

215 South Cascade Street  
PO Box 496  
Fergus Falls, Minnesota 56538-0496  
218 739-8200  
www.otpco.com



November 28, 2008

Ms. Patricia Van Gerpen  
Executive Director, Public Utilities Commission  
Capitol Building, 1<sup>st</sup> Floor  
500 East Capitol Ave.  
Pierre, SD 57501-5070

**RE: Otter Tail Power Company's December 1, 2008 Report to the Public Utilities Commission on Efforts to Comply with the Renewable and Recycled Energy Objective**

Dear Ms. Van Gerpen:

Otter Tail Corporation, d/b/a Otter Tail Power Company, hereby submits its report on efforts to comply with the Renewable and Recycled Energy Objective, pursuant to South Dakota Codified Laws §49-34A-94 through §49-34A-96 and §49-34A-101 through §49-34A-106.

Comments or questions can be directed to me at 218-739-8269 or [bmorlock@otpco.com](mailto:bmorlock@otpco.com).

Sincerely,

A handwritten signature in black ink that reads "Bryan D. Morlock". The signature is written in a cursive, flowing style.

Bryan D. Morlock, P.E.  
Consultant, Planning

**Renewable and Recycled Energy Objective  
Compliance Report  
to the  
South Dakota Public Utilities Commission**

**Report RP08-3  
Otter Tail Power Company  
Resource Planning Department  
December 1, 2008**

## **PREFACE**

This document is the report of Otter Tail Corporation, d/b/a Otter Tail Power Company, to the South Dakota Public Utilities Commission on the Company's efforts and status on compliance with the South Dakota Renewable and Recycled Energy Objective contained in Statutes §49-34A-94 through §49-34A-96 and §49-34A-101 through §49-34A-106. This report is required annually commencing on December 1, 2008 and continuing through December 1, 2017.

Questions and comments regarding the information and data contained herein should be addressed to Bryan D. Morlock, P.E. at 218-739-8269 or [bmorlock@otpc.com](mailto:bmorlock@otpc.com).

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## INTRODUCTION

Pursuant to South Dakota Codified Laws §49-34A-105, Otter Tail Corporation, d/b/a Otter Tail Power Company (Otter Tail or Company), makes this information filing electronically to the South Dakota Public Utilities Commission. This filing is the Company's first annual report on efforts to meet the state renewable and recycled energy objective that takes effect January 1, 2015. The South Dakota objective is that 10% of all electricity sold at retail be obtained from qualifying renewable energy and recycled energy resources.<sup>1</sup>

As the following pages of this report demonstrate, Otter Tail is well on the way to implementing renewable resources as part of its diverse resource portfolio and expects to be in full compliance of any and all renewable energy objectives and standards within all three state jurisdictions in which Otter Tail serves.

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<sup>1</sup> South Dakota Codified Law §49-34A-101.

## JURISDICTIONAL REQUIREMENTS

Otter Tail serves retail load in Minnesota, North Dakota, and South Dakota. All three state jurisdictions have some sort of renewable energy objective (REO) or renewable energy standard (RES). Discussion of compliance efforts with any single jurisdiction also requires a discussion of the other two jurisdictions so that a complete understanding of the Company's compliance efforts can be obtained. The following sections describe the requirements in each of the state jurisdictions.

### Minnesota

Otter Tail is required to make a good faith effort to comply with the state REO through 2011. Beginning with 2012 the requirement switches to an RES. The state requirements<sup>2</sup> increase in a step-wise fashion, consisting of:

- 2007 – 1% of retail sales
- 2010 – 7% of retail sales
- 2012 – 12% of retail sales
- 2016 – 17% of retail sales
- 2020 – 20% of retail sales
- 2025 – 25% of retail sales.

Eligible energy technologies for compliance include solar, wind, hydroelectric with a capacity of less than 100 MW, hydrogen,<sup>3</sup> or biomass. Biomass includes landfill gas, anaerobic digestion, and mixed municipal solid waste or refuse-derived-fuel from mixed municipal solid waste as a primary fuel. Electricity generated by the combustion of biomass through co-firing with other fuels counts up to the percentage amount of biomass fuel relative to total fuel, only if the generating facility was constructed in compliance with new source performance standards promulgated under the federal Clean Air Act or if the facility employs the maximum achievable or best available control technology for that type of facility.

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<sup>2</sup> These REO and RES requirements only apply to utilities without nuclear generating assets. Utilities with nuclear generating assets have a more aggressive standard as detailed in Minn. Stat. §216B.1691.

<sup>3</sup> Provided that after January 1, 2010 the hydrogen must be generated from the other eligible energy technologies listed.

### North Dakota

The state REO is 10% of retail sales by the year 2015, and includes both renewable energy and recycled energy. The calculation contains a provision to reduce the amount of retail sales by any hydroelectric energy that cannot be counted toward the REO.<sup>4</sup> Renewable electricity and recycled energy includes electricity generated from solar, wind, biomass,<sup>5</sup> geothermal, hydrogen,<sup>6</sup> hydroelectric (must be from a facility with an in-service date of no earlier than January 1, 2007 or from efficiency improvements to a facility existing as of August 1, 2007), and recycled energy systems producing electricity from currently unused waste heat resulting from combustion or other processes into electricity and which do not use an additional combustion process. Recycled energy does not include any system whose primary purpose is the generation of electricity.

### South Dakota

The state REO is 10% of retail sales by the year 2015, and includes both renewable energy and recycled energy. The legislation appears to be very similar to the North Dakota requirements. The calculation contains a provision to reduce the amount of retail sales by any hydroelectric energy from a facility with an in-service date prior to July 1, 2008.<sup>7</sup> Renewable electricity and recycled energy include electricity generated from solar, wind, biomass,<sup>8</sup> geothermal, hydrogen,<sup>9</sup> hydroelectric (statutes seem to imply it must be from a facility with an in-service date of no earlier than July 1, 2008), and recycled energy systems producing electricity from currently unused waste heat resulting from combustion or other processes into electricity and which do not use an additional combustion process. Recycled energy does not include any system whose primary purpose is the generation of electricity.

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<sup>4</sup> North Dakota Century Code §49-02-30.

<sup>5</sup> Including agricultural crops and wastes and residues, wood and wood wastes and residues, animal wastes, and landfill gas.

<sup>6</sup> Provided that the hydrogen is generated from a source listed in this section of North Dakota Century Code §49-02-25.

<sup>7</sup> South Dakota Codified Laws §49-34A-103.

<sup>8</sup> Includes agricultural crops and wastes and residues, wood and wood wastes and residues, animal and other degradable organic wastes, and landfill gas.

<sup>9</sup> Provided that the hydrogen is generated from a source listed in this section of South Dakota Codified Laws §49-34A-94.

## MIDWEST RENEWABLE ENERGY TRACKING SYSTEM

Otter Tail has registered almost all renewable energy resources within the Midwest Renewable Energy Tracking System (M-RETS). There is a number of small customer owned units, generally less than 50 kW each, which the Company has not registered. The customers self-serve a portion of their own load with Otter Tail receiving the remaining surplus energy. Otter Tail does pay the cost, both initial and annual fees, to register a facility in M-RETS and the cost per renewable energy credit (REC) can become quite high on these small units. Otter Tail has raised this issue within the M-RETS administration and is seeking methods to reduce the registration cost for the small units. It is expected that at some point these small units will be registered.

Otter Tail has developed an account structure within M-RETS to help segregate RECs by type and usage. For customer-owned facilities that self-serve customer load, all of the generation is reported within M-RETS. Otter Tail then transfers RECs associated with the energy used to self-serve load into an account in the customer's name, for their use as they deem appropriate. The RECs associated with energy purchased by Otter Tail will remain in the Otter Tail account.

The Otter Tail M-RETS accounts include a retirement account by state jurisdiction by year. Thus it will be easy to verify the amount of RECs retired annually for compliance with each state's requirements. RECs associated with **TailWinds**, the Company's green pricing program, are retired into separate state jurisdiction accounts to ensure proper accounting for the green pricing tracker balance.

Retired RECs will be tracked on a calendar year basis. This may cause some verification difficulties with the South Dakota report, as the statute requires this report to cover an October – September time period. Otter Tail believes that the annual calendar year values should not be greatly different than the October – September values and that reasonable approximation can be made by verifying the amount of retired RECs on an annual basis.



The M-RETS system became operational in the last half of 2007. While Otter Tail began recording renewable energy within M-RETS late in 2007, the Company intends to begin full use of the M-RETS system for reporting verification beginning with the first full calendar year commencing January 1, 2008.

Otter Tail has not sold or purchased any RECs separate from the renewable energy. All energy currently being used for compliance is energy generated by Otter Tail or energy purchased by Otter Tail under power purchase agreements.

## **RENEWABLE AND RECYCLED ENERGY RESOURCES**

The breakdown of existing and potential future renewable energy resources for Otter Tail, to the extent known, at the time of this report are shown in Appendix A. The data provided includes the name of the facility, kW rating, vintage, technology and energy source, whether owned or through a PPA, and state eligibility. For customer-owned facilities, the customer name is not provided in order to protect customer information. The information provided includes future resources which may or may not be constructed, but for which development work has commenced. There are additional renewable energy facilities which are under discussion, but these have not been included in the data since they are still in preliminary stages of feasibility studies.

## SOUTH DAKOTA RENEWABLE AND RECYCLED ENERGY

The following data is for the October 1, 2007 – September 30, 2008 time period. The data assumes that renewable energy is allocated across the Otter Tail system based on retail sales kWh. The exceptions to this allocation methodology are that:

- WAPA energy is allocated based on the state in which the actual load resides;
- Big Stone Plant biomass energy is only eligible to be counted in North Dakota and South Dakota so it is all allocated to those two states; and
- TailWinds energy is based on the amount of wind energy sold under the green pricing program in South Dakota.

<b>South Dakota Renewable and Recycled Energy MWh October 1, 2007 – September 30, 2008</b>			
<b>Resource</b>	<b>Total kWh</b>	<b>SD Percentage</b>	<b>SD kWh</b>
Borderline Wind	1,437,910	10.11%	145,373
FPL Energy ND Wind II	55,785,461	10.11%	5,639,910
Customer D1	4,781,030	10.11%	483,362
FPLE Langdon	51,508,693	10.11%	5,207,529
OTP Langdon	90,727,691	10.11%	9,172,570
Big Stone Plant Biomass	630,000	20.87%	131,481
South Dakota TailWinds	198,044	100.0%	198,044
Customer A	32,770	10.11%	3,313
Customer C	1,680	10.11%	170
Customer E	34,560	10.11%	3,494
Customer F	18,704	10.11%	1,891
Customer H	4,057	10.11%	410
Customer J	1,191	10.11%	120
Customer K	103	10.11%	10
Customer L	854	10.11%	86
OTP Owned Hydro	21,104,572	10.11%	2,133,672 <sup>10</sup>
Manitoba Hydro	209,600,000	10.11%	21,190,560 <sup>11</sup>
WAPA Hydro	29,870,425	0%	0 <sup>12</sup>

<sup>10</sup> This hydroelectric energy does not count toward compliance, but can be subtracted from the retail sales before calculating the percentage of compliance.

<sup>11</sup> This hydroelectric energy does not count toward compliance, but can be subtracted from the retail sales before calculating the percentage of compliance. It includes only energy under the firm 50 MW contract, which is specified as coming from hydro facilities. (262 days X 16 hours/day X 50 MW)

<sup>12</sup> The WAPA hydroelectric energy is an allocation to five Native American tribes. At the time of this report, none of the energy is designated for loads located in South Dakota.

<b>South Dakota Renewable and Recycled Energy Compliance October 1, 2007 – September 30, 2008</b>	
South Dakota Retail Sales	424,573,808 kWh
Less Hydro Energy Adjustment	-23,324,232 kWh
Net SD Retail Sales for REO Compliance	401,249,576 kWh
South Dakota Renewable Energy	20,987,763 kWh
SD REO Compliance Percentage	5.23%

It must be noted that Otter Tail does intend to bank some allowances for future use, and to ensure that future compliance will take place. Otter Tail does plan to retire all 2007 allowances in a 2007 retirement account, except for unused *TailWinds* green pricing RECs, since 2007 was a startup year for M-RETS and the system was not fully functional. Otter Tail does not intend to retire all RECs created in 2008, but decisions have not yet been made on the details of Company plans with respect to RECs.

The data does show that Otter Tail is already more than 50% of the way toward compliance with the South Dakota statute. The level of compliance will increase in 2009 as the 48 MW Ashtabula Wind Farm just recently began commercial operation and is not included in any of the data presented above.

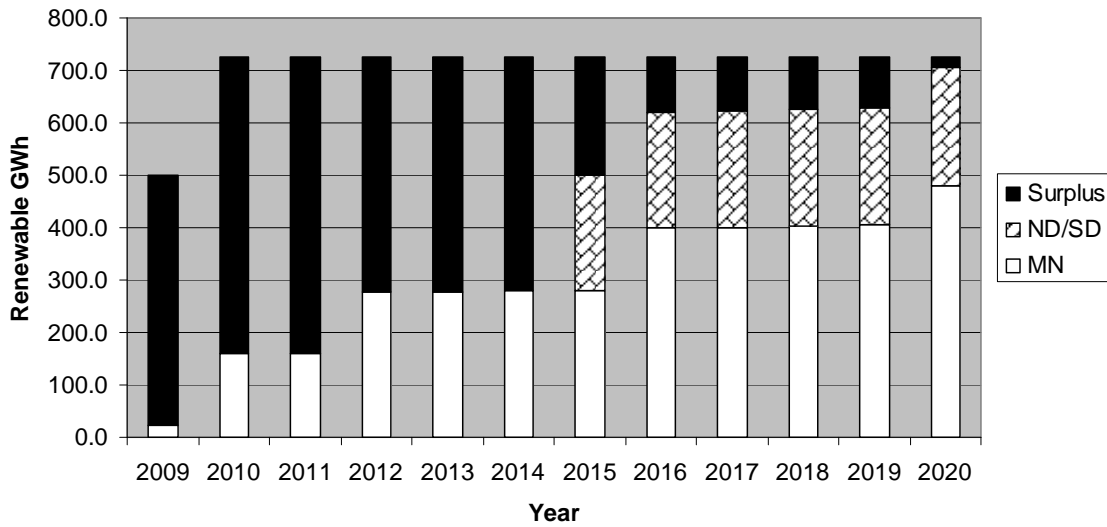
## **FORECAST OF FUTURE REO/RES COMPLIANCE**

At the time of this report, Otter Tail is just completing construction of the 48 MW Ashtabula Wind Farm and is working toward construction of the 49.5 MW M-Power Wind Farm in 2009. Combined with the 60 MW the Company receives from the Langdon Wind Farm completed in late 2007/early 2008 Otter Tail is well positioned to comply with the renewable energy objectives and standards in all three states. Final commitments to the M-Power Wind Farm have not yet been made.

The following graph shows the Company's expected available renewable energy compared to the REO/RES requirements going out to 2020. The graph assumes that all RECs are counted in the year they are generated and are not banked for future compliance use. Otter Tail does expect to bank some allowances simply to provide a safety margin for future compliance, and to sell surplus allowances to help reduce retail customer rates. The details of those plans have not yet been developed. The graph does not include new customer-owned facilities that may be developed. Otter Tail is seeing significant customer interest in owning wind generation. The Company is obligated to purchase any renewable energy offered from customers under the federal Public Utility Regulatory Policies Act of 1978 (PURPA).

The North Dakota and South Dakota requirements are very similar and are lumped together in the graph. As demonstrated in the graph, Otter Tail expects by 2010 to have sufficient renewable energy available to comply with state REO/RES requirements until beyond 2020.

### Future REO/RES Compliance Renewable Energy Available vs REO/RES Requirements



## **BARRIERS TO REO/RES COMPLIANCE**

The most significant obstacles fall into four basic categories, including:

- Transmission
  - Interconnection queue
  - Transmission delivery service
  - LMP prices
- Turbine availability
- Developer knowledge
- Economic and financing issues

### Interconnection Queue

The Midwest Independent Transmission System Operator (MISO) interconnection queue has been a major impediment to the development of any resources due to the significant backlog of requests. In late August the Federal Energy Regulatory Commission (FERC) approved revisions to the MISO interconnection queue process which Otter Tail believes will help to alleviate the backlog. It is expected that many projects that were simply attempting to reserve a spot in the queue will drop out, and future requests will more likely come from serious projects. Previously projects could submit a request and then remain in suspension for several years, tying up the queue. The ability to suspend a project in the queue is now limited to a much shorter term and only for force majeure reasons. All existing projects in the queue will need to transition to the new process, and MISO has issued a report detailing the status of each interconnection project and the required steps to complete the transition to the new process. The down side to the changes is that developers will have to be ready to make their application deposits and have other benchmarks in place in order to proceed in the new queue process.

Transmission Delivery – As a member of MISO Otter Tail must have firm delivery transmission service for any project to count as a network resource. At the present time transmission service is severely hampered by transmission constraints and the ability to get delivery service is limited. Otter Tail has benefited from the fact that almost 100% of

the Company's system is located to the west of the North Dakota Export Boundary, and generation can generally be delivered to load without crossing that constraint. However, there are other wind projects being developed in the Otter Tail service territory for other utilities that are using up the available transmission service. Otter Tail is a part of the CAPX 2020 group proposing new major high voltage transmission. If approved and constructed, the CAPX 2020 transmission additions will be a considerable help in reducing constraints. CAPX 2020 additions currently proposed will not come close to addressing the future transmission needs of projects in the queue. CAPX 2020 is studying the situation to determine what other new transmission resources are likely to be required.

Otter Tail is also one of the participating utilities in Minnesota Public Utilities Commission Docket Nos. CN-05-619 and TR-05-1275, seeking approval to build additional transmission facilities in southwest Minnesota. This transmission would be constructed with the capability to be updated to carry wind generation from the area. At this point in time more than forty wind generation projects have interconnection requests in the MISO queue that depend upon the addition of this transmission.

#### LMP Prices

The Location Marginal Price (LMP) is beginning to be impacted by the magnitude of the wind development taking place. The lack of adequate transmission for delivery service is causing wind generation to be economically stranded at times of plentiful wind and less than peak loads. Otter Tail wind resources at times receive less than full MISO market price because of inadequate transmission to move the energy where it is needed. As a result, the LMP price at the wind farm declines and can become negative at times. Otter Tail has to pay MISO to keep the wind generation operating at those times. This situation is being exacerbated as the amount of wind generation on the system increases. The end result is that wind generation becomes less economic and increases costs to the customer. The only cure is to increase transmission capability. The previously mentioned transmission project efforts will help to alleviate the situation, although even more transmission will be needed.



### Turbine Availability

The lack of available wind turbines is making the addition of wind generation resources very difficult. Turbines are readily available in small sizes (less than 100 kW), but the demand is so high for utility scale turbines that manufacturers are reticent to deal with anyone who is not a major player in the industry. Project developers that want to construct one or two turbines have asked Otter Tail for assistance in obtaining wind turbines, but there is little that Otter Tail can do. Even Otter Tail is too small to have significant direct access to wind turbines. Otter Tail discussed the possibility of increasing its order size for turbines for the Company's projects but was unable to do so. In some cases manufacturers prohibit the reselling of their new turbines. There aren't any utility solutions available to the problem, as long as demand for wind turbines remains high.

### Developer Knowledge

The larger developers know what they are doing with wind development. Otter Tail has experienced difficulty with small developers, community-based wind developers, and customers who consider building wind generation. These entities in general simply do not have the background and have not spent the time to learn about wind generation prior to attempting a project.

### Economic and Financing Issues

The recent economic downturn is expected to have a dampening effect on the development of renewable resources. Some major wind developers have already announced intentions to scale back their development plans for the near-term future. While Otter Tail has not seen any specific project delays or cancellations in wind projects yet, such actions are expected by most wind industry publications. Small wind development may especially be impacted in their efforts to obtain project financing.

## SUMMARY

Otter Tail has stepped forward with its development of renewable resources for a variety of reasons and is completing new renewable energy facilities at a pace much faster than needed to comply with REO/RES requirements. The most recent Company integrated resource plan called for 160 MW of new wind generation. With the M-Power project, Otter Tail will have completed that amount of wind generation addition to the system. Part of the reason for accelerated implementation is economics, as the cost of wind generation is escalating at a rate as fast or faster than any other generating technology. Also, the federal PTC is not likely to be available for the long term, so Otter Tail is taking advantage by moving forward early. The PTC reduces the cost of wind generation by about 33%.

With the current renewable resources in existence, under construction, and planned for the next couple of years, Otter Tail does not expect to need to add more resources for REO/RES compliance until about 2023. This forecast does not include counting the many small customer owned units currently being installed.

## Appendix A – Renewable and Recycled Energy Resources

<b>Existing Renewable and Recycled Generating Facilities</b>							
<b>Name</b>	<b>State</b>	<b>kW Rating</b>	<b>Vintage</b>	<b>Technology</b>	<b>Power Source</b>	<b>Owned/PPA</b>	<b>State Eligibility</b>
Customer A	MN	225	1997	Wind	Wind	PPA	MN, ND, SD
Customer B	SD	90	2002	Wind	Wind	PPA	TailWinds <sup>13</sup>
Hendricks	MN	900	2001	Wind	Wind	PPA	TailWinds <sup>13</sup>
Borderline	MN	900	2003	Wind	Wind	PPA	MN, ND, SD
FPLE ND Wind II	ND	21,000	2003	Wind	Wind	PPA	MN, ND, SD
Customer C	ND	50	1985	Wind	Wind	PPA	MN, ND, SD
FPLE Langdon	ND	19,500	2007	Wind	Wind	PPA	MN, ND, SD
OTP Langdon	ND	40,500	2008	Wind	Wind	Owned	MN, ND, SD
Customer D1	MN	1,650	2005	Wind	Wind	PPA	MN, ND, SD
Customer E	ND	660	2008	Wind	Wind	PPA	MN, ND, SD
Customer F	MN	39.5	2008	Wind	Wind	PPA	MN, ND, SD
Customer G	MN	39.5	2008	Wind	Wind	PPA	MN, ND, SD
Customer H	MN	39.5	2008	Wind	Wind	PPA	MN, ND, SD
Customer I	MN	35	2007	Wind	Wind	PPA	MN, ND, SD
Customer J	MN	1.8	2008	Wind	Wind	PPA	MN, ND, SD
Customer K	MN	1.8	2008	Wind	Wind	PPA	MN, ND, SD
Customer L	ND	20	2008	Wind	Wind	PPA	MN, ND, SD
Big Stone Plant	SD	475,000	1975	Steam	Biomass	Owned	ND, SD <sup>14</sup>
Bemidji Hydro	MN	740	1907	Hydro	Water	Owned	MN
Taplin Gorge	MN	560	1925	Hydro	Water	Owned	MN
Hoot Lake	MN	1,000	1914	Hydro	Water	Owned	MN
Pisgah	MN	520	1918	Hydro	Water	Owned	MN
Wright	MN	400	1922	Hydro	Water	Owned	MN
Dayton Hollow	MN	970	1909	Hydro	Water	Owned	MN
WAPA Allocation	Several	5,566	Various	Hydro	Water	PPA	None
Manitoba Hydro	Manitoba	50,000	Various	Hydro	Water	PPA	None

<sup>13</sup> At this time TailWinds energy counts in ND and SD, but not MN. TailWinds is the Company's green pricing tariff and the energy is counted only as customers purchase the energy, not as it is generated.

<sup>14</sup> Only the biomass portion of the fuel is counted. For the October 1, 2007 – September 30, 2008 time period only about .04% of the fuel was biomass.

### Appendix A – Renewable and Recycled Energy Resources

<b>Planned and Expected Future Renewable and Recycled Generating Facilities</b>							
<b>Name</b>	<b>State</b>	<b>kW Rating</b>	<b>Vintage</b>	<b>Technology</b>	<b>Power Source</b>	<b>Owned/PPA</b>	<b>State Eligibility</b>
Ashtabula Wind	ND	48,000	2008	Wind	Wind	Owned	MN, ND, SD
M-Power Wind	ND	49,500	2009	Wind	Wind	Owned	MN, ND, SD
Customer D2	MN	1,500	2009	Wind	Wind	PPA	MN, ND, SD
Customer D3	MN	1,500	2009	Wind	Wind	PPA	MN, ND, SD
Customer M	MN	20	2009	Wind	Wind	PPA	MN, ND, SD
Customer N	MN	250	2009	Wind	Wind	PPA	MN, ND, SD
Customer O	MN	1,500	2009	Wind	Wind	PPA	MN, ND, SD
Customer P	MN	7,000-8,000	2010	Binary Cycle	Waste Heat	PPA	ND, SD
Customer Q	MN	4,500	2010	Steam	MSW	PPA	MN
Customer R	MN	25	2009	Wind	Wind	PPA	MN, ND, SD
Customer S	MN	2.4	Unknown	Wind	Wind	PPA	MN, ND, SD