs of regulation from Dave Gates remain a topic of much discussion. The Montana Consumer Counsel in its analysis found, "We do not have an unambiguous

estimate of the cost of regulation from Dave Gates." Costs were originally set at \$13 per megawatt-hour by NorthWestern, charging load and transmission regulation with almost all of the capital costs of the facility and treating wind as an incremental user of regulation services. According to the analysis: "A fully allocated cost of regulation from Dave Gates would be much higher." The Federal Energy Regulatory Commission in April 2014 also issued a decision on how much transmission customers may be charged by NorthWestern, creating additional uncertainty about cost recovery at the facility.

The CREP question

As discussed previously, Montana's RPS includes provisions for CREPs, defined as renewable energy projects under 25 megawatts where local owners have a controlling interest. For compliance years 2012 through 2014, utilities must purchase both the renewable energy credits and the electricity output from CREPs totaling at least 50 megawatts in nameplate capacity. For compliance year 2015 and each following year, utilities must purchase both the RECs and the electricity output from CREPs totaling at least 75 megawatts in nameplate capacity.

CREPS have been an ongoing topic of discussion for NorthWestern Energy and the PSC. In 2011, NorthWestern Energy filed a petition with the PSC requesting a waiver from full compliance with the CREP requirement. NorthWestern requested a waiver for compliance years 2012 through 2014 and any associated penalties. The company asserted that it took all reasonable steps, as required by law, to meet the requirement but "sufficient CREPs do not exist to enable NorthWestern to achieve full compliance with the CREP purchase obligation, and the cost of any of the proposed CREPS, other than those acquired by NorthWestern, would have exceeded the cost caps."⁶⁰ The Montana Consumer Counsel also recommended that the PSC grant the waiver because NorthWestern had taken reasonable steps. The PSC found that NorthWestern took reasonable steps to acquire CREPs in 2008 and 2009. However, the PSC determined that NorthWestern failed to show that CREPs were not available and failed to demonstrate that the cost of CREPs exceeded the cost of the equivalent quantity

⁵⁹ Public Service Commission, "Application of NorthWestern Energy for Approval to Construct and Operate the Dave Gates Generating Station," Docket No. D2008.8.95, Order No. 6943e, page 32.

⁶⁰ NorthWestern petition for short-term waiver from full compliance with CREP requirement, D2011.6.53, Order No. 7177b.

of power over the equivalent contract term. The commission ultimately granted the waiver for 2012 but denied the request for 2013 and 2014.

The waiver, however, continues to generate much discussion before the PSC. The provisions in Montana law that require a utility to prove that it has “undertaken all reasonable steps” in an effort to comply with the CREP has raised concerns about the burden of proof for a utility. The PSC requested that agency legislation to repeal CREP requirements be brought before the 2015 Legislature. The ETIC encouraged the PSC to instead look for opportunities to improve implementation of CREP requirements.

NorthWestern Energy in October 2013 filed a second request for waiver from 2013 CREP compliance. The docket remains open before the PSC. The company has five CREP qualified resources. The projects account for about 33 megawatts, which is about 12 megawatts short of the 2012 obligation and 35 megawatts short of the 2015 obligation.

Case study: Request for a rate increase

In August 2010, MDU filed an application for authority to increase its electric service rates in Montana.

Reasons for the increase included:

- increased investment in facilities, including expansion of wind generation in the Cedar Hills and Diamond Willow projects;
- a decline in MDU’s total company wholesale sales margin; and
- recovery of the deferred generation costs associated with the proposed Big Stone II, Gascoyne, and Milton Young III generation projects (plants that were never built).⁶¹

Since 2007, MDU has made several new generating resource additions, including a 19.5-megawatt wind project named Diamond Willow, which began generating electricity in December 2007; a 5.3-megawatt heat recovery generating station named Glen Ullin Station #6, which commenced commercial operation in June 2010; and a 10.5-megawatt

⁶¹ Montana Public Service Commission, “Application for Authority to Establish Increased Rates for Electric Service,” Docket No. D2010.8.82, Order No. 7115d, page 4.

However, the PSC determined that NorthWestern failed to show that CREPs were not available and failed to demonstrate that the cost of CREPs exceeded the cost of the equivalent quantity of power over the equivalent contract term.

expansion to the Diamond Willow wind project, which began commercial operation in June 2010.

The Diamond Willow and Cedar Hills wind projects are used to meet customer energy requirements that MDU would otherwise potentially have purchased from the Midwest ISO Energy Market or generated from available company generation. The offsetting benefits of the renewable investments are passed through to the customer either under the fuel and purchased power tracking adjustment or directly, according to testimony provided to the PSC. Transmission investments and tariff costs can provide direct benefits to customers in the form of congestion relief, which reduces the amount of fuel and power that MDU would otherwise have to purchase. The corresponding savings flow back through the fuel and purchased power tracking adjustment.⁶²

In July 2011, the PSC approved a 6 percent increase in electric rates for MDU’s Montana customers. With the increase, a homeowner using 800 kilowatt-hours a month saw a bill increase of about \$3. North Dakota’s Public Service Commission in 2011 approved a rate increase for MDU’s 75,000 customers. The North Dakota Commission approved the increase in a split decision, with commissioners disagreeing on the impact of Montana’s RPS on North Dakota rates.

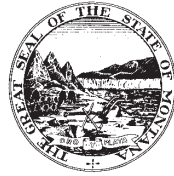
⁶² Montana Public Service Commission, “Application for Authority to Establish Increased Rates for Electric Service,” Docket No. D2010.8.82, Order No. 7115d, page 47.

CONCLUSION

The ETIC reached out to state and federal agencies, stakeholders, and the public throughout the SJ 6 process. The conclusions of this report—the findings—represent the areas where ETIC members were able to find consensus on broad aspects of Montana’s RPS. Ultimately, a majority of the ETIC agreed that Montana’s RPS is best left in its current form, requiring entities to procure 15 percent renewable energy generation by 2015.

FIGURE NOTES

- 1 Not provided in survey. See http://billingsgazette.com/news/state-and-regional/montana/ropin-the-wind-judith-gap-wind-farm-to-tap-montana/article_0bb700b2-db62-52e0-b038-74fc0021a28b.html.
- 2 The survey response provided by NorthWestern Energy indicated 790 construction jobs. The response was based on a breakdown by contractor and by pay period. The maximum number of Montana personnel in one payroll period and by contractor showed a total of 100 Montana workers. The total hours for Montana workers was equivalent to 12½ full-time jobs for a period of one year.
- 3 This includes all certified eligible renewable resources located in Montana and delivering electricity into Montana. A 40% capacity factor was used for output. Actual output may be higher or lower than 40%. By way of example, Judith Gap averages 38% capacity, Gordon Butte has averaged 45%, and Klondike III has been estimated at 30% to 34% capacity.
- 4 This includes only certified eligible renewable resources located in Montana. A 40% capacity factor was used in determining output.
- 5 This includes all certified eligible renewable resources located in Montana and delivering electricity into Montana. A 40% capacity factor was used for output. Actual output may be higher or lower than 40%. By way of example, Judith Gap averages 38% capacity, Gordon Butte has averaged 45%, and Klondike III has been estimated at 30% to 34% capacity.
- 6 This includes only certified eligible renewable resources located in Montana. A 40% capacity factor was used in determining output.



A JOINT RESOLUTION OF THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA REQUESTING AN INTERIM STUDY TO ANALYZE THE IMPACTS OF THE MONTANA RENEWABLE POWER PRODUCTION AND RURAL ECONOMIC DEVELOPMENT ACT; AND REQUIRING THAT THE FINAL RESULTS OF THE STUDY BE REPORTED TO THE 64TH LEGISLATURE.

WHEREAS, the Montana Renewable Power Production and Rural Economic Development Act, Title 69, chapter 3, part 20, has required certain utilities to procure a percentage of their resources from renewable resources since 2008; and

WHEREAS, beginning in 2015, and in each succeeding year, a public utility and competitive electricity supplier are required to procure a minimum of 15% of its retail sales of electrical energy in Montana from renewable resources; and

WHEREAS, there are ongoing discussions about increasing the renewable portfolio standard or abolishing the requirement; and

WHEREAS, there has been limited analysis of the impact the Renewable Power Production and Rural Economic Development Act has had in Montana.

NOW, THEREFORE, BE IT RESOLVED BY THE SENATE AND THE HOUSE OF REPRESENTATIVES OF THE STATE OF MONTANA:

That the Legislative Council be requested to designate an appropriate interim committee, pursuant to section 5-5-217, MCA, or direct sufficient staff resources to:

- (1) review the economic impacts of the renewable portfolio standard by analyzing:
 - (a) the renewable portfolio standard's contribution to new electrical generation in Montana;
 - (b) the short-term and long-term jobs created by the standard;
 - (c) industries working in Montana due in part to the standard;
 - (d) the use of renewable energy credits in Montana by the renewable energy industry; and
 - (e) how the standard has been used to leverage Montana's competitive advantages in developing new



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electric transmission;

(2) review the environmental benefits of the renewable portfolio standard by analyzing:

(a) the standard's contribution to diversified generation in Montana and to reduced dependence on fossil fuels;

(b) the types of renewable energy generation used in meeting the standard; and

(c) potential contributions to air quality improvements attributable to the standard; and

(3) review the impacts the renewable portfolio standard has had on Montana consumers by analyzing:

(a) whether the standard has mitigated or contributed to higher energy costs for consumers;

(b) how the standard has been used to hedge against volatility in fossil fuel prices; and

(c) whether the standard complements or hinders other efforts to help consumers.

BE IT FURTHER RESOLVED, that upon completion of the study, the committee make recommendations, if appropriate, to:

(1) revise Montana's Renewable Power Production and Rural Economic Development Act; and

(2) clarify existing law to ensure that the compliance costs do not outweigh the economic and environmental benefits.

BE IT FURTHER RESOLVED, that if the study is assigned to staff, any findings or conclusions be presented to and reviewed by an appropriate committee designated by the Legislative Council.

BE IT FURTHER RESOLVED, that all aspects of the study, including presentation and review requirements, be concluded prior to September 15, 2014.

BE IT FURTHER RESOLVED, that the final results of the study, including any findings, conclusions, comments, or recommendations of the appropriate committee, be reported to the 64th Legislature.

- END -

APPENDIX B

Assigned Studies

Study Montana's renewable portfolio standard

Source/authority: Senate Joint Resolution No. 6

Legislative Poll Ranking: #3

Background: Since 2008, the Montana Renewable Power Production and Rural Economic Development Act required certain utilities to procure a percentage of their resources from renewable resources. Beginning in 2015, and in each succeeding year, a public utility and competitive electricity supplier must procure a minimum of 15% of its retail sales of electrical energy in Montana from renewable resources. There are ongoing discussions about increasing the renewable portfolio standard or abolishing the requirement, and to-date there has been limited analysis of the impact the Renewable Power Production and Rural Economic Development Act has had in Montana. This study would focus on the policy points outlined in SJ 6, including:

(1) The economic impacts of the renewable portfolio standard, including the standard's contribution to new electrical generation in Montana, the short-term and long-term jobs created by the standard, industries working in Montana due in part to the standard, the use of renewable energy credits in Montana by the renewable energy industry, and how the standard has been used to leverage Montana's competitive advantages in developing new electric transmission.

(2) The environmental benefits of the renewable portfolio standard, including the standard's contribution to diversified generation in Montana and to reduced dependence on fossil fuels, the types of renewable energy generation used in meeting the standard, and potential contributions to air quality improvements attributable to the standard.

(3) The impacts the renewable portfolio standard has had on Montana consumers, including whether the standard has mitigated or contributed to higher energy costs for consumers and how the standard has been used to hedge against volatility in fossil fuel prices.

The ETIC allocated .6 FTE for this topic.

SJ 6 Work Plan Tasks:

- ✓ 1. Provide summary of Montana's Renewable Portfolio Standard. Summarize eligible renewable resources and entities subject to standard.
Who: ETIC staff
Time line: June 2013 meeting
- ✓ 2. ETIC tours of eligible renewable resources in Montana.
Who: ETIC members
Time line: September 2013 meeting
- ✓ 3. Review of RPS standards in other Western states and review of questionnaire for RPS stakeholders.
Who: ETIC members and staff
Time line: September 2013 meeting
- ✓ 4. Panel discussions with a focus on the economic impacts of Montana's RPS.
Who: Wheatland County developers, business owners, local governments
Time line: September 2013 meeting
- ✓ 5. Panel discussions with a focus on the environmental impacts of Montana's RPS.

Who: National Renewable Energy Laboratory, DEQ, utilities
Time line: November 2013 meeting

- ✓ 6. ETIC discussion of preliminary questionnaire responses and direction of study.
Who: ETIC members
Time line: November 2013 meeting
- ✓ 7. Panel discussions with a focus on the consumer impacts of Montana's RPS.
Who: Utilities and electricity suppliers, PSC
Time line: March 2014 meeting
- ✓ 8. Begin discussion of recommendations and proposed legislation.
Who: ETIC members
Time line: March 2014 meeting
- ✓ 9. Presentation of preliminary report and development of recommendations and proposed legislation.
Who: ETIC members, staff
Time line: May 2014 meeting
- ✓ 10. Review draft report, findings, recommendations, and any proposed legislation.
Who: ETIC members, staff
Time line: July 2014 meeting
- ✓ 11. Review public comment on draft report and any proposed legislation.
Who: ETIC members, staff
Time line: July 2014 meeting
- 12. Approval of final report and any findings, recommendations, or legislation.
Who: ETIC members
Time line: September 2014 meeting

Renewable Energy Requirements and Goals in the Rocky Mountain Region



Notes of interest...

In 2013, Colorado increased the standard for rural electric cooperatives from 10% to 20% by 2020. The law also permits co-ops to add a monthly surcharge—up to 2% of a customer's monthly bill—to fund projects needed to comply with the standard. It was the third time Colorado has raised the threshold since the standard was created by ballot initiative in 2004.

Colorado's standard includes a multiplier, so electricity generated at a community project—projects not greater than 30 megawatts in capacity owned by individual residents of a community, an organization or cooperative controlled by individual residents, a local government entity, or a tribal council—can receive 150% credit.

In Utah, the goal requires utilities to pursue renewable energy to the extent it is "cost-effective." The guidelines for determining the cost-effectiveness of acquiring an energy source include an assessment of whether acquisition of the resource will result in the delivery of electricity at the lowest reasonable cost, as well as an assessment of long-term and short-term impacts, risks, reliability, financial impacts on the affected utility, and other factors determined by the Utah Public Service Commission.

South Dakota's retail providers may deduct from their baseline retail sales the proportion of electricity obtained from hydroelectric facilities with an in-service date before July 1, 2008.

In Arizona, a REC is a bundled package of the kilowatt-hours, the renewable attributes, and any environmental attributes. All three must be delivered to Arizona customers and utilities in order to meet the requirements.

New Mexico has a "renewable energy and conservation fee" to support programs or projects to promote the use of renewable energy, load management, or energy efficiency. Distribution cooperatives may collect a fee of no more than 1% of the customer's bill, not to exceed \$75,000 annually from any single customer.

What Is an Eligible Renewable Resource?

Wind, solar, geothermal, certain hydroelectric projects, certain new hydroelectric projects at an existing reservoir or on an existing irrigation system, certain hydroelectric project expansions, landfill or farm-based methane gas, wastewater-treatment gas, biomass (with limits), and renewable fraction from flywheel storage, hydroelectric pumped storage, batteries, and compressed air.

Solar, wind, biomass, hydropower, geothermal, hydrogen derived from another eligible resource, and recycled energy systems that generate electricity from currently unused waste heat resulting from combustion or other processes and that do not use an additional combustion process. Hydropower facilities must have an in-service date of January 1, 2007, or later, or must qualify as new hydropower generation obtained from repowering or efficiency improvements to facilities.

Wind, solar, hydroelectric, biomass, geothermal resources, and electricity generated from currently unused waste heat from combustion or another process that does not use an additional combustion process and that is not the result of a system whose primary purpose is the generation of electricity. Hydrogen generated by any of the preceding resources is eligible.

Electric generation facilities operating after January 1995 that produce electricity from solar; wind; biomass; hydroelectric (under certain conditions); wave, tidal or ocean-thermal energy; geothermal; or waste gas and waste heat. Solar-thermal installations, methane gas from an abandoned coal mine and methane gas from a coal degassing operation associated with a permit, compressed air, and municipal solid waste count.

Solar-electric energy, wind energy, geothermal-electric energy, biomass facilities that burn non-toxic plants, landfill gas, animal waste, hydropower, recycled energy, and fuel cells using hydrogen derived from eligible renewables. Coal mine methane and pyrolysis of municipal solid waste qualify, if the Colorado Public Utilities Commission determines they are greenhouse gas-neutral technologies.

Solar water heat, solar space heat, solar thermal electric, solar thermal process heat, photovoltaics, landfill gas, wind, biomass, hydroelectric, geothermal electric, geothermal heat pumps, CHP/cogeneration, solar pool heating (commercial only), daylighting (nonresidential only), solar space cooling, solar HVAC, anaerobic digestion, fuel cells using renewable fuels, geothermal direct-use, and additional technologies upon approval. CHP only counts when the source fuel is an eligible renewable energy resource.

Electric energy generated by low- or zero-emissions generation technology with substantial long-term production potential; solar; wind; geothermal; hydropower facilities brought in service after July 1, 2007; fuel cells that are not fossil fueled; and biomass resources, including agriculture or animal waste, small diameter timber, salt cedar and other phreatophyte or woody vegetation removed from river basins or watersheds in New Mexico, landfill gas, and anaerobically digested waste biomass. Renewable energy does not include electric energy generated from nuclear facilities.

To learn more ...

Information included in this report is from the Database of State Incentives for Renewables and Efficiency (DSIRE). DSIRE is operated and funded by the North Carolina Solar Center at North Carolina State University, with support from the Interstate Renewable Energy Council, Inc., and the U.S. Department of Energy. Individual information about standards and goals is available for each state:

Montana — MCA 69-3-2001 et seq.

North Dakota — ND Century Code § 49-02-24 et seq.

South Dakota — SDCL § 49-34A-101 et seq. and SDCL § 49-34A-94et seq.

Colorado — CRS 40-2-124

New Mexico — N.M. Stat. § 62-16-1 et seq. and N.M. Stat. § 62-15-34 et seq.

Utah — Utah Code 54-17-101 et seq. and Utah Code 10-19-101 et seq.

Arizona — AAC R14-2-1801 et seq.

California's influence on renewables . . .

California's electric utilities must have 33% of their retail sales derived from eligible renewable energy resources in 2020 and all subsequent years. Interim targets include:

- ◆ 20% of retail sales by December 31, 2013; and
- ◆ 25% of retail sales by December 31, 2016.

Publicly owned municipal utilities, not regulated by the California Public Utility Commission, still must meet certain standards. Their governing boards are charged with establishing procurement requirements based on the interim goals. To meet California's RPS reporting requirements and the tracking needs of other states in the Western Electricity Coordinating Council, the Energy Commission and the Western Governors' Association developed the Western Renewable Energy Generation Information System (WREGIS). WREGIS tracks renewable energy generation and creates certificates for renewable energy credits, used to demonstrate compliance with state RPS policies. One REC represents one megawatt-hour of electricity generated from a renewable resource. About 62% of the (renewable attributes of) wind generated in Montana is used to meet California's RPS.

APPENDIX D

2008 RPS Compliance Year ¹			
Public Utilities			
	RECs Needed	Facilities	Status
NorthWestern Energy	296,696	Judith Gap	✓ ²
Montana-Dakota Utilities	34,718	Diamond Willow I	✓
Black Hills	1,490	Happy Jack	✓
Avista			Paid fee: \$153
Competitive Electricity Suppliers			
	RECs Needed	Facility	Status
PPL Treasure State	4,058	Judith Gap	✓
Electric City Power			Paid fee: \$23,260
Electricity Suppliers (Reports filed with PSC, but supplier is not subject to the RPS)			
Conoco Phillips			
Powerex			
Hinson Power			
PPL Energy Plus			

¹Utilities and competitive electricity suppliers were required to acquire renewable energy equal to 5% of their retail sales of electricity in Montana in compliance years 2008 and 2009.

²The checkmark shows that the utility or supplier met PSC and statutory requirements.

2009 RPS Compliance Year			
Public Utilities			
	RECs Needed	Facilities	Status
NorthWestern Energy	298,759	Judith Gap	✓
Montana-Dakota Utilities	34,717	Diamond Willow I	✓
Black Hills	1,985	Happy Jack	✓
Avista			Paid fee: \$219
Competitive Electricity Suppliers			
	RECs Needed	Facility	Status
PPL Treasure State	4,058	Klondike Wind III	✓
Electric City Power	6,720	Klondike Wind III	✓
Conoco Phillips			Paid fee: \$69,400
Electricity Suppliers (Reports filed with PSC, but supplier is not subject to the RPS)			
Powerex			
Hinson Power			
PPL Energy Plus			

2010 RPS Compliance Year³			
Public Utilities			
	RECs Needed	Facilities	Status
NorthWestern Energy	583,403	Judith Gap ⁴	✓
Montana-Dakota Utilities	70,040	1. Diamond Willow I 2. Cedar Hills	✓
Black Hills	4,663	Happy Jack	✓
Avista			Paid fee: \$550
Competitive Electricity Suppliers			
	RECs Needed	Facility	Status
PPL Treasure State	7,712	Klondike Wind III	✓
Electric City Power			Paid fee: \$132,234
Conoco Phillips	13,108	Klondike Wind III	✓
Electricity Suppliers (Reports filed with PSC, but supplier was not subject to the RPS)			
Powerex			
Hinson Power			
Idaho Power			
PPL Energy Plus			

³Utilities and competitive electricity suppliers are required to acquire renewable energy equal to 10% of their retail sales of electricity in Montana in compliance years 2010 through 2014.

⁴NorthWestern Energy also acquired credits from Klondike Wind III; however, after an error in accounting for RECs was made, only credits from Judith Gap were necessary to meet the standard.

2011 RPS Compliance Year			
Public Utilities			
	RECs Needed	Facilities	Status
NorthWestern Energy	577,561	Judith Gap	✓
Montana-Dakota Utilities	71,151	1. Diamond Willow I 2. Cedar Hills	✓
Black Hills	4,964	Happy Jack	✓
Avista			Paid fee: \$481
Competitive Electricity Suppliers			
	RECs Needed	Facility	Status
PPL Treasure State	12,394	Diamond Willow I	✓
Electric City Power	13,823	Happy Jack	✓
Conoco Phillips	11,931	Klondike Wind III	✓
Electricity Suppliers (Reports filed with PSC, but supplier was not subject to the RPS)			
Powerex			
Hinson Power			
Independent Electricity ⁵			
PPL Energy Plus			

⁵Independent Electricity Supply Service Inc. was determined not to be a competitive electricity supplier but purchased 3,162 credits from the Bonneville Power Administration that could be applied toward the 2012 compliance year. Independent Electricity purchased wholesale power solely from Southern Montana Electric Generation and Transmission Cooperative. With the bankruptcy of Southern Montana and the appointment of a trustee, the REC requirement of Independent Electricity is unclear.

2012 RPS Compliance Year						
Public Utilities						
	RECs Needed	Facilities	Status	CREP ⁶	Facilities	Status
NorthWestern Energy	592,007	1. Judith Gap 2. Spion Kop 3. Lower South Fork ⁷	✓	44 MW	1. Gordon Butte 2. Turnbull	✓ ⁸
Montana-Dakota Utilities	74,756	1. Diamond Willow I 2. Cedar Hills	✓	5.6 MW	1. Diamond Willow I 2. Cedar Hills	✓
Black Hills	5,082	Happy Jack	✓	.355 MW		Waiver granted ⁹
Avista ¹⁰			Paid fee: \$529	.045 MW		✓ ¹¹

⁶Beginning in 2012, public utilities were required to purchase both credits and electricity output from community renewable energy projects (CREPs) that total at least 50 megawatts in nameplate capacity. Community renewable energy projects are locally owned and are 25 megawatts or less. Public utilities proportionately allocate the CREP purchase required based on each public utility's retail sales in Montana in the calendar year 2011.

⁷NorthWestern Energy is requesting that the PSC certify the Lower South Fork Hydroelectric project as a CREP.

⁸NorthWestern Energy acquired 22.6 megawatts of CREP power. The PSC granted the utility a one-year waiver from acquiring the remaining 21.4 megawatts.

⁹With the passage of Senate Bill No. 164 by the Montana Legislature, Black Hills is no longer subject to Montana's RPS or to the CREP requirements.

¹⁰With the passage of Senate Bill No. 164 by the 2013 Montana Legislature, Avista is no longer subject to Montana's RPS or to the CREP requirements.

¹¹The fee paid includes a penalty for not meeting either the RPS or the CREP.

Competitive Electricity Suppliers						
	RECs Needed	Facility	Status			
PPL Treasure State	20,406	Diamond Willow I	✓			
Electric City Power	9,587	Klondike Wind III	✓			
Conoco Phillips ¹²	12,347	Klondike Wind III	✓			
Electricity Suppliers (Reports filed with PSC, but supplier was not subject to the RPS)						
Powerex						
Hinson Power						
Independent Electricity ¹³						
PPL Energy Plus						

¹²With the passage of Senate Bill No. 327, ConocoPhillips is no longer subject to Montana's RPS.

¹³See footnote #5.

2013 RPS Compliance Year						
Public Utilities						
	RECs Needed	Facilities	Status	CREP	Facilities	Status
NorthWestern Energy		1. Judith Gap 2. Spion Kop 3. Lower South Fork ¹⁴	✓		1. Gordon Butte 2. Turnbull	✓ ¹⁵
Montana-Dakota Utilities		1. Diamond Willow I 2. Cedar Hills	✓		1. Diamond Willow I 2. Cedar Hills	✓
Competitive Electricity Suppliers						
	RECs Needed	Facility	Status			
PPL Treasure State	20,406	Diamond Willow I	✓			
Electric City Power	9,587	Klondike Wind III	✓			
Electricity Suppliers (Reports filed with PSC, but supplier was not subject to the RPS)						
Powerex						
Hinson Power						
Independent Electricity ¹⁶						
PPL Energy Plus						

¹⁴NorthWestern Energy is requesting that the PSC certify the Lower South Fork Hydroelectric project as a CREP.

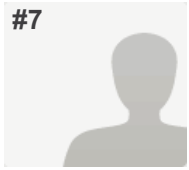
¹⁵NorthWestern Energy acquired 22.6 megawatts of CREP power. The PSC granted the utility a one year waiver from acquiring the remaining 21.4 megawatts.

¹⁶See footnote #5.

APPENDIX E

Renewable Energy in Montana - Survey for Utilities and Suppliers

#7



COMPLETE

Collector: Follow Up 2 (Email)
Started: Thursday, December 05, 2013 9:38:34 AM
Last Modified: Tuesday, January 28, 2014 2:06:02 PM
Time Spent: Over a month
Email: john.bushnell@northwestern.com
Custom Data: NorthWestern Energy

IP Address: 199.96.16.11

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	NorthWestern Energy
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	All years
Q3: Have you been able to meet the overall percentage requirements?	Yes
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	<i>Respondent skipped this question</i>
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	
Judith Gap - 135 MW wind Spion Kop - 40 MW wind Gordon Butte - 9.6 MW wind Turnbull - 13 MW hydro Flint Creek - 2 MW hydro Lower South Fork - 0.5 MW hydro	
Q7: Are you subject to the CREP requirement?	Yes
Q8: Have you met the CREP requirement?	No, If not, have you received a waiver for any compliance year? Yes
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	NWE estimates conservatively that it has expended \$25,000 to date on waiver filings.
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	No
Q11: What eligible renewable resources have you used to meet the CREP requirement?	
Gordon Butte - 9.6 MW wind Turnbull - 13 MW hydro Flint Creek - 2 MW hydro Lower South Fork - 0.5 MW hydro	
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	
Gordon Butte - Gordon Butte Wind, LLC Turnbull - Turnbull Hydro, LLC Flint Creek - Flint Creek Hydroelectric, LLC Lower South Fork - Lower South Fork, LLC	

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q13: Has the standard contributed to the diversification of your portfolio in Montana?

No,

Please explain how it has or has not.
NWE had already been focused on renewable resources prior to RPS. A minimal amount of NWE's resource portfolio can be attributed to the standards.

Q14: Has the standard led to you reducing your dependence on fossil fuels?

No,

Please explain how it has or has not.
No. Given NWE's dependence on market purchases, this cannot be precisely determined. However, NWE believes any change in fossil fuel use to be minimal.

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?

No,

Please provide some details on how it has or has not.
No. On one hand, resources acquired to meet the RPS standards provide a partial hedge against volatility of fossil fuel markets by reducing market purchases, which include a thermal (gas/coal) component. On the other hand, the inclusion of RPS resources caused NWE to invest in additional gas-fired resources to integrate/regulate those resources. These offsetting effects cannot be precisely determined.

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?

Neutral,

Please explain your answer
Neutral: Customer cost impact cannot be precisely calculated (refer to NWE's responses to 14 and 15). However, NWE's highest cost RPS resources are currently much more costly, on a \$/MWh basis, than the market purchases that they displace.

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

Respondent skipped this question

Q18: How is the standard beneficial to your customers?

NorthWestern was focused on renewable resources prior to RPS (refer to NWE's response to 13, 15 and 16). Therefore, any benefit from RPS is minimal.

Q19: How is the standard a drawback for your customers?

NorthWestern was focused on renewable resources prior to RPS (refer to NWE's response to 13, 15, and 16). Therefore, the drawback from RPS is minimal.

Q20: What additional resources have been needed to integrate renewable resources?

Dave Gates Generation Station (DGGS) and wind forecasting services.

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?

Yes

Q22: Would you have constructed or acquired these resources at a different size if there was no standard?

Yes

Q23: Please explain your response to 21 and 22 above.

A majority of the RPS resources in NWE's energy supply portfolio would have been acquired absent the RPS standards, see NWE's answer to question 13.

Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard?

Roughly 50% of the cost of DGGS.

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Gordon Butte(\$69.53/MWh), Lower South Fork(\$66.25/MWh), Judith Gap Energy(\$34.27/MWh), Turnbull Hydro(\$65.96/MWh); Average Cost - \$59.00

Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:

Spot/hourly market resources?	\$40.47
Coal resources?	\$66.83
Natural gas resources?	Basin Creek Plant is a capacity and tolling agreement
Hydropower resources?	\$52.78
Qualifying facility resources?	\$75.52
Please identify the resources you are using as the basis of the answers above.	Market - Multiple sources; Coal - Costrip Unit 4; Hydro - Tiber Dam & Turnbull Hydro; QF - multiple sources

Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Judith Gap - \$39.71

Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:

Spot/hourly market resources?	\$44.42
Coal resources?	\$44.73
Natural gas resources?	Basin Creek Plant is a capacity and tolling agreement
Hydropower resources?	\$41.42
Qualifying facility resources?	\$68.64
Please identify the resources you are using as the basis of the answers above.	Market - Multiple sources; Coal - Colstrip 4; Hydro - Tiber Dam; QF - Multiple source

Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Judith Gap - \$37.33/MWh

Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:

Spot/hourly market resources?	\$54.54
Coal resources?	\$38.26
Natural gas resources?	Basin Creek Plant is a capacity and tolling agreement
Hydropower resources?	\$41.92
Qualifying facility resources?	\$67.30
Please identify the resources you are using as the basis of the answers above.	Market - Multiple sources; Coal - Unit contingent purchase; Hydro - Tiber Dam; QF - Multiple sources

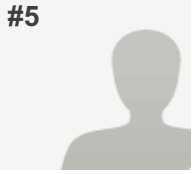
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

NWE is developing a portfolio of owned resources sufficient to meet its customers' loads reliably and economically. An increase in the RPS requirement could potentially affect NWE's planned load and resource balance. Additionally, an increase in the RPS standard could create integration/regulation needs in excess of NWE's current ability to provide those services.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#5



COMPLETE

Collector: Initial e-mail (Email)

Started: Thursday, September 26, 2013 1:07:16 PM

Last Modified: Friday, December 06, 2013 5:56:49 AM

Time Spent: Over a month

Email: darcy.neigum@mdu.com

Custom Value: MDU

IP Address: 162.57.10.186

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	Montana-Dakota Utilities
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	2008 - current
Q3: Have you been able to meet the overall percentage requirements?	Yes
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	<i>Respondent skipped this question</i>
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	
Diamond Willow I Diamond Willow II Cedar Hills	
Q7: Are you subject to the CREP requirement?	Yes
Q8: Have you met the CREP requirement?	Yes
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	No
Q11: What eligible renewable resources have you used to meet the CREP requirement?	
Diamond Willow I Diamond Willow II Cedar Hills	
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	
Montana-Dakota Utilities Co.	

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q13: Has the standard contributed to the diversification of your portfolio in Montana?

No,

Please explain how it has or has not.
Montana-Dakota Utilities Co.'s addition of 57 MW of renewable generation resources to its portfolio was not made solely in response to the Montana Renewable Portfolio Standard but in conjunction with the Company's Integrated Resources Plan which included the costs and consideration of other forms of generation. The standard probably accelerated the acquisition of renewable generation resources.

Q14: Has the standard led to you reducing your dependence on fossil fuels?

Yes,

Please explain how it has or has not.
To a minor degree. It did not reduce the need for Montana-Dakota's thermal generation. However, the energy produced by the renewable resources reduced the need to purchase energy from MISO, in which thermal resources still dominate.

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?

No,

Please provide some details on how it has or has not.
Montana-Dakota's renewable resources do not avoid the need for thermal resources

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?

Neutral,

Please explain your answer
The renewable resources acquired by the Company were cost competitive with other forms of electric generation available at the time of their investment.

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

Respondent skipped this question

Q18: How is the standard beneficial to your customers?

The standard did not directly benefit customers however, the introduction of renewables into Montana-Dakota's generation portfolio has reduced the cost of fuel and purchased power for its customers. This has also reduced the amount of market purchases from others and/or reduced the amount of generation from other higher cost resources that the Company has available to it. The introduction of renewables into Montana-Dakota's generation portfolio has also diversified the types of resources that the Company utilizes to meet its customers requirements.

Q19: How is the standard a drawback for your customers?

The existing renewable standard did not have a negative impact upon Montana-Dakota's customers. The renewable resources acquired by the Company were cost competitive with other forms of electric generation available at the time of their investment and are operated as integrated system resources.

Q20: What additional resources have been needed to integrate renewable resources?

None. Montana-Dakota is a member of the Midcontinent Independent System Operator (MISO) System and no additional resources are needed to firm renewables within MISO.

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?

Yes

Q22: Would you have constructed or acquired these resources at a different size if there was no standard?

No

Q23: Please explain your response to 21 and 22 above.

As noted in Response No. 20 Montana-Dakota did not need additional resources to integrate the renewable resources. Also refer to Response No. 13.

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard? None. See response to 20.

Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Respondent skipped this question

Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above. MISO Average Energy Purchase Price; MISO Energy Market offer prices for MDU's coal and natural gas resources

Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	\$27 to \$37 per MWh
Coal resources?	\$14 to \$22 per MWh
Spot/hourly market resources?	\$23 per MWh

Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Respondent skipped this question

Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above. MISO Average Energy Purchase Price; MISO Energy Market offer prices for MDU's coal and natural gas resources

Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	\$41 to \$43 per MWh
Coal resources?	\$13 to \$19 per MWh
Spot/hourly market resources?	\$28 per MWh

Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Respondent skipped this question

Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above. MISO Average Energy Purchase Price; MISO Energy Market offer prices for MDU's coal and natural gas resources

Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	\$53 to \$60 per MWh
Coal resources?	\$11 to \$20 per MWh
Spot/hourly market resources?	\$56 per MWh

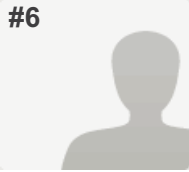
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

The Montana Renewable Portfolio Standard should not be changed. All investments in renewables should be justified on an equal basis with other available resources, without regard to a mandate.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#6



COMPLETE

Collector: Initial e-mail (Email)
Started: Friday, December 06, 2013 12:32:37 PM
Last Modified: Friday, December 06, 2013 2:39:53 PM
Time Spent: 02:07:16
Email: michael.theis@blackhillscorp.com
Custom Value: Black Hills

IP Address: 74.116.253.5

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	Black Hills
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	2008-current
Q3: Have you been able to meet the overall percentage requirements?	Yes
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	<i>Respondent skipped this question</i>
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	Wind generation located in Cheyenne, WY
Q7: Are you subject to the CREP requirement?	Yes
Q8: Have you met the CREP requirement?	No, If not, have you received a waiver for any compliance year? yes
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	approximately \$40,000
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	If so, in what amount? N/A
Q11: What eligible renewable resources have you used to meet the CREP requirement?	N/A
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	N/A
Q13: Has the standard contributed to the diversification of your portfolio in Montana?	No, Please explain how it has or has not. BHP could not find an economically viable solution to meet the CREP requirement, therefore we were granted a waiver to avoid creating an undue financial burden on our customers. As a result, we have not added to our renewable portfolio in Montana.

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q14: Has the standard led to you reducing your dependence on fossil fuels?

No,

Please explain how it has or has not.
The majority of our Montana load is constant industrial load. We must maintain generation to meet the demand regardless of the availability of our wind energy.

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?

No,

Please provide some details on how it has or has not.
Since we own and operate our own generation, we have limited exposure to any volatility in the fossil fuel markets.

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?

Neutral,

Please explain your answer
Had we complied with the CREP requirements, it would have resulted in higher costs to our customers. Given the small number of customers we have in Montana, we have not adjusted rates for many years, or for any moderate increases associated with renewable energy we have provided.

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

Projected in 2013 through 2015?

0 See explanation in question 16

In 2012?

0

In 2011?

0

In 2010?

0

In 2009?

0

In 2008?

0

Q18: How is the standard beneficial to your customers?

We do not believe the standard is beneficial to our Montana customers, given the economics associated with our small number of customers.

Q19: How is the standard a drawback for your customers?

Due to the small number of customers in the rural area of the state, the CREP requirement is not economically feasible compared to our current generation resources.

Q20: What additional resources have been needed to integrate renewable resources?

BHP has utilized additional regulation services as a result of integrating the renewable resources.

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?

No

Q22: Would you have constructed or acquired these resources at a different size if there was no standard?

No

Q23: Please explain your response to 21 and 22 above.

The renewable resources are our most expensive resource in our mix of generation resources to serve Montana customers, so it is unlikely these resources would have been utilized without the standard.

The bulk of wind generation produced in Cheyenne is utilized by other business units, so it is unlikely the small amount utilized in Montana would have any impact to the overall size or type of the project.

Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard?

100%

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? \$ 0.0476 per kWh

Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	company owned generation
Qualifying facility resources?	\$0.0476 per kWh
Hydropower resources?	N/A
Natural gas resources?	N/A
Coal resources?	\$0.0382 per kWh
Spot/hourly market resources?	\$0.0217 per kWh (purchased power)

Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Information not readily available at this time

Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:

Spot/hourly market resources? Information not readily available at this time

Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? Information not readily available at this time

Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:

Spot/hourly market resources? Information not readily available at this time

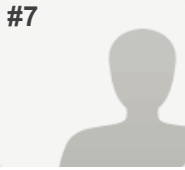
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

The information for questions 27-30 are not readily available at this time, but if needed we can provide this information. Please let us know if you would like us to follow-up with this.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#7



COMPLETE

Collector: Initial e-mail (Email)
Started: Tuesday, December 10, 2013 1:05:25 PM
Last Modified: Tuesday, December 10, 2013 4:21:53 PM
Time Spent: 03:16:27
Email: linda.gervais@avistacorp.com
Custom Value: Avista

IP Address: 198.251.0.1

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	Avista
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	2008-2012
Q3: Have you been able to meet the overall percentage requirements?	No, If not, have you received a waiver for any compliance year? See 31
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	See 31
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	Yes, If so, in what amount? 528.60 - 2012
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	N/A
Q7: Are you subject to the CREP requirement?	No
Q8: Have you met the CREP requirement?	No, If not, have you received a waiver for any compliance year? See 31
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	See 31
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	No
Q11: What eligible renewable resources have you used to meet the CREP requirement?	See Response to 31
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	See Response to 31
Q13: Has the standard contributed to the diversification of your portfolio in Montana?	No, Please explain how it has or has not. See Response to 31
Q14: Has the standard led to you reducing your dependence on fossil fuels?	No, Please explain how it has or has not. See Response to 31

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets? No,
Please provide some details on how it has or has not.
See Response to 31

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers? Please explain your answer N/A - See Response to 31

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

Projected in 2013 through 2015?	N/A
In 2012?	N/A
In 2011?	N/A
In 2010?	N/A
In 2009?	N/A
In 2008?	N/A

Q18: How is the standard beneficial to your customers?

N/A

Q19: How is the standard a drawback for your customers?

N/A

Q20: What additional resources have been needed to integrate renewable resources?

N/A

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana? Yes

Q22: Would you have constructed or acquired these resources at a different size if there was no standard? Yes

Q23: Please explain your response to 21 and 22 above.

N/A

Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard? N/A

Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? N/A

Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	N/A
Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	N/A
Coal resources?	N/A
Spot/hourly market resources?	N/A

Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? N/A

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	N/A
Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	N/A
Coal resources?	N/A
Spot/hourly market resources?	N/A

Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)? N/A

Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	N/A
Qualifying facility resources?	N/A
Hydropower resources?	N/A
Natural gas resources?	N/A
Coal resources?	N/A
Spot/hourly market resources?	N/A

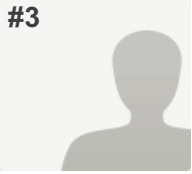
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

The Montana Legislature enacted SB164 which exempted any utility with 50 customers or less from the requirements of 69-3-2004. Avista falls under the exemption effective on passage and approval in 2013 (SB164, Chapter No. 73) and applies retroactively within the meaning of 1-02-109 to the compliance year beginning January 1, 2013. The Company's retail load in the state of Montana is quite small, consisting of only 28 or fewer retail customers.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#3



COMPLETE

Collector: Follow Up 1 (Email)

Started: Wednesday, December 04, 2013 12:03:12 PM

Last Modified: Wednesday, December 04, 2013 12:07:47 PM

Time Spent: 00:04:35

Email: gdoyon@greatfallsmt.net

Custom Value: Electric City Power

IP Address: 63.228.223.162

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Q1: What is the name of the utility or electricity supplier you represent?	Electric City Power
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	2005
Q3: Have you been able to meet the overall percentage requirements?	No, If not, have you received a waiver for any compliance year? Yes
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	No
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	Wind
Q7: Are you subject to the CREP requirement?	No
Q8: Have you met the CREP requirement?	<i>Respondent skipped this question</i>
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	<i>Respondent skipped this question</i>
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	<i>Respondent skipped this question</i>
Q11: What eligible renewable resources have you used to meet the CREP requirement?	<i>Respondent skipped this question</i>
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	<i>Respondent skipped this question</i>
Q13: Has the standard contributed to the diversification of your portfolio in Montana?	<i>Respondent skipped this question</i>
Q14: Has the standard led to you reducing your dependence on fossil fuels?	<i>Respondent skipped this question</i>
Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?	<i>Respondent skipped this question</i>
Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?	<i>Respondent skipped this question</i>

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)	<i>Respondent skipped this question</i>
Q18: How is the standard beneficial to your customers?	<i>Respondent skipped this question</i>
Q19: How is the standard a drawback for your customers?	<i>Respondent skipped this question</i>
Q20: What additional resources have been needed to integrate renewable resources?	<i>Respondent skipped this question</i>
Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?	No
Q22: Would you have constructed or acquired these resources at a different size if there was no standard?	No
Q23: Please explain your response to 21 and 22 above.	<i>Respondent skipped this question</i>
Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard?	<i>Respondent skipped this question</i>
Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	<i>Respondent skipped this question</i>
Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:	<i>Respondent skipped this question</i>
Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	<i>Respondent skipped this question</i>
Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:	<i>Respondent skipped this question</i>
Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	<i>Respondent skipped this question</i>
Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:	<i>Respondent skipped this question</i>
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard	<i>Respondent skipped this question</i>
Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).	Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#2



COMPLETE

Collector: Initial e-mail (Email)

Started: Tuesday, November 12, 2013 8:27:40 AM

Last Modified: Monday, December 02, 2013 8:17:49 AM

Time Spent: Over a week

Email: rdgabbard@pplweb.com

Custom Value: PPL Energy Plus

IP Address: 167.155.144.19

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	PPL Energy Plus
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	PPL EnergyPlus is NOT a Competitive Electricity Supplier
Q3: Have you been able to meet the overall percentage requirements?	If not, have you received a waiver for any compliance year? NA
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	NA
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	If so, in what amount? NA
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	NA
Q7: Are you subject to the CREP requirement?	No
Q8: Have you met the CREP requirement?	If not, have you received a waiver for any compliance year? NA
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	NA
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	If so, in what amount? NA
Q11: What eligible renewable resources have you used to meet the CREP requirement?	NA
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	NA
Q13: Has the standard contributed to the diversification of your portfolio in Montana?	No, Please explain how it has or has not. NA
Q14: Has the standard led to you reducing your dependence on fossil fuels?	No, Please explain how it has or has not. NA

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?

No,

Please provide some details on how it has or has not. Market price volatility has increased, not decreased, with the addition of intermittent resources. There is also lower market liquidity due to the uncertainty of generation, particularly in the spring months. Prices can be negative during the off peak periods and in excess of \$100/MWh in the highest peak hours of the same day due to significant swings in intermittent generation.

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?

Neutral,

Please explain your answer
PPL EnergyPlus, LLC is not a Competitive Electricity Supplier

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

In 2008?	NA
In 2009?	NA
In 2010?	NA
In 2011?	NA
In 2012?	NA
Projected in 2013 through 2015?	NA

Q18: How is the standard beneficial to your customers?

PPL EnergyPlus, LLC is not a Competitive Electricity Supplier

Q19: How is the standard a drawback for your customers?

PPL EnergyPlus, LLC is not a Competitive Electricity Supplier

Q20: What additional resources have been needed to integrate renewable resources?

NWMT has added the Dave Gates Generating Station which has increased costs for both regulation and default supply.

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?

No

Q22: Would you have constructed or acquired these resources at a different size if there was no standard?

No

Q23: Please explain your response to 21 and 22 above.

NA

Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard?

NA

Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?

NA

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA

Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?

NA

Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA

Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?

NA

Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:

Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

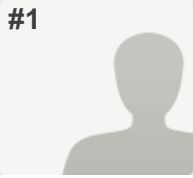
Respondent skipped this question

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Renewable Energy in Montana - Survey for Utilities and Suppliers

#1



COMPLETE

Collector: Initial e-mail 2 (Email)
Started: Tuesday, November 12, 2013 8:17:47 AM
Last Modified: Monday, December 02, 2013 8:17:05 AM
Time Spent: Over a week
Email: rdgabbard@pplweb.com
Custom Value: PPL Treasure State

IP Address: 167.155.144.19

PAGE 1

Q1: What is the name of the utility or electricity supplier you represent?	PPL Treasure State
Q2: What years were or are you subject to Montana's RPS (69-3-2004, MCA)?	Starting in 2008 with extension of RPS to Competitive Electricity Supplier
Q3: Have you been able to meet the overall percentage requirements?	Yes, If not, have you received a waiver for any compliance year? NA
Q4: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	NA
Q5: If you have not met the standard or received a waiver, have you paid an administrative penalty?	If so, in what amount? NA
Q6: What eligible renewable resources have you used to meet the overall percentage standards?	Judith Gap, Klondike 3 and Diamond Willow
Q7: Are you subject to the CREP requirement?	No
Q8: Have you met the CREP requirement?	If not, have you received a waiver for any compliance year? NA
Q9: If you received a waiver, what was the overall cost (includes administrative costs) of the waiver?	NA
Q10: If you have not met the requirement or received a waiver, have you paid an administrative penalty?	If so, in what amount? NA
Q11: What eligible renewable resources have you used to meet the CREP requirement?	NA
Q12: Who owns the eligible renewable resource(s) you have used to meet the CREP requirement?	NA

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q13: Has the standard contributed to the diversification of your portfolio in Montana?

No,

Please explain how it has or has not.
PPLTS has purchased RECs from Eligible Renewable Resources as defined in the Renewable Energy Standards to meet its obligation. PPL Montana, LLC made a significant investment to upgrade and expand the Rainbow Power House. However, this investment did not result in Rainbow being defined as an Eligible Renewable Resource due to vetoes in the 2009, 2011 and 2013 Legislative Sessions (HB 257 in 2009, HB 59 in 2011 and amendatory veto of SB 45 in 2013).

Q14: Has the standard led to you reducing your dependence on fossil fuels?

No,

Please explain how it has or has not.
The addition of intermittent resources to meet the Renewable Energy Standards has resulted in operating complexities and additional costs of regulation such as the construction of the Dave Gates Generating Station. In addition, the market impact of the intermittent resources has resulted in increased cycling of thermal units. This is expected to have a long term effect of higher maintenance costs and lower commercial availability.

Q15: Has the standard assisted you in hedging against the volatility of fossil fuel markets?

No,

Please provide some details on how it has or has not.
Market price volatility has increased, not decreased, with the addition of intermittent resources. There is also lower market liquidity due to the uncertainty of generation, particularly in the spring months. Prices can be negative during the off peak periods and in excess of \$100/MWh in the highest peak hours of the same day due to significant swings in intermittent generation.

Q16: Has the standard contributed to higher, lower, or neutral costs for your customers?

Higher,

Please explain your answer
The Renewable Standard has resulted in higher costs to customers due to both the cost of the RECs and the increased regulation cost from the transmission provider.

Q17: How much has the standard changed, if at all, your average residential customer's monthly utility bill? (indicate increase or decrease)

Projected in 2013 through 2015?

NA

In 2012?

NA

In 2011?

NA

In 2010?

NA

In 2009?

NA

In 2008?

NA

Q18: How is the standard beneficial to your customers?

No perceived benefits

Q19: How is the standard a drawback for your customers?

The standard is a drawback to the customers due to additional costs and an added compliance obligation. These added costs result in putting our customers at a competitive disadvantage in either global or national markets.

Q20: What additional resources have been needed to integrate renewable resources?

NWMT has added the Dave Gates Generating Station which has increased costs for both regulation and default supply.

Renewable Energy in Montana - Survey for Utilities and Suppliers

Q21: Would these renewable and integration resources have been added to your portfolio if there was not a standard in Montana?	No
Q22: Would you have constructed or acquired these resources at a different size if there was no standard?	No
Q23: Please explain your response to 21 and 22 above.	
21 and 22 are not applicable	
Q24: How much of the cost of integration resources used in conjunction with the renewable resources used to meet the standard is attributable to the standard?	NA
Q25: In the 2012 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	PPLTS acquires RECs at market prices which vary by year
Q26: What was the comparable price in 2012 of your supply (not transmission service) resources, including:	
Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA
Q27: In the 2010 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	PPLTS acquires RECs at market prices which vary by year
Q28: What was the comparable price in 2010 of your supply (not transmission service) resources, including:	
Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA
Q29: In the 2008 compliance year what was the average unit price, including integration costs, for each renewable resource used to meet the standard (dollars/MWh)?	PPLTS acquires RECs at market prices which vary by year
Q30: What was the comparable price in 2008 of your supply (not transmission service) resources, including:	
Please identify the resources you are using as the basis of the answers above.	NA
Qualifying facility resources?	NA
Hydropower resources?	NA
Natural gas resources?	NA
Coal resources?	NA
Spot/hourly market resources?	NA

Renewable Energy in Montana - Survey for Utilities and Suppliers

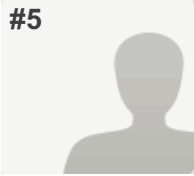
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

PPL's understanding of the original intent of the Renewable Portfolio Standard was that industrial and large commercial Choice customers would be exempt from compliance with the standard. The RPS standard has impacted supply options for small Choice customers. A recent article in the Great Falls Tribune indicated that PPLTS was the only supplier to provide a final offer to the City of Great Falls. Morgan Stanley provided an indicative proposal but not a final proposal. The article did not state the reason for this but the RPS may have been a contributing factor.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Generators

#5



COMPLETE

Collector: Initial e-mail (Email)

Started: Friday, September 27, 2013 1:31:42 PM

Last Modified: Friday, December 06, 2013 5:57:26 AM

Time Spent: Over a month

Email: darcy.neigum@mdu.com

Custom Value: Cedar Hills

IP Address: 162.57.10.186

PAGE 1

Q1: What is the name of the project?

Cedar Hills

Q2: When did ...

... construction of the project begin? 10/01/2009,

... the project begin operating? 05/20/2010

Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?

No,

Please provide details of why it did or did not.
Montana-Dakota Utilities Co.'s addition of 57 MW of renewable generation resources to its portfolio was not made solely in response to the Montana Renewable Portfolio Standard but in conjunction with the Company's Integrated Resources Plan which included the costs and consideration of other forms of generation. The standard probably accelerated the acquisition of our renewable generation resources.

Q4: What was the project investment (in \$ dollars)?

\$47.4 million

Q5: How many Montana contractors or subcontractors were hired during construction?

0

Q6: Please list the contractors and subcontractors

Wanzek Construction out of West Fargo, ND was the general contractor for the project.

Q7: How many people were employed in Montana during construction?

0 - Project construction was in North Dakota

Q8: What were the average earnings per job?

0

Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?

0 - Project located in North Dakota

Q10: How many Montana or local vendors are utilized in support of the project?

0

Q11: In general, can you describe how those vendors are utilized?

N/A

Renewable Energy in Montana - Survey for Generators

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 6 of construction or operation?	0
Year 5 of construction or operation?	0
Year 4 of construction or operation?	0
Year 3 of construction or operation?	0
Year 2 of construction or operation?	0
Year 1 of construction or operation?	0

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? No

Q14: What is the abatement? *Respondent skipped this question*

Q15: When will the tax abatement expire? *Respondent skipped this question*

Q16: What are the estimated property taxes following expiration of the abatement? N/A

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 6 of construction or operation?	0
Year 5 of construction or operation?	0
Year 4 of construction or operation?	0
Year 3 of construction or operation?	0
Year 2 of construction or operation?	0
Year 1 of construction or operation?	0

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? No

Q20: If yes, what was the amount paid in:

Year 6 of operation?	0
Year 5 of operation?	0
Year 4 of operation?	0
Year 3 of operation?	0
Year 2 of operation?	0
Year 1 of operation?	0

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? No

Renewable Energy in Montana - Survey for Generators

Q22: If yes, what was the amount paid in:

Year 1 of operation?	0
Year 2 of operation?	0
Year 3 of operation?	0
Year 4 of operation?	0
Year 5 of operation?	0
Year 6 of operation?	0

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)?

No

Q24: If so -

How much in year 3?	0
How much in year 2?	0
How much in year 1?	0
To what government entity?	0

Q25: In general terms how much is paid for land leases in Montana needed for the project?

\$0 - project located in North Dakota

Q26: How much is paid for Montana state land leases?

\$0 - project located in North Dakota

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?

No

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?

No

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

Respondent skipped this question

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

No,

Please elaborate on why or why not?
No new electrical transmission was built in conjunction with this project.

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

The Montana Renewable Portfolio Standard should not be changed. All investments in renewables should be justified on an equal basis with other available resources, without regard to a mandate.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Renewable Energy in Montana - Survey for Generators

#3



COMPLETE

Collector: Initial e-mail 2 (Email)
Started: Thursday, September 26, 2013 2:09:24 PM
Last Modified: Friday, December 06, 2013 5:57:03 AM
Time Spent: Over a month
Email: darcy.neigum@mdu.com
Custom Value: Diamond Willow I

IP Address: 162.57.10.186

PAGE 1

Q1: What is the name of the project?	Diamond Willow 1 and 2
Q2: When did ...	
... construction of the project begin?	08/01/2007,
... the project begin operating?	12/29/2007
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	No, Please provide details of why it did or did not. Montana-Dakota Utilities Co.'s addition of 57 MW of renewable generation resources to its portfolio was not made solely in response to the Montana Renewable Portfolio Standard but in conjunction with the Company's Integrated Resources Plan which included the costs and consideration of other forms of generation. The standard probably accelerated the acquisition of renewable generation resources.
Q4: What was the project investment (in \$ dollars)?	\$39.4 million for Diamond Willow 1
Q5: How many Montana contractors or subcontractors were hired during construction?	2
Q6: Please list the contractors and subcontractors	
Wanzek Construction out of West Fargo, ND was the general contractor for the project.	
Colstrip Electric was the electric sub-contractor for Wanzek Construction.	
Fallon County Redi-Mix provided concrete for the project as a sub-contractor for Wanzek Construction.	
Q7: How many people were employed in Montana during construction?	Approximately 50
Q8: What were the average earnings per job?	Unknown
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?	
Combined 2 employees full-time employees for both Diamond Willow I and Diamond Willow II	
Q10: How many Montana or local vendors are utilized in support of the project?	See below
Q11: In general, can you describe how those vendors are utilized?	
Lodging Restaurant Groceries Small tools and equipment	

Renewable Energy in Montana - Survey for Generators

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 6 of construction or operation?	0
Year 5 of construction or operation?	0
Year 4 of construction or operation?	0
Year 3 of construction or operation?	0
Year 2 of construction or operation?	0
Year 1 of construction or operation?	0

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? No

Q14: What is the abatement? *Respondent skipped this question*

Q15: When will the tax abatement expire? *Respondent skipped this question*

Q16: What are the estimated property taxes following expiration of the abatement? *Respondent skipped this question*

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation?	73,159 to Fallon County
Year 2 of construction or operation?	79,653
Year 3 of construction or operation?	81,369
Year 4 of construction or operation?	80,607
Year 5 of construction or operation?	98,657
Year 6 of construction or operation?	105,552

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation?	None
Year 2 of construction or operation?	"
Year 3 of construction or operation?	"
Year 4 of construction or operation?	"
Year 5 of construction or operation?	"
Year 6 of construction or operation?	"

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? Yes

Q20: If yes, what was the amount paid in:

Year 1 of operation?	9,750
Year 2 of operation?	10,154
Year 3 of operation?	10,185
Year 4 of operation?	14,830
Year 5 of operation?	13,643
Year 6 of operation?	11,186 thru October 2013

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Renewable Energy in Montana - Survey for Generators

Q22: If yes, what was the amount paid in:

Year 1 of operation?	12,999
Year 2 of operation?	13,538
Year 3 of operation?	13,580
Year 4 of operation?	19,773
Year 5 of operation?	18,191
Year 6 of operation?	14,915 thru October 2013

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)?

No

Q24: If so -

Respondent skipped this question

Q25: In general terms how much is paid for land leases in Montana needed for the project?

\$52,000 per year

Q26: How much is paid for Montana state land leases?

\$0

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?

No

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?

No

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

Respondent skipped this question

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

No,

Please elaborate on why or why not?
No new electrical transmission was built in conjunction with this project.

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

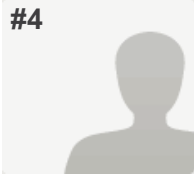
The Montana Renewable Portfolio Standard should not be changed. All investments in renewables should be justified on an equal basis with other available resources, without regard to a mandate.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Renewable Energy in Montana - Survey for Generators

#4



COMPLETE

Collector: Initial e-mail 3 (Email)
Started: Friday, September 27, 2013 1:23:56 PM
Last Modified: Friday, December 06, 2013 5:57:13 AM
Time Spent: Over a month
Email: darcy.neigum@mdu.com
Custom Value: Diamond Willow II

IP Address: 162.57.10.186

PAGE 1

Q1: What is the name of the project?	Diamond Willow 1 and 2
Q2: When did construction of the project begin? 10/01/2009, ... the project begin operating? 06/16/2010	
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	No, Please provide details of why it did or did not. Montana-Dakota Utilities Co.'s addition of 57 MW of renewable generation resources to its portfolio was not made solely in response to the Montana Renewable Portfolio Standard but in conjunction with the Company's Integrated Resources Plan which included the costs and consideration of other forms of generation. The standard probably accelerated the acquisition of renewable generation resources.
Q4: What was the project investment (in \$ dollars)?	\$25.4 million for Diamond Willow 2
Q5: How many Montana contractors or subcontractors were hired during construction?	0
Q6: Please list the contractors and subcontractors	Wanzek Construction out of West Fargo, ND was the general contractor for the project.
Q7: How many people were employed in Montana during construction?	approximately 25
Q8: What were the average earnings per job?	Unknown
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?	Combined 2 employees full-time employees for both Diamond Willow I and Diamond Willow II
Q10: How many Montana or local vendors are utilized in support of the project?	See below
Q11: In general, can you describe how those vendors are utilized?	Lodging Restaurants Groceries Small tools and equipment

Renewable Energy in Montana - Survey for Generators

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? No

Q14: What is the abatement? 0

Q15: When will the tax abatement expire? *Respondent skipped this question*

Q16: What are the estimated property taxes following expiration of the abatement? *Respondent skipped this question*

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	51,324
Year 5 of construction or operation?	62,635
Year 6 of construction or operation?	61,687

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? Yes

Q20: If yes, what was the amount paid in:

Year 1 of operation?	Provided under Diamond Willow 1 in total
----------------------	--

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Q22: If yes, what was the amount paid in:

Year 1 of operation?	Provided under Diamond Willow 1
----------------------	---------------------------------

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? No

Q24: If so - *Respondent skipped this question*

Q25: In general terms how much is paid for land leases in Montana needed for the project?

\$28,000 per year

Renewable Energy in Montana - Survey for Generators

Q26: How much is paid for Montana state land leases?

\$0

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis? No

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located? No

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy? *Respondent skipped this question*

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission? No,
Please elaborate on why or why not?
No new electrical transmission was built in conjunction with this project.

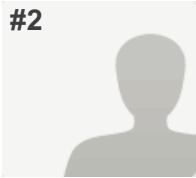
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

The Montana Renewable Portfolio Standard should not be changed. All investments in renewables should be justified on an equal basis with other available resources, without regard to a mandate.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Generators

#2



COMPLETE

Collector: Initial e-mail (Email)

Started: Thursday, October 03, 2013 9:11:36 AM

Last Modified: Wednesday, December 04, 2013 3:55:58 PM

Time Spent: Over a month

Email: brogan@oversightresources.com

Custom Value: Gordon Butte

IP Address: 72.174.34.65

PAGE 1

Q1: What is the name of the project?

Gordon Butte

Q2: When did ...

... construction of the project begin? 04/01/2011,

... the project begin operating? 01/03/2012

Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?

No,

Please provide details of why it did or did not.
The largest factor that contributed to our decision to build was having access to the avoided cost rate provided in the QF-1 tariff that was available at that time. Although we do meet the RPS requirements for renewable generation and CREPs, neither one had a direct impact on our decision to build.

Q4: What was the project investment (in \$ dollars)?

23,000,000

Q5: How many Montana contractors or subcontractors were hired during construction?

60

Q6: Please list the contractors and subcontractors

Dick Anderson Construction
Rocky Mountain Contractors
Electrical Consultants, Inc.
Colstrip Electric
Stahley Engineering

Q7: How many people were employed in Montana during construction?

50

Q8: What were the average earnings per job?

Respondent skipped this question

Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?

3 - \$33,333 avg salary

Q10: How many Montana or local vendors are utilized in support of the project?

7

Q11: In general, can you describe how those vendors are utilized?

They support the project as suppliers, scheduled maintenance, unplanned maintenance, repairs, technical support.

Renewable Energy in Montana - Survey for Generators

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 6 of construction or operation?	170000
Year 5 of construction or operation?	91000
Year 4 of construction or operation?	96000
Year 3 of construction or operation?	102000
Year 2 of construction or operation?	108000
Year 1 of construction or operation?	110342

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? Yes

Q14: What is the abatement? 50% property tax abatement

Q15: When will the tax abatement expire?

Enter a date: 01/01/2022

Q16: What are the estimated property taxes following expiration of the abatement? 100,000

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 6 of construction or operation?	See #12 - Meagher County
Year 5 of construction or operation?	See #12 - Meagher County
Year 4 of construction or operation?	See #12 - Meagher County
Year 3 of construction or operation?	See #12 - Meagher County
Year 2 of construction or operation?	See #12 - Meagher County
Year 1 of construction or operation?	See #12 - Meagher County

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in: Respondent skipped this question

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? No

Q20: If yes, what was the amount paid in: Respondent skipped this question

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Q22: If yes, what was the amount paid in:

Year 1 of operation?	8300
Year 2 of operation?	8300
Year 3 of operation?	8300
Year 4 of operation?	8300
Year 5 of operation?	8300
Year 6 of operation?	8300

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? No

Q24: If so - Respondent skipped this question

Q25: In general terms how much is paid for land leases in Montana needed for the project?

Approximately \$80,000 per year, increasing to approx \$130,000 per year

Q26: How much is paid for Montana state land leases? Respondent skipped this question

Renewable Energy in Montana - Survey for Generators

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?

Yes,

Please list those taxes and the year and amount paid
Because all of the owners of Gordon Butte are Montana residents there will be additional income tax revenue generated from the project.

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?

Yes,

If yes, please list. Harlow ton Rodeo

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

The project has contributed to the state and local economies by hiring and contracting with Montana based business's. Because it is a CREP it creates additional tax revenue for the state from income taxes that would otherwise go to out of state entities.

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

No,

Please elaborate on why or why not?
The RPS has not contributed to developing new electric transmission. Although projects that have been built in Montana have contributed to upgrades and improvements to the electric transmission system in Montana, the upgrades only benefit a specific project and do not allow for additional renewable generation to be tapped or exported. Essentially the projects make relatively minor improvements to the grid but do not leverage Montana's competitive advantage in developing more resources.

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

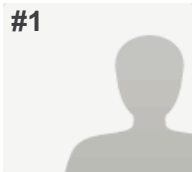
Respondent skipped this question

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Renewable Energy in Montana - Survey for Generators

#1



COMPLETE

Collector: Follow-up #1 (Email)

Started: Wednesday, December 04, 2013 12:08:28 PM

Last Modified: Wednesday, December 04, 2013 12:09:36 PM

Time Spent: 00:01:08

Email: gdoyon@greatfallsmt.net

Custom Value: Great Falls Wastewater Treatment Plant

IP Address: 63.228.223.162

PAGE 1

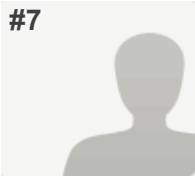
Q1: What is the name of the project?	Great Falls Wastewater Plant
Q2: When did ...	Respondent skipped this question
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	No
Q4: What was the project investment (in \$ dollars)?	Respondent skipped this question
Q5: How many Montana contractors or subcontractors were hired during construction?	Respondent skipped this question
Q6: Please list the contractors and subcontractors	Respondent skipped this question
Q7: How many people were employed in Montana during construction?	Respondent skipped this question
Q8: What were the average earnings per job?	Respondent skipped this question
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?	Respondent skipped this question
Q10: How many Montana or local vendors are utilized in support of the project?	Respondent skipped this question
Q11: In general, can you describe how those vendors are utilized?	Respondent skipped this question
Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:	Respondent skipped this question
Q13: Is the project currently receiving a state (Montana) or federal tax abatement?	No
Q14: What is the abatement?	Respondent skipped this question
Q15: When will the tax abatement expire?	Respondent skipped this question
Q16: What are the estimated property taxes following expiration of the abatement?	Respondent skipped this question
Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:	Respondent skipped this question
Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:	Respondent skipped this question

Renewable Energy in Montana - Survey for Generators

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)?	No
Q20: If yes, what was the amount paid in:	<i>Respondent skipped this question</i>
Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)?	No
Q22: If yes, what was the amount paid in:	<i>Respondent skipped this question</i>
Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)?	No
Q24: If so -	<i>Respondent skipped this question</i>
Q25: In general terms how much is paid for land leases in Montana needed for the project?	<i>Respondent skipped this question</i>
Q26: How much is paid for Montana state land leases?	<i>Respondent skipped this question</i>
Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?	No
Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?	No
Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?	<i>Respondent skipped this question</i>
Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?	No
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard	<i>Respondent skipped this question</i>
Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).	Yes

Renewable Energy in Montana - Survey for Generators

#7



COMPLETE

Collector: Initial e-mail (Email)

Started: Tuesday, December 17, 2013 1:47:09 PM

Last Modified: Tuesday, December 31, 2013 12:57:13 PM

Time Spent: Over a week

Email: kmclain@invenergyllc.com

Custom Value: Judith Gap

IP Address: 38.98.131.120

PAGE 1

Q1: What is the name of the project?	Judith Gap
Q2: When did construction of the project begin? 01/01/2005, ... the project begin operating? 02/16/2006	
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	<i>Respondent skipped this question</i>
Q4: What was the project investment (in \$ dollars)?	183,974,000
Q5: How many Montana contractors or subcontractors were hired during construction?	<i>Respondent skipped this question</i>
Q6: Please list the contractors and subcontractors	<i>Respondent skipped this question</i>
Q7: How many people were employed in Montana during construction?	<i>Respondent skipped this question</i>
Q8: What were the average earnings per job?	<i>Respondent skipped this question</i>
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job? 11 FTE, \$80,000 in earnings including benefits	
Q10: How many Montana or local vendors are utilized in support of the project?	<i>Respondent skipped this question</i>
Q11: In general, can you describe how those vendors are utilized?	<i>Respondent skipped this question</i>
Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:	<i>Respondent skipped this question</i>
Q13: Is the project currently receiving a state (Montana) or federal tax abatement?	No
Q14: What is the abatement?	<i>Respondent skipped this question</i>
Q15: When will the tax abatement expire?	<i>Respondent skipped this question</i>
Q16: What are the estimated property taxes following expiration of the abatement?	<i>Respondent skipped this question</i>

Renewable Energy in Montana - Survey for Generators

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation?	1,399,000 - Wheatland County
Year 2 of construction or operation?	1,366,000 - Wheatland County
Year 3 of construction or operation?	1,333,000 - Wheatland County
Year 4 of construction or operation?	1,398,000 - Wheatland County
Year 5 of construction or operation?	1,535,000 - Wheatland County
Year 6 of construction or operation?	1,639,000 - Wheatland County

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in: *Respondent skipped this question*

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? *Respondent skipped this question*

Q20: If yes, what was the amount paid in: *Respondent skipped this question*

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Q22: If yes, what was the amount paid in:

Year 1 of operation?	63,000
Year 2 of operation?	62,000
Year 3 of operation?	101,000
Year 4 of operation?	94,000
Year 5 of operation?	86,000
Year 6 of operation?	92,000

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? Yes

Q24: If so -

To what government entity?	Wheatland County
How much in year 1?	787,000
How much in year 2?	787,000
How much in year 3?	787,000

Q25: In general terms how much is paid for land leases in Montana needed for the project?

\$400,000 annually.

Q26: How much is paid for Montana state land leases?

\$55,000 annually.

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis? *Respondent skipped this question*

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located? Yes,
If yes, please list.
Judith Gap provides community donations to multiple entities in Wheatland County every year, generally between \$5-\$10,000 annually.

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy? *Respondent skipped this question*

Renewable Energy in Montana - Survey for Generators

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

Respondent skipped this question

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

Respondent skipped this question

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Nowakowski, Sonja

From: Sasse, Art <Art.Sasse@iberdrolaren.com>
Sent: Wednesday, September 18, 2013 2:14 PM
To: Nowakowski, Sonja
Subject: RE: Montana Survey for Klondike

Sonja,

So, as we look at this – seems like only question #31 applies. This will be our answer to that question....

Montana has a strong wind resource but does not have significant load so it is unlikely an out-of-state project will be affected by the Montana RPS. In-state projects will look more favorable.

Should I go through the formal survey process for this – or does this give you what you need.



Art Sasse
Director, Communications & Brand

Iberdrola Renewables
1125 NW Couch Street, Suite 700; Portland, OR 97209
Telephone: (503) 796-7740; Mobile (503) 475-0330
art.sasse@iberdrolaREN.com



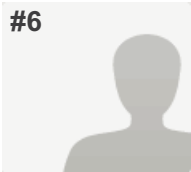
In the interests of the environment, please print only if necessary and recycle.

From: survey-noreply@smo.surveymonkey.com [<mailto:survey-noreply@smo.surveymonkey.com>] **On Behalf Of** snowakowski@mt.gov via [surveymonkey.com](https://www.surveymonkey.com)
Sent: Tuesday, September 17, 2013 12:28 PM
To: Sasse, Art
Subject: Montana Survey for Klondike

Dear Renewable Energy Generator: The Montana Legislature is seeking your feedback concerning the Montana Renewable Power Production and Rural Economic Development Act. Since 2008, the law has required certain utilities to procure a percentage of their resources from renewable resources. As directed by [Senate Joint Resolution No. 6](#), the Energy and Telecommunications Interim Committee of the Legislature is focused on the economic impacts of the renewable portfolio standard, the environmental benefits of the standard, and the impacts the standard has had on Montana consumers. The committee is beginning its work by reaching out to renewable generators in Montana. Please take a few minutes to fill out the survey at the following link: https://www.surveymonkey.com/s.aspx?sm=rmJRAQmAOMOdAKzbOJMzaQ_3d_3d This link is uniquely tied to your project. You may forward this email and the link for this survey to multiple people to assist in filling it out. When the survey is complete, please click the “Final Submission” button at the bottom of the last page. Thank you for your participation. Sonja Nowakowski Research Analyst Montana Legislative Services Division (406) 444-3078 Please note: If you do not wish to receive further emails from us, please click the link below, and you will be automatically removed from our mailing list.
https://www.surveymonkey.com/optout.aspx?sm=rmJRAQmAOMOdAKzbOJMzaQ_3d_3d

Renewable Energy in Montana - Survey for Generators

#6



COMPLETE

Collector: Follow Up #2 (Email)

Started: Saturday, December 07, 2013 7:55:10 AM

Last Modified: Saturday, December 07, 2013 8:40:38 AM

Time Spent: 00:45:28

Email: ted@tsorenson.net

Custom Value: Turnbull

IP Address: 69.20.157.151

PAGE 1

Q1: What is the name of the project?

Turnbull

Q2: When did ...

... construction of the project begin? 06/01/2010,

... the project begin operating? 07/15/2011

Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?

Yes,

Please provide details of why it did or did not.

We were able to sell the power to Northwestern Energy under the community resource program. It was a competitive bid to Northwestern. Our bid was successful. The community resource program would not be available absent the RPS requirement. We are grateful to the legislature for passing the program and are hopeful it will continue to allow rural communities to develop small hydro resources associated with irrigation systems.

Q4: What was the project investment (in \$ dollars)?

Direct \$ 13.8 million

Q5: How many Montana contractors or subcontractors were hired during construction?

8 to 10

Q6: Please list the contractors and subcontractors

Selway Fabrication, Stevensville

Ajay Concrete, Augusta

Ramaker Swanson concrete, Choteau

Pimley Electric, Joplin

Greenfields Irrigation District Crews, Fairfield

Red Rock electric transmission, Havre

Numerous equipment rental houses in Great Falls and Helena

Q7: How many people were employed in Montana during construction?

about 20 to 20

Q8: What were the average earnings per job?

\$15 to \$ 50 per hour

Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?

operation is equivalent to 1 full time job

Q10: How many Montana or local vendors are utilized in support of the project?

6 to 10

Q11: In general, can you describe how those vendors are utilized?

Electrical wiring, Steel, rebar, concrete, construction equipment, power poles etc, steel fabrication

Renewable Energy in Montana - Survey for Generators

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:	<i>Respondent skipped this question</i>
Q13: Is the project currently receiving a state (Montana) or federal tax abatement?	Yes
Q14: What is the abatement?	new business for property taxes
Q15: When will the tax abatement expire? Enter a date: 12/31/2021	
Q16: What are the estimated property taxes following expiration of the abatement?	\$250,000
Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in: Year 3 of construction or operation? Year 2 of construction or operation? Year 1 of construction or operation?	teton county about \$190,000 teton county about \$170,000 teton county about \$160,000
Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:	<i>Respondent skipped this question</i>
Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)?	<i>Respondent skipped this question</i>
Q20: If yes, what was the amount paid in: Year 3 of operation? Year 2 of operation? Year 1 of operation?	About \$8000 about \$8000 about \$6000
Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)?	No
Q22: If yes, what was the amount paid in:	<i>Respondent skipped this question</i>
Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)?	No
Q24: If so -	<i>Respondent skipped this question</i>
Q25: In general terms how much is paid for land leases in Montana needed for the project? 10 % of revenue or about \$170,000 per year goes to Greenfield Irrigation district.. This reduces the water assessments to about 80,000 acres of farmland	
Q26: How much is paid for Montana state land leases? none	
Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?	Yes, Please list those taxes and the year and amount paid All the owners of the project pay substantial personal Montana state incomes taxes as the project is owned by Montana limited liability company(LLC).

Renewable Energy in Montana - Survey for Generators

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?

Yes,

If yes, please list.

We contribute to the local high school sports teams and buy 4H animals

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

We put a lot of people to work when the economy was down and continue to put money into Montana in terms of property tax and income taxes plus we have reduced the water assessments for numerous farmers in the Fairfield area.

Item 12 would not allow me to enter the annual property taxes. they are about \$190,000 per year

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

Please elaborate on why or why not?

We built only 4.5 miles of new transmission line


Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

I urge the legislature to continue as it will allow small developers to develop new resources throughout the state

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

Renewable Energy in Montana - Survey for Generators

<p>#9</p> 	<p>COMPLETE</p>	<p>Collector: Follow Up #3 (Email) Started: Monday, January 06, 2014 9:13:40 AM Last Modified: Monday, January 06, 2014 9:40:46 AM Time Spent: 00:27:06 Email: jbacon@goldwindamerica.com Custom Data: Musselshell Wind I IP Address: 64.187.194.96</p>
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Q1: What is the name of the project?	Musselshell 1 and 2
Q2: When did construction of the project begin? 06/01/2012, ... the project begin operating? 01/01/2013	
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	Yes, Please provide details of why it did or did not. Musselshell wind project won bid to provide a 20 year PPA to North western Energy to cover a portion of their renewable portfolio requirements.
Q4: What was the project investment (in \$ dollars)?	48 million
Q5: How many Montana contractors or subcontractors were hired during construction?	15 counted may have been more.
Q6: Please list the contractors and subcontractors Substation Inc - Helena MT CEI - Billings MT EPC/CEI Services - Billings MT Local Machine Shop near Ryegate MT Local sanitation company - Roundup MT Mullen Crane - Billings MT Bull Mountain Excavation - Lavina MT Eagle Construction - Billings MT Battle Ridge Construction-Livingston MT Hanson-Kelly Construction - Billings MT Fast Track Acoustics-Laurel MT T.J. Painting - Billings MT Pro Pump & Equipment-Laurel MT Northern Plumbing - Molt MT R&T Services-Billings MT Summit Electric- Billings MT	
Q7: How many people were employed in Montana during construction?	Max was 100 - 120 Avg 75
Q8: What were the average earnings per job?	20.00/hr
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?	3 / 68,000/yr
Q10: How many Montana or local vendors are utilized in support of the project?	10-15

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Q11: In general, can you describe how those vendors are utilized?

Providing specialized services to site operations.

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? Yes

Q14: What is the abatement? 0

Q15: When will the tax abatement expire? *Respondent skipped this question*

Q16: What are the estimated property taxes following expiration of the abatement? Unknown

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? *Respondent skipped this question*

Q20: If yes, what was the amount paid in:

Year 1 of operation?	0
Year 2 of operation?	0
Year 3 of operation?	0
Year 4 of operation?	0
Year 5 of operation?	0
Year 6 of operation?	0

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? *Respondent skipped this question*

Q22: If yes, what was the amount paid in:

Year 1 of operation?	0
Year 2 of operation?	0
Year 3 of operation?	0
Year 4 of operation?	0
Year 5 of operation?	0
Year 6 of operation?	0

Renewable Energy in Montana - Survey for Generators

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? Yes

Q24: If so -

To what government entity?	Wheatland County
How much in year 1?	0
How much in year 2?	0
How much in year 3?	0

Q25: In general terms how much is paid for land leases in Montana needed for the project?

60,000 per year

Q26: How much is paid for Montana state land leases?

Unknown

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis? No

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located? No

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy? *Respondent skipped this question*

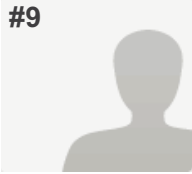
Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission? No

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard *Respondent skipped this question*

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Generators

#9



COMPLETE

Collector: Follow Up #2 (Email)

Started: Thursday, December 26, 2013 12:57:14 PM

Last Modified: Tuesday, January 28, 2014 8:14:46 AM

Time Spent: Over a month

Email: john.bushnell@northwestern.com

Custom Data: Spion Kop

IP Address: 199.96.16.11

PAGE 1

Q1: What is the name of the project?	Spion Kop
Q2: When did ...	
... construction of the project begin?	03/20/2012,
... the project begin operating?	12/01/2012
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	Yes, Please provide details of why it did or did not. NorthWestern Energy is obligated under Montana's Renewable Portfolio Standard to purchase output from eligible renewable projects.
Q4: What was the project investment (in \$ dollars)?	\$83,900,949
Q5: How many Montana contractors or subcontractors were hired during construction?	22
Q6: Please list the contractors and subcontractors	
<ul style="list-style-type: none"> - Dick Anderson Construction - DJ& A - Annala Fencing - Oswald construction - Paradise Fencing - Riley 4 Securities - Schellinger Construction - Terracon - Tetra Tech - Asplund Enterprises - Boland Construction - Fire Guys - Contract Flooring - Windy City Excavation - United Materials - Christmas Roofing - Klinefelters Insulation - Lonesome Dove - MacDonald Heating and Cooling - Mountain West Steel - United electric - Summit Plumbing 	
Q7: How many people were employed in Montana during construction?	790 MT residents were employed during construction
Q8: What were the average earnings per job?	\$33.17

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Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?

5 @ approximately \$75,000 annually

Q10: How many Montana or local vendors are utilized in support of the project? approximately 10

Q11: In general, can you describe how those vendors are utilized?

Local vendors are used for services typical for a commercial operation and include for example; trash removal, weed control, road maintenance, rodent control, and bottled water services.

Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:

Year 1 of construction or operation?	255684
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? Yes

Q14: What is the abatement? Montana New or Expanding Industry (15-24-1402 MCA)

Q15: When will the tax abatement expire?

Enter a date: 12/31/2021

Q16: What are the estimated property taxes following expiration of the abatement? 400,000.00

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation? 255,684.11, Judith Basin

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation? 0

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? No

Q20: If yes, what was the amount paid in:

Year 1 of operation? \$0

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Q22: If yes, what was the amount paid in:

Year 1 of operation? \$33,288

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? Yes

Q24: If so -

To what government entity?	Judith Basin County
How much in year 1?	209753
How much in year 2?	104876
How much in year 3?	104876

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Q25: In general terms how much is paid for land leases in Montana needed for the project?

Approximately \$200,000 annually.

Q26: How much is paid for Montana state land leases?

\$0

Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?

Yes,

Please list those taxes and the year and amount paid
Montana Consumer Counsel Tax & Montana Public Service Commission Tax totaling approximately \$40,000 annually.

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?

Yes,

If yes, please list.

\$10,000 donated to the Geyser school for purchase of iPads

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

Respondent skipped this question

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?

No,

Please elaborate on why or why not?

From a transmission providers perspective, the RPS itself does not seem to have promoted the development of new electric transmission. The RPS standard does seem to have resulted in more use of the existing transmission system in certain areas and also in direct interconnection facilities for projects striving to be part of the RPS solution. However, at this point larger scale transmission additions have not occurred as a result of the RPS

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

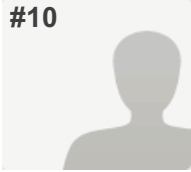
Respondent skipped this question

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later).

Yes

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#10



COMPLETE

Collector: Follow up - Lower South Fork (Email)
Started: Tuesday, February 11, 2014 2:44:41 PM
Last Modified: Tuesday, February 11, 2014 3:02:34 PM
Time Spent: 00:17:52
First Name: Ben
Last Name: Singer

Email: ben@hydrodynamics.biz
Custom Data: Lower South Fork
IP Address: 71.217.166.189

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Q1: What is the name of the project?	Flint Creek
Q2: When did ...	
... construction of the project begin?	05/01/2012,
... the project begin operating?	03/14/2013
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	Yes, Please provide details of why it did or did not. It encouraged Northw estern Energy to be slightly less antagonistic w ith independent pow er producers.
Q4: What was the project investment (in \$ dollars)?	4 million
Q5: How many Montana contractors or subcontractors were hired during construction?	12
Q6: Please list the contractors and subcontractors	
Tallon Construction, EPC services, S&N concrete, Hydrodynamics Inc, Northw estern Energy, Timberline Fencing, FEPE, S&J rentals, Mungas Co, Sun Rental Center,	
Q7: How many people were employed in Montana during construction?	12
Q8: What were the average earnings per job?	50,000
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job?	1, 30,000
Q10: How many Montana or local vendors are utilized in support of the project?	12
Q11: In general, can you describe how those vendors are utilized?	
purchased materials, equipment. Rented equipment.	
Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:	
Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Renewable Energy in Montana - Survey for Generators

Q13: Is the project currently receiving a state (Montana) or federal tax abatement? No

Q14: What is the abatement? *Respondent skipped this question*

Q15: When will the tax abatement expire? *Respondent skipped this question*

Q16: What are the estimated property taxes following expiration of the abatement? 0

Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:

Year 1 of construction or operation?	0
Year 2 of construction or operation?	0
Year 3 of construction or operation?	0
Year 4 of construction or operation?	0
Year 5 of construction or operation?	0
Year 6 of construction or operation?	0

Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)? No

Q20: If yes, what was the amount paid in: *Respondent skipped this question*

Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)? Yes

Q22: If yes, what was the amount paid in:

Year 1 of operation?	2000
Year 2 of operation?	2000
Year 3 of operation?	2000
Year 4 of operation?	2000
Year 5 of operation?	2000
Year 6 of operation?	2000

Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)? No

Q24: If so - *Respondent skipped this question*

Q25: In general terms how much is paid for land leases in Montana needed for the project?

zero

Q26: How much is paid for Montana state land leases?

\$75,000 annually

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Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis? No

Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located? No

Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?

This project funds the dam at Georgetown Lake. Without this revenue, the dam was going to potentially be removed. The recreation on the lake is a source of local income.

Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission? No,

Please elaborate on why or why not?
There is still no available transmission for small independent producers. Should transmission to Idaho and beyond become available, more projects like this could be developed.

Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard

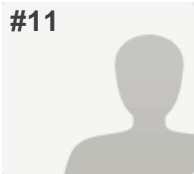
The consequences of failure need to be geared toward hurting the shareholders and not the ratepayers.

Better rates are needed to encourage local independent power producers. Every stream coming off a mountain in Montana should have a small hydro on it.

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

Renewable Energy in Montana - Survey for Generators

#11



COMPLETE

Collector: Follow up for Flint Creek (Email)
Started: Tuesday, February 11, 2014 3:03:05 PM
Last Modified: Tuesday, February 11, 2014 3:12:15 PM
Time Spent: 00:09:10
First Name: Ben
Last Name: Singer

Email: ben@hydrodynamics.biz
Custom Data: Flint Creek
IP Address: 71.217.166.189

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Q1: What is the name of the project?	Low er South Fork
Q2: When did construction of the project begin? 06/01/2011, ... the project begin operating? 08/14/2012	
Q3: Did Montana's Renewable Portfolio Standard, enacted in 2005, contribute to your decision to build?	Yes, Please provide details of why it did or did not. Low rates for Independent power producers would not have allowed this project to be built. The RPS encouraged Northw estern to pay a little more.
Q4: What was the project investment (in \$ dollars)?	1 million
Q5: How many Montana contractors or subcontractors were hired during construction?	4
Q6: Please list the contractors and subcontractors jares fence, northw estern energy, schlessler materials, J & T materials, Ladvala electric, Hydrodynamics Inc, mountain excavation, JMG contracting,	
Q7: How many people were employed in Montana during construction?	5
Q8: What were the average earnings per job?	45,000
Q9: How many full-time permanent jobs has the project created in Montana and what are the average earnings per job? 0.5, 20,000	
Q10: How many Montana or local vendors are utilized in support of the project?	4
Q11: In general, can you describe how those vendors are utilized? Purchased equipment and materials. Rented equipment.	
Q12: How much in Montana property taxes (15-6-157, MCA) have been paid for the project in:	<i>Respondent skipped this question</i>
Q13: Is the project currently receiving a state (Montana) or federal tax abatement?	No
Q14: What is the abatement?	<i>Respondent skipped this question</i>

Renewable Energy in Montana - Survey for Generators

Q15: When will the tax abatement expire?	<i>Respondent skipped this question</i>
Q16: What are the estimated property taxes following expiration of the abatement?	<i>Respondent skipped this question</i>
Q17: How much in local property taxes (15-6-157, MCA) have been paid in Montana, and in what county, for the project in:	<i>Respondent skipped this question</i>
Q18: What was the amount of business equipment taxes (15-6-138, MCA) paid in Montana conjunction with the project in:	<i>Respondent skipped this question</i>
Q19: Is the project subject to Montana's wholesale energy transaction tax (15-72-104, MCA)?	<i>Respondent skipped this question</i>
Q20: If yes, what was the amount paid in:	<i>Respondent skipped this question</i>
Q21: Is the project subject to Montana's electrical energy producers tax (15-51-101 MCA)?	Yes
Q22: If yes, what was the amount paid in:	
Year 1 of operation?	400
Year 2 of operation?	400
Year 3 of operation?	400
Year 4 of operation?	400
Year 5 of operation?	400
Year 6 of operation?	400
Q23: Has the project paid or will the project in the future pay facility impact fees for local governmental units and school districts in Montana (15-24-3004, MCA and 15-24-3005, MCA)?	No
Q24: If so -	<i>Respondent skipped this question</i>
Q25: In general terms how much is paid for land leases in Montana needed for the project?	
0	
Q26: How much is paid for Montana state land leases?	
0	
Q27: Are there additional taxes paid in Montana in conjunction with the project that you feel the committee should include in its analysis?	Please list those taxes and the year and amount paid All revenue results in montana income tax
Q28: Have community donations or additional financial contributions been made in the Montana community where the project is located?	No
Q29: Please provide any additional thoughts on how the project has contributed to Montana or your local economy?	
This project helps a ranch get into the black by using water from their irrigation ditch. This plant also helps fund said ditch.	
Q30: Has Montana's renewable energy standard assisted in leveraging Montana's competitive advantage in developing new electric transmission?	Yes, Please elaborate on why or why not? The low rates available to independent power producers is not enough to build small irrigation hydros. The RPS encouraged Northwestern energy to pay a little more.
Q31: Please provide any additional thoughts on Montana's Renewable Portfolio Standard	<i>Respondent skipped this question</i>

Renewable Energy in Montana - Survey for Generators

Q32: FINAL SUBMISSION: All questions are complete and this survey is ready for submission (select no if you wish to return and complete this survey later). Yes

APPENDIX F

Tax Information						
Renewable Energy Generation Certified by PSC to meet Montana RPS						
<u>Diamond Willow Wind Farms I and II</u>						
Owner	Montana-Dakota Utilities					
Operational	I in 2008 and II in 2011					
Information provided by owner.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$167,239 Fallon County	\$161,292	\$131,841	\$81,369	\$79,653	\$73,159
WET Tax¹	\$11,186	\$13,643	\$14,830	\$10,185	\$10,154	\$9,750
EET Tax²	\$14,915	\$18,191	\$19,773	\$13,580	\$13,538	\$12,999
<u>Judith Gap Wind Energy Facility</u>						
Owner	Invenergy					
Operational	2008					
Information provided by owner.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$1,639,000 Wheatland County	\$1,535,000	\$1,398,000	\$1,333,000	\$1,366,000	\$1,399,000
WET Tax						
EET Tax	\$92,000	\$86,000	\$94,000	\$101,000	\$62,000	\$63,000
Other Tax				\$787,000	\$787,000	\$787,000 ³
<u>Gordon Butte Wind Farm</u>						
Owner	Oversight Resources					
Operational	2012					
Information provided by owner.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$170,000 Meagher County	\$91,000				
WET Tax						
EET Tax	\$8,300	\$8,300				

¹ The Department of Revenue considers the wholesale electrical tax (WET) information to be confidential. The numbers are only included for facilities that volunteered the information to the ETIC.

² The Department of Revenue considers the electrical energy tax (EET) information to be confidential. The numbers are only included for facilities that volunteered the information to the ETIC.

³ Facility impact fees.

Spion Kop Wind Farm						
Owner	NorthWestern Energy					
Operational	2013					
Information provided by owner.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$255,684 Judith Basin County ⁴					
WET Tax						
EET Tax	\$33,288					
Other Tax	\$209,753 ⁵					
Musselshell Wind I and II						
Owner	Goldwind America					
Operational	2013					
Information provided by Department of Revenue.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$238,786 Wheatland County					
WET Tax						
EET Tax						
Other Tax						
Lower South Fork of Dry Creek Hydro						
Owner	Hydrodynamics					
Operational	2012					
Information provided by Department of Revenue.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$2,477 Carbon County	\$2,303	\$3,327	\$3,348	\$3,398	\$2,968
WET Tax						
EET Tax						
Other Tax						
Turnbull Hydroelectric Facility						
Owner	Turnbull LLC					
Operational	2011					
Information provided by owner.						
Year	2013	2012	2011	2010	2009	2008
Property Taxes	\$190,000 Teton County	\$170,000	\$160,000			
WET Tax	\$8,000	\$8,000	\$6,000			

⁴ Receiving Montana New or Expanding Industry Tax Abatement (15-24-1402, MCA).

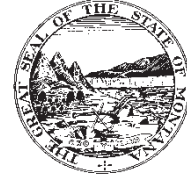
⁵ Facility impact fee. Will pay \$104,876 in next two years.

Flint Creek Hydro	
Owner Hydrodynamics	
Operational	2013
Information not available.	
Wastewater Treatment Plant Cogeneration Facility	
Owner City of Great Falls	
Operational	2008
Information not available. Facility not operational.	
Happy Jack Wind Farm	Duke Energy
Located in Wyoming. Does not pay taxes in Montana.	
Silver Sage Wind Farm	Duke Energy
Located in Wyoming. Does not pay taxes in Montana.	
Klondike III Wind	Iberdrola Renewables
Located in Oregon. Does not pay taxes in Montana.	



Mike Kadas
Director

Montana Department of Revenue



Steve Bullock
Governor

Memorandum

To: Energy and Telecommunications Interim Committee

From: Dan Dodds, Senior Economist

Date: December 3, 2013

Subject: State and Local Taxes Paid by Wind and Coal-Fired Generation

At its November meeting, the committee requested information on the taxes paid by wind-powered and coal-fired electricity generation plants. The taxes paid by a power plant would depend on where it is located, who owns it, and how it is financed. Table 1 shows the range of taxes per megawatt-hour of electricity produced by hypothetical new wind-powered and coal-fired generation. Applying the same assumptions to both power plants, the coal plant would generally pay about \$3 per megawatt-hour more in state and local taxes.

Table 1. Range of Possible Tax Revenue per MWh from New Electricity Generation

	Wind	Coal
Electrical Energy Producers License Tax	\$0.200	\$0.200
Wholesale Energy Transaction Tax	\$0.150	\$0.150
Coal Severance Tax	-	\$0.954
Coal Gross Proceeds Tax	-	\$0.318
Resource Indemnity Tax	-	\$0.025
Property Tax		
State	\$1.546	\$2.078
County & Special District	\$0.413 - \$2.679	\$1.111 - \$3.6
Schools, District & County-wide	\$0.467 - \$3.215	\$1.255 - \$4.321
Corporate Income Tax	<u>\$0 - \$4.134</u>	<u>\$0 - \$3.044</u>
Total	\$2.777 - \$11.925	\$6.091 - \$14.69

The range of property taxes reflects the range of mill levies in places a power plant might be located and whether local governments grant the wind-powered plant a partial

abatement of local property taxes. The range of corporate income tax reflects differences in ownership and financing of the plant.

Table 2 shows how revenue from these taxes would be distributed.

Table 2. Distribution of Potential Revenue per MWh from New Generation

	Wind		Coal	
	Low Case	High Case	Low Case	High Case
State				
General Fund	\$1.804	\$5.937	\$2.711	\$5.755
Special Revenue	\$0.093	\$0.093	\$0.353	\$0.353
Trust Funds	\$0.000	\$0.000	\$0.495	\$0.495
Local				
County & Special Districts	\$0.413	\$2.679	\$1.184	\$3.674
Schools	<u>\$0.467</u>	<u>\$3.215</u>	<u>\$1.347</u>	<u>\$4.413</u>
Total	\$2.777	\$11.925	\$6.091	\$14.690

Detailed explanations of how each tax is distributed are in the department's Biennial Report, which can be downloaded at this address http://revenue.mt.gov/content/publications/biennial_reports/2010-2012/Biennial-Report-2010-2012.pdf.

Revenue from the electrical energy producers license tax, the wholesale energy transactions tax and the corporate income tax is deposited in the state general fund.

The coal severance tax is split between state trust funds, the state general fund, and state special revenue funds that pay for state buildings and local coal impacts.

Property taxes are divided between the state general fund, local governments, local special districts, school districts and the university system,. The coal gross proceeds tax is property tax on coal and is distributed to the same taxing units as other property taxes.

Revenue from the resource indemnity tax is allocated to state special revenue funds and is used for natural resource related programs.

The rest of this memo explains the assumptions behind the numbers in Tables 1 and 2 and why there is a range of possible taxes.

Power Plant Assumptions

Table 3 shows characteristics of the two facilities that would affect their taxes.

Table 3. Power Plant Assumptions

	Wind	Coal
Nominal Capacity, MW	100	450
Capacity Factor	0.38	0.85
Annual Production, MWh	333,108	3,352,995
Plant Cost		
\$/kW Capacity	\$1,700	\$2,800
Total, \$ million	\$170	\$1,260
Heat Rate, Btu/kWh		9,000
Coal Heat Content, mmBtu/Ton		16.99
Coal Contract Sales Price, \$/Ton		\$6.3567

Costs and operating characteristics of the two generation facilities are based on information from Appendix 1 of the Sixth Northwest Conservation and Electric Power Plan developed by the Northwest Power and Conservation Council. Coal heat content is the average for coal delivered to Montana power plants published by the Energy Information Administration the last twelve months in Electric Power Monthly. The contract sales price is the average for surface mines reported on coal severance tax returns for the last four quarters.

Electricity Taxes

Montana imposes two taxes on electricity. The electrical energy producers license tax is a tax of \$.0002 per kilowatt-hour on electricity generated in the state. The wholesale energy transactions tax is a tax of \$.00015 per kilowatt-hour on electricity sent over transmission lines in the state. These taxes are the same for any type of power plant.

Coal Taxes

There are three taxes on coal production in Montana, the coal severance tax, the resource indemnity tax, and the coal gross proceeds tax. All three taxes are assessed on the contract sales price, which is the pre-tax mine-mouth price less any federal royalties over \$0.15 per ton. For surface mined coal appropriate for use in a power plant, the rates are 15% for the severance tax, 0.4% for the resource indemnity tax and 5% for the gross proceeds tax. The coal gross proceeds tax is considered property tax on coal in the ground. The legislature has made it a general policy that property taxes on mineral rights should be paid once, when the mineral owner receives income from having the mineral extracted rather than every year. Over time, the legislature has also converted property

taxes on minerals to uniform state-wide rates rather than having them determined by local mill levies.

Property Taxes

The amount of property taxes a generation facility will pay is determined by its market value, the assessment ratio that is applied to the market value to give taxable value, and the mills that are levied against the taxable value.

The initial cost, as estimated in the Sixth Power Plan, is used as the market value for both plants. Market value of a power plant may change over time. It may go up or down as the price of electricity changes. It may go down as existing assets at the plant depreciate over time, and it may go up as new investments are made at the plant. Thus, the estimates in this memo are for the first few years of the plant's life.

All taxable property in Montana is assigned to a property class, which determines its assessment ratio, which is the ratio of taxable value to market value. Wind-powered electric generation facilities are in class 14, which is taxed at 3% of market value¹. Most of the facilities at a coal-fired generation facility will be in class 13, which is taxed at 6% of market value, but the pollution control facilities will be in class 5, which is taxed at 3% of market value. Both facilities may include some class 4 real estate and some class 8 general business equipment, which are taxed at 3% of market value.

Local taxing jurisdictions can give a partial abatement to facilities that meet the definition of new or expanding industry. A new wind farm qualifies, but a new coal-fired power plant does not. If a local jurisdiction grants an abatement, its mill levies apply to 50% of the taxable value for the first five years of the facility's life. After five years, this percent increases by 10% a year until the facility is taxed at its full market value after 10 years.

In Montana, property taxes are levied by the state, by local governments, by local special districts such as fire districts, and by local school districts. The state levies 95 mills to help fund the state's share of local school district budgets and 6 mills to help fund the university system. Local governments, special districts and school districts set their mill levies annually by dividing the portion of their budget that will be funded by property taxes by the total taxable value in the jurisdiction.

Local mill levies vary widely across the state. The low case uses average rural mill levies for Rosebud county, which are among the lowest in the state. The high case uses state-wide average rural mill levies. In most areas where a power plant might be located, either a new coal plant or a new large wind farm would significantly increase the tax base allowing local governing bodies to reduce their mill levies. This effect would be largest in jurisdictions where a small tax base results in high mill levies. Thus, average mills give a better indication of the taxes a new power plant might face than the highest mills in the state.

¹ To qualify, the developer must have paid standard prevailing wages during construction.

Table 4 shows the assumptions behind the range of property tax estimates.

Table 4. Property Tax Assumptions

Market Value		
Wind Farm		\$170,000,000
Coal Plant		\$1,260,000,000
Property Classification and Assessment Ratio		
Wind Farm	Classes 4, 8 and 14, taxed at 3% or less of market value	
Coal Plant	82.5% Class 13, taxed at 6% of market value 17.5% Classes 4, 5 and 8, taxed at 3% or less of market value	
Local Abatement		
	Low Case	High Case
Wind Farm	none	50%
Coal Plant	none	none
Mill Levies		
	Low Case	High Case
State	101	101
County and Special Districts	54	175
Schools, District and Countywide	61	210

Corporate Income Tax

Corporate income tax is 6.75% of the part of a corporation's net income that is apportioned to Montana.

The high case assumes that the power plant is built and operated by a company that does business only in Montana so that 100% of its net income is apportioned to Montana, that the power plant is 100% equity financed, and that the company earns a 12% pre-tax return on its investment.

Actual corporate income tax would almost certainly be lower, for a number of reasons. If the power plant were owned by a multi-state corporation, revenue from the power plant would be combined with revenue from the rest of the company's operations. Except in the best years, income from profitable parts of a large company is likely to be partly, or even completely, offset by losses from other parts. If the plant is partly financed with debt, the company will deduct interest payments as a business expense, which will make its taxable income lower than with 100% equity financing. Federal depreciation and amortization schedules, which Montana follows, generally front-load these capital cost recovery deductions, which reduces taxable income in the early years of a plant's life.

The lowest case would occur when the power plant is owned by a multi-state corporation that has losses in other states that more than offset the income from the power plant or when it is owned by a company only doing business in Montana but where accelerated depreciation more than offset net income after interest deductions.

Table 5 shows the assumptions behind the range of corporate income tax assumptions.

Table 5. Corporate Income Tax Assumptions

Low Case	High Case
Parent Company has Zero Taxable Income or Accelerated Depreciation > Net Operating Revenue	100% Montana Company 100% Equity Financed 12% Pre-Tax Rate of Return

If the power plant were owned by a partnership, LLC, or S-corporation, the owners would pay individual income tax rather than corporate income tax, but the range of tax revenue would be approximately the same.

APPENDIX H

Appendix I

Analysis Provided by Department of Commerce Business Resources Division

Dustin de Yong, Energy Development Specialist

Completed Wind Projects						
Project	Capacity (MW)	Capital Investment (Million \$)	Construction Jobs	Permanent Jobs	Property Taxes (2010)	Activated
Judith Gap	135	\$203	150	10	\$1,441,874	2005
Diamond Willow	30	\$45	100	4	\$81,369	2008
Gordon Butte	9.6	\$20	20	1	Not applicable	2012
Spion Kop	40	\$86	100	4	Not applicable	2012
Musselshell 1 (Shawmut)	10	\$20	38	2	Not applicable	2012
Musselshell 2 (Shawmut)	10	\$20	37	1	Not applicable	2012
Two Dot (under construction)	9.72	\$22	20	1	Not applicable	2014
Glacier I & II	210	\$550	486	40	\$3,708,734	2008 red does
Rim Rock	189	\$400	300	20	Not applicable	2012 not apply
Horseshoe Bend	9	\$15	20	1.5	\$211,888	2006 to the RPS
Martinsdale Colony	2.8	\$5	10	0.5	Not available	2006
Various Other Projects	1.5	\$4	8	1	Not available	Varies
subtotal:	656.62	\$1,390	1289	86		

Completed Hydro Projects				
Project	Capacity (MW)	Capital Investment (Million \$)	Construction Jobs	Permanent Jobs
Turnbull	13	\$10	30	1.5
Lower S Fork (est.)	0.455	\$1.5	5	0.5
Flint Creek (est.)	2	\$4	6	0.5
subtotal:	15.455	\$16	41	2.5

Ancillary/Firming Generation				
Project	Capacity (MW)	Capital Investment (Million \$)	Construction Jobs	Permanent Jobs
Dave Gates	150	\$200	265	10

Wind Transmission Projects				
Project	Trans. Capacity	Capital Investment (Million \$)	Construction Jobs	Permanent Jobs
MATL	600	\$300	180	10

Totals:	1422.075	\$1,905	1775	108.5	Total jobs:	1883.5
excluding firming power:	1272.075	\$1,705	1510	98.5		1608.5
also excluding transmission:	672.075	\$1,405	1330	88.5		1418.5
Solely RPS development:	259.775	\$431.0	506	25.5		531.5
Solely non-RPS development:	1012.3	\$1,274	1004	73		1077
non-RPS excluding transmission:	412.3	\$974	824	63		887

NREL Calculations and Comparisons to Montana Wind Projects

National Renewable Energy Laboratory (NREL) calculations for 100MW wind farm (2012):

Direct jobs	Local Revenues
70-100 construction jobs	\$350k-\$500k in lease payments
6-8 O&M jobs	\$500k-\$1 million in local property tax

NaturEnerg Comparison - Glacier 1&2, 210MW:

Direct jobs	Local Revenues
350 construction jobs	\$1 million in lease payment
18 O&M jobs	\$4 million in local property tax

A direct comparison between NREL's estimated impact formula and NaturEnerg's actual job and revenue numbers show that the NREL calculation is conservative compared to on the ground realities.

Judith Gap Comparison, 135MW:

Direct jobs	Local revenues
150 construction jobs	\$400,000
10 O&M jobs	\$1,441,874 in local property tax

A direct comparison between NREL's estimated impact formula and Judith Gap's actual job and revenue numbers show that the NREL calculation is conservative compared to on the ground realities.

Montana RPS qualifying wind farm economic impacts derived from NREL formula:

Project	Capacity (MW)	Construction jobs	O&M jobs	Lease payments	Local property tax revenue
Judith Gap	135	95 - 135	8 - 11	\$472,500 - \$675,000	\$675,000 - \$1,350,000
Diamond Willow	30	21 - 30	2	\$105,000 - \$150,000	\$150,000 - \$300,000
Gordon Butte	9.6	7 - 10	0.5 - 1	\$33,600 - \$48,000	\$48,000 - \$96,000
Spion Kop	40	28 - 40	2 - 3	\$140,000 - \$200,000	\$200,000 - \$400,000
Musselshell 1 (Shawmut)	10	7 - 10	0.5 - 1	\$35,000 - \$50,000	\$50,000 - \$100,000
Musselshell 2 (Shawmut)	10	7 - 10	0.5 - 1	\$35,000 - \$50,000	\$50,000 - \$100,000
Two Dot (under construction)	9.72	7 - 10	0.5 - 1	\$34,020 - \$48,600	\$48,600 - \$97,200
lower total:	-	172	14	\$ 855,120.00	\$ 1,221,600.00
upper total:	-	245	20	\$ 1,121,700.00	\$ 2,443,200.00



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Please mail your report to Montana Department of Revenue, PO Box 5835, Helena, MT 59604-5835.

Penalty. If your report is not filed by the due date, an administrative penalty of \$1,500 will be assessed.

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Judith Gap Energy LLC

Address 1 S. Wacker Drive, Suite 1900

Address _____

City Chicago

State Illinois Zip 60606

1. FEIN/SSN 59-3770596

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Cooperative utility for purposes of complying with 69-3-2008, MCA
- Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

1) \$ 15,267,719

2) \$ _____

3) \$ _____

4) \$ _____

5) \$ _____

6) \$ _____

7) \$ _____

8) \$ _____

Indicate whether the transaction was a sale or a purchase of electric energy credit

X s / p

s / p

s / p

s / p

s / p

s / p

s / p

s / p

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

X b / u

b / u

b / u

b / u

b / u

b / u

b / u

Signature [Signature] Title Asset Manager Phone 312-582-1535



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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Electric City Power, Inc

Address PO Box 5021

Address

City Great Falls

State MT Zip 59403

1. FEIN/SSN 20-8356802

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
Cooperative utility for purposes of complying with 69-3-2008, MCA
Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

- 1) \$ 5,637 (3,758 AT \$1.50 each)
2) \$
3) \$
4) \$
5) \$
6) \$
7) \$
8) \$

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

s/p X
b/u
s/p
b/u
s/p
b/u
s/p
b/u
s/p
b/u
s/p
b/u
s/p
b/u

Signature Title City Manager Phone

*Electric City Power, Inc dissolved in December, 2013. See attached.



Item: Ord. 3115, An Ordinance Repealing Title 5, Chapter 20, of the Official Code of the City of Great Falls (OCCGF) Titled "Establish and Operate an Electric Utility"

From: City Commission

Initiated By: City Commission

Presented By: Greg Doyon, City Manager

Action Requested: Conduct Public Hearing and Adopt Ord. 3115

Public Hearing:

1. Mayor conducts public hearing, calling three times each for proponents and opponents.
2. Mayor closes public hearing and asks the will of the Commission.

Suggested Motion:

1. Commissioner moves:
"I move the City Commission (adopt/deny) Ord. 3115."
 2. Mayor calls for a second, discussion, and calls for the vote.
-

Staff Recommendation: Staff recommends that, after conducting the public hearing, Ord. 3115 be adopted.

Background: On May 1, 2013, the City of Great Falls/Electric City Power and Southern Montana G&T reached a settlement that will permanently sever the City's relationship with Southern Montana G&T. The settlement agreement included an owed water credit in the amount of \$1,186,061.83 plus a mediated settlement amount of \$2,063,938.17, totaling \$3.25 million dollars to be paid in two installments.

On October 24, 2013, the City Commission awarded natural gas and electric supply contracts to Energy West Resources and PPL EnergyPlus, LLC, respectively. On November 1, 2013, two significant events occurred: 1) the City transitioned its electrical service from Southern to PPL 2) all customer contracts with ECPI were terminated. ECPI does not have any customers and the City Commission does not desire to continue operate ECPI as an electric provider.

Ordinance 2925, amending Title 5, Chapter 20, OCCGF, and authorizing and approving the creation of Electric City Power, Inc., was adopted on November 1, 2005. The City Commission does not desire to continue to operating ECPI and, therefore, wants to repeal the enabling ordinance. The process for repealing an ordinance is the same as adopting an ordinance.

At its December 3, 2013, City Commission meeting, City Commissioners approved the dissolution of ECPI, the Articles of Dissolution and authorized the City Manager to take all action to wind up and liquidate the affairs of ECPI. A public hearing for December 17, 2013, on Ord. 3115 was also set on this date.

Attachments/Exhibits: Ord. 3115

ORDINANCE 3115

AN ORDINANCE REPEALING TITLE 5, CHAPTER 20, OF THE OFFICIAL CODE OF THE CITY OF GREAT FALLS (OCCGF) TITLED "ESTABLISH AND OPERATE AN ELECTRIC UTILITY"

* * * * *

WHEREAS, on October 7, 2003, the City Commission adopted Ordinance 2861, which established Title 5, Chapter 20 of the OCCGF authorizing the City of Great Falls to establish and operate an electric utility and to market electric power services to consumers; and

WHEREAS, on November 1, 2005, the City Commission adopted Ordinance 2925 that repealed Ordinance 2861, and, in part, revised Title 5 Chapter 20 of the OCCGF, and authorized and provided for the creation of a non-profit corporation to be known as Electric City Power, Inc. in order to secure and provide reliable and economic supplies of electricity for the City of Great Falls; and,

WHEREAS, on November 15, 2005, the City Commission adopted Resolution Nos. 9529 and 9530 approving the Articles of Incorporation and the By-Laws of Electric City Power, Inc.; and,

WHEREAS, on March 2, 2010, the City Commission adopted Resolution 9876 authorizing the removal of Electric City Power, Inc. Directors in accordance with Montana Code Annotated (MCA), the Official Code of the City of Great Falls (OCCGF), and the Articles and the By-Laws of Electric City Power, Inc; and authorizing the initiation of the process of notification of the removal and subsequent appointment of members of the City Commission to fill the vacated positions; and,

WHEREAS, on March 16, 2010, the City Commission appointed the members of the City Commission to replace the five Electric City Power Directors that resigned or were removed by the City Commission, and have subsequently served one-year terms pursuant to the provisions of the By-Laws as amended by Resolution 9877, adopted April 20, 2010; and,

WHEREAS, on October 21, 2011, Southern Montana Electric Generation and Transmission Cooperative, Inc., filed bankruptcy under Chapter 11 of the Bankruptcy Code; and,

WHEREAS, on May 1, 2013, the City Commission approved a mutual Settlement and Release of all claims with Southern Montana Electric Generation and Transmission Cooperative, Inc., that totally, completely and permanently severed the City's relationship with Southern Montana Electric Generation and Transmission Cooperative, Inc.; and,

WHEREAS, on October 24, 2013, the City Commission accepted proposals from Energy West Resources and PPL EnergyPlus, LLC, for gas and electricity supply for the City of Great Falls and authorized the City Manager to execute the necessary supply agreements; and,

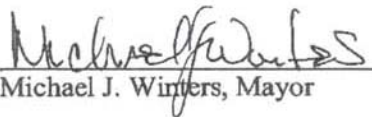
WHEREAS, on November 1, 2013, the City transitioned its electrical service from Southern Montana Electric Generation and Transmission Cooperative, Inc. to PPL EnergyPlus, LLC.

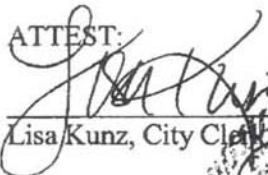
NOW, THEREFORE, BE IT ORDAINED BY THE CITY COMMISSION OF THE CITY OF GREAT FALLS, MONTANA:

- Section 1. That Ordinance 2925 is hereby repealed;
- Section 2. That Title 5, Chapter 20 of the Official Code of the City of Great Falls is hereby repealed in its entirety;
- Section 3. This ordinance shall be in full force and effect thirty (30) days after second reading and final adoption by the City Commission.


APPROVED by the City Commission on first reading December 3, 2013.


ADOPTED by the City Commission of the City of Great Falls, Montana on second reading December 17, 2013.


Michael J. Winters, Mayor

ATTEST:

Lisa Kunz, City Clerk

(Seal of the City)

APPROVED FOR LEGAL CONTENT:

Sara R. Sexe, City Attorney

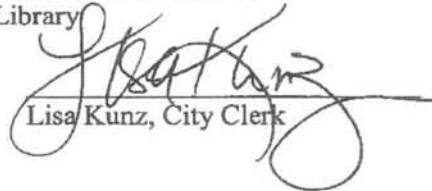


State of Montana)
County of Cascade : ss
City of Great Falls)

I, Lisa Kunz, City Clerk of the City of Great Falls, Montana, do hereby certify that I did post, as required by law and as prescribed and directed by the City Commission, Ordinance 3115 in three places within the limits of said City to-wit:

- On the Bulletin Board, first floor, Civic Center Building;
- On the Bulletin Board, first floor, Cascade County Court House;
- On the Bulletin Board, Great Falls Public Library




Lisa Kunz, City Clerk



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Line 5. Place an "X" in the box or boxes that describe your business entity.

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name NorthWestern Energy

Address 40 E. Broadway

Address _____

City Butte

State MT Zip 59701

1. FEIN/SSN 46-172280

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Cooperative utility for purposes of complying with 69-3-2008, MCA
- Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

- 1) \$ Refer to Note 1 on Attachment
- 2) \$ Refer to Note 2 on Attachment
- 3) \$ Refer to Note 3 on Attachment
- 4) \$ Refer to Note 4 on Attachment
- 5) \$ Refer to Note 5 on Attachment
- 6) \$ 6.73
- 7) \$ 6.73
- 8) \$ 12.50

Indicate whether the transaction was a sale or a purchase of electric energy credit

- s/p
- s/p
- s/p
- s/p
- s/p
- s/p
- s/p
- s/p

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- b/u
- b/u
- b/u
- b/u
- b/u
- b/u
- b/u
- b/u

Signature

Title

Director Revenue Administration

Phone

406-497-3362

ATTACHMENT
NorthWestern Energy
Renewable Energy Credit Report
January 1, 2013 through December 31, 2013

Notes

1. 29.93/MWH*
2. 65.75/MWH*
3. 69.21/MWH*
4. 69.21/MWH*
5. 69.21/MWH*

*These prices are for a Bundled Energy/REC Product with no value assigned specifically to the REC.



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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name ConocoPhillips Company

1. FEIN/SSN 73-0400345

Address 600 North Dairy Ashford, CH-1081

2. [] If this is an amended report, place an "X" in the box.

Address

3. [] If your address has changed, place an "X" in the box and print your new address here

City Houston

State Texas Zip 77079

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
[X] Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
Cooperative utility for purposes of complying with 69-3-2008, MCA
Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- 1) \$ 0.95
2) \$
3) \$
4) \$
5) \$
6) \$
7) \$
8) \$

- X s / p
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- b / u X
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b / u
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b / u
b / u

Signature [Signature] Title Manager, US Power Marketing & Trading Phone 281.293.2350

Robert D. Gabbard, Jr.
President

PPL Treasure State, LLC
Two North Ninth Street
Allentown, PA 18101-1179
Tel. 610.774.4168 Fax 610.774.6523
RDGabbard@pplweb.com



February 27, 2014

VIA FEDERAL EXPRESS

Montana Department of Revenue
125 N. Robert Street
Helena, MT 59601

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FEB 28 2014

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DEPARTMENT OF REVENUE

FEB 28 2014

BIT

RE: 2013 Renewable Energy Credit Report

Dear Sir/Madame:

Please find enclosed the 2013 Renewable Energy Credit Report for PPL Treasure State, LLC ("PPLTS"). PPLTS submits its 2013 Renewable Energy Credit Report in compliance with the 2011 Senate Bill 7 as codified in MCA 69-3-2009 and 69-3-2010. PPLTS is a competitive electricity supplier as defined in MCA 69-3-2003. PPLTS purchases Renewable Energy Credits ("RECs") on the bilateral market from Montana Public Service Commission ("MPSC") certified resources.

The purchase and sale of RECs from the MPSC certified resources are tracked in either the Western Renewable Energy Generation Information System ("WREGIS") or the Midwest Renewable Energy Tracking System ("MRETS"). The seller enters the RECs in WREGIS or MRETS and then transfers the same RECs to the buyer, in this case PPLTS. WREGIS and MRETS both disclose the attributes required for verification of RECs from MPSC certified resources. Neither WREGIS nor MRETS publicly disclose the price of the RECs. Therefore, per MCA 69-3-2010 PPLTS is not required to disclose the price of the RECs.

Sincerely,

Robert D. Gabbard, Jr.
President
PPL Treasure State, LLC

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FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

These instructions are to help you prepare your return. If you have questions about the Renewable Energy Credit Report, please call us toll-free at (866) 859-2254, in Helena at 444-6900, or visit our website at revenue.mt.gov for detailed instructions.

When and where to file. Your renewable energy credit report is due March 1 for the previous full calendar year.

Please mail your report to Montana Department of Revenue, PO Box 5835, Helena, MT 59604-5835.

Penalty. If your report is not filed by the due date, an administrative penalty of \$1,500 will be assessed.

Specific Instructions

Line 1. Please provide your FEIN.

Line 2. If you are amending a prior year's report, place an "X" in the box provided.

Line 3. If your mailing address has changed, place an "X" in the box and print your new address in the space provided.

Line 5. Place an "X" in the box or boxes that describe your business entity.

Line 6. In the first column please insert the purchase or sales price of the renewable energy credit. In the second column please circle either "s" or "p" to indicate whether the renewable energy credit was a sale (s) or a purchase (p) by the filer. In the third column please circle "b" to indicate that the sales or the purchase of the renewable energy credit was bundled or part of a transaction that included the selling or purchasing of electrical energy. If the sale or the purchase was not part of a bundled transaction, circle "u" to establish that the transaction was unbundled or not part of a bundled transaction.

DEPARTMENT OF REVENUE

FEB 28 2014

Renewable Energy Credit Report

BIT

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name PPL Treasure State, LLC

1. FEIN/SSN 26-1661044

Address 45 Basin Creek Road

2. If this is an amended report, place an "X" in the box.

Address _____

3. If your address has changed, place an "X" in the box and print your new address here

City Butte

State MT Zip 59701

5. Place an "X" in the box(es) that describes your entity
- Competitive electricity supplier (as defined in 69-3-2003, MCA)
 - Utility company (as defined in 69-5-102, MCA)
 - Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- 1) \$ 36,003 RECs*
- 2) \$ *REC prices are not publicly disclosed in WREGIS or
- 3) \$ MRETS. Therefore, only the number of credits are
- 4) \$ reported per MCA 69-3-2010.
- 5) \$ _____
- 6) \$ _____
- 7) \$ _____
- 8) \$ _____

s / p	X	b / u	X
s / p		b / u	
s / p		b / u	
s / p		b / u	
s / p		b / u	
s / p		b / u	
s / p		b / u	

Signature [Signature] Title President, PPL Treasure State, LLC Phone (610) 774-4168



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FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

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DEPARTMENT OF REVENUE

FEB 24 2014

BIT

Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name MDU Resources Group, Inc. (dba Montana-Dakota

Address Utilities Co.

Address 400 North Fourth Street

City Bismarck

State ND Zip 58501

1. FEIN/SSN 41-0423660

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
- Cooperative utility for purposes of complying with 69-3-2008, MCA
- Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

- 1) \$ 138003.44
- 2) \$ _____
- 3) \$ _____
- 4) \$ _____
- 5) \$ _____
- 6) \$ _____
- 7) \$ _____
- 8) \$ _____

Indicate whether the transaction was a sale or a purchase of electric energy credit

s / p

s / p

s / p

s / p

s / p

s / p

s / p

s / p

Indicate whether the sale or purchase was a part of a bundled/ unbundled transaction

b u

b / u

b / u

b / u

b / u

b / u

b / u

b / u

Signature Travis Jacobson

Title Mgr, Financial Reporting/Planning

Phone 701-222-7847

Travis Jacobson

5532



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BIT MT DOR FORM EREC INSTRUCTIONS - Renewable Energy Credit Report

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name United Materials of Great Falls, Inc.

1. FEIN/SSN 81-0406935

Address PO Box 1690

2. [] If this is an amended report, place an "X" in the box.

Address

3. [] If your address has changed, place an "X" in the box and print your new address here

City Great Falls

State MT Zip 59403

5. Place an "X" in the box(es) that describes your entity

- Public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
Competitive electricity supplier that buys or sells renewable energy credits for the purposes of complying with 69-3-2004, MCA
Cooperative utility for purposes of complying with 69-3-2008, MCA
[X] Owner of a renewable electrical generation facility that sells renewable energy credits

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- 1) \$ 18,413.85
2) \$ 12,986.88
3) \$
4) \$
5) \$
6) \$
7) \$
8) \$

- X s / p
X s / p
s / p
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s / p
s / p
s / p
s / p

- b / u X
b / u X
b / u
b / u
b / u
b / u
b / u
b / u

Signature [Signature] Title [Title] Phone 406-453-7192



FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Lower South Fork, LLC

1. FEIN/SSN 46-0962914

Address 825 W Rocky Creek Rd

2. If this is an amended report, place an "X" in the box.

Address _____

3. If your address has changed, place an "X" in the box and print your new address here

City Bozeman

State MT Zip 59715

5. Place an "X" in the box(es) that describes your entity

- Competitive electricity supplier (as defined in 69-3-2003, MCA)
- Utility company (as defined in 69-5-102, MCA)
- Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- 1) \$ 4091.86
- 2) \$ _____
- 3) \$ _____
- 4) \$ _____
- 5) \$ _____
- 6) \$ _____
- 7) \$ _____
- 8) \$ _____

- s/p
- s/p
- s/p
- s/p
- s/p
- s/p
- s/p
- s/p

- b/u
- b/u
- b/u
- b/u
- b/u
- b/u
- b/u
- b/u

Signature Title Project Manager Phone 406-587-5086



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FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Flint Creek Hydroelectric, LLC

Address 825 W Rocky Creek Rd

Address _____

City Bozeman

State MT Zip 59715

1. FEIN/SSN 46-2277737

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

Competitive electricity supplier (as defined in 69-3-2003, MCA)

Utility company (as defined in 69-5-102, MCA)

Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

1) \$ 51,084.94

2) \$ _____

3) \$ _____

4) \$ _____

5) \$ _____

6) \$ _____

7) \$ _____

8) \$ _____

s/p

s/p

s/p

s/p

s/p

s/p

s/p

s/p

b/u

b/u

b/u

b/u

b/u

b/u

b/u

b/u

Signature

Title

Project Manager

Phone

406-587-5086



FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Gordon Butte Wind, LLC

1. FEIN/SSN 27-4785429

Address 3424 Hwy 12 East

2. If this is an amended report, place an "X" in the box.

Address _____

3. If your address has changed, place an "X" in the box and print your new address here

City Helena

State MT Zip 59601

5. Place an "X" in the box(es) that describes your entity

- Competitive electricity supplier (as defined in 69-3-2003, MCA)
- Utility company (as defined in 69-5-102, MCA)
- Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

1) \$	<u>0</u>
2) \$	_____
3) \$	_____
4) \$	_____
5) \$	_____
6) \$	_____
7) \$	_____
8) \$	_____

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b / u

Signature [Signature]

Title Member/Manager

Phone 406-586-8440

Trasky, Russ

From: Bryan Rogan <brogan@oversightresources.com>
Sent: Thursday, February 06, 2014 12:18 PM
To: Trasky, Russ
Cc: McKeon, Jim
Subject: Re: Gordon Butte Wind - Renewable Energy Credit Report
Attachments: Dept of Rev REC Report.pdf

Hi Russ,

Attached is the REC Report. Below is language from our PPA contract with Northwestern explaining the disposition of the REC's from our project.

Article 5 Special Terms and Conditions

"5.2 Northwestern shall have the right to and shall receive all of the Environmental Attributes created or granted as a result of the operation of the Facility. Seller hereby waives all rights, title and claims to any of the Environmental Attributes".

Article 1 Definitions

"1.10 Environmental Attributes: Any credits, credit certificates, rights, powers, privileges or similar items such as those for greenhouse gas reduction, green certificates or the generation of green power or renewable energy, or for satisfying renewable portfolio standards or similar renewable energy mandates, or offsets of emissions of greenhouse gases, in each case created by any governmental agency and/or independent certification board or group generally recognized in the electric power generation industry, and generated by or associated with the Facility. The term "Environmental Attributes" does not include any federal, state, or local incentive or production tax attributes or other non-environmental benefits".

Please let me know if you need anything else.

Thanks,

Bryan Rogan
Gordon Butte Wind, LLC
1087 Stoneridge Drive, Suite 2E
Bozeman, MT 59718
brogan@oversightresources.com
Office: 406-586-8440

From: "Trasky, Russ" <rtrasky@mt.gov>
Date: Tuesday, February 4, 2014 3:26 PM
To: Bryan Rogan <brogan@oversightresources.com>
Cc: "McKeon, Jim" <jmckeon@mt.gov>
Subject: RE: Gordon Butte Wind - Renewable Energy Credit Report

Hi Bryan

Thanks for letting me know of your unique situation. Unfortunately, I am not familiar with your arrangement with Northwestern Energy. Would you kindly file a return reporting "zero" and attach a statement to the return similar to your statement below. Thanks for your patience.

Russ Trasky
Montana Dept of Revenue
406-444-0756

From: Bryan Rogan [<mailto:brogan@oversightresources.com>]
Sent: Wednesday, January 29, 2014 2:00 PM
To: Trasky, Russ
Subject: Gordon Butte Wind - Renewable Energy Credit Report

Hi Russ,

Per my inquiry, I received the letter regarding the filing of the Renewable Energy Credit Report and I am unsure as to whether or not I need to file this report. We sell our power generation to Northwestern Energy, and per our contract the renewable energy credits that are produced from the project are conveyed to Northwestern. This means there is not a dollar amount associated with the REC's, Northwestern simply pays us for the generation and they receive the REC's for no additional cost.

Can you please confirm whether or not we would still be required to file the REC Report?

Thank you,
Bryan Rogan
Gordon Butte Wind, LLC
1087 Stoneridge Drive, Suite 2E
Bozeman, MT 59718
brogan@oversightresources.com
Office: 406-586-8440



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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Tiber Montana LLC

1. FEIN/SSN 82-0531197

Address 5203 South 11th East

2. If this is an amended report, place an "X" in the box.

Address _____

3. If your address has changed, place an "X" in the box and print your new address here

City Idaho Falls

State Idaho Zip 83404

5. Place an "X" in the box(es) that describes your entity

- Competitive electricity supplier (as defined in 69-3-2003, MCA)
- Utility company (as defined in 69-5-102, MCA)
- Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- 1) \$ _____
- 2) \$ _____
- 3) \$ _____
- 4) \$ _____
- 5) \$ _____
- 6) \$ _____
- 7) \$ _____
- 8) \$ _____

- s / p
- s / p
- s / p
- s / p
- s / p
- s / p
- s / p
- s / p

- b / u
- b / u
- b / u
- b / u
- b / u
- b / u
- b / u
- b / u

Signature [Signature] Title Secretary Phone 208-529-2469



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FEB 06 2014

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Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Turnbull Hydro LLC

Address 5203 South 11th East

Address _____

City Idaho Falls

State Idaho Zip 83404

1. FEIN/SSN 26-0334292

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

- Competitive electricity supplier (as defined in 69-3-2003, MCA)
- Utility company (as defined in 69-5-102, MCA)
- Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

- 1) \$ _____
- 2) \$ _____
- 3) \$ _____
- 4) \$ _____
- 5) \$ _____
- 6) \$ _____
- 7) \$ _____
- 8) \$ _____

Indicate whether the transaction was a sale or a purchase of electric energy credit

- s / p
- s / p
- s / p
- s / p
- s / p
- s / p
- s / p
- s / p

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

- b / u
- b / u
- b / u
- b / u
- b / u
- b / u
- b / u
- b / u

Signature [Handwritten Signature]

Title owner

Phone 208-529-2469



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Rev 08 11

FORM EREC INSTRUCTIONS – Renewable Energy Credit Report

These instructions are to help you prepare your return. If you have questions about the Renewable Energy Credit Report, please call us toll-free at (866) 859-2254, in Helena at 444-6900, or visit our website at revenue.mt.gov for detailed instructions.

When and where to file. Your renewable energy credit report is due March 1 for the previous full calendar year.

Please mail your report to Montana Department of Revenue, PO Box 5835, Helena, MT 59604-5835.

Penalty. If your report is not filed by the due date, an administrative penalty of \$1,500 will be assessed.

Specific Instructions

Line 1. Please provide your FEIN.

Line 2. If you are amending a prior year's report, place an "X" in the box provided.

Line 3. If your mailing address has changed, place an "X" in the box and print your new address in the space provided.

Line 5. Place an "X" in the box or boxes that describe your business entity.

Line 6. In the first column please insert the purchase or sales price of the renewable energy credit. In the second column please circle either "s" or "p" to indicate whether the renewable energy credit was a sale (s) or a purchase (p) by the filer. In the third column please circle "b" to indicate that the sales or the purchase of the renewable energy credit was bundled or part of a transaction that included the selling or purchasing of electrical energy. If the sale or the purchase was not part of a bundled transaction, circle "u" to establish that the transaction was unbundled or not part of a bundled transaction.

DEPARTMENT OF REVENUE

JAN 27 2014

BIT

Renewable Energy Credit Report

Renewable energy credits purchased and/or sold January 1, 2013 through December 31, 2013

Name Lower South Fork, LLC

Address 825 W Rocky Creek Rd

Address _____

City Bozeman

State MT Zip 59715

1. FEIN/SSN 46-0962914

2. If this is an amended report, place an "X" in the box.

3. If your address has changed, place an "X" in the box and print your new address here

5. Place an "X" in the box(es) that describes your entity

Competitive electricity supplier (as defined in 69-3-2003, MCA)

Utility company (as defined in 69-5-102, MCA)

Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price

Indicate whether the transaction was a sale or a purchase of electric energy credit

Indicate whether the sale or purchase was a part of a bundled/unbundled transaction

1) \$ 4091.86

s/p

b/u

2) \$ _____

s/p

b/u

3) \$ _____

s/p

b/u

4) \$ _____

s/p

b/u

5) \$ _____

s/p

b/u

6) \$ _____

s/p

b/u

7) \$ _____

s/p

b/u

8) \$ _____

s/p

b/u

Signature [Signature] SINGER

Title Project Manager

Phone 406-587-5086



Chuck Loomis

Vice President of Energy Asset Optimization and Resource Planning
Chuck.Loomis@blackhillscorp.com

RECEIVED

MAR 04 2014

DIRECTOR'S OFFICE

625 Ninth Street
Rapid City, SD 57701
P: 605.721.1162
F: 605.721.2567

RECEIVED

MAR 06 2014

BTV

February 27, 2014

Mike Kadas
Montana Department of Revenue
Business and Income Tax Division
P.O. Box 5805
Helena, MT 59604-5805

Re: 2013 Renewable Energy Credit Report

Dear Mr. Kadas:

In accordance with Section 69-3-2004, Black Hills Power, Inc. (BHP) is not required to establish a graduated renewable energy standard per subsection (13) because the utility serves less than 50 retail customers in Montana.

Act SB0052 Section 1.(i) requires a public utility that buys or sells renewable energy credits for the purposes of complying with 69-3-2004 to annually file a renewable energy credit report. Because BHP is exempt from Section 69-3-2004 the enclosed 2013 Renewable Energy Credit Report reflects this exemption.

If you have any questions, please feel free to contact me.

Sincerely,

Chuck Loomis
Vice President, Energy Asset Optimization and Resource Planning

RECEIVED

MAR 06 2014

Renewable Energy Credit Report

BTV

Renewable energy credits purchases and/or sold January 1, 2013 through December 31, 2013.

Name Black Hills Power, Inc. 1 FEIN 46-0111677
 Address 625 Ninth Street 2 If this is an amended report, place an "X" in the box.
 3 If your address has changed, place an "X" in the box and
 City Rapid City, SD print your new address here
 State South Dakota Zip 57701

5. Place an "X" in the box(es) that describes your entity

<input type="checkbox"/>	Competitive electricity supplier (as defined in 69-3-2003, MCA)
<input checked="" type="checkbox"/>	Utility company (as defined in 69-5-102, MCA)
<input type="checkbox"/>	Owner of an electrical generation facility operating in Montana

6. Electric energy credit purchase/sales price	Indicate whether the transaction was a sale or purchase of electric energy credit	Indicate whether the sale or purchase was a part of a bundled/unbundled transaction
1) <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
2) _____		

Signature *Chuck Loomis* Title Vice President of Energy Asset Optimization and Resource Planning Phone 605-721-1162
 Chuck Loomis
 chuck.loomis@blackhillscorp.com
 Fax: 605-721-2567

APPENDIX J



MONTANA
EREC
Rev 04 14

Renewable Energy Credit Report

Use Form EREC to report your renewable energy credits that you purchased or sold during the calendar year. This report is due annually to the Department of Revenue on or before March 1st of each calendar year.

Name _____ 1. FEIN

Address _____ 2. Calendar year ending / /

Address _____ 3. If this is an amended report, check here

City _____ 4. If your address has changed, check this box

State _____ Zip _____

5. If your business does not, and will not in the future, purchase or sell renewable energy credits, check here. We will remove your business from our mailing list.

6. Types of entities that are required to file Form EREC. Select the "type of entity" from the list below and enter the corresponding letter type in line 7, column (i) for each purchase or sale of renewable energy credits.

If your purchases and sales meet more than one entity type, report each transaction separately.

- A) Public utility that buys renewable energy credits for the purpose of complying with 69-3-2004, MCA
- B) Competitive electricity supplier that buys renewable energy credits for the purposes of complying with 69-3-2004, MCA
- C) Cooperative utility for purposes of complying with 69-3-2008, MCA
- D) Owner of a renewable electric generation facility located in Montana that sells renewable energy credits

7. Type of entity (Indicate A,B,C, or D) (i)	Renewable energy credits purchased or sold		Renewable energy credits purchased or sold in a bundled or unbundled transaction		Renewable energy credits purchased or sold (see instructions on how to report your value)	
	Purchased (ii)	Sold (iii)	Bundled (iv)	Unbundled (v)	Volume (vi)	Value (vii)
a) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
b) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
c) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
d) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
e) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____
f) <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____

Signature _____ Title _____

Phone _____ Fax _____ Date _____

FORM EREC INSTRUCTION – RENEWABLE ENERGY CREDIT REPORT

These instructions are to help you prepare your report. If you have questions about Montana's Renewable Energy Credit Report, please call us toll-free at (866) 859-2254; in Helena at 444-6900, or visit our website at revenue.mt.gov for detailed instructions.

Filing Instructions

When and where to file. Your renewable energy credit is due on or before March 1st for the previous calendar year.

Please mail your original report to Montana Department of Revenue, PO Box 5835, Helena, MT 59604-5835.

Penalty. If your report is not filed by the due date, a penalty of \$1,500 will be assessed.

Specific Instructions

Lines 1 and 2. Please provide your FEIN and period ending date.

Line 3. If you are amending a prior return, place an "X" in the box provided.

Line 4. If your mailing address has changed, place an "X" in the box and print your address in the space provided.

Line 5. If your business does not, and will not in the future, purchase or sell renewable energy credits, place an "X" in the box provided. Check this box only if your business is not required to file this report, and we sent it to you in error.

Do not place an "X" in this box if you are responsible for filing this form, but you did not purchase or sell renewable energy credits this calendar year reporting period.

Line 6. List of entity types that are required to complete Form EREC. If your entity purchases or sells renewable energy credits that meet one or more of the types listed below, report these transactions separately on line 7.

[For example, if your business is Entity Type A) a public utility that buys renewable energy credits and also Entity Type D) an owner of a renewable electric generation facility that sells renewable energy credits, complete line 7a, reporting the activity as a public utility and line 7b, reporting as an owner who sells renewable energy credits.]

Line 7. Report each renewable energy credit transaction separately indicating for each transaction if it was a purchase or sale of renewable energy and if the purchase or sale was within a bundled or unbundled transaction (line 7, columns i through v). Enter on line 7, column vi the number of credits bought or sold and in column vii, the price of these credits.

If your business buys or sells renewable energy credits in a market where the price of the credit is not publicly disclosed, you are not required to disclose the price in column vii, instead enter the market where these credits

were purchased or sold. See exceptions in 69-3-2010, MCA.

Renewable Energy Frequently Asked Questions

What is a renewable energy credit (REC)?

- A REC is a measure that acknowledges the production of energy from renewable energy sources has been generated and delivered onto the power grid.

How are RECs created?

- A REC is created when 1 megawatt of power has been generated by renewable energy sources and delivered onto the power grid.

What are some examples of sources of power that possibly qualify for RECs?

- Solar, wind, geothermal, hydro-power, and biomass

What kind of information do RECs include?

- RECs generally include the following information:
 - The date the REC was created
 - The date the generator was built
 - The generator's location
 - The renewable generation's associated greenhouse gas emissions
 - The RECs eligibility for certification or renewable portfolio compliance

Why are RECs created?

- RECs are created to memorialize or acknowledge that a certain amount of power delivered onto the power grid has come from renewable resources.

Why recognize renewable energy sources introduced on the power grid?

- It is important to recognize the amount of power generated and delivered onto the power grid because of Montana's Renewable Portfolio Standards (RPS). The state RPS requires that a percentage of some entity's electricity generation come from renewable resources. RECs identify the amount of renewable energy produced.

Why are RECs bought and sold?

- Generally, RECs are bought and sold so that utilities and competitive electricity suppliers can meet their RPS requirements.

The Environmental Impact of Montana's Renewable Portfolio Standard

Prepared by MT Dept. of Environmental Quality

Montana's renewable portfolio standard (RPS), enacted in April 2005 as part of the Montana Renewable Power Production and Rural Economic Development Act, requires public utilities and competitive electricity suppliers to obtain a percentage of their retail electricity sales from eligible renewable resources. Beginning in 2008, public utilities and competitive electricity suppliers were required to meet 5% of their total retail electricity sales with renewable electricity purchases. This renewable energy requirement was increased to 10% beginning in 2010 and will increase to 15% beginning in 2015. Because the RPS applies to only public utilities and competitive electricity suppliers, and because subsequent amendments to the RPS exempted small utilities and competitive electricity suppliers, the RPS will only apply to four companies in Montana in 2013. Combined, these four companies account for approximately half of the state's retail electricity sales.

As part of Senate Joint Resolution No. 6, the Montana Legislative Council assigned the Energy and Telecommunications Interim Committee (ETIC) to conduct a study of the impacts that the Montana RPS program has had on the state since its implementation. As part of this study, ETIC must review the environmental benefits of the RPS program.

Since the RPS program was enacted in 2005, Montana has seen more than 650 megawatts (MW) of renewable energy projects installed within the state. The vast majority of this renewable energy capacity has utilized wind energy technology to take advantage of the state's strong and consistent wind resources. The remaining renewable energy projects have consisted mostly of small hydroelectric projects. However, only 250 MW of the more than 650 MW of Montana renewable energy capacity have been used for compliance with the Montana RPS. The 189 MW Rim Rock and 210 MW Glacier wind farms are being used for compliance with the California RPS. Several electricity providers have utilized small amounts of renewable energy from neighboring states to meet their Montana RPS requirements. Table 1 below shows the number of megawatt-hours (MWh) of renewable energy each electricity provider has submitted to achieve RPS compliance through 2012 and estimates the acquisitions needed for future compliance.

Table 1 - Renewable Energy Required to Meet Montana RPS (MWh)ⁱ

	2008	2010	2012	2015	2020	2025	2030
Northwestern Energy	296,696	583,403	592,007	908,584	965,764	1,022,772	1,085,243
MDU	34,718	70,040	74,756	114,732	121,953	129,151	137,040
PPL Treasure State	4,058	7,712	20,406	31,318	33,289	35,254	37,407
Electric City Power	*	*	9,587	14,714	15,640	16,564	17,575
Other	1,490	17,771	17,429				
Total	336,962	678,926	714,186	1,069,349	1,136,645	1,203,741	1,277,265
Cumulative	336,962	1,362,127	2,768,137	5,246,420	10,791,229	16,674,357	22,906,403

* Paid fee instead of procuring renewable energy

Based on the market activities within the electricity sector since 2005, the Montana RPS is having an impact on the electricity sector. A wide range of environmental benefits can be ascribed to these activities depending upon the assumptions being made. The DEQ has identified two key areas where increased renewable energy use within Montana has resulted in environmental benefits: air quality and water consumption.

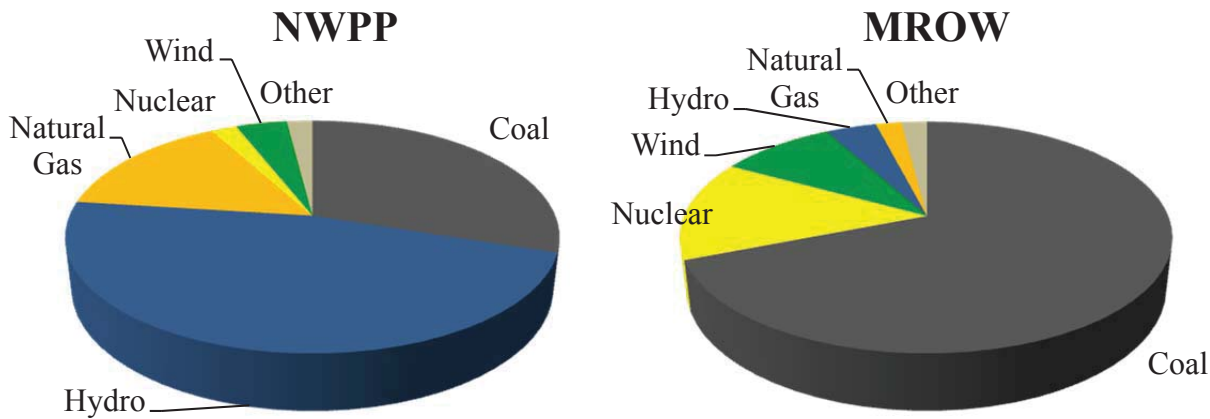
Air Quality

For this analysis, the DEQ will use the emissions accounting methods recommended by the U.S. Environmental Protection Agency's (EPA) Green Power Partnership that call for reporting air quality impacts based on the use and retirement of renewable energy credits (RECs), which denote 1 MWh of renewable electricity generation. The air quality impact of the Montana RPS can be best estimated by determining what types of energy generation Montana electricity providers are reducing their purchases of in response to increased renewable energy purchases. While more than 90% of the electricity generated in Montana currently comes from either coal-fired power plants or large hydroelectric dams, Montana's electricity consumption patterns are far more complicated. Much of the electricity generated in Montana is exported to other states while electricity generated in the broader region, including natural gas and nuclear power, is imported. As a result, the air quality emissions associated with Montana's electricity consumption are best estimated by using regional grid emission factors, not Montana specific numbers.

The EPA's 2012 Emissions and Generation Resource Integrated Database (eGRID) tracks emissions from the nation's power plants and aggregates these emissions to create state and regional grid averages, including average emission rates for all of a state or region's electricity generation and also for only the non-baseload generation. Non-baseload generation is the electricity generation used to meet fluctuations in electricity demand over the course of the day. It is the type of generation resource most likely to be replaced by renewable energy generation, especially when considering the high percentage of wind energy, whose output can vary throughout the day, being used to meet Montana's RPS.

The majority of Montana resides within the Northwest Power Pool (NWPP) sub-region of the western U.S. electricity grid. The NWPP has a diverse generation mix, generating 47% of its electricity in 2009 from hydroelectric dams, 30% from coal, and 15% from natural gas.ⁱⁱ However, the service territory of Montana-Dakota Utilities in eastern Montana resides within the eastern U.S. grid and is part of the Midwest Reliability Organization West (MROW) sub-region. Unlike the NWPP sub-region, MROW generated 69% of its electricity in 2009 from coal power plants, 14% from nuclear, 9% from wind. Natural gas accounted for only 2% of generation in the region.ⁱⁱⁱ

Figure 1 - Generation Mix in NWPP and MROW Sub-regions



The DEQ estimates avoided air pollution emissions based on eGRID's regional, non-baseload average emission rates, because these figures represent the best available data for estimating how the regional electricity market adjusts to accommodate renewable energy generation and consumption. These figures are the industry standard for estimating the air quality impacts of renewable energy consumption and can be found in Table 2.^{iv}

Table 2 - Electricity Emissions Rates for Select Resources^v

		CO ₂	NO _x	SO ₂
		mT/MWh	lbs/MWh	lbs/MWh
eGRID State and Sub-regional, Non-Baseload Emission Rates				
Montana		1.025	2.806	2.492
NWPP		0.637	1.501	1.160
MROW		0.959	3.236	5.769

The NWPP sub-region's average, non-baseload emission rates reflect the diversity of energy resources used to meet non-baseload electricity demand within the sub-region, falling approximately in the middle between the typical emission factors associated with coal and natural gas power plants. In contrast, the average, non-baseload emission rates within the MROW sub-region are only slightly less than the emission rates associated with a typical coal power plant. This is because the MROW sub-region's non-baseload power is dominated by coal power plants.

Air Quality Summary

The air quality impact of the Montana RPS program, in terms of avoided air emissions, can be calculated by multiplying the average non-baseload emission rates for the two sub-regions by the number of RECs used by the electricity providers to achieve RPS compliance.

As shown in Table 3 below, for the calendar year 2012, electricity provider compliance with the Montana RPS is estimated to have avoided emitting 479,000 metric tons of carbon dioxide, 545

metric tons of nitrogen oxide, and 532 metric tons of sulfur dioxide.^{vi} The avoided carbon dioxide emissions alone are equivalent to taking almost 100,000 cars off the road for a year. Had Montana not consumed this renewable energy, the CO₂ emissions associated with the state's retail electricity consumption in 2012 would have been an estimated 6.15 million metric tons instead of 5.67 million metric tons, an 8.4% increase in emissions.^{vii}

In calendar year 2015, the first year of compliance at the RPS program's 15% renewable energy standard, the RPS program is equivalent to avoided air emissions of nearly 700,000 metric tons of carbon dioxide, equivalent to taking 150,000 cars off the road for a year, as well as almost 800 metric tons of nitrogen oxide and sulfur dioxide. Without this renewable energy consumption, the CO₂ emissions associated with Montana's retail electricity consumption can be expected to be at least 12.7% higher in 2015 than they will be if Montana's RPS achieves 100% compliance.^{viii}

Table 3 - Estimated Annual Avoided Emissions from RPS Compliance^{ix}

		2008	2010	2012	2015	2020	2025	2030
RECs Required (MWh)		336,962	678,926	714,186	1,069,349	1,136,645	1,203,741	1,277,265
CO ₂	Metric Tons	225,863	455,108	479,092	696,912	704,446	709,486	715,925
NO _x	Metric Tons	257	517	545	794	803	809	816
SO ₂	Metric Tons	250	504	532	778	787	793	800

Through 2012, the cumulative air quality impact from avoided power plant emissions in the region, shown in Table 4 below, is equal to more than 1.85 million metric tons of carbon dioxide and more than 2,000 metric tons of both nitrogen oxide and sulfur dioxide. Through 2030, the current RPS program could avoid as much as 14 million metric tons of carbon dioxide that would otherwise be associated with Montana's retail electricity consumption.

Table 4 - Estimated Cumulative Avoided Emissions from RPS Compliance^x

		2008	2010	2012	2015	2020	2025	2030
RECs Required (MWh)		336,962	1,362,127	2,768,137	5,246,420	10,791,229	16,674,357	22,906,403
CO ₂	Metric Tons	225,863	912,745	1,855,520	3,484,610	6,990,408	10,527,873	14,091,458
NO _x	Metric Tons	257	1,037	2,110	3,996	7,961	11,993	16,054
SO ₂	Metric Tons	250	1,008	2,053	3,872	7,789	11,470	15,721

Water Consumption

Along with being a major emitter of carbon dioxide and other key air pollutants, the electricity industry is also one of the largest consumers of water in the country. The water is used to operate the steam generators that power most conventional, thermal power plants as well as to cool the resulting steam back to liquid water. Significant amounts of water are also used to control pollution emissions and, in the case of coal power plants, to transport coal ash into settling ponds. In contrast, Montana's existing renewable energy developments consume minimal amounts of water.

Using figures reported to the U.S. Energy Information Administration (EIA) in Form 923, a typical large coal power plant utilizing a recirculating cooling system will consume and evaporated an average of 550 gallons of water for every MWh of electricity generated by the power plant. Alternatively, newer NGCC power plants tend to consume less water than older coal power plants, but a typical NGCC power plant with a recirculating cooling system still consumes approximately 160 gallons of water per MWh of electricity generated. Assuming the avoided regional generation from increased renewable energy consumption is equally divided between coal and natural gas power plants, each MWh of renewable energy consumption avoids the consumption of an estimated 355 gallons of water. This translates into a quarter of a billion gallons of water saved in 2012 alone as a result of Montana’s RPS and just under 1 billion gallons saved between 2008 and 2012, as is shown in Table 5.

Table 5 – Potential Avoided Water Consumption from Renewable Energy Generation^{xi}

Type of Power Plant	Water Consumed (/MWh)	Potential 2012 Water Savings (gallons)*	Potential Cumulative Water Savings (gallons)**
Conventional Coal	550	390,000,000	1,500,000,000
NGCC	160	110,000,000	440,000,000
50-50 Split	355	250,000,000	970,000,000

* /MWh water consumption rate multiplied by 714,186 MWh, the total number of RECs used to meet Montana’s 2012 RPS requirements.

**/MWh water consumption rate multiplied by 2,768,137 MWh, the cumulative number of RECs used to meet Montana’s RPS through 2012.

Economic Impacts

In addition to the environmental impact of Montana’s RPS, it’s worth noting that the RPS has also had a significant economic impact within the state, particularly in more rural counties. Since 2005, renewable energy projects developed directly in response to Montana’s RPS requirement have created approximately 335 temporary construction jobs and 26 permanent jobs. These projects have resulted in over \$400 million in total capital investment in Montana. In addition, 250 megawatts of generation capacity have been built in Montana with no additional emissions and little water consumption. As we continue to review the impacts of the RPS with ETIC, DEQ’s State Energy Office looks forward to providing further analysis regarding the economic impacts to local communities and the state from Montana’s RPS program.

Conclusions

The environmental benefit of Montana’s RPS can be quantified using reasonable assumptions about the impacts increased renewable energy generation in Montana are having on the rest of the electricity sector. Increased renewable energy generation and consumption in Montana have helped to decouple the connection between increased electricity consumption and increased environmental degradation. By generating increasing amounts of renewable energy locally, Montana is able to meet its increased electricity demand without increasing its greenhouse gas and criteria air pollution emissions and without increasing water consumption.

Because Montana is part of two larger electricity grids, the environmental benefits of the Montana RPS program are not limited to Montana and are being achieved throughout the region. However, it's also the case that at least some of the environmental benefits of other state RPS programs are being felt in Montana since the state is now a major exporter of renewable electricity, just as it is a major exporter of conventionally generated electricity. As a result, the region's commitment to renewable energy benefits Montana's environment, just as Montana's commitment to renewable energy benefits the region's environment.

ⁱ RECs used for years 2008 through 2012 come from Public Service Commission Summary of Renewable Portfolio Standard Compliance documents. All REC requirements beyond 2012 were calculated by projecting retail sales growth using the U.S. Energy Information Administration's Mountain region retail sales growth estimates for 2013 through 2030.

ⁱⁱ Based on eGRID 2012 figures which utilize electricity generation figures from 2009.

ⁱⁱⁱ Based on eGRID 2012 figures which utilize electricity generation figures from 2009.

^{iv} While Montana electricity providers are meeting the current 10% renewable energy standard, they represent only half the retail sales within the state. In addition, retail sales are typically less than half the total electricity generation in Montana in a given year, with the net surplus electricity exported to other states.

^v The emission rates for Table 2 are from eGRID 2012 which utilizes emission figures from 2009.

^{vi} Calculated using EPA's Greenhouse Gas Equivalency Calculator. <http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results>.

^{vii} The total CO₂ emissions figure for Montana's retail electricity consumption with RPS renewable energy consumption was calculated by multiplying the sub-regional average CO₂ emissions rates (subtracting renewable energy generation) for NWPP and MROW from eGRID 2012 by an assumed 13.3 million MWh of non-renewable retail electricity consumption in 2012 and assumed that NWPP represented 92% of the state's retail electricity sales while MROW accounted for 8%. The potential total CO₂ emissions without the consumption of renewable energy was calculated by adding the avoided CO₂ emissions calculated in Table 3 to the total CO₂ emissions figure that included the RPS renewable energy.

^{viii} Calculated using the methodology used in endnote vii above but including the assumed electricity demand growth between 2012 and 2015 noted in endnote i as well as the slightly lower CO₂ emissions rate for the NWPP and MROW grids in 2015 as described in endnote ix below.

^{ix} Calculated by multiplying each electricity provider's number of RECs needed for compliance by the appropriate regional avoided grid emissions rates. Beginning in 2013, the avoided emission rates are reduced by 1% annually to account for air quality benefits associated with business-as-usual technology improvements and to account for the ongoing trend towards using cleaner burning fuels for electricity generation.

^x Calculated by multiplying each electricity provider's number of RECs needed for compliance by the appropriate regional avoided grid emissions rates. Beginning in 2013, the avoided emission rates are reduced by 1% annually to account for air quality benefits associated with business-as-usual technology improvements and to account for the ongoing trend towards using cleaner burning fuels for electricity generation.

^{xi} Figures calculated using EIA Form 923 water consumption data from years 2009 through 2012 for the Colstrip and Port Westward power plants.

**** Bill No. ****

Introduced By *****

By Request of the Energy and Telecommunications Interim Committee

A Bill for an Act entitled: "An Act requiring public utilities and competitive electricity suppliers subject to the renewable energy standard to prepare a cost-benefit report; establishing report requirements; amending section 69-3-2005, MCA; and providing an immediate effective date and a retroactive applicability date."

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

Section 1. Section 69-3-2005, MCA, is amended to read:

"69-3-2005. Procurement -- cost recovery -- reporting. (1)

In meeting the requirements of this part, a public utility shall:

- (a) conduct renewable energy solicitations under which the public utility offers to purchase renewable energy credits, either with or without the associated electricity, under contracts of at least 10 years in duration;
- (b) consider the importance of geographically diverse rural economic development when procuring renewable energy credits; and
- (c) consider the importance of dispatch ability, seasonality, and other attributes of the eligible renewable resource contained in the commission's supply procurement rules when considering the procurement of renewable energy or renewable energy credits.

(2) A public utility that intends to enter into contracts of less than 10 years in duration shall demonstrate to the commission that these contracts will provide a lower long-term cost of meeting the standard established in 69-3-2004.

(3) (a) Contracts signed for projects located in Montana must require all contractors to give preference to the employment of bona fide Montana residents, as defined in 18-2-401, in the performance of the work on the projects if the Montana residents have substantially equal qualifications to those of nonresidents.

(b) Contracts signed for projects located in Montana must require all contractors to pay the standard prevailing rate of wages for heavy construction, as provided in 18-2-414, during the construction phase of the project.

(4) All contracts signed by a public utility to meet the requirements of this part are eligible for advanced approval under procedures established by the commission. Upon advanced approval by the commission, these contracts are eligible for cost recovery from ratepayers, except that nothing in this part limits the commission's ability to subsequently, in any future cost-recovery proceeding, inquire into the manner in which the public utility has managed the contract and to disallow cost recovery if the contract was not reasonably administered.

(5) (a) Before September 1 of the year preceding a legislative session, a public utility or competitive electricity supplier subject to 69-3-2004 shall submit a cost-benefit report to the energy and telecommunications interim committee provided for in 5-5-230.

(b) The cost-benefit report shall include, but is not limited to, an estimation of the:

(i) rate impact of the activities of the public utility or competitive electricity supplier necessary to comply with this part. The rate impact estimate must be for wholesale rates and, if the utility or supplier makes retail sales, the estimate must include the impact on those sales; and

(ii) avoided air pollutant emissions, the in-state economic impacts, or other benefits attributable to compliance with this part.

(c) The public utility or competitive electricity supplier shall provide the methodologies and assumptions used in the estimations required pursuant to subsection (5) (b).

(d) The energy and telecommunications interim committee shall review the reports required pursuant to this subsection (5) and, if necessary, submit recommendations regarding the requirements of this part to the legislature.

~~(5)(6) A public utility or competitive electricity supplier shall submit renewable energy procurement plans to the commission in accordance with rules adopted by the commission. The plans must be submitted to the commission ~~on or before:~~~~

~~(a) June 1, 2013, for the standard required in ~~69-3-2004(4)~~; and~~

~~(b) any additional future dates as required by the commission.~~

~~(6)(7) A public utility or competitive electricity supplier shall submit annual reports, in a format to be determined by the~~

commission, demonstrating compliance with this part for each compliance year. The reports must be filed by March 1 of the year following the compliance year.

~~(7)~~(8) For the purpose of implementing this part, the commission has regulatory authority over competitive electricity suppliers."

{Internal References to 69-3-2005: None.}

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

NEW SECTION. **Section 3. {standard} Retroactive applicability.** [This act] applies retroactively, within the meaning of 1-2-109, to public utilities and competitive electricity suppliers subject to the standard established in 69-3-2004 on or after the compliance year beginning January 1, 2015.

- END -

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Rate Impacts of the Montana Renewable Portfolio Standard (RPS) and Community Renewable Energy Project (CREP) Requirements

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Background

The Renewable Power Production and Rural Economic Development Act (69-3-20, MCA) was enacted on April 2005 and went into effect on June 2006. It includes both a Renewable Portfolio Standard (RPS) component (a percentage of retail sales that must be met with “eligible renewable resources,” new resources meeting certain size and energy source requirements) and a Community Renewable Energy Project (CREP) component (projects that are locally or utility owned with a nameplate capacity of 25 MW or less) that public utilities and competitive electric suppliers must satisfy. The RPS component is as follows:

January 1, 2008 through December 31, 2009: 5% of retail sales.

January 1, 2010 through December 31, 2014: 10% of retail sales.

January 1, 2015 and each succeeding compliance year: 15% of retail sales.

Beginning January 1, 2012, as part of the compliance with the RPS, public utilities must also purchase at least 50 MW in CREP nameplate capacity, increasing to 75 MW on January 1, 2015. This total number is allocated proportionally among public utilities based on their respective retail sales and both the energy and associated Renewable Energy Credits (RECs) included in CREPs. NorthWestern’s share of the statewide CREP requirement is 44MW; MDU is responsible for 5.6MW.

Role of Qualifying Facilities (QFs)

The Public Utility Regulatory Policies Act (PURPA) (1978) established a class of generators that receive favorable rate and regulatory treatment. These facilities are either small power production facilities or cogeneration facilities.

Small power production facilities are generally 80 MW or less and are primarily fueled by renewable, biomass, waste, or geothermal resources. Cogeneration facilities are facilities that produce electricity and a useful form of thermal energy in a way that is more efficient than just the production of electricity or thermal energy alone. There is no size limit on eligible cogeneration facilities.

Under PURPA, utilities must purchase the energy produced by QFs in one of two ways. If the QF is below a certain threshold (100 kW or less under Federal law, 3 MW or less currently under Montana Public Service Commission rule A.R.M. 38-5-1902) it must be offered a standard rate equal to a utility’s avoided cost. If the QF is above the threshold, then utilities only have to purchase energy from them if the QF is selected as the winner through a competitive solicitation process.

QFs generally count towards the RPS and the CREP standard because they are usually renewable and often locally owned. They are also often below the size threshold (currently 3 MW, but formerly 10 MW) that allows them to take advantage of the standard offer rate which forces utilities to purchase energy from them at avoided cost. Therefore, any analysis of rate impacts that are attributable to the RPS and the CREP standard must account for QFs and remove them from the impact because even though they may help satisfy the RPS and CREP standards, Federal law requires Montana utilities to purchase from them if they fall below the 3 MW threshold. However, for QF contracts signed after the effective date of Order D2010.7.77, RECs must be purchased separately from the QF power output and any RECs purchased from QFs used for compliance with the RPS must be attributed to the RPS.

Regulation

Wind resources tend to be highly variable and create challenges for NorthWestern in meeting mandatory reliability standards set by the North American Electric Reliability Corporation (NERC) and enforced by the Federal Energy Regulatory Commission (FERC). Meeting those standards requires regulation service to offset the fluctuations in wind production. Before Dave Gates Generating Station (DGGS) was built, NorthWestern bought regulation service from third party providers. Since the plant has been in service it has been the main, if not sole provider of regulation service for NorthWestern.

For MDU, regulation is provided by Midcontinent Independent System Operator (MISO).

NorthWestern Energy (NWE)

In a January 2014 response to an ETIC Survey for Utilities and Suppliers, NWE stated that it used the following resources to comply with the RPS:

Judith Gap: 135 MW

Gordon Butte: 9.6 MW

Turnbull: 13 MW

Spion Kop: 40 MW

Flint Creek: 2 MW

Lower South Fork: 0.5 MW

Additionally, the Company stated Gordon Butte, Flint Creek, and Lower South Fork were used to comply with the CREP requirement.

Analysis of Resources Used For Compliance

Judith Gap: Judith Gap is a wind powered generation facility with a 135 MW nameplate capacity. This windfarm pre-dates the RPS (construction started 1/1/2005 and went into service 2/16/2006) but is used to comply with it. There is no evidence in testimony or orders in the preapproval filing (Docket No.

D2005.2.14) that this facility was approved with any thought of a future RPS in Montana so it cannot be directly attributed to the RPS.

Gordon Butte: Gordon Butte is a windfarm with a 9.6 MW nameplate capacity and an in-service date of 1/3/2012. This facility is both RPS and CREP compliant but it is also a QF and the developer is paid under the standard offer QF-1 rate that was available at the time that included RECs. Therefore, RPS and CREP compliance are ancillary benefits NWE receives because the Company is required to purchase energy from it under PURPA. (Note that in the absence of a Montana RPS, the RECs generated by bundled QFs could be sold off-system. These opportunity costs are not counted in this analysis.)

Turnbull: Turnbull is a hydroelectric facility with a 13 MW nameplate capacity and an in-service date of 7/15/2011. This facility is both RPS and CREP compliant and NWE states that they procured Turnbull via a competitive bid for CREP resources.

Spion Kop: Spion Kop is a windfarm with a 40 MW nameplate capacity and an in-service date of 12/1/2012. (Full production began the previous month.) It is owned by NWE and was purchased at a capacity cost of \$1947/kW. It is used to comply with the RPS and it is reasonable to conclude that it was built for compliance based on testimony (Docket No. D2011.5.41).

Flint Creek: Flint creek is a hydroelectric facility with a 2 MW nameplate capacity and an in-service date of 3/14/2013. This facility is both RPS and CREP compliant but energy is purchased from it based on the QF-1, Option 1(a) tariff rate. NWE would be required to purchase its output in the absence of both RPS and CREP legislation. RECs do not come bundled with the electricity but are purchased separately. Therefore associated REC costs are attributable to the RPS and CREP standard.

Lower South Fork: Lower South Fork is a hydroelectric facility with a 0.5 MW nameplate capacity and an in-service date of 8/14/2012. This facility is both RPS and CREP compliant but energy is purchase based on the QF-1, Option 1(a) tariff rate. NWE would be required to purchase its output in the absence of both RPS and CREP legislation. RECs do not come bundled with the electricity; so associated REC costs are attributable to the RPS and CREP standard.

Musselshell: Musselshell is a wind facility with a 20 MW nameplate capacity and an in service date of 1/1/2013. This facility is RPS compliant but it is a Qualifying Facility with energy purchased under the old REC-bundled QF rate option at \$69.21/MWh. It was not used to meet the RPS standard during the period studied in this report (through the 2012-13 Tracking Year).

ETIC has requested that MCC estimate the costs, if any, to ratepayers that are attributable to the RPS and CREP standards. MCC's analyses are constrained by the availability of data. Estimation of the costs to ratepayers requires assumptions about what resources would have been purchased, and the cost of those resources, in lieu of those acquired for the purpose of meeting the RPS and CREP standards. For example, one possible assumption could be that the utility's avoided cost is a measure of the costs that would have been incurred. For QF resources this means the only additional costs would be the costs of RECs purchased separately. For non-QF resources the additional costs would be the difference between the relevant QF rate and the cost actually paid, plus regulation costs if appropriate, plus the costs of

RECs purchased separately, also if appropriate. An alternate assumption could be that the power provided by the CREP and RPS resources would have been purchased in the spot market. A third alternative is that the power would have been purchased at a cost similar to that of other assumed long term resources. Another alternative could be a weighted average of the long term and spot market costs.

NorthWestern's non-QF RPS and CREP resources are Judith Gap, Spion Kop, and Turnbull Hydro. Judith Gap's cost is considerably lower than the QF rate. When NorthWestern built the DGGs plant for regulation it assigned wind the incremental capital costs of the plant above that needed for regulation of load and transmission customers, in the range of \$13 per MWh of wind. Even adding this value for regulation the total cost of Judith Gap is below avoided cost. Spion Kop, including current estimates for the cost of regulation, is \$45.22, also well below avoided cost. Turnbull Hydro's cost is \$65.75; regulation is not an issue for hydro plants. Because this rate is below the average avoided cost (75.26) for peak months of July and August, when most of Turnbull's production arises, Turnbull has lower overall costs than the avoided cost alternative. Therefore the net impact of CREP and RPS to ratepayers, when measured by the avoided cost example would be negative.

The following analyses compare the cost to ratepayers of the CREP and RPS resources using the spot market and the weighted average spot and long term contract cost alternatives.

Analysis of Rate Impacts Pre 2012-2013 Tracker Year

For the first several years of the RPS requirement, through the 2009-2010 tracking year, the Judith Gap plant provided sufficient RECs for NorthWestern's full requirement for RECs. Because the Judith Gap facility was purchased at such an advantageous rate before the imposition of RPS, for this period no additional costs were placed on ratepayers by the RPS requirement. Therefore, our analysis begins with the 2010-2011 tracking year.

Rate impacts were determined by analyzing the change in supply rates in NWE's Annual Electric Tracker filings by removing the resources directly attributable to the RPS and replacing them with either (a) market purchases or (b) a 50/50 mix of market purchases and long-term contracts. This allows us to compare the change in costs (under the two assumptions about alternative resources) that can be directly attributed to the RPS. As noted above, different assumptions could be used and different impacts would be derived.

NWE Annual Electric Tracker filings were analyzed from the beginning of the implementation of the RPS up to the point that the last actual tracker information was present, in this analysis the 2011-2012 tracker year. Beyond the 2011-2012 tracker year there currently is no actual production and cost information filed (the 2012-2013 tracker filing is expected in May, 2014). This analysis only looks at the rate impact of Turnbull and leaves out any rate impact of Spion Kop, Flint Creek, Lower South Fork, or Musselshell, because they were not in operation during that period.

Market Replacement

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Average
Total delivered cost (\$/MWh)	\$43.5349	\$40.5213	\$38.7577	\$38.5227	\$38.7338	\$40.3214	\$31.8041	\$32.3079	\$30.4854	\$37.7652	\$35.0958	\$36.4529	\$36.9442
Total delivered cost w/o Turnbull	\$43.5349	\$40.5213	\$38.7577	\$38.5227	\$38.7338	\$40.3214	\$31.8041	\$32.3079	\$30.4854	\$37.7652	\$35.0958	\$36.3375	\$36.9361
% change w/o Turnbull	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.32%	-0.02%
	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Total
Total delivered cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$61,672.65	\$61,672.65
Total delivered cost w/o Turnbull	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9,207.34	\$9,207.34
Difference in Cost w/o Turnbull	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-\$52,465.31	-\$52,465.31
	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Average
Total delivered cost (\$/MWh)	\$33.7801	\$31.9969	\$32.8019	\$33.8572	\$35.7915	\$32.7086	\$34.1850	\$32.3373	\$33.8536	\$37.0074	\$42.2958	\$32.4703	\$34.3349
Total delivered cost w/o Turnbull	\$33.1601	\$31.3626	\$32.3353	\$33.9075	\$35.7915	\$32.7086	\$34.1850	\$32.3373	\$33.8536	\$37.0074	\$41.7021	\$31.5114	\$34.0643
% change w/o Turnbull	-1.84%	-1.98%	-1.42%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-1.40%	-2.95%	-0.79%
	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Total
Total delivered cost	\$445,335.75	\$519,807.80	\$381,248.57	\$55,581.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$315,218.62	\$559,493.45	\$2,276,686.03
Total delivered cost w/o Turnbull	\$92,371.47	\$130,550.78	\$149,187.91	\$79,726.85	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$14,210.42	\$43,588.12	\$509,635.55
Difference in Cost w/o Turnbull	-\$352,964.28	-\$389,257.02	-\$232,060.66	\$24,145.01	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-\$301,008.20	-\$515,905.33	-\$1,767,050.48

50/50 Market/Long-Term

	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Average
Total delivered cost (\$/MWh)	\$43.5349	\$40.5213	\$38.7577	\$38.5227	\$38.7338	\$40.3214	\$31.8041	\$32.3079	\$30.4854	\$37.7652	\$35.0958	\$36.4529	\$36.9442
Total delivered cost w/o Turnbull	\$43.5349	\$40.5213	\$38.7577	\$38.5227	\$38.7338	\$40.3214	\$31.8041	\$32.3079	\$30.4854	\$37.7652	\$35.0958	\$36.3428	\$36.9365
% change w/o Turnbull	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.30%	-0.02%
	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Total
Total delivered cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$61,672.65	\$61,672.65
Total delivered cost w/o Turnbull	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$11,628.00	\$11,628.00
Difference in Cost w/o Turnbull	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-\$50,044.65	-\$50,044.65
	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Average
Total delivered cost (\$/MWh)	\$33.7801	\$31.9969	\$32.8019	\$33.8572	\$35.7915	\$32.7086	\$34.1850	\$32.3373	\$33.8536	\$37.0074	\$42.2958	\$32.4703	\$34.3349
Total delivered cost w/o Turnbull	\$33.2770	\$31.5110	\$32.4673	\$33.8365	\$35.7915	\$32.7086	\$34.1850	\$32.3373	\$33.8536	\$37.0074	\$41.8175	\$31.7560	\$34.1224
% change w/o Turnbull	-1.49%	-1.52%	-1.02%	-0.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-1.13%	-2.20%	-0.62%
	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Total
Total delivered cost	\$445,335.75	\$519,807.80	\$381,248.57	\$55,581.84	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$315,218.62	\$559,493.45	\$2,276,686.03
Total delivered cost w/o Turnbull	\$158,940.42	\$221,608.14	\$214,825.96	\$45,638.43	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$72,734.39	\$175,211.77	\$888,959.10
Difference in Cost w/o Turnbull	-\$286,395.33	-\$298,199.66	-\$166,422.61	-\$9,943.41	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	-\$242,484.23	-\$384,281.68	-\$1,387,726.93

Regulation and Other Costs of Wind Resources

We do not have an unambiguous estimate of the cost of regulation from DGGS. NorthWestern's original estimate was approximately \$13 per MWh of wind; this estimate charged load and transmission regulation with almost all the capital costs of DGGS and treated wind as an incremental user of regulation services. A fully allocated cost of regulation from DGGS would be much higher. FERC's decisions on how much transmission customers may be charged has created additional uncertainty over who will be responsible for resulting shortfalls in cost recovery. More recently, based on sunk costs of

DGGS, NWE testimony in the Spion Kop docket estimated incremental regulation costs for that resource as less than \$1.30 per MWh (based upon a 39% capacity factor for Spion Kop and increased operating costs at DGGS equal to \$.03 per MWh of utility load); the Commission evaluated alternate leveled regulation costs as high as \$4.32. Further uncertainty comes from both FERC and the Genivar study with regard to how much regulation service is necessary to accommodate wind, and therefore how much wind NorthWestern can integrate on its system before having to expand its regulating resource capability. For this analysis we will accept NorthWestern's Spion Kop value of \$1.30 for the current incremental operating costs that would be associated with the presence or absence of RPS and CREP resources.

NorthWestern indicates that its imbalance costs have risen as the reliance on wind has increased. Total utility imbalance costs are now in the neighborhood of \$5.5 million per year; however neither we nor NorthWestern have any estimate of either an allocation of these annual costs to wind and other sources of imbalance or of the marginal imbalance costs associated with additional MW of installed wind on NorthWestern's system. There are also minor additional costs directly attributable to wind, such as the cost of participating in the Western Renewable Energy Generation Information System (WREGIS) used for tracking RECs in the Western Interconnection, and for the installation and operation of meteorological towers for purposes of wind forecasting. These costs have not been included here but would likely lead to a small increase in the estimated cost to ratepayers of the RPS and CREP standards.

Post 2011-2012 Tracker Year

Post 2011-2012 Electric Tracker data is not yet available. Therefore, we cannot conduct an identical impact analysis in supply rates. Rather we estimate the impact using REC purchases, QF contract or PPA contract prices, and estimated regulation costs to calculate the resource cost, and either a 50-50 mix of Mid-C prices and a surrogate measure of long term contracts calculated from the median ratio of long term to market in the 2010-2011 and 2011-2012 tracker years, or spot market purchases as the surrogate for the cost of power that would have been purchased in the absence of the CREP and RPS requirements¹. As discussed previously, an alternate assumption which values the surrogate cost of power at NorthWestern's avoided cost would result in negative costs to ratepayers for Spion Kop and Turnbull, offset only by the very modest cost of purchasing RECs from South Fork and Flint Creek. Our estimate of the ratepayer impacts is therefore bracketed by alternate assumptions about the cost of resources that would otherwise have been acquired.

Turnbull Hydro: The rate for electricity NWE pays for Turnbull is \$65.75/MWh, with RECs bundled. We estimate the additional costs to ratepayers, compared with the spot market alternative, at \$1,352,872

¹ Also, we have assumed that purchases at Mid-C would be swapped for Colstrip power to avoid wheeling costs. If that option were not possible, wheeling charges of \$5 to \$8 per MWh would have to be added to the alternate power costs, also significantly reducing the estimated excess cost to ratepayers of the RPS.

for the 2012-13 Tracking Year. Using a 50/50 assumption for the alternate supply, we estimate the additional costs for Turnbull at \$1,020,813.

Spion Kop: We can estimate the costs for 2013 from the actual costs associated with the plant (\$6,217,339 fixed costs plus \$113,139 variable costs), and the actual production by month for calendar year 2013 (144,150 MWh). The resulting cost estimate for the first year of production is \$43.92/MWh. Regulation brings this estimate to \$45.22/MWh. We estimate additional costs attributable to the RPS, compared with the spot market alternative, to be \$2,739,714 for the 2012-13 Tracking Year. Using a 50/50 assumption for the alternate supply, we estimate the additional costs for Spion Kop at \$1,156,405.

Flint Creek: NWE purchases power from Flint Creek at a rate of \$90.87/MWh for high load hours and \$54.44/MWh for low load hours. (High load hours are 16 hours a day, 6 days a week during the months of December, January, February, July and August. Low load hours are all other hours during those months, and all hours during the other seven months.) RECs are purchased separately at a price of \$6.73. We estimate the additional cost associated with the RPS and CREP to be \$22,061 for the 2012-13 Tracking Year.

Lower South Fork: NWE purchases power from Lower South Fork under the QF-1 rate of \$90.87/MWh for high load hours and \$54.44/MWh for low load hours. RECs are purchased separately at a price of \$6.73. We estimate the additional cost associated with the RPS and CREP standards at \$6,232 for the 2012-13 Tracking Year.

Musselshell Wind: NWE purchases power from Musselshell under the old bundled-REC QF rate option of \$69.21/MWh. RECs are included. Because Musselshell Wind would still have to be acquired under PURPA if there were no RPS or CREP requirements, there are no additional costs to ratepayers associated with this facility.

Montana-Dakota Utilities (MDU)

MDU serves loads in Montana, North Dakota and South Dakota, with loads split approximately 66 percent in North Dakota, 5 percent in South Dakota, and 29 percent in Montana. North Dakota and South Dakota each have legislation setting renewable goals for utilities to meet 10 percent of load within the state by “renewable, recycled or conserved” energy, but do not require the retirement of RECs to satisfy the goal.

MDU has acquired three wind generating facilities: Diamond Willow I and Diamond Willow II, in Montana, and Cedar Hills in North Dakota. All three generate RECs that are tracked by the Midwest Renewable Energy Tracking System (M-RETS).

Diamond Willow 1: Diamond Willow 1 is a windfarm with a nameplate capacity of 19.5 MW and an in-service date of 12/27/2007. This facility is both RPS and CREP compliant and is owned by MDU with a capacity cost of approximately \$2020/kW. MDU has stated that this facility was not constructed solely

to comply with the RPS, but instead as part of a broader resource plan that resulted from its Integrated Resource Planning process.

Diamond Willow 2: Diamond Willow 2 is a windfarm with a nameplate capacity of 10.5 MW and an in-service date of 6/16/2010. This facility is both RPS and CREP compliant and is owned by MDU with a capacity cost of approximately \$2419/kW. MDU has stated that this facility was not constructed solely to comply with the RPS, but instead as part of a broader resource plan that resulted from its Integrated Resource Planning process.

Cedar Hills: Cedar Hills is a windfarm with a nameplate capacity of 20 MW and an in-service date of 5/20/2010. This facility is both RPS and CREP compliant and is owned by MDU with a capacity cost of approximately \$2370/kW. MDU has stated that this facility was not constructed solely to comply with the RPS, but instead as part of a broader resource plan that resulted from its Integrated Resource Planning process.

These three facilities generate roughly 150-160,000 RECs per year. MDU has also acquired a small (7.5 MW) waste heat plant in North Dakota, not certified as an eligible renewable resource under Montana law. It is not used by MDU to meet Montana's standards, but it generates RECs under the rules of the M-RETS and is used to help meet the North Dakota and South Dakota renewable goals. MDU's Montana load is approximately 750,000 MWh, requiring roughly 75,000 RECs. The remainder of the wind RECs are available for carryover for up to two years to meet future Montana REC needs, or are sold (together with those generated by the waste heat plant) and the proceeds credited to customers in North Dakota and South Dakota. The generation associated with the excess RECs, together with that of the waste heat plant and conserved energy, is used to demonstrate compliance with North Dakota and South Dakota "renewable, recycled or conserved" energy goals.

MDU does not separate out or track the annual costs of its individual generating resources. Accordingly it was not possible to estimate the cost of MDU's compliance with Montana RPS and CREP requirements and the difference in overall costs to ratepayers compared with the resources that might have been used to meet load in the absence of those requirements.

Summary

The RPS and accompanying CREP legislation in Montana has had relatively minimal rate impact on NWE's customers. This is mainly due to the fact that almost all the resources that NWE uses to comply with both standards were either purchased before the implementation of the RPS (Judith Gap) or they are QFs that can take advantage of the Standard Offer Rate which NWE is required to extend to them under Federal law. QF resources that are contracted under legacy tariffs have RECs bundled, while QFs that are contracted under more recent tariffs do not have RECs bundled, so any costs related to the separate purchase of RECs are attributable to the RPS.

The rate impact of the RPS and CREPs on MDU's Montana customers is difficult to discern as MDU currently does not separate or track costs of its individual generators. Also, its renewable resources were procured as part of its Integrated Resource Planning Process which incorporates a multitude of factors beyond the need for RPS and CREP compliance. Given MDU's statements that the Diamond Willow and Cedar Hills resources would likely have been built absent the RPS, it is reasonable to assume that the impact has been minimal.

I. Electricity Output of All Certified Eligible Renewable Resources

542 MW averaging approximately 40% Capacity Factor

Output = Generation MW x 8,760 hours/year x % Capacity Factor

- $542 \text{ MW} \times 8760 \text{ hours/year} \times 0.40 = 1.9 \text{ million MWh per year}$

Carbon Dioxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .57 tons/MWh of carbon dioxide¹

Average U.S. emissions rates from coal-fired generation = 1.1 tons/MWh of carbon dioxide

$1.9 \text{ million MWh} \times .57 \text{ tons/MWh} = 1.1 \text{ million tons of equivalent carbon dioxide}$

$1.9 \text{ million MWh} \times 1.1 \text{ tons/MWh} = 2.1 \text{ million tons of equivalent carbon dioxide}$

- (Natural gas displacement) All certified eligible renewable projects displace 1.1 million tons of carbon dioxide per year.
- (Coal displacement) All certified eligible renewable projects displace 2.1 million tons of carbon dioxide per year.

Sulfur Dioxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .00005 tons/MWh of sulfur dioxide²

Average U.S. emissions rates from coal-fired generation = .007 tons/MWh of sulfur dioxide.

$1.9 \text{ million MWh} \times .00005 \text{ tons/MWh} = 95 \text{ tons of equivalent sulfur dioxide}$

$1.9 \text{ million MWh} \times .007 \text{ tons/MWh} = 13,300 \text{ tons of equivalent sulfur dioxide}$

- (Natural gas displacement) All certified eligible renewable projects displace 95 tons of sulfur dioxide per year.
- (Coal displacement) All certified eligible renewable project displace about 13,300 tons of sulfur dioxide per year.

Nitrogen Oxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .0009 tons/MWh of nitrogen oxides³

Average U.S. emissions rates from coal-fired generation = .003 tons/MWh of nitrogen oxides

$1.9 \text{ million MWh} \times .0009 \text{ tons/MWh} = 1,615 \text{ tons of equivalent nitrogen oxides}$

$1.9 \text{ million MWh} \times .003 \text{ tons/MWh} = 5,700 \text{ tons of equivalent nitrogen oxides}$

- (Natural gas displacement) All certified eligible renewable projects displace 1,615 tons of nitrogen oxide per year.
- (Coal displacement) All certified eligible renewable projects displace 5,700 tons of nitrogen oxide per year.

¹ See <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>.

² Ibid.

³Ibid.

II. Electricity Output of Eligible Renewable Resources Certified and Located in Montana

250 MW averaging approximately 40% Capacity Factor

Output = Generation MW x 8,760 hours/year x % Capacity Factor

- $250 \text{ MW} \times 8760 \text{ hours/year} \times 0.40 = 876,000 \text{ MWh per year}$

Carbon Dioxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .57 tons/MWh of carbon dioxide

Average U.S. emissions rates from coal-fired generation = 1.1 tons/MWh of carbon dioxide

$876,000 \text{ MWh} \times .57 \text{ tons/MWh} = 499,320 \text{ tons of equivalent carbon dioxide}$

$876,000 \text{ MWh} \times 1.1 \text{ tons/MWh} = 963,600 \text{ tons of equivalent carbon dioxide}$

- (Natural gas displacement) Certified eligible renewable projects located in Montana displace 499,320 tons of carbon dioxide per year.
- (Coal displacement) Certified eligible renewable projects located in Montana displace 963,600 tons of carbon dioxide per year.

Sulfur Dioxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .00005 tons/MWh of sulfur dioxide

Average U.S. emissions rates from coal-fired generation = .007 tons/MWh of sulfur dioxide

$876,000 \text{ MWh} \times .00005 \text{ tons/MWh} = 43.8 \text{ tons of equivalent sulfur dioxide}$

$876,000 \text{ MWh} \times .007 \text{ tons/MWh} = 6,132 \text{ tons of equivalent sulfur dioxide}$

- (Natural gas displacement) Certified eligible renewable projects located in Montana displace 43.8 tons of sulfur dioxide per year.
- (Coal displacement) Certified eligible renewable projects located in Montana displace 6,132 tons of sulfur dioxide per year.

Nitrogen Oxide Emissions Displaced:

Average U.S. emissions rates from natural gas-fired generation = .0009 tons/MWh of nitrogen oxides

Average U.S. emissions rates from coal-fired generation = .003 tons/MWh of nitrogen oxides

$876,000 \text{ MWh} \times .0009 \text{ tons/MWh} = 788 \text{ tons of equivalent nitrogen oxides}$

$876,000 \text{ MWh} \times .003 \text{ tons/MWh} = 2,628 \text{ tons of equivalent nitrogen oxides}$

- (Natural gas displacement) Certified eligible renewable projects located in Montana displace 788 tons of nitrogen oxide per year.
- (Coal displacement) Certified eligible renewable projects located in Montana displace 2,628 tons of nitrogen oxide per year.