MINNESOTA DEPARTMENT OF COMMERCE

85 7TH PLACE EAST, SUITE 500
SAINT PAUL, MINNESOTA 55101-2198
MN.GOV/COMMERCE
651.539.1500 FAX: 651.539.1547
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October 17, 2016

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, Minnesota 55101

RE: **Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E999/CI-15-755

Dear Mr. Wolf:

On June 22, 2016, the Minnesota Public Utilities Commission (Commission) issued a *Notice of Comment Period in the Matter of a Commission Inquiry into Fees Charged on Qualifying Facilities*. Attached please find the comments of the Minnesota Department of Commerce, Division of Energy Resources (Department). The Department is available to answer any questions the Commission may have.

Sincerely,

/s/ SUSAN L. PEIRCE
Rates Analyst

/s/ DANIELLE WINNER
Rates Analyst

SLP/DW/lt
Attachment

MINNESOTA DEPARTMENT OF COMMERCE

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

COMMENTS OF THE MINNESOTA DEPARTMENT OF COMMERCE DIVISION OF ENERGY RESOURCES

DOCKET NO. E999/CI-15-755

I. BACKGROUND INFORMATION

On October 13, 2015, the Minnesota Public Utilities Commission (Commission) opened a docket to collect information about charges imposed on Qualifying Facilities (QF) (i.e., distributed generation customers) by investor-owned, cooperative, and municipal utilities. The notice sought information on QF fees charged to net metered customers prior to July 1, 2015.[1] The table below lists the utilities that indicated they impose a monthly fee on qualifying facilities:

[1] Minn. Stat. § 216B.164, subd. 3(a) was amended by the Minnesota Legislature effective July 1, 2015 to state "a cooperative electric association or municipal utility may charge an additional fee to recover the fixed costs not already paid for by the customer through the customer's existing billing arrangement…"

Table 1: Summary of QF Charges

Company	Monthly Fee
Connexus	$2.65
Mille Lacs Coop.	$4.50
Goodhue	$3.00
Minnesota Power	<40 kW: $2.55 ≥40 kW to ≤ 100 kW: $3.57
OTP	Net Energy Bill, $3.70 per month Purchase & Sale, Firm Power: $8.87 per month Purchase & Sale, Nonfirm Power: $1.40 per month TOD Purchase, Firm Power: $8.87 per month TOD Purchase, Nonfirm Power: $3.25 per month
Xcel Energy	Net Energy Bill, single-phase: $3.15 Net Energy Bill, 3-phase: $6.40 Purchase & Sale, single-phase: $5.50 Purchase & Sale, 3-phase: $8.00 TOD Purchase, single-phase: $5.50 TOD Purchase, 3-phase: $8.00

On December 23, 2015, the Commission issued a Notice of Comment Period seeking comment on whether imposing a charge on customers with distributed generation systems interconnected to a cooperative or to a municipal utility prior to July 1, 2015, or to a public utility, was permissible under Minnesota Statutes section (or Minn. Stat. §) 216B.164 and/or Minnesota Rules 7835.3000. If permissible, the Commission sought comment on the reasonableness of the QF charges levied by the utilities listed in Table 1, above.

On June 22, 2016, the Commission issued a Notice of Supplemental Comment Period seeking supplemental comments on the issues raised by parties in their June 6, 2016 reply comments.

II. SUMMARY OF REPLY COMMENTS

A. MINNESOTA POWER

In its June 6, 2016 reply comments, Minnesota Power (MP) stated that its monthly metering fee is permitted because MP has filed its Rider for Parallel Generation with the Commission every year since the Commission adopted rules governing cogeneration and small power production in 1984.[2] Additionally, MP received written approval for its monthly service charge in Docket No. E015/CG-84-88, which occurred after the proposed rules were

[2] October 16, 1984 *Findings of Fact, Conclusion of Law and Order* adopting final rules governing cogeneration and small power production. Docket No. E-999/R-80-560.

released but before the final rules were adopted; MP noted that no changes from the proposed and final rules affected the monthly service charge.

MP stated that the fee is reasonable because it is based on reasonable interconnection costs as defined under Minnesota Rules 7835.0100, subp. 12 and made permissible under Minn. Stat § 216B.164, subd. 8(b). MP stated that it does not currently charge DG customers (i.e., QFs) an upfront interconnection or application fee, but does require customers to pay for customer-owned infrastructure upgrades or engineering studies as necessary. MP's fee is based on the unique costs associated with serving DG customers, which includes meter maintenance costs (the cost of the meter, the cost to install or remove a meter, and a portion of administration and general service expense and distribution general engineering cost) and the average customer accounting cost per Residential or General Service Customer. MP noted that its service charge has increased by $1.25 over a 31-year period (1984 to 2015), and points out that, the original fee of $1.30 "has the same buying power as $2.99 in 2016," which is higher than the 2015 fee of $2.55.

B. OTTER TAIL POWER CORPORATION (OTP)

In its June 6, 2016 reply comments, OTP asserted that its customer charges specific to QFs are permitted under Minn. Stat. § 216B.164 for the incremental cost of metering equipment and associated administrative and maintenance expenses. OTP argued that its QF charge is consistent with its treatment of other customer groups with additional equipment such as customers served under the Company's Water Heating Control Rider. Finally, OTP stated that its QF fees have been in place since 1983, and were approved most recently as part of the Company's 2010 rate case (Docket No. 017/GR-10-239).

C. XCEL ENERGY (Xcel)

In its June 6, 2016 reply comments, Xcel stated that its monthly metering fees are permitted by federal and state statutes, as well as Minnesota Rules and Commission Orders. The Company specifically cited to the Commission's 1981 approval of a separate metering charge.[3] In addition, Xcel argued that the Commission approved a process permitting QF tariff rates to go into effect 60 days after filing unless an objection is raised.[4] The Company stated that providing refunds to customers would not be appropriate because the fees were tariffed, and so it would have been unlawful not to charge them.

Xcel stated that its monthly metering fees are reasonable because they are based on the incremental costs of serving the metering, labor, and billing requirements of net energy billed customers in excess of those normally incurred by the utility for non-QF customers. Xcel provided a detailed calculation of the incremental cost of serving a QF customer, and demonstrated that their fee actually under-recovers the total incremental cost.

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[3] In the Matter of a Change in the Rate Schedule for the Purchase of Power from a Qualifying Facility, Docket E002/M-81-341, August 11, 1981 Order.

[4] In the Matter of the proposed Adoption of Amendments to the Rules of the Minnesota Public Utilities Commission Governing Cogeneration and Small Power Production, *Findings of Fact, Conclusions of Law and Order Adopting Rules,* October 16, 1984, Docket No. E999/R-84-105.

D. CONNEXUS ENERGY (Connexus)

In its December 11, 2015, comments, Connexus Energy stated that in 2005, its Board of Directors approved the addition of a monthly $2.65 single phase meter charge to the Net Energy Billing Service Tariff. However, Connexus did not begin implementation of the fee until July of 2014. In its June 6, 2016, reply comments, Connexus stated that this lag time was intended to provide members considering a QF to include the fee in their economic assessment, and to provide a phase-in period for already established QFs.

Also in its reply comments, Connexus argued that its QF fee was permitted because the Net Energy Billing Service Tariff, with the meter charge, was included in the Company's Annual Cogeneration Filing with the Commission every year since 2005, and the Commission never commented on whether the monthly fee meets the statutory language. Connexus argued that its fee was reasonable because the fee reflects incremental interconnection costs of servicing a QF, citing Minn. Stat. § 216B.164, subd 8(b) and Minnesota Rule 7835.0100, subp. 12. Connexus specifically stated that these incremental costs include the cost of a bi-directional meter, and related meter reading and billing, or operation and maintenance (O&M) and customer service. The utility asserts that "the incremental costs associated with the monthly fee are identical to the costs Connexus recovers for metering load management services. The difference being that incremental expenses for load management programs are embedded in the rate/credit versus a separate meter fee."[5]

Connexus recommended that the Commission affirm that Minnesota statutes and rules specify that reasonable interconnection costs are the responsibility of the QF, and that ongoing reasonable interconnection costs meet the statutory language of Minn. Stat. § 216B.164, subd. 8(b) and Minnesota Rules 7835.0100.

E. MINNESOTA RURAL ELECTRIC ASSOCIATION (MREA)

In this proceeding, Goodhue Electric Cooperative (Goodhue) and Mille Lacs Energy Cooperative (Mille Lacs) are represented by MREA.

In its June 6, 2016 reply comments MREA stated that the QF fees are permitted because cooperatives are required to submit their average retail rate calculation as part of their Annual Cogeneration and Small Power Production Filings (Annual Filings) each year, but are not otherwise required by statute or rule to file other rates, fees or charges with the Commission. MREA asserted that the fees charged by each utility are reasonable because they reflect recovery of allowable interconnection costs as defined in Minnesota Rules 7835.0100, subp 12.

[5] Connexus June 6, 2016 Reply Comments, page 2.

F. FRESH ENERGY, ENVIRONMENTAL LAW & POLICY CENTER, AND VOTE SOLAR (CLEAN ENERGY ORGANIZATIONS OR CEO)

CEO argued that utilities may not single out DG customers (i.e., QFs) for additional monthly fees that are not charged to similarly situated customers in the same customer class, and that if the fees are in fact interconnection costs, then they should be subject to the interconnection process. CEO also questioned the legality of the QF fees.

G. ENERGY FREEDOM COALITION OF AMERICA (EFCA)

EFCA argued that the QF fees in question are not legal and, even if the Commission deems them to be permissible, the utilities have not demonstrated that they are reasonable.

III. DEPARTMENT ANALYSIS

The scope of the instant docket is limited to QF fees charged prior to the July 1, 2015 effective date of the amendment to Minn. Stat. § 216B.164, subd. 3(a), which permits cooperative and municipal utilities greater latitude to charge fees on qualifying facilities. This amendment did not change the statutory provisions regarding investor-owned public utilities such as Minnesota Power, Otter Tail, and Xcel Energy.

Many parties raised issues concerning statutory, rule, and Commission Order interpretation. These "issues of law" spanned a variety of areas, but each generally focused on the question of whether fees charged prior to July 2015 were permitted by statute, and if permitted, whether the fees had been affirmatively approved by the Commission as required by Minnesota Rule 7835.0300. As noted in the Department's May 6, 2016 comments, the statute and rules permit recovery of the incremental costs associated with the interconnection of a distributed generation facility, such as additional metering and the ongoing maintenance costs associated with such metering. The Department provides below its analysis on the permissibility of interconnection cost recovery and whether the rates currently being charged by the utilities have been approved by the Commission. For clarity, the Department's analysis is divided between IOUs and cooperatives.

A. INVESTOR-OWNED UTILITIES (IOUs)

1. Recovery of Interconnection costs

Minnesota Power, Otter Tail Power, and Xcel Energy assert that Minn. Stat. § 216B.164, subd. 8(b) and Minnesota Rules 7835.0100, subp. 12 permit recovery of interconnection costs from QFs. Both the statute and rule were unchanged by 2015 amendments. The full text of the pre-2015 statute and rule[6] are as follows:

> 216B.164 COGENERATION AND SMALL POWER PRODUCTION
> Subd. 8. **Interconnection required; obligation for costs.**
> (b) Nothing contained in this section shall be construed to excuse the qualifying facility from any obligation for costs of interconnection and wheeling in excess of those normally incurred by the utility for customers with similar load characteristics who are not cogenerators or small power producers, or from any fixed charges normally assessed such nongenerating customers.[7]
>
> 7835.0100 DEFINITIONS
> Subp. 12. **Interconnection costs**
> "Interconnection costs" means the reasonable costs of connection, switching, metering, transmission, distribution, safety provisions, and administrative costs incurred by the utility that are directly related to installing and maintaining the physical facilities necessary to permit interconnected operations with a qualifying facility. Costs are considered interconnection costs only to the extent that they exceed the corresponding costs which the utility would have incurred if it had not engaged in interconnected operations, but instead generated from its own facilities or purchased from other sources an equivalent amount of electric energy or capacity. Costs are considered interconnection costs only to the extent that they exceed the costs the utility would incur in selling electricity to the qualifying facility as a nongenerating customer.[8]

The Department does not disagree that Minnesota statutes and rules prior to 2015 allowed for the reasonable recovery of interconnection costs. The Uniform Statewide Contract in 2013, provided in Minnesota Rules 7835.9910, provides for an estimation of "actual, reasonable costs of interconnection" and includes a line to identify how the QF will pay for those interconnection costs, as shown below:

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[6] Section 7835 of Minnesota Rules were changed in October of 2015. The quoted rule language is the most recent edition of the rules prior to the 2015 changes.
[7] https://www.revisor.mn.gov/statutes/?id=216B.164&year=2014
[8] https://www.revisor.mn.gov/rules/?id=7835&date=2013

> **7835.9910 UNIFORM STATEWIDE CONTRACT; FORM.**
> AGREEMENTS
>
> 8. The QF is responsible for the actual, reasonable costs of interconnection which are estimated to be $_____. *The QF will pay the Utility in this way:* _____ _____.[9]

[Emphasis in italics added]

As indicated in its initial comments, the Department understands Minn. Stat. § 216B.164, subd. 8(b) and the Uniform Statewide Contract prior to July 1, 2015, to permit the assessment of reasonable interconnection costs that varied with the type of recovery (up-front, monthly or some combination of the two) as determined by parties to the contract.

In its initial comments, the Department raised concerns about the recovery in perpetuity of one-time costs through a monthly charge. After reviewing several cost studies related to these costs, the Department does not object to the use of a monthly fee for recovery, but expects the costs to be reflected in the Uniform Statewide Contract presented to QF providers. In addition, the Department expects IOUs to abide by the terms of the Uniform Statewide Contract provision that the permits the QF options regarding how those costs are paid.

2. Commission Approval of the QF Fees

Minnesota Power, Otter Tail Power, and Xcel Energy each claimed that its QF fees were permitted by law and were reasonable because the fees were approved by the Commission in each utility's most recent rate case, as well as through their most recent Annual Cogeneration and Small Power Production Filings, made prior to July 1, 2015.

EFCA and CEO appear to disagree with the IOUs' assertions. In response to Otter Tail, EFCA and CEO stated that simply because Otter Tail received Commission approval of fees through a rate case proceeding does not necessarily mean that the fees are legal and reasonable. EFCA also stated that all non-utility parties largely agree that none of the QF (*i.e.*, DG) fees at issue are legal. CEO further claimed that since the legality of Otter Tail's QF fee was not raised in the Company's last rate case, the fee cannot be presumed to be reasonable.

The Department does not agree with the premise that a Commission-approved fee, whether approved in a rate case or in another proceeding, is somehow not authorized. Rates filed with and approved by the Commission are rates that an IOU may include in its tariffs and be charged to QFs until changed on a going-forward basis by the Commission.

[9] https://www.revisor.mn.gov/rules/?id=7835&date=2013

Therefore, the Department concludes that to the extent that each investor-owned utility's fees were approved as part of the IOUs' most recent rate cases, those QF fees are permitted to be charged to QFs. Note, however, an IOU's changes in QF fees *between* rate cases are a different matter and is discussed later in this analysis with respect to Minnesota Power.

The Department disagrees with the IOUs that they obtained Commission approval simply through the filing of their Annual Cogeneration and Small Power Production Filings. Minnesota Rules 7835.0300 clearly states that the Annual Filings are submitted for the Commission's "*review and approval.*" To the Department's knowledge, none of the IOUs sought affirmative Commission approval of their Annual Filings and the Commission did not give such approval. Therefore, the Department concludes that the Commission did not approve the Annual Filings of any IOU.

With this in mind, a summary of the most recent Commission-approved QF fees, prior to July 1, 2015, is provided below.

Table 2: Summary of IOU's Approved DG Fees as of July 1, 2015, Initial and Most Recent Approvals

Company	Initial Rate Case Approval of the Fee	Fee Most Recently Approved (prior to July 1, 2015)
Minnesota Power	• Approved October 29, 2009 in Docket No. E015/GR-08-415	• Approved May 24, 2011 in E015/GR-09-1151
Otter Tail Power	• Net Energy Billing Rate Fee: Approved April 25, 2011 in Docket E017/GR-10-239 • Sale & Purchase, TOD Fees: unknown	• Approved April 25, 2011 in Docket No. E017/GR-10-239
Xcel Energy	• Approved October 23, 2009 in Docket No. E-002/GR-08-1065	• Approved May 8, 2015 in Docket No. E002/GR-13-868

The Department notes that this table summarizes dates and dockets for approved QF fees; it does not incorporate subsequent changes to the fees made in the Annual Filings, which it concludes were not approved by the Commission. The Department discusses revisions to the QF fees made outside of a rate case in more detail below.

Minnesota Power

In its October 29, 2009 Order in Docket E015/GR-08-415, the Commission granted Minnesota Power explicit approval for the Company's Rider for Parallel Generation, which included Service Charges of $0.75 for QFs under 40 kW, and $0.74 for QFs at 40kW or greater. This same Rider was uncontested in the utility's next rate case in Docket No. E015/GR-09-1151, and was thereby re-approved by the Commission's May 24, 2011 Order. Minnesota Power subsequently filed Annual Cogeneration and Small Power Production Filings each year between approval of the fee in E015/GR-09-1151 and July 1, 2015. The following table shows the fees shown in MP's Annual Filings:

Table 3: Minnesota Power QF (Service) Charges Enacted through Annual Filings

Annual Filing Docket	Filed Date	Service Charge	Effective Date
E999/PR-10-9	Dec 23. 2010	$0.61	Jan 1, 2011
E999/PR-11-9	Dec 29, 2011	$0.72	Jan 1, 2012
E999/PR-12-9	Dec 27, 2012	$0.54	Jan 1, 2013
E999/PR-13-9	Dec 23, 2013	$0.48	Jan 1, 2014
E999/PR-14-9	Dec 29, 2014	<40 kW: $2.55 ≥40 kW to ≤ 100 kW: $3.57	Jan 1, 2015

As shown in the above table, Minnesota Power changed their QF fees between the time of Commission approval in the Company's 2009 rate case and July 1, 2015. Furthermore, MP provided no cost justification for its QF fee changes in its Annual Filings.[10] MP neither requested nor obtained Commission approval for any of these revisions.

Therefore, the Department concludes that Minnesota Power violated the statutory requirement that it obtain affirmative Commission approval to change the rate that was approved in its 2009 rate case. Given that MP appears to have undercharged QFs through 2014, the Department recommends that the Commission order Minnesota Power to refund the fee differential to QFs (customers) for the period between Jan 1, 2015 to the present.

Otter Tail Power

Otter Tail's QF fees vary depending on the applicable purchase rate chosen by the QF. The $3.70 fee for the company's Net Energy Billing Rate was first implemented and approved by the Commission's April 25, 2011 Order during the utility's 2010 rate case in Docket E017/GR-10-239. The QF fees for the company's Simultaneous Purchase and Sale Rate and Time of Day Purchase Rates were implemented prior to the 2010 rate case, but the Department is unable to determine when these fees were first implemented (or whether those fees were approved). The Department requests that the Company clarify in reply comments the initial QF fee implementation and approval dates under Otter Tail's Simultaneous Purchase and Sale Rate and Time of Day Purchase Rate.

Since Commission approval of these fees in 2011, Otter Tail has filed Annual Cogeneration and Small Power Production Filings each year, and has not changed their fees.

Xcel Energy

In its December 11, 2015 filing in the present docket, Xcel indicated that it implemented its current QF fees January 2, 2007, when the company filed their Annual Cogeneration and Small Power Production Filing that year. However, the utility did not provide a docket reference for that year, and the Department is unable to find the Annual Filing for that year. The Department requests that the Company clarify the initial fee implementation docket in reply comments. The Department was able to verify, however, that the following QF fees

[10] Minnesota Power did change the purchase rates in addition to the Service Charge fees in these filings. Cost justification information (in the form of the Schedules) was provided for the rates, but not the fees.

were approved by the Commission's September 1, 2006 Order in Xcel's 2005 rate case in Docket No. E002/GR-05-1428:

Table 4: Xcel QF Fees Approved in Utility's 2005 Rate Case

Docket	Fees	Order Date
E002/GR-05-1428	Net Energy Bill, single-phase: $3.00 Net Energy Bill, 3-phase: $6.25 Purchase & Sale, single-phase: $5.35 Purchase & Sale, 3-phase: $7.85 TOD Purchase, single-phase: $5.35 TOD Purchase, 3-phase: $7.85	September 1, 2006

The fees in the above table, approved in the 2005 rate case, are slightly lower than the company's current QF fees, which can be found in Table 1. Although not verified by the Department, Xcel may have filed its Annual Cogeneration and Small Power Production Filing four months after the Commission's final rate case order such that on January 2, 2007 MP raised its QF fees to the current amounts. It appears that Xcel did not seek or obtain Commission approval to raise its QF fees above the amounts approved in the 2005 rate case until its 2008 rate case. The current fees were approved (although uncontested) in the utility's 2008 rate case in Docket No. E002/GR-08-1065 per the Commission's final Order on October 23, 2009. The 2008 rate-case-approved fees have remained constant since that time.

Once the fees were approved as part of Xcel's 2008 rate case, Xcel was authorized to include those QF fees in its tariffs and to charge those approved QF fees. Again, however, it appears that the initial increase in QF rates identified in Xcel's 2007 Annual Filing did not receive affirmative approval from the Commission. Therefore, the Department concludes that the utility may have charged unapproved fees between January 2, 2007 (when the fees were initially raised) and the October 23, 2009 approval date in the 2008 rate case.

The Department recommends that the Commission order Xcel to refund the amount charged in excess of the Commission-approved QF rate as part of Xcel's 2005 rate case for the period between Jan 2, 2007 (the time the first unapproved fee became effective) and October 23, 2009 (the approval date of the fees).

In its June 6, 2016 Reply Comments, Xcel cited to the Commission's October 16, 1984 Order in Docket No. E999/R-84-105 to argue that QF fees (and changes to DG fees) were permitted to go into effect within 60 days of their filing unless an objection is made.[11] The Department found no evidence that the Commission memorialized this treatment of rate changes in future orders. The Department defers to the Commission whether it intended to permit QF fee increases without the Commission's affirmative review and approval (i.e., that DG rate changes could go into effect within 60 days of filing unless an objection is made).

[11] In the Matter of the Proposed Adoption of Amendments to the Rules of the Minnesota Public Utilities Commission Governing Cogeneration and Small Power Production, *Findings of Fact, Conclusions of Law and Order Adopting Rules,* October 16, 1984, Docket No. E999/R-84-105.

At least on a going-forward basis, the Department urges the Commission to affirmatively reject such methodology for ratemaking.

3. Other Concerns with the Annual Cogeneration reports

As part of its investigation in this docket, the Department also reviewed the Annual Cogeneration and Small Power Production Annual Filings (Annual Filings) of Minnesota Power, Otter Tail Power, and Xcel Energy. The Department provides the text of the filing requirements, as specified by pre-2015 Minnesota Rules.

> 7835.0300 FILING DATES.
> Within 60 days after the effective date of this chapter, on January 1, 1985, and every 12 months thereafter, each utility must file with the commission, for its review and approval, a cogeneration and small power production tariff. *The tariff for generating utilities must contain schedules A to G,* except that generating utilities with less than 500,000,000 kilowatt-hour sales in the calendar year preceding the filing may substitute their retail rate schedules for schedules A and B.

[Emphasis in italics added].

MP, OTP, and Xcel, as generating utilities with more than 500,000,000 kilowatt hour sales every year, were required to file a cogeneration and small power production tariff that contained schedules A to G. Attachment A – Trade Secret to these comments contains these Annual Filings for of the IOUs filed in 2015.

The Department notes that each of the IOUs included the required tariffs, as well as Schedules A through G in their Annual Filings. The Department also notes that schedules A through C provide the underlying cost justification of the filed purchase rates, and so the cost justification of those particular rates was present. None of the IOUs, however, provided the cost justification for the QF fees. This is particularly problematic in the case of Minnesota Power, which changed its QF fees after MP's last rate case; MP also did not provide the cost justification for these QF fee changes in its Annual Filings.

Additionally, the Department is concerned that the IOUs' tariffs do not comply with the terms of the Uniform Contract. The Uniform Contract permits the QF to choose the method under which it will pay its interconnection costs while the IOUs' tariffs did not include terms that allowed the QF to so choose. Specifically, by implementing a monthly QF fee for the recovery of metering costs associated with the interconnection of a QF, the utilities did not provide QF customers with the options required by the Uniform Contract. Xcel, MP and OTP have all filed revised tariffs to comply with the revision of Minnesota Rules 7835. The Department will discuss this QF choice regarding its interconnection payment options further in the following dockets: Docket No. E002/M-16-280 (Xcel), E017/M-16-280 (OTP), and E015/M-16-204 (MP).

B. COOPERATIVE UTILITIES

1. Recovery of Interconnection Costs

Electric cooperatives Connexus, Goodhue, and Mille Lacs (together, the Cooperatives) assert Minn. Stat. § 216B.164, subd. 8(b) and Minnesota Rules 7835.0100, subp. 12 permitted recovery of interconnection costs. For clarity, the Department again provides the text below:[12]

> 216B.164 COGENERATION AND SMALL POWER PRODUCTION
> Subd. 8.**Interconnection required; obligation for costs.**
> (b) Nothing contained in this section shall be construed to excuse the qualifying facility from any obligation for costs of interconnection and wheeling in excess of those normally incurred by the utility for customers with similar load characteristics who are not cogenerators or small power producers, or from any fixed charges normally assessed such nongenerating customers.[13]
>
> 7835.0100 DEFINITIONS
> Subp. 12.**Interconnection costs** "Interconnection costs" means the reasonable costs of connection, switching, metering, transmission, distribution, safety provisions, and administrative costs incurred by the utility that are directly related to installing and maintaining the physical facilities necessary to permit interconnected operations with a qualifying facility. Costs are considered interconnection costs only to the extent that they exceed the corresponding costs which the utility would have incurred if it had not engaged in interconnected operations, but instead generated from its own facilities or purchased from other sources an equivalent amount of electric energy or capacity. Costs are considered interconnection costs only to the extent that they exceed the costs the utility would incur in selling electricity to the qualifying facility as a nongenerating customer.[14]

As with the IOUs, the Department agrees that Minnesota statutes and rules permit the recovery of interconnection costs. As noted earlier in these comments, Minn. Stat. § 216B.164, subd. 8(b) and the Uniform Statewide Contract permitted the assessment of reasonable interconnection costs, with the type of recovery (up-front, monthly or some combination of the two) to be determined by parties to the contract.

In its initial comments, the Department raised concerns about the recovery in perpetuity of one-time costs through a monthly charge. After reviewing several cost studies related to QF fees, the Department does not object to the use of a monthly fee for recovery, but expects

[12] The July 1, 2015 statutory change did not impact the statute and rule quoted here.
[13] https://www.revisor.mn.gov/statutes/?id=216B.164&year=2014
[14] https://www.revisor.mn.gov/rules/?id=7835&date=2013

the costs to be reflected in the Uniform Statewide Contract presented to QF providers. In addition, the Department expects utilities to abide by the Uniform Statewide Contract provision that the permits the QF choices regarding how those costs are paid.

2. Commission Approval of the Tariffs

The Cooperatives are not defined as public utilities under Minn. Stat. § 216B.02, subd. 4, and consequently, are not subject to the same level of regulatory oversight as the IOUs. One major exception to this, however, is the purchase of electricity from Qualifying Facilities by cooperative utilities. The Commission's authority to regulate the rates of these electricity purchases stems from the Public Utility Regulatory Policies Act (PURPA) of 1978, United States Code, title 16, section 824-a-3 and the Federal Energy Regulatory Commission Regulations, Code of Federal Regulations, title 18, part 292.

Under Minn. Rules 7835.0300, cooperatives are required to file an Annual Cogeneration and Small Power Production Filing, with the purpose of implementing provisions of Minnesota Statutes, section 216.164.

The Department provides the full text of Minn. Rules 7835.0300 below:

> 7835.0300 FILING DATES.
> Within 60 days after the effective date of this chapter, on January 1, 1985, and every 12 months thereafter, *each utility must file with the commission, for its review and approva*l, a cogeneration and small power production tariff. The tariff for generating utilities must contain schedules A to G, except that generating utilities with less than 500,000,000 kilowatt-hour sales in the calendar year preceding the filing may substitute their retail rate schedules for schedules A and B. The tariff for nongenerating utilities must contain schedules C, D, E, F, and H, and may, at the option of the utility, contain schedules A and B, using data from the utility's wholesale supplier.

[Emphasis in italics added].

Thus, Connexus, Goodhue, and Mille Lacs are each required to file an annual Cogeneration and Small Power Production Tariff for the Commission's review and approval.

Both Connexus and MREA (representing Goodhue and Mille Lacs) emphasized that the Commission has limited statutory authority as to the Annual Filings, and that the Commission's role in this matter is to ensure that the Cooperatives have met their statutory obligation by filing these reports. MREA stated that:

> The role of the Commission with regards to electric cooperatives and tariff filings is limiting [sic] to insuring the coop is meeting the plain statutory language. In this case, the plain statutory

> requirement is the collection of reasonable interconnection costs from the qualifying facility. Mille Lacs and Goodhue are basing their interconnection costs charges on the actual interconnection costs as determined by member-owners of the cooperatives through their elected board of directors. Mille Lacs and Goodhue have met the plain language of the statute in charging an ongoing interconnection charge to recover the reasonable interconnection costs to the electric cooperative. [15]

MREA appears to suggest that the Commission's role is limited to a final determination of whether or not the cooperative has charged the fees that were deemed reasonable by the Cooperative boards.

The Department disagrees. MREA's interpretation of the Commission's role regarding the Annual Filings is too narrow. Minnesota Rules 7835.0300 clearly states that the Annual Filings are submitted for the Commission's "*review and approval*". As indicated above, the IOUs received Commission approval of QF fees as part of the Commission's approval of the IOUs' general rate cases, but not as part of the IOUs' Annual Filings. To the Department's knowledge, none of the Cooperatives requested or received Commission approval of their QF fees. Therefore, the Department concludes that none of the QF fees included in the Cooperatives' Annual Cogeneration and Small Power Production Tariff Filings have been approved by the Commission.

3. Other Concerns with the Cooperatives' Annual Filings

a. Required Content

Pursuant to Minnesota Rules 7835.0300, Connexus, Goodhue, and Mille Lacs, as nongenerating utilities, are required to file a cogeneration and small power production tariff that must contain schedules C, D, E, F, and H.[16] The Department interprets "tariff" to mean the Cooperatives' rule books of the rates and fees in question. Thus, in the instant docket, the Department interprets Minnesota Rules 7835.0300 to mean that Cooperative utilities are required to file their rule books of the QF fee options available to QFs for purchases of QF-generated electricity by the utility.[17]
MREA appears to disagree with the Department's interpretation, stating that the Annual Filings require electric Cooperatives "to file the average retail rate calculation as defined

[15] MREA's July 6, 2016 Comments, page 4.
[16] The Rules also require utilities to file annual reports on the number and location of Qualifying Facilities interconnected with the utility; however, these reports are considered separate from the Annual Filings that include the tariffs, and so are not considered here.
[17] The Department also notes that it makes sense for QF fees to be filed under purchase rates (energy purchased by utility) rather than under sale rates (energy sold by utility). This is because the incremental costs associated with serving a QF appear to be related largely to a need for a second meter, which measures energy purchased by the utility. The second meter would not be present if the utility were not purchasing energy from the QF, and so the costs associated with the second meter will not be present if the purchase rate is not present. This view is supported by the fact that MP, OTP, Xcel, and Connexus each filed their three required purchase rates with the Commission, and each filing clearly delineated the QF fees in question.

under 7835.0100 Subp. 2(a). Nothing in statute or rule requires a co-op to file other rates, fees or charges with the Commission."[18] MREA further implied that Goodhue Cooperative did not file its interconnection charge in Goodhue's Annual Filings because interconnection charges were outside the scope of what was required to be filed with the Commission.

For clarity, the Department includes the full text of Schedule and Tariff requirements from the pre-2015 rules below.

> **7835.0650 SCHEDULE C.**
> Schedule C must contain the calculation of the average retail utility energy rates.
>
> **7835.0700 SCHEDULE D.**
> Schedule D must contain all standard contracts to be used with qualifying facilities, containing applicable terms and conditions.
>
> **7835.0800 SCHEDULE E.**
> Schedule E must contain the utility's safety standards, required operating procedures for interconnected operations, and the functions to be performed by any control and protective apparatus. These standards and procedures must not be more restrictive than the interconnection guidelines listed in parts 7835.4800 to 7835.5800. The utility may include in schedule E suggested types of equipment to perform the specified functions. No standard or procedure may be established to discourage cogeneration or small power production.
>
> **7835.0900 SCHEDULE F.**
> Schedule F must contain procedures for notifying affected qualifying facilities of any periods of time when the utility will not purchase electric energy or capacity because of extraordinary operational circumstances which would make the costs of purchases during those periods greater than the costs of internal generation.
>
> **7835.1100 SCHEDULE H; SPECIAL RULE FOR NONGENERATING UTILITIES.**
> Schedule H must list the rates at which a nongenerating utility purchases energy and capacity. If the nongenerating utility has more than one wholesale supplier, schedule H must list the rates of that supplier from which purchases may first be avoided. If the nongenerating utility with more than one wholesale supplier also chooses to file schedules A and B, the

[18] MREA's June 6, 2016 Comments, page 3.

data on schedules A and B must be obtained from that supplier from which purchases may first be avoided.

7835.3200 STANDARD RATES FOR PURCHASES IN GENERAL.
For qualifying facilities with capacity of 100 kilowatts or less, standard rates apply. Qualifying facilities with capacity of more than 100 kilowatts may negotiate contracts with the utility or may be compensated under standard rates if they make commitments to provide firm power. The utility must make available three types of standard rates, described in parts 7835.3300, 7835.3400, and 7835.3500. The qualifying facility with a capacity of 100 kilowatts or less must choose interconnection under one of these rates, and must specify its choice in the written contract required in part 7835.2000. Any net credit to the qualifying facility must, at its option, be credited to its account with the utility or returned by check within 15 days of the billing date. The option chosen must be specified in the written contract required in part 7835.2000. Qualifying facilities remain responsible for any monthly service charges and demand charges specified in the tariff under which they consume electricity from the utility.

7835.3300 NET ENERGY BILLING RATE.
Subpart 1. Applicability. The net energy billing rate is available only to qualifying facilities with capacity of less than 40 kilowatts which choose not to offer electric power for sale on either a time-of-day basis or a simultaneous purchase and sale basis.
Subp. 2. Method of billing. The utility must bill the qualifying facility for the excess of energy supplied by the utility above energy supplied by the qualifying facility during each billing period according to the utility's applicable retail rate schedule.
Subp. 3. Additional calculations for billing. When the energy generated by the qualifying facility exceeds that supplied by the utility during a billing period, the utility must compensate the qualifying facility for the excess energy at the average retail utility energy rate.

7835.3400 SIMULTANEOUS PURCHASE AND SALE BILLING RATE.
Subpart 1. Scope. The simultaneous purchase and sale rate is available only to qualifying facilities with capacity of less than 40 kilowatts which choose not to offer electric power for sale on a time-of-day basis.

Subp. 2. Method of billing. The qualifying facility must be billed for all energy and capacity it consumes during a billing period according to the utility's applicable retail rate schedule.

Subp. 3. Compensation to qualifying facility.

The utility must purchase all energy and capacity which is made available to it by the qualifying facility. At the option of the qualifying facility, its entire generation must be deemed to be made available to the utility. Compensation to the qualifying facility must be the sum of items A and B.

A. The energy component must be the appropriate system average incremental energy costs shown on schedule A; or if the generating utility has not filed schedule A, the energy component must be the energy rate of the retail rate schedule, applicable to the qualifying facility, filed in lieu of schedules A and B; or if the nongenerating utility has not filed schedule A, the energy component must be the energy rate shown on schedule H.

B. If the qualifying facility provides firm power to the utility, the capacity component must be the utility's net annual avoided capacity cost per kilowatt-hour averaged over all hours shown on schedule B; or if the generating utility has not filed schedule B, the capacity component must be the demand charge per kilowatt, if any, of the retail rate schedule, applicable to the qualifying facility, filed in lieu of schedules A and B, divided by the number of hours in the billing period; or if the nongenerating utility has not filed schedule B, the capacity component must be the capacity cost per kilowatt shown on schedule H, divided by the number of hours in the billing period. If the qualifying facility does not provide firm power to the utility, no capacity component may be included in the compensation paid to the qualifying facility.

7835.3500 TIME-OF-DAY PURCHASE RATES.

Subpart 1. Applicability. Time-of-day rates are required for qualifying facilities with capacity of 40 kilowatts or more and less than or equal to 100 kilowatts, and they are optional for qualifying facilities with capacity less than 40 kilowatts. Time-of-day rates are also optional for qualifying facilities with capacity greater than 100 kilowatts if these qualifying facilities provide firm power.

Subp. 2. Method of billing. The qualifying facility must be billed for all energy and capacity it consumes during each billing period according to the utility's applicable retail rate schedule. Any utility rate-regulated by the commission may propose time-of-day retail rate tariffs which require qualifying

> facilities that choose to sell power on a time-of-day basis to also purchase power on a time-of-day basis.
>
> Subp. 3. Compensation to qualifying facility. The utility must purchase all energy and capacity which is made available to it by the qualifying facility. Compensation to the qualifying facility must be the sum of items A and B.
>
> A. The energy component must be the appropriate on-peak and off-peak system incremental costs shown on schedule A; or if the generating utility has not filed schedule A, the energy component must be the energy rate of the retail rate schedule, applicable to the qualifying facility, filed in lieu of schedules A and B; or if the nongenerating utility has not filed schedule A, the energy component must be the energy rate shown on schedule H.
>
> B. If the qualifying facility provides firm power to the utility, the capacity component must be the utility's net annual avoided capacity cost per kilowatt-hour averaged over the on-peak hours as shown on schedule B; or if the generating utility has not filed schedule B, the capacity component must be the demand charge per kilowatt, if any, of the retail rate schedule, applicable to the qualifying facility, filed in lieu of schedules A and B, divided by the number of on-peak hours in the billing period; or if the nongenerating utility has not filed schedule B, the capacity component must be the capacity cost per kilowatt shown on schedule H, divided by the number of on-peak hours in the billing period. The capacity component applies only to deliveries during on-peak hours. If the qualifying facility does not provide firm power to the utility, no capacity component may be included in the compensation paid to the qualifying facility.

Pre-July 1, 2015, Minnesota Rules 7835.3200-7835.3500 clearly required Cooperatives to make available three types of purchase rates to QFs: a Net Energy Billing Rate, a Simultaneous Purchase and Sale Billing Rate, and a Time-of-Day Purchase Rate. The rate choice was at the option of the QF.

MREA appears to suggest that Schedule C alone (the Average Retail Rate calculation) was the only rate required to be filed with the Commission. While Schedule C does inform the amount of the Net Energy Billing Rate (now called the Average Retail Energy Rate), the Average Retail Rate calculation alone is not enough to identify what would be the QF fee that is included in the tariff. Also, even if filing the Average Retail Rate calculation were considered sufficient to identify the QF fee, it was only one of the three QF rates required to be included in the filed tariff. Therefore, the Department concludes that Minnesota Rule

7835.0300 required that a Cooperative's purchase tariff, which was to include these three types of QF rates, as well as Schedules C, E, D, E, F, and H, must be filed each year for Commission's review and approval.

Additionally, review of the pre-2015 Uniform Statewide Contract supports a conclusion that the QF rates were required to be filed as part of the Annual Filings. The Uniform Statewide Contract stated:

> The Utility will buy electricity from the QF under the current rate schedule *filed with the Commission*. The QF elects the rate schedule category hereinafter indicated:
>
> ___ a. Net energy billing rate under part 7835.3300.
> ___ b. Simultaneous purchase and sale billing rate under part 7835.3400.
> ___ c. Time-of-day purchase rates under part 7835.3500.
>
> A copy of the presently filed rate schedule is attached to this contract.[19]

[Emphasis in italics added]

The Department submits that the above-quoted language contained in the Uniform Statewide Contract clearly required the filing of these three QF rate schedules with the Commission, as part of the tariff required by Minnesota Rules 7835.0300.

In order for the Commission to adequately "review and approve" those three QF tariffs, the Commission needed to understand how the Cooperatives' rates and fees were derived. The underlying justifications for the three required purchase rates are included in Schedules A, B, C, and/or H. In other words, the purpose of these schedules appears to have been to standardize QF purchase rate practices across Cooperative utilities and to ensure that the QF rates included in the filed tariff were based on reasonable assumptions.

That said, while the schedules were to provide the underlying justifications for the QF rates, the Department concludes that in order for the Commission to adequately review and approve the reasonableness of the Annual Filings, cost justification for QF fees also needed to be included in those filings.

Finally, upon reviewing the Annual Filings of the Cooperatives, the Department notes that there appears to be confusion regarding the Uniform Statewide Contract provisions, and so we discuss the statutory and administrative requirements below.

[19] Minnesota Rule 7835.9910 (2).

Minn. Stat. § 216B.164, subd. 6(a) requires the Commission to establish a uniform statewide form of contract for use between a Cooperative utility and a net metered or qualifying facility having less than 40-kilowatt capacity, and subd. 6(c) states that:

> The uniform statewide form of contract shall be applied to all new and existing interconnections established between a utility and a net metered or qualifying facility having less than 40-kilowatt capacity, except that existing contracts may remain in force until terminated by mutual agreement between both parties.

The Commission included the statutory contract requirement in Minnesota Rule 7835.2000, which specifies that a written contract must be executed between the qualifying facility and the utility. Minnesota Rule 7835.0300 requires each utility to file with the Commission, for its review and approval, a cogeneration and small power production tariff, including Schedule D. Minnesota Rule 7835.0700 states that Schedule D must contain all standard contracts to be used with qualifying facilities, containing applicable terms and conditions.

b. Review of Cooperatives' Annual Filings

With these pre-July 1, 2015 content requirements in mind, the Department reviewed the Annual Filings submitted by each Cooperative from the year that its respective QF fee was first implemented to July 2015, as reported in the instant docket. The Department has attached each Cooperative's 2015 Annual Filing in Attachment B – Trade Secret to serve as examples; these filings appear to be representative of the Annual Filings submitted each year that the respective QF fees were in place.

Connexus Energy

The Department's review indicates that Connexus filed the appropriate tariff, including the QF fee in question, in its Annual Filing each year since the fee was first adopted. However, Connexus did not provide cost justification for the fee. The Department also found that Connexus filed schedules A, B, C, E, F, and H every year since its QF fee was in place, but did not file Schedule D (the Uniform Contract) for any of those years. The Department also noted that Connexus did not request and did receive Commission approval of the QF fees filed as part of its Annual Filings.

As with the investor-owned utilities, the Department is concerned about the presence of QF fees in Connexus' tariff that were not approved by the Commission. In addition, and as noted earlier in this Department analysis, the Uniform Contract permits the QF to choose the method under which it would pay its interconnection costs. By implementing a monthly QF fee for the recovery of metering costs associated with the interconnection of a QF, Connexus did not provide QF customers with a choice among options as is required by the Uniform Contract.

The Department concludes that due to the absence of cost justification for the QF fees and the absence of Schedule D, Connexus did not fully comply with the rule requirements. The Department acknowledges that Connexus appropriately filed the three required QF rates every year. The Department recommends that the Commission require Connexus, in its future Annual Filings, to provide cost justification for its fees and provide Schedule D. Further, the Department recommends that the Commission require Connexus to issue customer refunds for QF fees charged prior to July 1, 2015.

As previously discussed above, Xcel has argued that the Commission's October 16, 1984 Order in Docket No. E999/R-84-105 permitted QF (DG rates) to go into effect within 60 days of filing unless an objection was raised. If the Commission determines that this process was in effect prior to July 1, 2015, then Connexus' QF fees would be deemed to be approved.

If the Commission determines that it did not allow QF fees to become effective without the Commission's affirmative review and approval, then the Department recommends that the Commission direct Connexus to refund the unapproved QF fees that it imposed prior to July 1, 2015.

Goodhue

The Department's review indicates that Goodhue filed schedules A, B, C, E, F, and H. Goodhue did not file Schedule D (the Uniform Statewide Contract). Goodhue also did not file the required QF tariff, and so it did not file the three required purchase rates, or the QF fees in question. Finally, Goodhue did not provide cost justification for its QF fees. The Department recommends that the Commission direct Goodhue, going forward, to file the required tariff, provide cost justification for any QF fees, and to file Schedule D. Because Goodhue did not file its QF fees with the Commission, the Department recommends that the Commission direct Goodhue to refund the unapproved QF fees that it imposed prior to July 1, 2015.

Mille Lacs

The Department's review indicates that Mille Lacs did not file a tariff, the three required rates, or the QF fees in question. Mille Lacs also did not provide cost justification for their fees. Mille Lacs did file schedules A, B, C, D, E, F, and H.

Although Mille Lacs filed Schedule D, the utility appears to have filed a contract with certain pre-selected criteria; that is, certain components of the contract that were to be left to the discretion of the customer appear to have been pre-decided by Mille Lacs. Specifically, Mille Lacs' contract pre-selected the following terms within the contract sections, as shown by an "X", below:

> 2. The Cooperative will buy electricity from the QF under the current rate schedule filed with the Commission. The QF has elected the rate schedule category hereinafter indicated (select one):

_X_a. Net energy billing rate under part 7835.3300.
___b. Simultaneous purchase and sale billing rate under part 7835.3400.
___c. Time-of-day purchase rates under 7835.3500.

4. The cooperative will compute the charges and payments for purchases and sales for each billing period. Any net credit to the QF will be made under one of the following options as chosen by the QF:
_X_a. Credit to the QF's account with the Cooperative
___b. Paid by check to the QF within 15 days of the billing date.

8. The QF is responsible for the actual, reasonable cost of interconnection which are estimated to be $____NA_____. The QF will pay the Cooperative in this way: _____

The preselection of QF purchase rates and payment options by the cooperative rather than by the QF is the subject of recent dispute in Docket No. E123/CG-16-241. Therefore, for the benefit of Mille Lacs and MREA, the Department reiterates its position in that pending docket here.

Minn. Stat. § 216B.164, subd. 3(a), requires Cooperatives to compensate customers with Qualifying Facilities under 40 kW for net input into the utility system at a per kilowatt-hour rate as determined under Minn. Stat. 216B.164, subd. (c), (d), or (f). Minn. Stat. § 216B.164, subd. (c) discusses the use of avoided costs, while subdivision (d) states "a qualifying facility having less than 40-kilowatt capacity may elect that the compensation for net input by the qualifying facility into the utility system shall be at the average retail utility energy rate." Minn. Stat. § 216B.164, subd. (f), which deals with compensation by kilowatt-hour credit, became effective on July 1, 2015, and so does not apply to the instant docket.

Both sections 2 and 4 of Mille Lacs' contract quoted above are explicitly defined to be matters of choice to be made at the option of the QF, in Minnesota Rules 7835.3200 (entitled Standard Rates for Purchases by Cooperative Electric Associations and Municipal Utilities from Qualifying Facilities). Minnesota Rule 7835.3200, subpart 1, states:

> **Subpart 1. Qualifying facilities with 100 kilowatt capacity or less**. For qualifying facilities with capacity of 100 kilowatts or less, standard purchase rates apply. The *utility must make available three types of standard rates*, described in parts 7835.3300, 7835.3400 and 7835.3500. *The qualifying facility with a capacity of 100 kilowatts or less must choose interconnection under one of these rates*, and must specify its choice in the written contract required in part 7835.2000. Any net credit to the qualifying facility must, at its option, be credited to its account with the utility or returned by check

> within 15 days of the billing date. The option chosen must be specified in the written contract required in part 7835.2000. Qualifying facilities remain responsible for any monthly service charges and demand charges specified in the tariff under which they consume electricity from the utility.

[Emphasis in italics added].

Additionally, Section 8 of Mille Lacs' contract quoted above specifies the estimated cost of interconnection as not applicable, "NA." This indication appears to contradict MREA's claim that "The charges at issue in this proceeding are not fixed cost recovery charges but, interconnection costs and allowable under Minnesota Statute 216B.164 Subd. 8(b) and Minnesota Rules 7835.0100 Subp. 12"[20]

The Department concludes that Mille Lacs did not show that it was reasonable for the cooperative to use a contract with pre-selected options that were required to be chosen among options by the QF. The Department requests that Mille Lacs specify in reply comments whether it actually enforced the pre-selected options with QF customers and, if so, to provide the time periods for which it did so. Additionally, the Department requests that Mille Lacs specify whether it informed QF customers of interconnection costs through means other than the signed the contract with the QF and, if so, to explain in detail.

The Department recommends that the Commission direct Mille Lacs on a going forward basis to provide the tariff, provide cost justification for any fees, and to provide Schedule D in its Annual Filings. Consistent with its recommendations for Goodhue, the Department also recommends that if the Commission direct Mille Lacs to refund the unapproved QF fees that it imposed prior to July 1, 2015.

C. PROCESS GOING FORWARD FOR IOUS AND COOPS

As stated above, the Commission has authority to review and approve fees assessed to QFs (DG customers). Increased interest in solar DG has increased the attention being given to QF fees. The Department recommends that the Commission clarify that going forward, any utility proposing a change in its Cogeneration and Small Power Production tariff must receive written approval from the Commission prior to implementing a proposed change.

IV. DEPARTMENT CONCLUSIONS AND RECOMMENDATIONS

The Department concludes that the Commission is charged with regulating the purchases of energy by utilities from QFs. As such, all utilities must file the three required purchase rate schedules, as part of their tariff, with the Commission as part of their Annual Cogeneration and Small Power Production Filings. These rates must be based upon the applicable calculations detailed in Minnesota Rules, and any customer fees must be based on the

[20] MREA June 6, 2016 Comments, page 2.

incremental cost of serving DG customers. Any customer fees included in the tariff must be apparent, and the underlying cost justification for these fees must also be provided. Therefore, the Department concludes that none of the utilities concerned have provided adequate cost justification for fees in their Annual Filings, and that Goodhue and Mille Lacs have not filed these customer fees with the Commission.

The Department recommends that the Commission:

1. Determine whether the utilities are permitted to place QF fees filed in their Annual Cogeneration and Small Power Production Filings into effect within 60 days unless an objection is filed, or determine that implementing and changing QF fees requires affirmative Commission approval.

If the Commission finds that utilities required affirmative Commission approval prior to implementing or changing a QF fee, for the utilities that have filed fees as part of the Annual Cogeneration and Small Power Production Filings, the Department recommends the Commission:

2. Order Minnesota Power to refund the fee differential to customers for the period between Jan 1, 2011 and July 1, 2015;

3. Order Xcel to refund the fee differential to customers for the period between Jan 2, 2007 (the time the first unapproved fee became effective) and October 23, 2009; and

4. Order Connexus to issue refunds to customers charged QF fees.

With respect to Mille Lacs and Goodhue Cooperatives, because neither Cooperative has filed its QF fees with the Commission in its Annual Cogeneration and Small Power Production filings, the Department recommends the Commission:

5. Order Mille Lacs and Goodhue Cooperatives to issue refunds to customers charged QF fees.

6. Direct Mille Lacs and Goodhue to file their QF fees along with cost support, as well as the appropriate tariff.

With respect to the process going forward, the Department recommends the Commission:

7. Direct all public, cooperative, and municipal utilities to comply with currently applicable Minnesota statute and rule by submitting, for the Commission's review and approval, annual tariffs for energy purchased by utilities from QFs. Tariffs shall include all components set forth in Minnesota Rules; that is, all schedules, rates, and fees, as well as any cost of service studies or other pertinent information needed for the Commission to make a determination of reasonableness in its review and approval of the tariff. If no changes are to be

made to the tariff, the filing entity may comply with MN Rule 7835.0400 in that year. Written Commission approval is required prior to implementation of any updated tariffs, unless 60 days have passed.

The Department requests the following information in applicable parties' reply comments:

1. The Department requests that Otter Tail Power specify the initial QF fee implementation and approval dates under Otter Tail's Simultaneous Purchase and Sale Rate and Time of Day Purchase Rate.

2. The Department requests that Xcel Energy specify the initial QF fee implementation docket.

3. The Department requests that Mille Lacs specify whether it enforced the pre-selected contract options with QF customers and, if so, to provide the time periods for which it did so. Additionally, the Department requests that Mille Lacs specify whether it informed QF customers of interconnection costs through means other than the signed the contract with the QF and, if so, to explain in detail.

/lt

minnesota power
AN ALLETE COMPANY

30 west superior street / duluth, minnesota 55802-2093 / fax: 218-723-3955 /www.allete.com

David R. Moeller
Senior Attorney
218-723-3963
dmoeller@allete.com

PUBLIC DOCUMENT
TRADE SECRET DATA
HAS BEEN EXCISED

December 29, 2014

VIA E-FILING
Dr. Burl Haar, Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: ***Cogeneration and Small Power Production***
Tariff Filing
Docket No. E999/PR-14-09

Dear Dr. Haar:

Enclosed for filing, in accordance with the Cogeneration and Small Power Production Regulations, Minn. Rule 7835.0300, is Minnesota Power's Request for Rate Revision.

Because of the sensitive nature of information provided on pages 1 and 2 of 13 in Schedule A and pages 6 and 7 of 13 in Schedule B, Minnesota Power has designated this information as **TRADE SECRET**. As such, Minnesota Power has provided both a Public version and a Trade Secret version of the filing.

Trade Secret data is defined as data filed with the Minnesota Public Utilities Commission that meets the definition of trade secret in the Minnesota Government Data Practices Act, Minn. Stat. § 13.37. A statement justifying the Trade Secret designation is attached.

Please contact me should there be any questions pertaining to this filing.

Yours truly,

David R. Moeller

DRM:sr
Enclosures

Statement Regarding Trade Secret Designation

Pursuant to the Commission's revised Procedures for Handling Trade Secret and Privileged Date in furtherance of the intent of Minn. Stat. 13.37 and Minn. Rule Part 7829.0500, Minnesota Power has designated portions of its Cogeneration and Small Power Production filing as Trade Secret.

Minnesota Power's filing contains detailed information of Minnesota Power's generating costs. The disclosure of this information would be materially harmful to Minnesota Power because it provides estimation for other electric utilities in the wholesale market the cost of energy purchased for Minnesota Power's system. Minnesota Power and its wholesale and retail customers would be materially harmed if such information was used to Minnesota Power's disadvantage. The effect of public disclosure could affect the price Minnesota Power pays for purchased energy, a price that would be passed on to consumers through the Company's fuel clause. In order to protect itself and its customers from escalating purchased energy costs, Minnesota Power has designated the information as trade secret.

Minnesota Power respectfully requests the opportunity to provide additional justification in the event of a challenge to the trade secret designation provided herein.

Submitted: December 29, 2014

MINNESOTA POWER

REQUEST FOR RATE REVISION
TO THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In compliance with Section 16 of the Minnesota Public Utilities Act, Minnesota Power submits the following for filing:

Document - Cogeneration and Small Power Production Tariff filed pursuant to Minn. Rule 7835.0300

Attached is a copy of the present and proposed documents indicating where changes have been made. These documents contain the following Minnesota Power Rate Book identifications:

Present		Proposed	
Volume I	Section V	Volume I	Section V
33	Page No. 60-60.1	34	Page No. 60-60.1

Effective January 2014 Billing Cycle — January 2015 Billing Cycle

****

SUPPORTING DATA

A. **Summary of Changes**

Pursuant to the Public Utilities Regulatory Policies Act of 1978, Section 210, and pursuant to Minn. Stat. § 216B.164, the Minnesota Public Utilities Commission has promulgated regulations at Minn. Rule 7835.0100 et seq. Pursuant to Minn. Rule 7835.0300, Minnesota Power files the attached Cogeneration and Small Power Production Tariff.

SUPPORTING DATA (cont'd)

B. **Number of Customers Affected**

108 customers at the present time are affected. The content of this filing will be applicable to any customer contracting for service under Minnesota Power's Rider for Parallel Generation.

C. **Notification to Customers**

Existing cogeneration and small power production customers will be advised by letter of any revisions to applicable rates. All customers will be advised by bill insert of the availability of service under Minnesota Power's tariff for cogenerators and small power producers.

D. **Financial Data**

See attached financial data

E. **Revenue Impact**

There will be minimal revenue impact

F. **Proposed Effective Date**

January 2015 billing cycle

G. **If additional data is required, please contact:**

David R. Moeller
Attorney
Minnesota Power
30 W. Superior Street
Duluth, Minnesota 55802
Telephone: (218) 723-3963
dmoeller@allete.com

MINNESOTA POWER

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0500
Schedule: A
Subpart: N/A

Description: Estimated system average incremental energy costs by seasonal peak and off-peak periods for each of the next five years.

System Average Incremental Energy Costs
(Adjusted for 50% of Line Losses and Environmental Externalities)

	On-Peak (¢/kWh)	Off-Peak (¢/kWh)	All Hours (¢/kWh)
2015	**[TRADE SECRET INFORMATION EXCISED]**		
2016			
2017			
2018			
2019			

On-peak periods are defined as the hours from 0700 to 2200, Monday through Friday excluding holidays. All other hours are off-peak. The hours selected correspond to the hours used by Minnesota Power for retail rate-making purposes. Due to Minnesota Power's unique system load characteristics, the seasonal variations in avoided costs are minimal; therefore, no seasonal variations in on-peak and off-peak costs were assumed.

Derivation of Energy Costs

Minnesota Power's avoided energy costs represent the variable cost (fuel + variable O&M) avoided by the addition of a 100 MW, 100% capacity factor, zero cost resource. This "100 MW decremental cost" is calculated by comparing the hourly total variable cost (fuel + variable O&M) of two hourly chronological production cost model cases: with and without the 100 MW resource. A current production cost model base case was used here.

MINNESOTA POWER

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0500
Schedule: A
Subpart: N/A

Description: Estimated system average incremental energy costs by seasonal peak and off-peak periods for each of the next five years.

(Continued from Page 1 of 13)

Estimated Incremental Energy Costs

	On-Peak (¢/kWh)	Off-Peak (¢/kWh)
2015	**[TRADE SECRET INFORMATION EXCISED]**	
2016		
2017		
2018		
2019		

To determine system average incremental costs for all hours, a weighted average of the on-peak and off-peak energy costs was developed. The total number of hours in the on-peak period of the year was multiplied by the appropriate on-peak avoided energy cost. The total number of hours in the off-peak period of the year was multiplied by the appropriate off-peak avoided energy cost. The results for the on-peak and off-peak periods were summed and then divided by the total number of hours in the year.

Derivation of Adjusted Energy Costs

The energy costs derived on the previous page were adjusted for 50% of the line losses shown in Minn. Rule 7835.0600, subp. 4 and Minnesota Public Utilities Commission approved environmental externalities. Fifty percent of the line losses was 5.2472%.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0600
Schedule: B
Subpart: 2

Description: Description of all planned utility generating facility additions anticipated during the next ten years.

Minnesota Power's last approved integrated resource plan was approved by the Minnesota Public Utilities Commission ("Commission") in an Order dated November 12, 2013 (Docket No. E015/RP-13-53). The 2013 resource plan includes an updated load and capability forecast and the planned utility generation facility additions for the next ten years. At the time of this filing Minnesota Power added wind generation in the North Dakota region, identified solar projects and plans to expand its biomass facilities generation facilities over the next ten years to meet the Minnesota Renewable Energy and Solar Standards – Minn. Stat. § 216B.1691. Per the company's resource plan, the Bison 4 Wind Project was filed and approved with the MPUC through Docket No. E-015/M-13-907, and will be commissioned in 2015. Minnesota Power continues to refine the size, type and timing of an efficient natural gas resource to be implemented in the 2020 time period.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0600
Schedule: B
Subpart: 3

Description: Description of all planned firm capacity purchases, other than from qualifying facilities, during the next ten years.

As part of its low-cost supply obligations and its bulk power marketing effort, Minnesota Power is continually seeking off-system purchase opportunities.

MINNESOTA POWER

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0600
Schedule: B
Subpart: 4

Description: Utility's overall average percentage of line losses due to the distribution, transmission and transformation of electric energy.

Minnesota Power's overall average percentage of line losses is 10.4943%.

Refer to Minn. Rule 7835.1000, Schedule G for determination of percentage of line losses.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0600
Schedule: B
Subpart: 5 & 6

Description: The utility's net annual avoided capacity cost stated in dollars per kilowatt-hour averaged over the on-peak hours and the utility's net annual avoided capacity cost stated in dollars per kilowatt-hour over all hours.

Minnesota Power's net annual avoided capacity cost associated with planned capacity purchases is **[TRADE SECRET DATA EXCISED]**/kW-year.

A. The annual capacity purchase amount, in dollars per kilowatt, for the utility's next planned capacity purchase, other than from a qualifying facility, must be discounted to present value as of the midpoint of the reporting year, from the year of the planned capacity purchase. The discount rate used must be the incremental cost of capital.

Net annual avoided capacity cost stated in dollars per kilowatt at present value:

[TRADE SECRET DATA EXCISED]/kW year

B. The net annual avoided capacity cost calculated in item A must be multiplied by 1.1132 to recognize a reserve margin:

[TRADE SECRET DATA EXCISED]/kW-year

C. The figure determined from the calculation of item B must be increased by one-half of the percentage amount of the average system line losses, as shown on Schedule B:

[TRADE SECRET DATA EXCISED]/kW-year

MINNESOTA POWER

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0600
Schedule: B
Subpart: 5 & 6

Description: The utility's net annual avoided capacity cost stated in dollars per kilowatt-hour averaged over the on-peak hours and the utility's net annual avoided capacity cost stated in dollars per kilowatt-hour over all hours.

(Continued from Page 6 of 13)

D. The annual dollar per kilowatt figure, as calculated in accordance with item C, must be divided by the annual number of hours in the on-peak period, as specified in Schedule A. The resulting figure is the utility's net annual on-peak avoided capacity cost in dollars per kilowatt-hour.

[TRADE SECRET DATA EXCISED]/kWh or

[TRADE SECRET DATA EXCISED]¢/kWh (on-peak)

E. The annual dollar per kilowatt figure, as calculated in accordance with item C, must be divided by the annual number of hours in the year. The resulting figure is the utility's net annual avoided capacity cost in dollars per kilowatt-hour, averaged over all hours.

[TRADE SECRET DATA EXCISED]/kWh or

[TRADE SECRET DATA EXCISED]¢/kWh (annual)

MINNESOTA POWER

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0650
Schedule: C
Subpart: N/A

Description: Calculation of average retail utility energy rates.

	Residential	General Service	Large Light & Power
Annual Class Revenue - The Sale of Electricity	$ 102,178,764	$ 63,499,574	$ 109,946,808
Annual Class Revenue - Fixed Charges	$ 10,561,847	$ 2,423,873	$ 899,980
Annual Class Revenue - Excluding Fixed Charges	$ 91,616,916	$ 61,075,702	$ 109,046,828
Annual Class kWh	990,162,085	623,178,037	1,420,177,278
Average Retail Utility Energy Rate (cents/kWh)	9.25	9.80	7.68

Notes: The revenues and kWh are based on the 12-month period ending October 2014.

The Fixed Charge Revenues reflect revenues from service charges only.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0700
Schedule: D
Subpart: N/A

Description: All standard contracts to be used with qualifying facilities, containing applicable terms and conditions.

For those facilities less than 40 kW, the uniform statewide contract under the Minnesota Public Utilities Commission Rules governing Cogeneration and Small Power Production, Part 7835.9910 shall apply. A copy of Minnesota Power's rules, regulations and policies are attached. They are:

Appendix A - Minnesota Power's Electric Service Regulations.

Appendix B - Process and Technical Documents from In the Matter of the Petition of Minnesota Power for Approval of Rider for Distributed Generation Service and Rider for Standby Services, Order dated November 7, 2005, Docket No. E-015/M-04-2030.

Plus any interconnection standards as may be required by Minnesota Power.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0800
Schedule: E
Subpart: N/A

Description: Utility's safety standards, required operating procedures for interconnected operations, and the functions to be performed by any control and protective apparatus.

1. The Seller will be required to pay for any change or new equipment required on the Company's system due to increased fault current levels, increased load levels, increased feeder current unbalance, or special operating conditions caused by Seller.

2. A Seller's generator shall operate within the following limits:

   A. Power factor not less than 85% leading or lagging.
   B. Flicker not to exceed the limitations set forth in ANSI/IEEE Standard 141-1993.
   C. Harmonic distortion not to exceed the limits set forth in IEEE Standard 519.
   D. Voltage regulation within the limits normally experienced without the Seller's generator in use.

3. The following is the minimum protection required at the interconnection between Seller and Company:

   A. Time overcurrent
   B. Over and under frequency (±1 Hz)
   C. Over and under voltage (105v & 130v on a 120v base)

   The Seller is responsible for all other equipment necessary to protect his equipment from faults, over and under voltage, single phasing, frequency deviations, or other system disturbances.

4. The Seller's generator shall be capable of tripping off for all faults on the line between Company's system and Seller's generator or on the Seller's generating equipment within 9 cycles, so as to not interfere with Company instantaneous reclosing.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0800
Schedule: E
Subpart: N/A

Description: Utility's safety standards, required operating procedures for interconnected operations, and the functions to be performed by any control and protective apparatus.

(Continued from Page 10 of 13)

5. The Seller's breaker or disconnect device used for tripping off the Seller's generator during fault conditions must be sized to adequately interrupt the full fault current of the generator or the fault current available from the utility, whichever is greater.

6. Fuses shall not be allowed as a means of overcurrent protection on three-phase generators.

7. Except in rare instances, all generators of Sellers shall be isolated from utility- owned equipment by a power transformer. The transformer shall be connected in such a manner as to isolate the zero sequence circuit of the Seller from Company's zero sequence circuit.

8. Since there are often unique circumstances associated with generation additions, the design should be reviewed and approved by Minnesota Power or be designed with Minnesota Power participation.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.0900
Schedule: F
Subpart: N/A

Description: Procedures for notifying affected qualifying facilities of any periods of time when the utility will not purchase electric energy or capacity because of extraordinary operational circumstances which would make the costs of purchases during those periods greater than the costs of internal generation.

Affected qualifying facilities will be notified of any period of time when Minnesota Power will not purchase electric energy or capacity, because of extraordinary operational circumstances which would make the costs of purchases during those periods greater than the costs of internal generation, by means of a letter or telephone call, if reasonable.

Minnesota Public Utilities Commission

Rules Governing Cogeneration & Small Power Production

Filing Requirements

Part: 7835.1000
Schedule: G
Subpart: N/A

Description: Describe all computations made by the utility in determining Schedules A and B.

Schedule B - Subpart 4

Derivation of utility's overall average percentage of line losses:

Line losses were derived from MP Retail Docket No. E-015/GR-09-1151. They are summarized as follows:

	Line Losses
Distribution	5.23%
Distribution Bulk Delivery	0.78%
Transmission	4.19%

Average overall line losses were derived as follows:

(1 + Average Overall Line Losses) = (1 + Distribution Losses) x (1 + Distribution Bulk Delivery Losses) x (1 + Transmission Losses) = 1.0523 x 1.0078 x 1.0419 = 1.104943

Average Overall Line Losses = 0.104943 or 10.4943%

NOTICE TO COGENERATORS
AND
SMALL POWER PRODUCERS

In accordance with Minn. Rule 7835.4600, Contents of Written Notice, Minnesota Power will notify each of its customers within 60 days following each annual filing required by parts 7835.0300 to 7835.1200. The following notice will be published in Minnesota Power's February/March Energizer pamphlet, which will be mailed with every customer bill during the month of February 2015:

DO YOU GENERATE YOUR OWN ELECTRICITY?

The Minnesota Public Utilities Commission (MPUC) requires Minnesota Power to buy all electric energy that qualified facilities offer for sale. The rules apply to small power producers who use renewable resources and cogenerators who produce electricity and steam. Disputes that might arise over interconnections, sales or purchases of power will be resolved by the MPUC.

You can obtain more information by contacting Minnesota Power.

RIDER FOR PARALLEL GENERATION

APPLICATION

Applicable to cogenerator or small power producers rated at 100 kW or less.To any customer taking single or three phase service under one of the Company's standard electric rate schedules and who has entered into a contract with the Company for the sale of electricity as a cogenerator or small power producer (Seller) as defined under State or Federal Law.

RATE (Monthly)

The following charges and credits are applicable in addition to all charges for service being taken under Company's standard rate schedule:

I. Sellers with facilities rated at less than 40 kW shall have the option of selling to Company under either the Net Energy Billing Rate, the Simultaneous Purchase and Sale Rate or the Time-of-Day Purchase Rate. The Rate selected shall be as specified in the Cogeneration and/or Small Power Production Facilities Agreement between Seller and Minnesota Power.

A. Net Energy Billing Rate

Net Energy shall be the difference between all kWh's supplied by the Company to the Seller and those generated by the Seller and fed back into the Company's distribution system as surplus energy during the month. Seller shall be billed on Company's standard applicable rate schedule based on the amount of net energy "to Seller" or based on zero kWh's where the amount of Net Energy is "to Company." In addition, if the amount of Net Energy is "to Seller," Seller shall be subject to the following Service Charge; or, if the amount of Net Energy is "to Company," Seller shall be subject to the following Service Charge and Energy Credit:

Service Charge (Monthly)
$2.550.48

Energy Credit
9.258.70¢ per kWh of Net Energy - Residential Customers
9.808.74¢ per kWh of Net Energy - General Service Customers
7.687.15¢ per kWh of Net Energy - Large Light & Power Customers

B. Simultaneous Purchase and Sale Rate

The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller

RIDER FOR PARALLEL GENERATION

will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$2.550.48
Energy and Firm Power Capacity Credit
3.242.93¢ per kWh delivered to Company during period

C. Time-of-Day Purchase Rate
The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company may require those facilities that choose to sell power on a time-of-day basis to also purchase power on a time-of-day basis. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$2.550.48
Energy and Firm Power Capacity Credit
3.823.56¢ per kWh delivered to Company during On-Peak periods.
2.732.40¢ per kWh delivered to Company during Off-Peak periods.

II. Facilities rated at 40 kW or greater and less than or equal to 100 kW shall be subject to the following Time-of-Day Purchase Rate.

A. Time-of-Day Purchase Rate
The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company may require those facilities that choose to sell power on a time-of-day basis to also purchase power on a time-of-day basis. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$3.570.48

Energy and Firm Power Capacity Credit
3.823.56¢ per kWh delivered to Company during On-Peak periods.
2.732.40¢ per kWh delivered to Company during Off-Peak periods.

DEFINITION OF PEAK PERIODS

On-Peak periods shall include all hours between 7 a.m. and 10 p.m. Monday through Friday excluding holidays. Off-Peak periods shall include all hours not included in On-Peak periods.

RIDER FOR PARALLEL GENERATION

APPLICATION

Applicable to cogenerator or small power producers rated at 100 kW or less.To any customer taking single or three phase service under one of the Company's standard electric rate schedules and who has entered into a contract with the Company for the sale of electricity as a cogenerator or small power producer (Seller) as defined under State or Federal Law.

RATE (Monthly)

The following charges and credits are applicable in addition to all charges for service being taken under Company's standard rate schedule:

I. Sellers with facilities rated at less than 40 kW shall have the option of selling to Company under either the Net Energy Billing Rate, the Simultaneous Purchase and Sale Rate or the Time-of-Day Purchase Rate. The Rate selected shall be as specified in the Cogeneration and/or Small Power Production Facilities Agreement between Seller and Minnesota Power.

A. Net Energy Billing Rate

Net Energy shall be the difference between all kWh's supplied by the Company to the Seller and those generated by the Seller and fed back into the Company's distribution system as surplus energy during the month. Seller shall be billed on Company's standard applicable rate schedule based on the amount of net energy "to Seller" or based on zero kWh's where the amount of Net Energy is "to Company." In addition, if the amount of Net Energy is "to Seller," Seller shall be subject to the following Service Charge; or, if the amount of Net Energy is "to Company," Seller shall be subject to the following Service Charge and Energy Credit:

Service Charge (Monthly)
$2.55

Energy Credit
9.25¢ per kWh of Net Energy - Residential Customers
9.80¢ per kWh of Net Energy - General Service Customers
7.68¢ per kWh of Net Energy - Large Light & Power Customers

B. Simultaneous Purchase and Sale Rate

The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller

RIDER FOR PARALLEL GENERATION

will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$2.55
Energy and Firm Power Capacity Credit
3.24¢ per kWh delivered to Company during period

C. Time-of-Day Purchase Rate
The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company may require those facilities that choose to sell power on a time-of-day basis to also purchase power on a time-of-day basis. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$2.55
Energy and Firm Power Capacity Credit
3.82¢ per kWh delivered to Company during On-Peak periods.
2.73¢ per kWh delivered to Company during Off-Peak periods.

II. Facilities rated at 40 kW or greater and less than or equal to 100 kW shall be subject to the following Time-of-Day Purchase Rate.

A. Time-of-Day Purchase Rate
The Seller shall be billed for all energy and capacity it consumes during each billing period according to the Company's applicable retail rate schedule. The Company may require those facilities that choose to sell power on a time-of-day basis to also purchase power on a time-of-day basis. The Company shall purchase all energy and capacity which is made available to it by the Seller. The Seller will be subject to the following Service Charge and Energy and Firm Power Capacity Credit:

Service Charge (Monthly)
$3.57

Energy and Firm Power Capacity Credit
3.82¢ per kWh delivered to Company during On-Peak periods.
2.73¢ per kWh delivered to Company during Off-Peak periods.

DEFINITION OF PEAK PERIODS

On-Peak periods shall include all hours between 7 a.m. and 10 p.m. Monday through Friday excluding holidays. Off-Peak periods shall include all hours not included in On-Peak periods.

STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS	)	

Susan Romans of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 29th day of December, 2014, she served Minnesota Power's Cogeneration and Small Power Production Regulations Petition in Docket No. E999/PR-13-09 to the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing.

Susan Romans

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Susan Romans

ATTACHMENT 1

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

PURPOSE AND CONTENTS

These Service Regulations govern the supplying and taking of electric service. The regulations are designed to provide each Customer the greatest practicable latitude in the use of service consistent with reliable, economical and safe service to all Customers.

These Service Regulations, together with Extension Rules and Rate Schedules, are on file in the Company's various offices, and copies are obtainable by any Customer upon request by telephone, by mail, or www.mnpower.com.

Approved by: Marcia A. Podratz
Marcia A. Podratz
Director - Rates

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

PURPOSE AND CONTENTS

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

SECTION I - DEFINITIONS

The following terms when used in these Service Regulations, in Rate Schedules and in Service Agreements, shall, unless otherwise indicated, have the meanings given below:

1. **Customer:** Any individual(s), partnership, association, firm, public or private corporation or governmental agency having Company's electric service at any specified location.

2. **Company:** Minnesota Power.

3. **Electric Service:** The supplying of electric power and energy, or its availability, irrespective of whether any electric power and energy is actually used. Supplying of service by Company consists of the maintaining by it, at the point of delivery, of approximately the agreed voltage and frequency by means of facilities adequate for carrying Customer's contracted load.

4. **Point of Delivery:** The end of Company's service drop, or the point where Company's wires are joined to Customer's service entrance conductors or apparatus, unless otherwise specified in Customer's Service Agreement.

5. **Customer's Installation:** In general, all wiring, appliances and apparatus of any kind or nature on Customer's side of the point of delivery (except Company's meter installation), useful in connection with Customer's ability to take electric service.

6. **Service Drop:** The wires, owned by Company, connecting Company's distribution mains to Customer's service entrance conductors.

7. **Service Entrance Conductors:** The wires provided by the Customer extending from Customer's main line switch or center at which circuits originate, to the terminal of the Company's service drop.

8. **Month:** An interval of approximately thirty days between successive meter reading dates, except when the calendar month is specified.

9. **Service Agreement:** The agreement or contract between Company and Customer pursuant to which service is supplied and taken.

10. **Notice:** Unless otherwise specified, a written notification delivered personally or mailed by one party to the other at such other party's last known address, the period of notice being computed from the date of such personal delivery or mailing.

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

11. **Meter:** The meter or meters, together with auxiliary devices, if any, constituting the complete installation needed to measure and report the power and energy supplied to any Customer at a single point of delivery.

12. **Customer Extension:** Any branch from, or continuation of, an existing line to the point of delivery to Customer, including increases in capacity of any of Company's existing facilities, or the changing of any line to meet the Customer's requirements, and including all transformers, service drops and meters.

SECTION II - SERVICE AGREEMENTS

13. **Form and Execution of Service Agreements:** Each application for service normally is made on Company's standard form of application, which, when properly executed by Customer and Company, becomes binding and along with the applicable Rate Schedules, Rules and Regulations, is termed a Service Agreement. Any Service Agreement referred to herein is subject to amendment or change by Company. Any such amendment or change to a Service Agreement may be subject to acceptance or approval by any regulatory body having jurisdiction thereof and upon acceptance or approval will automatically apply to any executed Service Agreement.

If for any reason an application is not signed by the Customer, the giving of service by the Company and the accepting of such service by all Customers receiving service shall impose the same obligation on each as if a Service Agreement had been executed.

14. **Contract Period of Service Agreements:** The contract period shall be as indicated in the applicable Rate Schedule, unless otherwise provided for in the Service Agreement.

15. **Renewal and Termination of Service Agreements:** Renewals shall be as provided for in the Service Agreement. Unless otherwise provided in the Service Agreement or Rate Schedule, Customer may terminate service at any time by notifying Company not less than three days prior to the date termination is desired. Customer will be held responsible for all service supplied to vacated premises until such notice has been received by Company. Notification may be made by writing, by telephone, mail or by visiting the Company's website at www.mnpower.com.

When the contract period of a Service Agreement is extended, the demand previously established by Customer is considered as having been established under the extended contract period.

When a new Service Agreement is entered into, the demand previously established by Customer is considered as having been established under the contract period of the new

Service Agreement except that, when the contract demand under the new Service Agreement is less than 60% of the highest actual demand established in the previous contract year, the Company will waive the above requirement.

16. **Company's Right to Cancel Service Agreement or to Suspend Service:** Company, in addition to all other legal remedies, may terminate the Service Agreement, or suspend delivery of service, for any default or breach of the Service Agreement by the Customer, but no such termination or suspension will be made by Company without five (5) days written notice, excluding Sundays and legal holidays, to Customer, stating in what particular the Service Agreement has been violated, except in cases of unlawful or unauthorized use of service by Customer, or dangerous leakage or short circuit on Customer's side of the point of delivery, or in case of utilization by Customer of service in such manner as to cause danger to persons or property. Failure of Company at any time to either suspend delivery of service or to terminate the Service Agreement, or to resort to any other legal remedy, or its adoption of either one or the other of such alternatives, shall not affect Company's right to resort to any of such remedies for the same or any future default or breach by Customer.

17. **Successors and Assigns:** Service Agreements inure to the benefit of and are binding upon the respective heirs, legal representatives, successors and assigns of the parties thereto; but no assignment by Customer shall be binding upon Company until accepted in writing by the latter.

SECTION III - SUPPLY AND TAKING OF SERVICE

18. **Supplying of Service:** Service is supplied only under and pursuant to these Service Regulations and the applicable Rate Schedule, Riders, and Regulatory Rules. Service is supplied under a given Rate Schedule only at such points of delivery as are adjacent to facilities of Company adequate and suitable, as to capacity and voltage, for the service desired.

Service will be subject to disconnection and deposit requirements as provided by rules of the Minnesota Public Utilities Commission and other applicable law, if, at the time of application for service, the Customer is indebted to the Company for service previously supplied at the same or another address.

19**. Disconnection of Service:**

A. With Notice - Service may be disconnected with notice for any reason under Minn. Rules Part 7820.1000 or as may otherwise be provided in Company's Service Regulations, Service Schedules or Service Agreements.

B. Without Notice - Service may be disconnected without notice for any reason under Minn. Rules Part 7820.1100 or as may otherwise be provided in Company's Service Regulations, Service Schedules or Service Agreements.

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

20**. Reconnection of Service:** Company shall reconnect service following disconnection for non-payment only after all past due accounts, deposits and reconnection fees, where applicable, shall have been paid.

A. The Service Reconnection Fee shall be as follows:

i. $20.00 between the hours of 8:00 AM and 4:30 PM Monday through Friday.

ii. $100.00 after 4:30 PM, before 8:00 AM and on Saturdays, Sundays and legal holidays.

B. Where service has been disconnected under Minn. Rules Part 7820.1100.B., a reconnection fee will not be required.

C. Following disconnection under Minn. Rules 7820.1100.A., reconnection will occur only after Company has received payment from Customer of the following:

i. Power and energy not recorded on the meter at the appropriate rate, the amount of which may be estimated by Company based on the best available data.

ii. All expenses incurred by Company due to any such unauthorized act or acts.

21**. Service Relock Penalty:**

A. Company shall assess a Service Relock Penalty of $100 where the Company has previously disconnected service and is required to subsequently return to relock or disconnect the service after it was connected by a Customer without Company authorization.

B. Company shall assess a penalty for all expenses incurred if additional disconnection of service is required at Customer premises.

C. In the event of any loss or damage to such property of Company or other person caused by or arising out of carelessness, neglect or misuse by Customer or other unauthorized persons, the cost of making good such loss or repairing such damage shall be paid by Customer.

22. **Continuity of Service:** Company will endeavor to provide continuous service but does not guarantee a constant supply of electric energy and shall not be liable to Customer for damages occasioned by interruption, except as provided by law. The Company shall not be liable for any loss of profits, special, or consequential damages resulting from the use of service or any interruption or disturbance of service.

In the event of power shortage any curtailment among Customers shall be made as nearly as practical pro rata without liability on the part of Company to any Customer affected.

If any part of service furnished by Company is employed for purpose of pumping water, Company assumes no obligation to maintain an adequate supply for fire protection, or any other purpose, whatsoever, and such use shall not subject Company to any liability to any party for damages to person or property due to failure of water supply resulting from an interruption or deficiency of electric service from whatsoever cause the same may arise.

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

23. **Suspension of Service for Repairs and Changes:** When necessary to make repairs to or changes in its lines or system, Company may, without incurring any liability therefore, suspend service for such periods as may be necessary, and in such manner as to minimize inconvenience to Customer.

24. **Use of Service:** Service is for Customer's use only. Company permits redistribution and submetering only where allowed by law. The electric service equipment and associated building wiring of buildings shall be arranged by the owner to permit individual metering of the electrical consumption of each building and occupancy unit to comply with Minn. Stat. 504B.161 and any law amendatory thereto. If desired by the owner, the Company will install and maintain necessary individual Company meters to measure consumption and render bills on the applicable Rate Schedules to each Customer and separately occupied building and occupancy unit.

In no case may Customer, except with the written consent of Company, extend or connect an installation to lines across or under a street, alley, lane, court or avenue or other public or private space in order to obtain service for adjacent property through one meter even though such adjacent property be owned by Customer. Such consent may be given when such adjacent properties are operated as one integral unit under the same name and for carrying on parts of the same business. In case of unauthorized remetering, sale or extension of service to another person, Company, after five (5) days written notice excluding Sundays and legal holidays, may discontinue the supplying of service to Customer until such unauthorized act is discontinued and full payment is made for all service supplied or used, billed on proper classification and Rate Schedule, and reimbursement in full made to Company for all extra expenses incurred, including expenses for clerical work, testing and inspections.

25. **Customer's Responsibility:** Customer assumes all responsibility on Customer's side of the point of delivery for the service supplied or taken, as well as for the electrical installation, appliances and apparatus used in connection therewith, and shall save Company harmless from and against all claims for injury or damage to persons or property occasioned by or in any way resulting from such service or the use thereof on Customer's side of the point of delivery.

26. **Right-of-Way:** Customer shall, without compensation, make or procure satisfactory conveyance to Company of right-of-way for Company's lines necessary and incidental to the furnishing of service to Customer and for continuing or extending said lines over, under, across or through the property owned or controlled by Customer in a manner deemed appropriate by the Company.

27. **Access to Premises:** Company personnel may enter Customer's premises only as authorized by applicable law and regulations. Failure of Customer to provide Company reasonable access may result in disconnection of service under Minn. Rules Part 7820.1000(E).

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

28. **Location of Point of Attachment:** Customer's Point of Attachment is to be located at a point readily accessible to Company's distribution mains. Customer shall install and maintain a point of attachment for Company's service drop. Said point of attachment shall be of sufficient mechanical strength to support the wind and ice loaded weight of the service drop and shall be located as determined by the Company.

SECTION IV - CUSTOMER'S INSTALLATION

29. **Nature and Use of Installation:** All of Customer's wires, apparatus and equipment shall be selected with the view to obtaining safety, good efficiency, good voltage regulation and the highest practicable power factor and shall be installed in accordance with standard practices. Customer shall install and maintain, on Customer's side of point of delivery, suitable protective equipment as may be required by the Company for the protection of its service to other customers and may not employ or utilize any equipment, appliance or device so as to affect adversely Company's service to Customer or to others. The Company's failure to require such equipment shall not operate to relieve Customer from the obligation to utilize and comply with standard practices. Company may require auto starters or other suitable starting devices for motors above 5 horsepower. When polyphase service is supplied by Company, Customer shall control the use thereof so that the load at the point of delivery will be maintained in reasonable electrical balance between the phases.

Installations of neon, fluorescent, mercury vapor lamps or tubes, or other types of gaseous tube lamps, or other devices having low power factor characteristics, should be equipped with corrective apparatus to increase the power factor of each unit or separately controlled group of units to not less than approximately 90% lagging.

30. **Inspection by Company:** Company retains the right, but does not assume the duty, to inspect Customer's installation at any time and will refuse to commence or to continue service whenever it does not consider such installation to be in good operating condition, but Company does not in any event assume any responsibility whatever in connection with such matters.

31. **Changes in Installations:** As Company's service drops, transformers, meters, and other facilities used in supplying service to Customer have a definite limited capacity, Customer shall give notice to Company, and obtain Company's consent, before making any material changes or increases in Customer's installation. Company as promptly as possible after receipt of such notice will give its approval to the proposed change or increase, or will advise Customer upon what conditions service can be supplied for such change or increase. Failure to secure Company's approval shall make Customer liable for any damage to Company's facilities.

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SECTION V - COMPANY'S INSTALLATION

32. **Installation and Maintenance:** Except as otherwise provided in these Service Regulations, in Service Agreements or Rate Schedules, Company will install and maintain its lines and equipment on its side of the point of delivery, but shall not be required to install or maintain any lines or equipment, except meters, on Customer's side of the point of delivery. Only Company's agents are authorized to connect Company's service drop to Customer's service entrance conductors and to connect Company's meters.

(a) Electrical Permit: The Company is prohibited from connecting its service drop to Customer's service entrance conductors until permitted by the governmental authority having jurisdiction.

(b) Standard Connection: The ordinary method of connection between Company's distribution mains and Customer's service entrance conductors will be by overhead wires. If Customer desires to have connection made in any other manner, special arrangements will be made between Customer and Company by which the connection will be made and maintained at Customer's expense.

(c) Suitable Space: The Customer shall provide at no cost to Company a suitable room or space for Company's transformers and equipment specifically used in providing service to Customer when such room or space is deemed necessary by Company.

33. **Protection by Customer:** Customer shall protect Company's wiring and apparatus on Customer's premises and shall permit no one except Company's agents or persons authorized by law to inspect or handle same. In the event of any loss or damage to such property of Company or other person caused by or arising out of carelessness, neglect or misuse by Customer or other unauthorized persons, the cost of making good such loss or repairing such damage shall be paid by Customer.

Company shall not be responsible to Customer or any other party because of any damage resulting from such installations which are not readily subject to inspection from the ground and the exterior of the premises, or from the meter location, unless Customer shall have notified Company of a condition which, in the reasonable opinion of the Customer, requires attention and the Company shall have had a reasonable time within which to inspect and, if necessary, repair the same.

34. **Customer Extensions:** The Company, at its own expense, makes extensions where the revenue therefrom is sufficient, in Company's opinion, to justify the necessary expenditure.

Where the Company cannot be assured that the business offered is of sufficient duration, where unusual expenditures are necessary to supply service because of location, size or character of installation, or where area requirements of regulatory bodies may control, the Customer or Customers shall make arrangements satisfactory to Company dependent upon the particular conditions of each situation.

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35. **Alteration of Facilities:** Company will, at its discretion, alter, relocate, convert to underground, or remove Company's facilities as may be requested in writing by Customer. Customer shall pay Company for all costs, except as limited below, associated with such alteration, relocation, conversion to underground, or removal including any new facilities required to provide service after the alteration, relocation, conversion, or removal.

Customers requesting the alteration, relocation, conversion, or removal shall pay the estimated cost for the change, less salvage, of the facilities required to effect such change prior to Company committing funds for the work. Where the actual cost is different from the estimated cost upon which the advance payment was based, as determined upon completion of the requested alteration, relocation, or removal, Company will refund any excess payment made by Customer or render a bill for any additional amount due. However, where Company's estimated cost is less than $5,000, and actual cost exceeds such estimate, the additional amount due by Customer shall not exceed 15 percent of the estimate, regardless of the amount of actual cost.

SECTION VI - METERING

36. **Installation:** Company shall furnish and install the necessary meter or meters, and Customer shall provide and maintain a location, free of expense and satisfactory to Company, all in accordance with Company's Metering Standards.

37. **Evidence of Consumption:** Unless proven to be inaccurate, the registration of Company's meter shall be accepted and received at all times and places as prima facie evidence of the amount of power and energy taken by Customer.

38. **Tests:** Company tests its meters and maintains their accuracy of registration in accordance with good practice. On request of Customer, Company will make a special test which will be done at the expense of the Company. If the Customer requests another test before the expiration of a twelve-month period, the Customer shall bear the cost of the test if the meter is found to be in error by less than 2%, fast or slow. The average registration accuracy of a meter is taken as the mean of full load (100% of rated load) accuracy, and light load (5-10% of rated load) accuracy. At Company's discretion, tests may be made under average load conditions.

SECTION VII - PARALLEL GENERATION

39. **Design:** Customer's electric generating equipment shall be designed (1) to operate in synchronization with Company's system and (2) to automatically disconnect the facility from Company's system in the event Company's system becomes de-energized. All synchronizing and protective devices to accomplish this mode of operation shall be provided and maintained by Customer.

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

40. **Disconnection:** Customer shall provide and maintain a manual, lockable disconnect switch providing a visible open and capable of isolating the Customer's generator from the Company's electrical system. This disconnect switch shall be readily accessible to Company personnel at all times, shall include a provision for padlocking it in the open position, and shall meet all other reasonable requirements established by Company.

41. **Customer Responsibility:** Customer shall pay for the cost of rebuilding and/or modifying Company facilities to provide adequate capacity for the parallel generation system and adequate protection for the Company's electrical system.

Customer shall be subject to Company's Safety Standards and Interconnection Requirements Applicable to Cogenerators and/or Small Power Producers of Minnesota Power as filed annually with the Commission. Copies of such standards shall be made available to Customer upon request and are available at www.mnpower.com.

SECTION VIII - BILLING

42. **Billing Periods:** Bills ordinarily are rendered regularly at monthly intervals, but may be rendered more or less frequently at Company's option. Non-receipt of bills by Customer does not release or diminish the obligation of Customer with respect to payment thereof.

43. **Separate Billing for Each Point of Delivery:** At each point of delivery the use of service is metered separately for each Customer served. Whenever for any reason Company furnishes two or more meter installations for a single Customer, or supplies service under a Rate Schedule which does not require a meter, each point of metering and/or point of delivery where no meter is required is considered as a separate service. A separate Service Agreement is required, and bills are separately calculated, for each such separate service, except where Company may, under special circumstances, waive this requirement.

44. **Adjustment for Inaccurate Meter Registration:**

Meter too fast or too slow: In the event that any routine or special test of a Company meter discloses its average accuracy of registration to be in error by more than 2%, fast or slow, Company will refund the overcharge for a fast meter or charge for electricity consumed, but not included in the bills previously rendered for a slow meter. The refund or charge for both fast and slow meters will be based on corrected meter readings for a period equal to one-half the time elapsed since the last previous test but not to exceed six (6) months, unless it can be established that the error was due to some cause, the date of which can be fixed with reasonable certainty, in which case the refund or charge will be computed to that date, but in no event for a period longer than one (1) year.

ELECTRIC SERVICE REGULATIONS of MINNESOTA POWER

Whenever any bill or bills have been adjusted or corrected as provided above, the Company will refund to existing Customer any amount due when the amount due exceeds one ($1) dollar or to previous Customer any amount due when the amount due exceeds two ($2) dollars or Company will bill Customer for any amount owed when the amount owed exceeds ten ($10) dollars, as the case may be.

Meter fails to register or registers intermittently: When the average error cannot be determined by test because the meter is not found to register or is found to register intermittently, the Company may charge for an estimated amount of electricity used, which shall be calculated by averaging the amounts registered over corresponding periods in previous years or in the absence of such information, over similar periods of known accurate measurement preceding or subsequent thereto, but in no event shall such charge be for a period longer than one year.

If a Customer has called to the Company's attention doubts as to the meter's accuracy and the Company has failed within a reasonable time to check it, there shall be no back billing for the period between the date of the Customer's notification and the date the meter was checked.

45. **Late Payment Charge:** Company shall assess a Late Payment Charge of 1-1/2% or $1.00 per monthly billing period, whichever is greater, on that portion of a retail Customer's account representing charges for Company service(s) past due, if the unpaid balance exceeds $10.00. All late payments received will be credited against the oldest outstanding account balance before the application of any Late Payment Charge. The unpaid Company account balance for a Customer under the Budget Billing Plan or another Company approved payment plan shall mean that the Company budget arrears balance and not the accumulated actual Company balance will be subject to a Late Payment Charge. No Late Payment Charge will be charged on the portion of the Company balance in dispute while dispute procedures are underway. A Late Payment Charge may be retroactively charged on the settled amount after dispute procedures are completed. At Company's discretion, any Late Payment Charge, or portion thereof, may be waived provided such waiver is consistent with the Minnesota Public Utilities Act.

A. **Residential customer**: A Late Payment Charge shall be added to any Company account for which payment is not received and credited by Company by the next scheduled billing date. Residential customer who qualifies for assistance under the Low Income Home Energy Assistance Program (LIHEAP) may request waiver of the Late Payment Charge on the "current bill" portion of each monthly bill. Self-qualification using LIHEAP income guidelines will be permitted for Senior Citizens at age 62 or older. Efforts will be made by Company to work with local governmental agencies to pre-qualify Customers where administratively feasible. Customer accounts must be re-qualified annually.

B. **Nonresidential customer**: A Late Payment Charge shall be added to any Company account for which bill payment is not received and credited by Company within fifteen (15) days from the current billing date.

46. **Delinquent Bills:** Bills become delinquent if not paid on or before the past due date as shown on bill and service may be discontinued upon five (5) days written notice, excluding Sundays and legal holidays, to Customer after becoming delinquent. During the cold weather months, October 15 through April 15, service may be disconnected only as provided in section 60 and Minnesota Statutes, section 216B.096. For residential customers, such written notice of disconnection shall specify a disconnection date not earlier than the third working day after the next scheduled billing date.

47. **Unlawful Use of Service:** In any case of tampering with meter installation or interfering with the proper functioning thereof or any other unlawful use or diversion of service by any person, or evidence of any such tampering, interfering, unlawful use or service diversion, Customer is liable to immediate discontinuance of service, without notice, and to prosecution under applicable laws, and Company shall be entitled to collect from Customer at the appropriate rate for all power and energy not recorded on the meter by reason of such tampering, interfering, or other unlawful use or service diversion (the amount of which may be estimated by Company from the best available data), and also for all expenses incurred by the Company on account of such unauthorized act or acts.

48. **Charge for Restoring Service:** If service to Customer is discontinued by Company for valid cause, then before service is restored, Customer shall pay Company all permitted costs of discontinuing and restoring service. There will be no charge for reconnection when service has been discontinued in the event of a condition determined to be hazardous to Customer, to other Customers of Company, to Company's equipment, or to the public.

If Customer requests that service be discontinued and subsequently requests restoration of service at same premises within twelve (12) months of discontinuance, the charge for restoring service will be the sum of minimum bills during the elapsed period but not less than all costs of discontinuing and restoring service.

49. **Selection of Schedule:** The Company's Rate Schedules are designed for service supplied to Customer on a continuous annual basis. Customer may elect to take service under any of the Rate Schedules applicable to such service. Company will advise Customer of the Rate Schedules which, in its judgment, are best adapted to Customer's needs on an annual basis, but such advice must be based upon Customer's statements as to Customer's installation and requirements for service and Company assumes no responsibility for the selection of the Rate Schedule made by Customer. If Customer changes selection of a Rate Schedule, Customer may not go back to the previous Rate Schedule for a period of twelve (12)

months; provided, however, that a Large Light and Power Customer whose normal monthly firm demand is below 10,000 kW shall be billed on the Large Power Service Schedule in months in which its measured demand, as adjusted for power factor, exceeds 10,000 kW, and shall go back to the Large Light and Power Service Schedule when its demand falls below 10,000 kW. Rules applicable to specific Rate Schedules shall apply when Customer desires service on other than a continuous annual basis, or the term of service provision of the Rate Schedule is greater than one (1) year.

If, for any cause a Service Agreement is entered into in which is specified a Rate Schedule not applicable to the class of service taken, on discovery of the error all bills rendered during the preceding twelve (12) months will be recalculated in accordance with the properly applicable Rate Schedule and Company will refund to existing Customer any amount due, when the amount due exceeds one ($1) dollar or to previous Customer any amount due, when the amount due exceeds two ($2) dollars, or Company will bill Customer for any amount owed, when the amount owed exceeds ten ($10) dollars, as the case may be. If the amount due Company is not paid within ten (10) days from presentation of bill, or Customer does not agree to payment over a reasonable period of time, or Customer fails to sign a new Service Agreement, Company may, after five (5) days written notice excluding Sundays and legal holidays, disconnect service.

50. **Proration of Bills:** Bills for energy used during a billing period that is longer or shorter than the normal billing period by more than five (5) days shall be prorated on a daily basis, but no billing will be made for three (3) or less days when no energy is used. However, in no event will the total length of service between initial and final service be taken as less than one (1) month.

No bill will be prorated for change in operating level within the billing period.

51. **Company Billing Errors**: When a Customer has been overcharged or undercharged as a result of incorrect reading of the meter, incorrect application of rate schedule, incorrect connection of the meter, application of an incorrect multiplier or constant or other similar reasons, the amount of the overcharge shall be refunded to the Customer or the amount of the undercharge may be billed to the Customer as detailed in Minnesota Administrative Rules 7820.3800 subparts 2 through 4.

A. **Remedy for overcharge**. If a Customer was overcharged, the Company shall calculate the difference between the amount collected for service rendered and the amount the Company should have collected for service rendered, plus interest up to a maximum of three years from the date of discovery. Interest will be calculated as prescribed by Minnesota Statutes, section 325E.02(b). If the recalculated amount indicates that more than $1 is due an existing Customer or $2 is due a person no longer a Customer of the Company, the full amount of the calculated difference between the amount paid and the recalculated amount shall be refunded to the Customer.

B. **Remedy for undercharge.** If a Customer was undercharged, the Company shall calculate the difference between the amount collected for service rendered and the amount the Company should have collected for service rendered, for the period beginning one year before the date of discovery. If the recalculated amount due the Company exceeds $10, the Company may bill the Customer for the amount due. The Company must not bill any undercharge incurred after the date of a Customer inquiry or complaint if the Company failed to begin investigating the matter within a reasonable time and the inquiry or complaint ultimately resulted in the discovery of the undercharge.

C. **Exception if error date known.** If the date the error occurred can be fixed with reasonable certainty, the remedy shall be calculated on the basis of payments for service rendered after that date, but in no event for a period beginning more than three years before the discovery of an overcharge or one year before the discovery of an undercharge.

SECTION IX - DEPOSITS AND GUARANTEES

52. **When Required:** Company may require Customer to make a deposit or guarantee satisfactory to Company to secure the payment of bills as they become due. Specific conditions requiring deposits or guarantees are identified in Regulation 54. The amount of such deposit shall not exceed twice the average monthly bill of Customer as estimated by Company from Customer's statement in his or her application or as thereafter ascertained.

53. **When Refunded:** The deposit shall be refunded to Customer after twelve (12) consecutive months of prompt payment of all Company bills. Company may, at its option, refund the deposit by direct payment or as a credit on the bill. Upon termination of service, the deposit with accrued interest shall be credited to Customer's final bill and the balance, if any, shall be returned within forty-five (45) days to Customer with a written receipt as required under Minn. Stat. 325E.02(b).

54. **Interest on Deposits:** Interest shall be paid annually on all deposits at the rate specified by Minn. Stat. 325E.02(b) or other applicable laws of the State of Minnesota and will be applied against the electric service bill. Any unpaid interest at time of final settlement of Customer's accounts will be credited to Customer's accounts.

55. **Conditions Requiring a Deposit or Guarantee**: Company may require a deposit or guarantee of payment as condition of obtaining new service or continuing existing service under Minn. Rules Part 7820.4300, 7820.4400 or as may otherwise be provided below.

A. Customer has outstanding a prior utility service account with another electric or gas utility which at the time of request for service remains unpaid and not in dispute.

B. Information requested under Minn. Rules Part 7820.4300 or 7820.4400 is not provided within twenty (20) days of the request for service (except where Customer has sought but not yet received credit information from a prior utility).

C. Information provided pursuant to Minn. Rules Part 7820.4300 or 7820.4400 is determined to be false or erroneous.

56. **Conditional Service Prior to Establishment of Credit**: Conditional service shall be provided expeditiously upon receipt of an application for service, and for up to twenty (20) days until credit has been satisfactorily established. Conditional service may be disconnected immediately without notice if required information or a required deposit or guarantee has not been received twenty (20) days after Company's request.

SECTION X – COLD WEATHER RULE

57. **Applicability.** This section applies only to residential customers of the Company.

58. **Definitions.**

A. The terms used in this section have the meanings given them in Minnesota Statute, 216B.096.

B. "Cold weather period" means the period from October 15 through April 15 of the following year.

C. "Customer" means a residential customer of the Company.

D. "Disconnection" means the involuntary loss of Company heating service as a result of a physical act by the Company to discontinue service. Disconnection includes installation of a service or load limiter or any device that limits or interrupts Company service in any way.

E. "Household income" means the combined income, as defined in Minnesota Statutes 290A.03, subdivision 3, of all residents of the Customer's household, computed on an annual basis. Household income does not include any amount received for energy assistance.

F. "Reasonably timely payment" means payment within five working days of agreed-upon due dates.

G. "Reconnection" means the restoration of Company heating service after it has been disconnected.

H. "Summary of rights and responsibilities" means a Commission-approved notice that contains, at a minimum, the following:
   1) an explanation of the provisions of subdivision 5;
   2) an explanation of no-cost and low-cost methods to reduce the consumption of energy;
   3) a third-party notice;
   4) ways to avoid disconnection;
   5) information regarding payment agreements;
   6) an explanation of the Customer's right to appeal a determination of income by the Company and the right to appeal if the Company and the Customer cannot arrive at a mutually acceptable payment agreement, and a list of names and telephone numbers for county and local energy assistance, and weatherization providers in each county served by the Company.

I. "Third-party notice" means a commission-approved notice containing, at a minimum, the following information;

   1) a statement that the Company will send a copy of any future notice of proposed disconnection of Company heating service to a third party designated by the residential customer;
   2) instructions on how to request this service; and
   3) a statement that the residential customer should contact the person the Customer intends to designate as the third-party's name.

J. "Company" means Minnesota Power.

K. "Company heating service" means natural gas or electricity used as a primary heating source, including electricity service necessary to operate gas heating equipment, for the Customer's primary residence.

L. "Working days" means Mondays through Fridays, excluding legal holidays. The day of receipt of a personally served notice and the day of mailing a notice shall not be counted in calculating working days.

59. **Company obligations before cold weather period.** Each year, between September 1 and October 15, the Company must provide all Customers, personally or by first class mail, a summary of rights and responsibilities. The summary must also be provided to all new residential customers when service is initiated.

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60. **Notice before disconnection during cold weather period.** Before disconnecting Company heating service during the cold weather period, the Company must provide, personally or by first class mail, a commission-approved notice to a Customer, in easy-to-understand language, that contains, at a minimum, the date of the scheduled disconnection, the amount due, and a summary of right and responsibilities.

61. **Cold Weather Rule**

A. During the cold weather period, the Company may not disconnect and must reconnect Company heating service of a Customer whose household income is at or below 50 percent of the state median income if the Customer enters into and makes reasonably timely payments under a mutually acceptable payment agreement with the Company that is based on the financial resources and circumstances of the household; provided that, the Company may not require a Customer to pay more than ten percent of the household income toward current and past Company bills for Company heating service.
B. The Company may accept more than ten percent of the household income as the payment arrangement amount if agreed to by the Customer
C. The Customer or a designated third party may request a modification of the terms of a payment agreement previously entered into if the Customer's financial circumstances have changed or the Customer is unable to make reasonably timely payments.
D. The payment agreement terminates at the expiration of the cold weather period unless a longer period is mutually agreed to by the Customer and the Company
E. The Company shall use reasonable efforts to restore service within 24 hours of an accepted payment agreement, taking into consideration Customer availability.

62. **Verification of income**

A. In verifying a Customer’s household income, the Company may:
   1. accept the signed statement of a Customer that the Customer is income eligible;
   2. obtain income verification from a local energy assistance provider or a government agency;

3. consider one or more of the following:
    i. the most recent income tax return filed by members of the Customer's household;
    ii. for each employed member of the Customer's household, paycheck stubs for the last two months or a written statement from the employer reporting wages earned during the preceding two months;
    iii. documentation that the Customer receives a pension from the Department of Human Services, the Social Security Administration, the Veteran's Administration, or other pension provider; a letter showing the Customer's dismissal from a job or other documentation of unemployment; or
    iv. other documentation that supports the Customer's declaration of income eligibility.

B. A Customer who receives energy assistance benefits under any federal, state or county government programs in which eligibility is defined as household income at or below 50 percent of state median income is deemed to be automatically eligible for protection under this section and no other verification of income may be required.

63. **Prohibitions and requirements.**

A. Section 63 applies during the cold weather period.

B. The Company may not charge a deposit or delinquency charge to a Customer who entered into a payment agreement or a Customer who has appealed to the Commission under Minnesota Statutes 216B.096 subdivision 8.

C. The Company may not disconnect service during the following periods:
    1) during the pendency of any appeal under Minnesota Statutes 216B.096 subdivision 8;
    2) earlier than ten working days after the Company has deposited in first class mail, or seven working days after the Company has personally served, the notice required under Minnesota Statutes 216B.096 subdivision 4 to a Customer in an occupied dwelling;
    3) earlier than ten working days after the Company has deposited in first class mail the notice required under Minnesota Statutes 216B.096 subdivision 4 to the recorded billing address of the Customer, if the Company has reasonably determined from an on-site inspection that the dwelling is unoccupied;

4) on a Friday, unless the Company makes personal contact with and offers a payment agreement consistent with this section to the Customer;
5) on a Saturday, Sunday, holiday , or the day before the holiday;
6) when Company offices are closed;
7) when no Company personnel are available to resolve disputes, enter into payment agreements, accept payments, and reconnect service, or;
8) when Commission offices are closed.

D. The Company may not discontinue service until the Company investigates whether the dwelling is actually occupied. At a minimum, the investigation must include one visit by the Company to the dwelling during normal working hours. If no contact is made and there is reason to believe that the dwelling is occupied, the Company must attempt a second contact during non-business hours. If personal contact is made, the Company representative must provide notice required under Minnesota Statutes 216B.096 subdivision 4 and, if the Company representative is not authorized to enter into a payment agreement, the telephone number the Customer can call to establish a payment agreement.

E. The Company must reconnect Company service if, following disconnection, the dwelling is found to be occupied and the Customer agrees to enter into a payment agreement or appeals to the commission because the Customer and the Company are unable to agree on a payment agreement.

64. **Disputes, Customer appeals.**

A. The Company must provide the Customer and any designated third party with a Commission-approved written notice of the right to appeal:
1) the Company determination that the Customer's household income is more than 50 percent of state median household income; or
2) when the Company and Customer are unable to agree on the establishment or modification of a payment agreement.

B. A Customer's appeal must be filed with the Commission no later seven working days after the Customer's receipt of a personally served appeal notice, or within ten working days after the Company has deposited a first class mail appeal notice.

C. The Commission must determine all Customer appeals on an informal basis, within 20 working days of receipt of a Customer's written appeal. In making its determination, the Commission must consider one or more of the factors in Minnesota Statutes 216B.096 subdivision 6.

D. Notwithstanding any other law, following an appeals decision adverse to the Customer, the Company may not disconnect Company heating service for seven working days after the Company has personally served a disconnection notice, or for ten working days after the Company has deposited a first class mail notice. The notice must contain, in easy-to-understand language, the date on or after which disconnection will occur, the reason for disconnection, and ways to avoid disconnection.

65. **Customers above 50 percent of state median income.** During the cold weather period, a Customer whose household income is above 50 percent of state median income:

A. has the right to a payment agreement that takes into consideration the Customer's financial circumstances and any other extenuating circumstances of the household; and
B. may not be disconnected and must be reconnected if the Customer makes timely payments under a payment agreement accepted by the Company.

SECTION XI – RESIDENTIAL CUSTOMER PROTECTIONS

66. **Applicability.** The provisions of this section apply to residential customers of the Company

67. **Budget billing plans.** The Company shall offer a Customer a budget billing plan for payment of charges for service, including adequate notice to Customer prior to changing budget payment amounts.

68. **Payment agreements.** The Company shall offer a payment agreement for the payment of arrears. Payment agreements must consider a Customer's financial circumstances and any extenuating circumstances of the household. No additional service deposit may be charged as a consideration to continue service to a Customer who has entered and is reasonably on time under an accepted payment agreement.

69. **Undercharges.**

A. In compliance with Minnesota Statutes 216B.098, the Company shall offer a payment agreement to Customers who have been undercharged if no culpable conduct by the Customer or resident of the Customer's household caused the undercharge. The agreement must cover a period equal to the time over which the undercharge occurred or a different time period that is mutually agreeable to the Customer and the Company, except that the duration of a payment agreement offered by the Company to a Customer whose household income is at or below 50 percent of state median household income must consider the financial circumstances of the Customer's household.

B. No interest or delinquency fee may be charged as part of an undercharge agreement under this subdivision.

C. If a Customer inquiry or complaint results in the Company's discovery of the undercharge, the Company may bill for the undercharges incurred after the date of the inquiry or complaint only if the Company began investigating the inquiry or complaint within a reasonable time after it was made.

70. **Medically necessary equipment.** The Company shall reconnect or continue service to a Customer's residence where a medical emergency exists or where medical equipment requiring electricity necessary to sustain life is in use, provided that the Company receives from a medical doctor written certification, or initial certification by telephone and written certification within five business days, that failure to reconnect or continue service will impair or threaten the health or safety of a resident of the Customer's household. The Customer must enter into a payment agreement.

71. **Commission authority.** In addition to any other authority, the Commission has the authority to resolve Customer complaints against the Company, whether or not the complaint involves a violation of this Chapter 216B of Minnesota Statutes. The Commission may delegate this authority to commission staff as it deems appropriate.

SECTION XII - MISCELLANEOUS REGULATIONS

72. **Conflicts:** In case of conflict between any provision of these approved Service Regulations, Customer's Service Agreement or a Rate Schedule, the provision of the Service Agreement takes precedence, followed by the provision of the Rate Schedule. The Customer's Service Agreement will identify all such conflicts with the service Regulations or Rate Schedule.

73. **Franchise Limitations:** All Service Agreements are subject to existing franchise limitations.

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74. **Franchise Fees Notification:** The Company will notify the Minnesota Public Utilities Commission of any new, renewed, expired, or changed fee, authorized by Minn. Stat. § 216B.36 to raise revenue, at least 60 days prior to its implementation. If the Company receives less than 60 days' notice of a repealed or reduced fee from a city, the Company will notify the Minnesota Public Utilities Commission within 10 business days of receiving notice. Notification to the Minnesota Public Utilities Commission will include a copy of the relevant franchise fee ordinance, or other operative document authorizing imposition of, or change in, the fee.

75. **Franchise Fees Customer Notification:** The following language will be included with the first customer bills on which a new or amended franchise fee is collected:

> The City of _____granted Minnesota Power a franchise to operate within the City limits. An electric franchise fee of (____% OF GROSS REVENUES or $_____ PER METER or $_____ PER KWH) will be imposed on customers effective MM/DD/YYYY. The line item appears on your bills as "_____Franchise Fee." Minnesota Power remits 100% of this fee to the City of _____.

76. **Regulation and Jurisdiction:** Electric service shall be available from Company at the rates and under the terms and conditions set forth in the currently applicable Rate Schedule or other superseding Rate Schedules in effect from time to time. All the rates and regulations referred to herein are subject to amendment and change by Company. Any such amendments or changes may be subject to acceptance or approval by any regulatory body having jurisdiction thereof.

ATTACHMENT 2

State of Minnesota

Interconnection Process for Distributed Generation Systems

Introduction

This document has been prepared to explain the process established in the State of Minnesota, to interconnect a Generation System with Minnesota Power, the Area Electrical Power System (Area EPS). This document covers the interconnection process for all types of Generation Systems which are rated 10MW's or less of total generation Nameplate Capacity; are planned for interconnection with Minnesota Power's Distribution System; are not intended for wholesale transactions and aren't anticipated to affect the transmission system. This document does not discuss the interconnection Technical Requirements, which are covered in the **"State of Minnesota Distributed Generation Interconnection Requirements"** document. This other interconnection requirements document also provides definitions and explanations of the terms utilized within this document. To interconnect a Generation System with Minnesota Power, there are several steps that must be followed. This document outlines those steps and the Parties' responsibilities. At any point in the process, if there are questions, please contact the Generation Interconnection Coordinator at Minnesota Power. Since this document has been developed to provide an interconnection process which covers a very diverse range of Generation Systems, the process appears to be very involved and cumbersome. For many Generation Systems the process is streamlined and provides an easy path for interconnection.

The promulgation of interconnection standards for Generation Systems by the Minnesota Public Utilities Commission (MPUC) must be done in the context of a reasonable interpretation of the boundary between state and federal jurisdiction. The Federal Energy Regulatory Commission (FERC) has asserted authority in the area, at least as far as interconnection at the transmission level is concerned. This, however, leaves open the question of jurisdiction over interconnection at the distribution level. The Midwest Independent System Operator's (MISO) FERC Electric Tariff, (first revised volume 1, August 23,2001) Attachment R (Generator Interconnection Procedures and Agreement) states in section 2.1 that "Any existing or new generator connecting at transmission voltages, sub-transmission voltages, or distribution voltages, planning to engage in the sale for resale of wholesale energy, capacity, or ancillary services requiring transmission service under the Midwest ISO OATT must apply to the Midwest ISO for interconnection service". Further in section 2.4 it states that "A Generator not intending to engage in the sale of wholesale energy, capacity, or ancillary services under the Midwest ISO OATT, that proposes to interconnect a new generating facility to the distribution system of a Transmission Owner or local distribution utility interconnected with the Transmission System shall apply to the Transmission Owner or local distribution utility for interconnection". It goes on further to state "Where facilities under the control of the Midwest ISO are affected by such interconnection, such interconnections may be subject to the planning and operating protocols of the Midwest ISO…."

Through discussions with MISO personnel and as a practical matter, if the Generation System Nameplate Capacity is not greater in size than the minimum expected load on the distribution substation, that is feeding the proposed Generation System, and Generation System's energy is not being sold on the wholesale market, then that installation may be considered as not "affecting" the transmission system and the interconnection may be considered as governed by this process. If the Generation System will be selling energy on the wholesale market or the Generation System's total Nameplate Capacity is greater than the expected distribution substation minimum load, then the Applicant shall contact MISO (Midwest Independent System Operator) and follow their procedures.

GENERAL INFORMATION

A) Definitions

1) "Applicant" is defined as the person or entity who is requesting the interconnection of the Generation System with Minnesota Power and is responsible for ensuring that the Generation System is designed, operated and maintained in compliance with the Technical Requirements.

2) "Area EPS" is defined as an electric power system (EPS) that serves Local EPS's. Note. Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. Minnesota Power's distribution system is an AREA EPS.

3) "Area EPS Operator" is the entity who operates the Area EPS, here Minnesota Power.

4) "Dedicated Facilities" is the equipment that is installed due to the interconnection of the Generation System and not required to serve other Minnesota Power customers.

5) "Distribution System" is Minnesota Power's facilities which are not part of Minnesota Power's Transmission System or any Generation System.

6) "Extended Parallel" means the Generation System is designed to remain connected with Minnesota Power for an extended period of time.

7) "Generation" is defined as any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.

8) "Generation Interconnection Coordinator" is the person or persons designated by Minnesota Power to provide a single point of coordination with the Applicant for the generation interconnection process.

9) "Generation System" is the interconnected generator(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.

10) "Interconnection Customer" is the party or parties who will own/operate the Generation System and are responsible for meeting the requirements of the agreements and Technical Requirements. This could be the Generation System applicant, installer, owner, designer, or operator.

11) "Local EPS" is an electric power system (EPS) contained entirely within a single premises or group of premises

12) "Nameplate Capacity" is the total nameplate capacity rating of all the Generation included in the Generation System. For this definition the "standby" and/or maximum rated kW capacity on the nameplate shall be used.

13) "Open Transfer" is a method of transferring the local loads from Minnesota Power to the generator such that the generator and Minnesota Power are never connected together.

14) "Point of Common Coupling" is the point where the Local EPS is connected to an Minnesota Power.

15) "Quick Closed" is a method of generation transfer which does not parallel or parallels for less then 100msec with Minnesota Power and has utility grade timers which limit the parallel duration to less then 100 msec with Minnesota Power.

16) "Technical Requirements" "is the State of Minnesota Distributed Generation Interconnection Requirements".

17) "Transmission System" means those facilities as defined by using the guidelines established by the Minnesota State Public Utilities Commission; "In the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions" Docket No. E-015/M-99-1002.

B) Dispute Resolution

The following is the dispute resolution process to be followed for problems that occur with the implementation of this process.

1) Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.

2) In the event a dispute arises under this process, and if it cannot be resolved by the Parties within thirty (30) days after written notice of the dispute to the other Party, the Parties shall submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in the State of Minnesota. The Parties agree to participate in good faith in the mediation for a period of 90 days. If the parties are not successful in resolving their disputes through mediation, then the Parties may refer the dispute for resolution to the Minnesota Public Utilities Commission, which shall maintain continuing jurisdiction over this process

C) Minnesota Power's Generation Interconnection Coordinator.

Minnesota Power shall designate a Generation Interconnection Coordinator(s) and this person or persons shall provide a single point of contact for an Applicant's questions on this Generation Interconnection process. Minnesota Power may have several Generation Interconnection Coordinators assigned, due to the geographical size of their electrical service territory or the amount of interconnection applications. This Generation Interconnection Coordinator will typically not be able to directly answer or resolve all of the issues involved in the review and implementation of the interconnection process and standards, but shall be available to provide coordination assistance with the Applicant

D) Engineering Studies

During the process of design of a Generation System interconnection between a Generation System and Minnesota Power, there are several studies which many need to be undertaken. On the Local EPS (Customers side of the interconnection) the addition of a Generation System may increase the fault current levels, even if the generation is never interconnected with Minnesota Power's system. The Interconnection Customer may need to conduct a fault current analysis of the Local EPS in conjunction with adding the Generation System. The addition of the Generation System may also affect Minnesota Power and special engineering studies may need to be undertaken looking at Minnesota Power's distribution system with the Generation System included. Appendix D, lists some of the issues that may need to receive further analysis for the Generation System interconnection.

While, it is not a straightforward process to identify which engineering studies are required, we can at least develop screening criteria to identify which Generation Systems may require further analysis. The following is the basic screening criteria to be used for this interconnection process.

1) Generation System total Nameplate Capacity does not exceed 5% of the radial circuit expected peak load. The peak load is the total expected load on the radial circuit when the other generators on that same radial circuit are not in operation.

2) The aggregate generation's total Nameplate Capacity, including all existing and proposed generation, does not exceed 25% of the radial circuit peak load and that total is also less then the radial circuit minimum load.

3) Generation System does not exceed 15% of the Annual Peak Load for the Line Section, which it will interconnect with. A Line Section is defined as that section of the distribution system between two sectionalizing devices in Minnesota Power's distribution system.

4) Generation System does not contribute more than 10% to the distribution circuit's maximum fault current at the point at the nearest interconnection with Minnesota Power's primary distribution voltage.

5) The proposed Generation System total Nameplate Capacity, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment to exceed 85 percent of the short circuit interrupting capability.

6) If the proposed Generation System is to be interconnected on a single-phase shared secondary, the aggregate generation Nameplate Capacity on the shared secondary, including the proposed generation, does not exceed 20kW.

7) Generation System will not be interconnected with a "networked" system

E) Scoping Meeting

During Step 2 of this process, the Applicant or Minnesota Power has the option to request a scoping meeting. The purpose of the scoping meeting shall be to discuss the Applicant's interconnection request and review the application filed. This scoping meeting is to be held so that each Party can gain a better understanding of the issues involved with the requested interconnection. Minnesota Power and Applicant shall bring to the meeting personnel, including system engineers, and other resources as may be reasonably required, to accomplish the purpose of the meeting. The Applicant shall not expect Minnesota Power to complete the preliminary review of the proposed Generation System at the scoping meeting. If a scoping meeting is requested, Minnesota Power shall schedule the scoping meeting within the 15 business day review period allowed for in Step 2. Minnesota Power shall then have an additional 5 days, after the completion of the scoping meeting, to complete the formal response required in Step 2. The Application fee shall cover Minnesota Power's costs for this scoping meeting. There shall be no additional charges imposed by Minnesota Power for this initial scoping meeting.

F) Insurance

1) At a minimum, in connection with the Interconnection Customer's performance of its duties and obligations under this Agreement, the Interconnection Customer shall maintain, during the term of the Agreement, general liability insurance, from a qualified insurance agency with a B+ or better rating by "Best" and with a combined single limit of not less then:

   a) Two million dollars ($2,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is greater then 250kW.

   b) One million dollars ($1,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is between 40kW and 250kW.

   c) Three hundred thousand ($300,000) for each occurrence if the Gross Nameplate Rating of the Generation System is less then 40kW.

   d) Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under this agreement.

2) The general liability insurance required shall, by endorsement to the policy or policies, (a) include Minnesota Power as an additional insured; (b) contain a sever ability of interest clause or cross-liability clause; (c) provide that Minnesota Power shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to Minnesota Power prior to cancellation, termination, alteration, or material change of such insurance.

3) If the Generation System is connected to an account receiving residential service from Minnesota Power and it total generating capacity is smaller then 40kW, then the endorsements required in Section F.2 shall not apply.

4) The Interconnection Customer shall furnish the required insurance certificates and endorsements to Minnesota Power prior to the initial operation of the Generation System. Thereafter, Minnesota Power shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance

5) Evidence of the insurance required in Section F.1. shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance maintained by Minnesota Power.

6) If the Interconnection Customer is self-insured with an established record of self-insurance, the Interconnection Customer may comply with the following in lieu of Section F.1 – 5:

7) Interconnection Customer shall provide to Minnesota Power, at least thirty (30) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under section F.1

8) If Interconnection Customer ceases to self-insure to the level required hereunder, or if the Interconnection Customer is unable to provide continuing evidence of it's ability to self-insure, the Interconnection Customer agrees to immediately obtain the coverage required under section F.1.

9) Failure of the Interconnection Customer or Minnesota Power to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

G) Pre-Certification

The most important part of the process to interconnect generation with Local EPS and Minnesota Power is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence, is required by the State of Minnesota to be listed by a recognized testing and certification laboratory, for its intended purpose. Typically we see this as "UL" listed. Since Generation Systems have tended to be uniquely designed for each installation they have been designed and approved by Professional Engineers. This process has been set up to be able to deal with these uniquely designed systems. As the number of Generation Systems installed increase, vendors are working towards creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move towards "plug and play" installations. For this reason, this interconnection process recognizes the efficiently of "pre-certification" of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacture, tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929 shall be acceptable for interconnection without additional protection system requirements. An "equipment package" shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not required further design review, testing or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing ad listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by Minnesota Power.

The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to Minnesota Power. An application will still need to be submitted and an interconnection review may still need to be performed, to determine the compatibility of the Generation System with Minnesota Power.

H) Confidential Information

Except as otherwise agreed, each Party shall hold in confidence and shall not disclose confidential information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section). Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which, in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.

I) Non-Warranty.

Neither by inspection, if any, or non-rejection, nor in any other way, does Minnesota Power give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Applicant or leased by the Applicant from third parties, including without limitation the Generation System and any structures, equipment, wires, appliances or devices pertinent thereto.

J) Required Documents

The chart below lists the documents required for each type and size of Generation System proposed for interconnection.

Find your type of Generation System interconnection, across the top, then follow the chart straight down, to determine what documents are required as part of the interconnection process.

GENERATION INTERCONNECTION DOCUMENT SUMMARY					
Open Transfer	Quick Closed Transfer	Soft Loading Transfer	Extended Parallel Operation		
			QF facility <40kW	Without Sales	With Sales
Interconnection Process (This document)					
State of Minnesota Distributed Generation Interconnection Requirements					
Generation Interconnection Application (Appendix B)					
		Engineering Data Submittal (Appendix C)			
			Interconnection Agreement (Appendix E)		
				MISO / FERC	
					PPA

Interconnection Process = "State of Minnesota Interconnection Process for Distributed Generation Systems." (This document)

State of Minnesota Distributed Generation Interconnection Requirements = "State of Minnesota Distributed Generation Interconnection Requirements"

Generation Interconnection Application = The application form in Appendix B of this document.

Engineering Data Submittal = The Engineering Data Form/Agreement, which is attached as Appendix C of this document.

Interconnection Agreement = "Minnesota State Interconnection Agreement for the Interconnection of Extended Parallel Distributed Generation Systems with Electric Utilities", which is attached as Appendix E to this document.

MISO. = Midwest Independent System Operator, www.midwestiso.org

FERC = Federal Energy Regulatory Commission, www.ferc.gov

PPA = Power Purchase Agreement.

Process for Interconnection

Step 1 Application (By Applicant)

Once a decision has been made by the Applicant, that they would like to interconnect a Generation System with Minnesota Power, the Applicant shall supply Minnesota Power with the following information:

1) Completed Generation Interconnection Application (Appendix C), including;
   a) One-line diagram showing;
      i) Protective relaying.
      ii) Point of Common Coupling.
   b) Site plan of the proposed installation.
   c) Proposed schedule of the installation.
2) Payment of the application fee, according to the following sliding scale.

Generation Interconnection Application Fees

Interconnection Type	≤ 20kW	>20kW & ≤250kW	>250kW & ≤500kW	> 500 kW & ≤1000kW	>1000 kW
Open Transfer	$0	$0	$0	$100	$100
Quick Closed	$0	$100	$100	$250	$500
Soft Loading	$100	$250	$500	$500	$1000
Extended Parallel (Pre Certified System)	$0	$250	$1000	$1000	$1500
Other Extended Parallel Systems	$100	$500	$1500	$1500	$1500

This application fee is to contribute to Minnesota Power's labor costs for administration, review of the design concept and preliminary engineering screening for the proposed Generation System interconnection.

For the Application Fees chart, above;
The size (kW) of the Generation System is the total maximum Nameplate Capacity of the Generation System.

Step 2 Preliminary Review (By Minnesota Power)

Within 15 business days of receipt of all the information listed in Step 1, Minnesota Power's Generation Interconnection Coordinator shall respond to the Applicant with the information listed below. (If the information required in Step 1 is not complete, the Applicant will be notified, within 10 business days of what is missing and no further review will be completed until the missing information is submitted. The 15-day clock will restart with the new submittal)

As part of Step 2 the proposed Generation System will be screened to see if additional Engineering Studies are required. The base screening criteria is listed in the general information section of this document.

1) A single point of contact with Minnesota Power for this project. (Generation Interconnection Coordinator)

2) Approval or rejection of the generation interconnection request.
   a) Rejection – Minnesota Power shall supply the technical reasons, with supporting information, for rejection of the interconnection Application.
   b) Approval - An approved Application is valid for 6 months from the date of the approval. Minnesota Power's Generation Interconnection Coordinator may extend this time if requested by the Applicant

3) If additional specialized engineering studies are required for the proposed interconnection, the following information will be provided to the Applicant. Typical Engineering Studies are outlined in Appendix D. The costs to the Applicant, for these studies shall be not exceed the values shown in the following table for pre-certified equipment.

Generation System Size	Engineering Study Maximum Costs
<20kW	$0
20kW – 100kW	$500
100kW – 250kW	$1000
>250kW or not pre-certified equipment	Actual costs

   a) General scope of the engineering studies required.
   b) Estimated cost of the engineering studies.
   c) Estimated duration of the engineering studies.
   d) Additional information required to allow the completion of the engineering studies.
   e) Study authorization agreement.

4) Comments on the schedule provided.

5) If the rules of MISO (Midwest Independent System Operator) require that this interconnection request be processed through the MISO process, the Generation Interconnection Coordinator will notify the Applicant that the generation system is not eligible for review through the State of Minnesota process.

Step 3 Go-No Go Decision for Engineering Studies (By Applicant)

In this step, the Applicant will decide whether or not to proceed with the required engineering studies for the proposed generation interconnection. If no specialized engineering studies are required by Minnesota Power, Minnesota Power and the Applicant will automatically skip this step.

If the Applicant decides NOT to proceed with the engineering studies, the Applicant shall notify Minnesota Power's Generation Interconnection Coordinator, so other generation interconnection requests in the queue are not adversely impacted. Should the Applicant decide to proceed, the Applicant shall provide the following to Minnesota Power's Generation Interconnection Coordinator:

1) Payment required by Minnesota Power for the specialized engineering studies.
2) Additional information requested by Minnesota Power to allow completion of the engineering studies.

Step 4 Engineering Studies (By Minnesota Power)

In this step, Minnesota Power will be completing the specialized engineering studies for the proposed generation interconnection, as outlined in Step 2. These studies should be completed in the time frame provided in step 2, by Minnesota Power. It is expected that Minnesota Power shall make all reasonable efforts to complete the Engineering Studies within the time frames shown below. If additional time is required to complete the engineering studies the Generation Interconnection Coordinator shall notify the Applicant and provide the reasons for the time extension. Upon receipt of written notice to proceed, payment of applicable fee, and receipt of all engineering study information requested by Minnesota Power in step 2, Minnesota Power shall initiate the engineering studies.

Generation System Size	Engineering Study Completion
<20kW	20 working days
20kW – 250kW	30 working days
250kW – 1MW	40 working days
> 1MW	90 working days

Once it is known by Minnesota Power that the actual costs for the engineering studies will exceed the estimated amount by more the 25%, then the Applicant shall be notified. Minnesota Power shall then provide the reason(s) for the studies needing to exceed the original estimated amount and provide an updated estimate of the total cost for the engineering studies. The Applicant shall be given the option of either withdrawing the application, or paying the additional estimated amount to continue with the engineering studies.

Step 5 Study Results and Construction Estimates (By Minnesota Power)

Upon completion of the specialized engineering studies, or if none was necessary, the following information will be provided to the Applicant.

1) Results of the engineering studies, if needed.

2) Monitoring & control requirements for the proposed generation.

3) Special protection requirements for the Generation System interconnection.

4) Comments on the schedule proposed by the Applicant.

5) Distributed Generation distribution constrained credits available

6) Interconnection Agreement (if applicable).

7) Cost estimate and payment schedule for required Minnesota Power work, including, but not limited to;
   a) Labor costs related to the final design review.
   b) Labor & expense costs for attending meetings
   c) Required Dedicated Facilities and other Minnesota Power modification(s).
   d) Final acceptance testing costs.

Step 6 Final Go-No Go Decision (By Applicant)

In this step, the Applicant shall again have the opportunity to indicate whether or not they want to proceed with the proposed generation interconnection. If the decision is NOT to proceed, the Applicant will notify Minnesota Power's Generation Interconnection Coordinator, so that other generation interconnections in the queue are not adversely impacted. Should the Applicant decide to proceed, a more detailed design, if not already completed by the Applicant, must be done, and the following information is to be supplied to Minnesota Power's Generation Interconnection Coordinator:

1) Applicable up-front payment required by Minnesota Power, per Payment Schedule, provided in Step 5. (if applicable)

2) Signed Interconnection Agreement (if applicable).

3) Final proposed schedule, incorporating Minnesota Power's comments. The schedule of the project should include such milestones as foundations poured, equipment delivery dates, all conduit installed, cutover (energizing of the new switchgear/transfer switch), Minnesota Power work, relays set and tested, preliminary vendor testing, final Minnesota Power acceptance testing, and any other major milestones.

4) Detailed one-line diagram of the Generation System, including the generator, transfer switch/switchgear, service entrance, lockable and visible disconnect, metering, protection and metering CT's / VT's, protective relaying and generator control system.

5) Detailed information on the proposed equipment, including wiring diagrams, models and types.

6) Proposed relay settings for all interconnection required relays.

7) Detailed site plan of the Generation System.

8) Drawing(s) showing the monitoring system (as required per table 5A and section 5 of the "State of Minnesota Distributed Generation Interconnection Requirements". Including a drawing which shows the interface terminal block with Minnesota Power's monitoring system.

9) Proposed testing schedule and initial procedure, including;
   a) Time of day (after-hours testing required?).
   b) Days required.
   c) Testing steps proposed.

Step 7 Final Design Review (By Minnesota Power)

Within 15 business days of receipt of the information required in Step 6, Minnesota Power's Generation Interconnection Coordinator will provide the Applicant with an estimated time table for final review. If the information required in Step 6 is not complete, the Applicant will be notified, within 10 business days of what information is missing. No further review may be completed until the missing information is submitted. The 15-business day clock will restart with the new submittal. This final design review shall not take longer then 15 additional business days to complete, for a total of 30 business days.

During this step, Minnesota Power shall complete the review of the final Generation System design. If the final design has significant changes from the Generation System proposed on the original Application which invalidate the engineering studies or the preliminary engineering screening, the Generation System Interconnection Application request may be rejected by Minnesota Power and the Applicant may be requested to reapply with the revised design.

Upon completion of this step the Generation Interconnection Coordinator shall supply the following information to the Applicant.

1) Requested modifications or corrections of the detailed drawings provided by the Applicant.

2) Approval of and agreement with the Project Schedule. (This may need to be interactively discussed between the Parties, during this Step)

3) Final review of Distributed Generation Credit amount(s) (where applicable).

4) Initial testing procedure review comments. (Additional work on the testing process will occur during Step 8, once the actual equipment is identified)

Step 8 Order Equipment and Construction (By Both Parties)

The following activities shall be completed during this step. For larger installations this step will involve much interaction between the Parties. It is typical for approval drawings to be supplied by the Applicant to Minnesota Power for review and comments. It is also typical for Minnesota Power to require review and approval of the drawings that cover the interconnection equipment and interconnection protection system. If Minnesota Power also requires remote control and/or monitoring, those drawings are also exchanged for review and comment.

By the Applicant's personnel:

1) Ordering of Generation System equipment.
2) Installing Generation System.
3) Submit approval drawings for interconnection equipment and protection systems, as required by Minnesota Power.
4) Provide final relay settings provided to Minnesota Power.
5) Submit Completed and signed Engineering Data Submittal form.
6) Submit proof of insurance, as required by Minnesota Power's tariff(s) or interconnection agreements.
7) Submit required State of Minnesota electrical inspection forms ("blue Copy) filed with Minnesota Power.
8) Inspecting and functional testing Generation System components.
9) Work with Minnesota Power personnel and equipment vendor(s) to finalize the installation testing procedure.

By Minnesota Power personnel:

1) Ordering any necessary Minnesota Power equipment.
2) Installing and testing any required equipment.
   a) Monitoring facilities.
   b) Dedicated Equipment.
3) Assisting Applicant's personnel with interconnection installation coordination issues
4) Providing review and input for testing procedures.

Step 9 Final Tests (By Minnesota Power/ Applicant)

(Due to equipment lead times and construction, a significant amount of time may take place between the execution of Step 8 and Step 9.) During this time the final test steps are developed and the construction of the facilities are completed.

Final acceptance testing will commence when all equipment has been installed, all contractor preliminary testing has been accomplished and all Minnesota Power preliminary testing of the monitoring and dedicated equipment is completed. One to three weeks prior to the start of the acceptance testing of the generation interconnection the Applicant shall provide, a report stating;

- that the Generation System meets all interconnection requirements.
- all contractor preliminary testing has been completed.
- the protective systems are functionally tested and ready.
- and provides a proposed date that the Generation System will be is ready to be energized and acceptance tested.

For non-type certified systems a Professional Electrical Engineer registered in the State of Minnesota is required to provide this formal report.

For smaller systems scheduling of this testing may be more flexible, as less testing time is required than for larger systems.

In many cases, this testing is done after hours to ensure no typical business-hour load is disturbed. If acceptance testing occurs after hours, Minnesota Power's labor will be billed at overtime wages. During this testing, Minnesota Power will typically run three different tests. These tests can differ depending on which type of communication / monitoring system(s) Minnesota Power decides to install at the site.

For, problems created by Minnesota Power or any Minnesota Power equipment that arise during testing, Minnesota Power will fix the problem as soon as reasonably possible. If problems arise during testing which are caused by the Applicant or Applicant's vendor or any vendor supplied or installed equipment, Minnesota Power will leave the project until the problem is resolved. Having the testing resume will then be subject to Minnesota Power personnel time and availability.

Step 10 (By Minnesota Power)

After all Minnesota Power's acceptance testing has been accomplished and all requirements are met, Minnesota Power shall provide written approval for normal operation of the Generation System interconnection, within 3 business days of successful completion of the acceptance tests.

Step 11 (By Applicant)

Within two (2) months of interconnection, the Applicant shall provide Minnesota Power with updated drawings and prints showing the Generation System as it were when approved for normal operation by Minnesota Power. The drawings shall include all changes which were made during construction and the testing process.

Attachments:

Attached are several documents which may be required for the interconnection process. They are as follows;

Appendix A:
Flow chart showing summary of the interconnection process.

Appendix B:
Generation Interconnection Application Form.

Appendix C:

Engineering Data Submittal Form.

Appendix D:

Engineering Studies: Brief description of the types of possible Engineering Studies that may be required for the review of the Generation System interconnection.

Appendix E:

State of Minnesota Interconnection Agreement for the Interconnection of Extended Paralleled Distributed Generation Systems with Electric Utilities.

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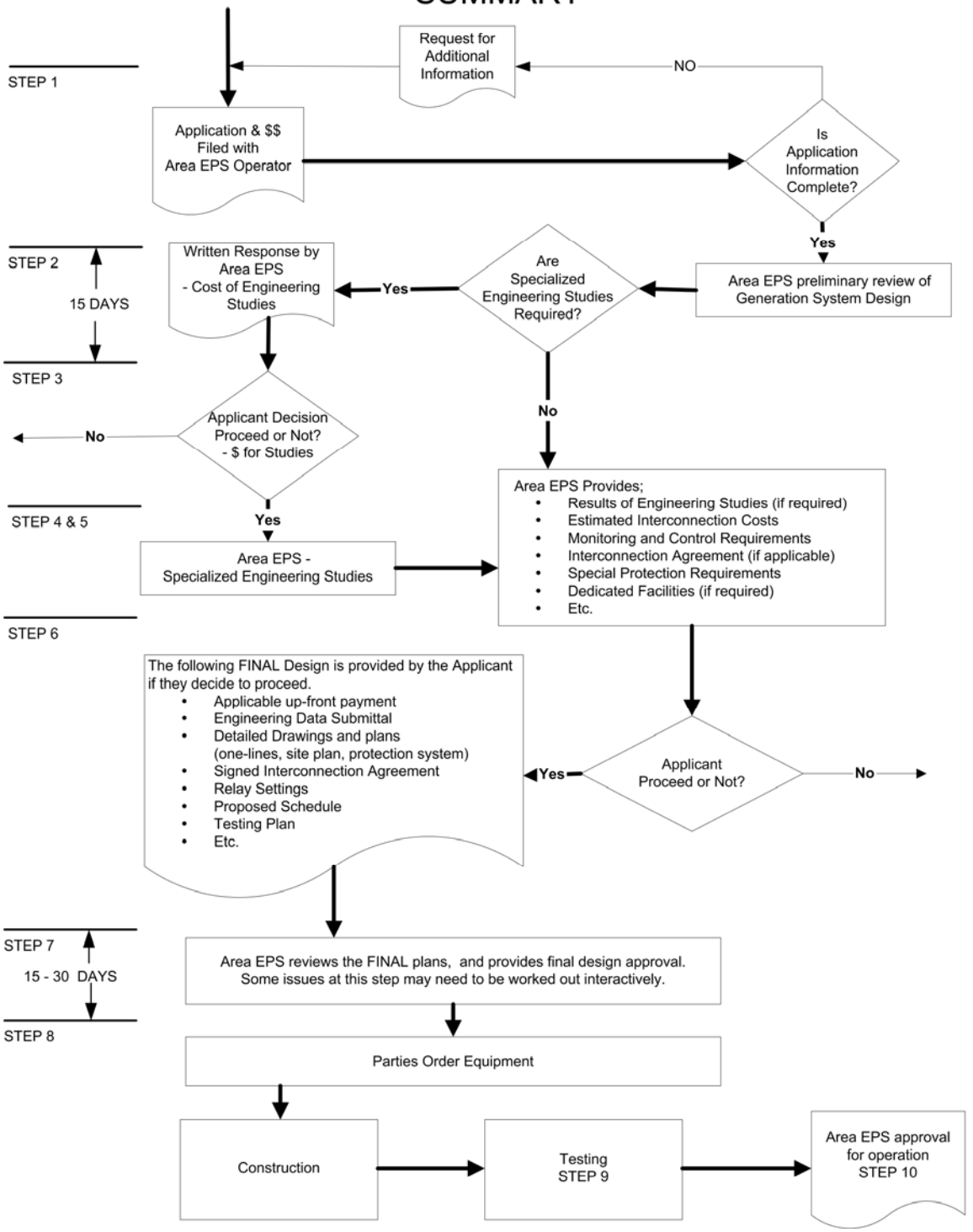
APPENDIX A

DISTRIBUTED GENERATION INTERCONNECTION PROCESS SUMMARY



APPENDIX B

INSERT

INTERCONNECTION

APPLICATION

FORM

APPENDIX C

INSERT

ENGINEERING DATA

SUBMITTAL

FORM

APPENDIX D

Engineering Studies

For the engineering studies there are two main parts of the study: 1. Does the distributed generator cause a problem? and 2. What would it cost to make a change to handle the problem.? The first question is relatively straightforward to determine as the Minnesota Power Engineer reviews the proposed installation. The second question typically has multiple alternatives and can turn into an iterative process. This iterative process can become quite large for more complex generation installations. For the Engineer there is no "cook book" solution which can be applied.

For some of the large generation installations and/or the more complex Minnesota Power may suggest dividing up the engineering studies into the two parts; identify the scope of the problems and attempt to identify solutions to resolve the problems. By splitting the engineering studies into two steps, it will allow for the Applicant to see the problems identified and to provide the Applicant the ability to remove the request for interconnection if the problems are too large and expensive to resolve. This would then save the additional costs to the Applicant for the more expensive engineering studies; to identity ways to resolve the problem(s).

This appendix provides an overview of some of the main issues that are looked at during the engineering study process. Every interconnection has its unique issues, such as relative strength of the distribution system, ratio of the generation size to the existing area loads, etc. Thus many of the generation interconnections will require further review of one or several of the issues listed.

- Short circuit analysis – the system is studied to make sure that the addition of the generation will not over stress any of Minnesota Power's equipment and that equipment will still be able to clear during a fault. It is expected that the Applicant will complete their own short circuit analysis on their equipment to ensure that the addition of the generation system does not overstress the Applicant's electrical equipment.

- Power Flow and Voltage Drop
  - Reviews potential islanding of the generation
  - Will Minnesota Power Equipment be overloaded
    - Under normal operation?
    - Under contingent operation? With backfeeds?

- Flicker Analysis –
  - Will the operation of the generation cause voltage swings?
    - When it loads up? When it off loads?
  - How will the generation interact with Minnesota Power voltage regulation?
  - Will Minnesota Power capacitor switching affect the generation while on-line?

- Protection Coordination
  - Reclosing issues – this is where the reclosing for the distribution system and transmission system are looked at to see if the Generation System protection can be set up to ensure that it will clear from the distribution system before the feeder is reenergized.
    - Is voltage supervision of reclosing needed?
  - Is transfer-trip required?
  - Do we need to modify the existing protection systems? Existing settings?
  - At which points do we need "out of sync" protection?
  - Is the proposed interconnection protection system sufficient to sense a problem on Minnesota Power's distribution system?
  - Are there protection problems created by the step-up transformer?

- Grounding Reviews
  - Does the proposed grounding system for the Generation System meet the requirements of the NESC? "National Electrical Safety Code" published by the Institute of Electrical and Electronics Engineers (IEEE)

- System Operation Impact.
  - Are special operating procedures needed with the addition of the generation?
  - Reclosing and out of sync operation of facilities.
  - What limitations need to be placed on the operation of the generation?
  - Operational Var requirements?.

APPENDIX E

INSERT

STATE OF MINNESOTA
INTERCONNECTION AGREEMENT

FOR THE

INTERCONNECTION OF EXTENDED PARALLELED
DISTRIBUTION GENERATION SYSTEMS

WITH

ELECTRIC UTILITIES

STATE OF MINNESOTA

DISTRIBUTED GENERATION INTERCONNECTION REQUIREMENTS FOR MINNESOTA POWER

TABLE OF CONTENTS

Foreword

Electric distribution system connected generation units span a wide range of sizes and electrical characteristics. Electrical distribution system design varies widely from that required to serve the rural customer to that needed to serve the large commercial customer. With so many variations possible, it becomes complex and difficult to create one interconnection standard that fits all generation interconnection situations.

In establishing a generation interconnection standard there are three main issues that must be addressed; Safety, Economics and Reliability.

The first and most important issue is safety; the safety of the general public and of the employees working on the electrical systems. This standard establishes the technical requirements that must be met to ensure the safety of the general public and of the employees working with Minnesota Power. Typically designing the interconnection system for the safety of the general public will also provide protection for the interconnected equipment.

The second issue is economics; the interconnection design must be affordable to build. The interconnection standard must be developed so that only those items, that are necessary to meet safety and reliability, are included in the requirements. This standard sets the benchmark for the minimum required equipment. If it is not needed, it will not be required.

The third issue is reliability; the generation system must be designed and interconnected such that the reliability and the service quality for all customers of the electrical power systems are not compromised. This applies to all electrical systems not just Minnesota Power's distribution system.

Many generation interconnection standards exist or are in draft form. The IEEE, FERC and many states have been working on generation interconnection standards. There are other standards such as the National Electrical Code (NEC) that, establish requirements for electrical installations. The NEC requirements are in addition to this standard. This standard is designed to document the requirements where the NEC has left the establishment of the standard to "the authority having jurisdiction" or to cover issues which are not covered in other national standards.

This standard covers installations, with an aggregated capacity of 10MW's or less. Many of the requirements in this document do not apply to small, 40kW or less generation installations. As an aid to the small, distributed generation customer, these small unit interconnection requirements have been extracted from this full standard and are available as a separate, simplified document titled: "Standards for Interconnecting Generation Sources, Rated Less then 40kW with Minnesota Electric Utilities"

1. Introduction

This standard has been developed to document the technical requirements for the interconnection between a Generation System and an area electrical power system “Utility system or Area EPS”, here Minnesota Power. This standard covers 3 phase Generation Systems with an aggregate capacity of 10 MWs or less and single phase Generation Systems with a aggregate capacity of 40kW or less at the Point of Common Coupling. This standard covers Generation Systems that are interconnected with Minnesota Power’s distribution facilities. This standard does not cover Generation Systems that are directly interconnected with Minnesota Power’s Transmission System, Contact Minnesota Power for their Transmission System interconnection standards.

While, this standard provides the technical requirements for interconnecting a Generation System with a typical radial distribution system, it is important to note that there are some unique Area EPS, which have special interconnection needs. One example of a unique Area EPS would be one operated as a “networked” system. This standard does not cover the additional special requirements of those systems. The Interconnection Customer must contact the Owner/operator of the Area EPS with which the interconnection is intended, to make sure that the Generation System is not proposed to be interconnected with a unique Area EPS. If the planned interconnection is with a unique Area EPS, the Interconnection Customer must obtain the additional requirements for interconnecting with the Area EPS.

Minnesota Power has the right to limit the maximum size of any Generation System or number of Generation Systems that, may want to interconnect, if the Generation System would reduce the reliability to the other customers connected to Minnesota Power.

This standard only covers the technical requirements and does not cover the interconnection process from the planning of a project through approval and construction. Please read the companion document “State of Minnesota Interconnection Process for Distributed Generation Systems” for the description of the procedure to follow and a generic version of the forms to submit. It is important to also get copies of Minnesota Power’s tariff’s concerning generation interconnection which will include rates, costs and standard interconnection agreements. The earlier the Interconnection Customer gets Minnesota Power involved in the planning and design of the Generation System interconnection the smoother the process will go.

A) Definitions

The definitions defined in the "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems" (1547 Draft Ver. 11) apply to this document as well. The following definitions are in addition to the ones defined in IEEE 1547 , or are repeated from the IEEE 1547 standard.

i) "Area EPS" an electric power system (EPS) that serves Local EPS's. Note. Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. Minnesota Power's distribution system is an AREA EPS.

ii) "Generation" any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.

iii) "Generation System" the interconnected Distributed Generation(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.

iv) "Interconnection Customer" the party or parties who are responsible for meeting the requirements of this standard. This could be the Generation System applicant, installer, designer, owner or operator.

v) "Local EPS" an electric power system (EPS) contained entirely within a single premises or group of premises.

vi) "Point of Common Coupling" the point where the Local EPS is connected to Minnesota Power.

vii) "Transmission System", are those facilities as defined by using the guidelines established by the Minnesota State Public Utilities Commission; "In the Matter of Developing Statewide Jurisdictional Boundary Guidelines for Functionally Separating Interstate Transmission from Generation and Local Distribution Functions" Docket No. E-015/M-99-1002.

viii) "Type-Certified" Generation paralleling equipment that is listed by an OSHA listed national testing laboratory as having met the applicable type testing requirement of UL 1741. At the time is document was prepared this was the only national standard available for certification of generation transfer switch equipment. This definition does not preclude other forms of type-certification if agreeable to Minnesota Power.

B) Interconnection Requirements Goals

This standard defines the minimum technical requirements for the implementation of the electrical interconnection between the Generation System and Minnesota Power. It does not define the overall requirements for the Generation System. The requirements in this standard are intended to achieve the following:

i) Ensure the safety of utility personnel and contractors working on the electrical power system.

ii) Ensure the safety of utility customers and the general public.

iii) Protect and minimize the possible damage to the electrical power system and other customer's

property.

iv) Ensure proper operation to minimize adverse operating conditions on the electrical power system.

C) Protection

The Generation System and Point of Common Coupling shall be designed with proper protective devices to promptly and automatically disconnect the Generation from Minnesota Power in the event of a fault or other system abnormality. The type of protection required will be determined by:

i) Size and type of the generating equipment.

ii) The method of connecting and disconnecting the Generation System from the electrical power system.

iii) The location of generating equipment on Minnesota Power's distribution system.

D) Minnesota Power Modifications

Depending upon the match between the Generation System, Minnesota Power and how the Generation System is operated, certain modifications and/or additions may be required to Minnesota Power's distribution system with the addition of the Generation System. To the extent possible, this standard describes the modifications which could be necessary to Minnesota Power for different types of Generation Systems. For some unique interconnections, additional and/or different protective devices, system modifications and/or additions will be required by Minnesota Power; In these cases Minnesota Power will provide the final determination of the required modifications and/or additions. If any special requirements are necessary they will be identified by Minnesota Power during the application review process.

E) Generation System Protection

The Interconnection Customer is solely responsible for providing protection for the Generation System. Protection systems required in this standard, are structured to protect Minnesota Power's electrical power system and the public. The Generation System Protection is not provided for in this standard. Additional protection equipment may be required to ensure proper operation for the Generation System. This is especially true while operating disconnected, from Minnesota Power. Minnesota Power does not assume responsibility for protection of the Generation System equipment or of any portion Local EPS.

F) Electrical Code Compliance

Interconnection Customer shall be responsible for complying with all applicable local, independent, state and federal codes such as building codes, National Electric Code (NEC), National Electrical Safety Code (NESC) and noise and emissions standards. As required by Minnesota State law, Minnesota Power will require proof of complying with the National Electrical Code before the interconnection is made, through installation approval by an electrical inspector recognized by the Minnesota State Board of Electricity.

The Interconnection Customer's Generation System and installation shall comply with latest revisions of the ANSI/IEEE standards applicable to the installation, especially IEEE 1547; "Standard for Interconnecting Distributed Resources with Electric Power Systems". See the reference section in this document for a partial list of the standards which apply to the generation installations covered by this standard.

2. References

The following standards shall be used in conjunction with this standard. When the stated version of the following standards is superseded by an approved revision then that revision shall apply.

IEEE Std 100-2000, "IEEE Standard Dictionary of Electrical and Electronic Terms"

IEEE Std 519-1992, "IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems"

IEEE Std 929-2000,"IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems".

IEEE Std 1547, "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems"

IEEE Std C37.90.1-1989 (1995), "IEEE Standard Surge Withstand Capability (SEC) Tests for Protective Relays and Relay Systems".

IEEE Std C37.90.2 (1995), "IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers".

IEEE Std C62.41.2-2002, "IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits"

IEEE Std C62.42-1992 (2002), "IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and less) AC Power Circuits"

ANSI C84.1-1995,"Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)"

ANSI/IEEE 446-1995, "Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications".

ANSI/IEEE Standard 142-1991, "IEEE Recommended Practice for Grounding of Industrial an Commercial Power Systems – Green Book",

UL Std. 1741 "Inverters, Converters, and Controllers for use in Independent Power Systems"

NEC – "National Electrical Code", National Fire Protection Association (NFPA), NFPA-70-2002.

NESC – "National Electrical Safety Code". ANSI C2-2000, Published by the Institute of Electrical and Electronics Engineers, Inc.

3. Types of Interconnections

A) The manner in which the Generation System is connected to and disconnected from Minnesota Power can vary. Most transfer systems normally operate using one of the following five methods of transferring the load from Minnesota Power to the Generation System.

B) If a transfer system is installed which has a user accessible selection of several transfer modes, the transfer mode that has the greatest protection requirements will establish the protection requirements for that transfer system.

i) Open Transition (Break-Before-Make) Transfer Switch – With this transfer switch, the load to be supplied from the Distributed Generation is first disconnected from Minnesota Power and then connected to the Generation. This transfer can be relatively quick, but voltage and frequency excursions are to be expected during transfer. Computer equipment and other sensitive equipment will shut down and reset. The transfer switch typically consists of a standard UL approved transfer switch with mechanical interlocks between the two source contactors that drop the Minnesota Power source before the Distributed Generation is connected to supply the load.

(1) To qualify as an Open Transition switch and the limited protective requirements, mechanical interlocks are required between the two source contacts. This is required to ensure that one of the contacts is always open and the Generation System is never operated in parallel with Minnesota Power. If the mechanical interlock is not present, the protection requirements are as if the switch is a closed transition switch.

(2) As a practical point of application, this type of transfer switch is typically used for loads less then 500kW. This is due to possible voltage flicker problems created on Minnesota Power's distribution system, when the load is removed from or returned to the Minnesota Power source. Depending up Minnesota Power's stiffness this level may be larger or smaller then the 500kW level.

(3) Figure 1 at the end of this document provides a typical one-line of this type of installation.

ii) Quick Open Transition (Break-Before-Make) Transfer Switch – The load to be supplied from the Distributed Generation is first disconnected from Minnesota Power and then connected to the Distributed Generation, similar to the open transition. However, this transition is typically much faster (under 500 ms) than the conventional open transition transfer operation. Voltage and frequency excursions will still occur, but some computer equipment and other sensitive equipment will typically not be affected with a properly designed system. The transfer switch consists of a standard UL approved transfer switch, with mechanical interlocks between the two source contacts that drop the Minnesota Power source before the Distributed Generation is connected to supply the load.

(1) Mechanical interlocks are required between the two source contacts to ensure that one of the contacts is always open. If the mechanical interlock is not present, the protection requirements are as if the switch is a closed transition switch

(2) As a practical point of application this type of transfer switch is typically used for loads less then 500kW. This is due to possible voltage flicker problems created on Minnesota Power's distribution system, when the load is removed from or returned to the Minnesota Power source. Depending up the Minnesota Power's stiffness this level may be larger or smaller than the 500kW level.

(3) Figure 2 at the end of this document provides a typical one-line of this type of installation and shows the required protective elements.

iii) Closed Transition (Make-Before-Break) Transfer Switch – The Distributed Generation is synchronized with Minnesota Power prior to the transfer occurring. The transfer switch then parallels with Minnesota Power for a short time (100 msec. or less) and then the Generation System and load is disconnect from Minnesota Power. This transfer is less disruptive than the Quick Open Transition because it allows the Distributed Generation a brief time to pick up the load before the support of Minnesota Power is lost. With this type of transfer, the load is always being supplied by Minnesota Power or the Distributed Generation.

(1) As a practical point of application this type of transfer switch is typically used for loads less then 500kW. This is due to possible voltage flicker problems created on Minnesota Power's distribution system, when the load is removed from or returned to the Minnesota Power source. Depending up the Minnesota Power's stiffness this level may be larger or smaller then the 500kW level.

(2) Figure 2 at the end of this document provides a typical one-line of this type of installation and shows the required protective elements. The closed transition switch must include a separate parallel time limit relay, which is not part of the generation control PLC and trips the generation from the system for a failure of the transfer switch and/or the transfer switch controls.

iv) Soft Loading Transfer Switch

(1) With Limited Parallel Operation – The Distributed Generation is paralleled with Minnesota Power for a limited amount of time (generally less then 1-2 minutes) to gradually transfer the load from Minnesota Power to the Generation System. This minimizes the voltage and frequency problems, by softly loading and unloading the Generation System.

(a) The maximum parallel operation shall be controlled, via a parallel timing limit relay (62PL). This parallel time limit relay shall be a separate relay and not part of the generation control PLC.

(b) Protective Relaying is required as described in section 6.

(c) Figure 3 at the end of this document provide typical one-line diagrams of this type of installation and show the required protective elements.

(2) With Extended Parallel Operation – The Generation System is paralleled with Minnesota Power in continuous operation. Special design, coordination and agreements are required before any extended parallel operation will be permitted. The Minnesota Power interconnection study will identify the issues involved.

(a) Any anticipated use in the extended parallel mode requires special agreements and special protection coordination.

(b) Protective Relaying is required as described in section 6.

(c) Figure 4 at the end of this document provides a typical one-line for this type of interconnection. It must be emphasized that this is a typical installations only and final installations may vary from the examples shown due to transformer connections, breaker configuration, etc.

v) Inverter Connection

This is a continuous parallel connection with the system. Small Generation Systems may utilize inverters to interface to Minnesota Power. Solar, wind and fuel cells are some

examples of Generation which typically use inverters to connect to Minnesota Power. The design of such inverters shall either contain all necessary protection to prevent unintentional islanding, or the Interconnection Customer shall install conventional protection to affect the same protection. All required protective elements for a soft-loading transfer switch apply to an inverter connection. Figure 5 at the end of this document, shows a typical inverter interconnection.

(1) Inverter Certification – Prior to installation, the inverter shall be Type-Certified for interconnection to the electrical power system. The certification will confirm its anti-islanding protection and power quality related levels at the Point of Common Coupling. Also, utility compatibility, electric shock hazard and fire safety are approved through UL listing of the model. Once this Type Certification is completed for that specific model, additional design review of the inverter should not be necessary by Minnesota Power.

(2) For three-phase operation, the inverter control must also be able to detect and separate for the loss of one phase. Larger inverters will still require custom protection settings, which must be calculated and designed to be compatible with the specific Area EPS being interconnected with.

(3) A visible disconnect is required for safely isolating the Distributed Generation when connecting with an inverter. The inverter shall not be used as a safety isolation device.

(4) When banks of inverter systems are installed at one location, a design review by Minnesota Power must be preformed to determine any additional protection systems, metering or other needs. The issues will be identified by Minnesota Power during the interconnection study process

4. Interconnection Issues and Technical Requirements

A) General Requirements - The following requirements apply to all interconnected generating equipment. Minnesota Power shall be the source side and the customer's system shall be the load side in the following interconnection requirements.

i) Visible Disconnect - A disconnecting device shall be installed to electrically isolate Minnesota Power from the Generation System. The only exception for the installation of a visible disconnect is if the generation is interconnected via a mechanically interlocked open transfer switch and installed per the NEC (702.6) "so as to prevent the inadvertent interconnection of normal and alternate sources of supply in any operation of the transfer equipment."

The visible disconnect shall provide a visible air gap between Interconnection Customer's Generation and Minnesota Power in order to establish the safety isolation required for work on Minnesota Power's distribution system. This disconnecting device shall be readily accessible 24 hours per day by Minnesota Power field personnel and shall be capable of padlocking by Minnesota Power field personnel. The disconnecting device shall be lockable in the open position.

The visible disconnect shall be a UL approved or National Electrical Manufacture's Association approved, manual safety disconnect switch of adequate ampere capacity. The visible disconnect shall not open the neutral when the switch is open. A draw-out type circuit breaker can be used as a visual open.

The visible disconnect shall be labeled, as required by Minnesota Power to inform Minnesota Power field personnel.

ii) Energization of Equipment by Generation System – The Generation System shall not energize a de-energized Minnesota Power's distribution system. The Interconnection Customer shall install the necessary padlocking (lockable) devices on equipment to prevent the energization of a de-energized electrical power system. Lock out relays shall automatically block the closing of breakers or transfer switches on to a de-energized Minnesota Power's distribution system.

iii) Power Factor - The power factor of the Generation System and connected load shall be as follows;

(1) Inverter Based interconnections – shall operate at a power factor of no less then 90%.at the inverter terminals.

(2) Limited Parallel Generation Systems, such as closed transfer or soft-loading transfer systems shall operate at a power factor of no less then 90%, during the period when the Generation System is parallel with Minnesota Power, as measured at the Point of Common Coupling.

(3) Extended Parallel Generation Systems shall be designed to be capable of operating between 90% lagging and 95% leading. These Generation Systems shall normally operate near unity power factor (+/-98%) or as mutually agreed between Minnesota Power and the Interconnection Customer.

iv) Grounding Issues

(1) Grounding of sufficient size to handle the maximum available ground fault current shall be designed and installed to limit step and touch potentials to safe levels as set forth in "IEEE Guide for Safety in AC Substation Grounding", ANSI/IEEE Standard 80.

(2) It is the responsibility of the Interconnection Customer to provide the required grounding for the Generation System. A good standard for this is the IEEE Std. 142-1991 "Grounding of Industrial and Commercial Power Systems"

(3) All electrical equipment shall be grounded in accordance with local, state and federal electrical and safety codes and applicable standards

v) Sales to Minnesota Power or other parties – Transportation of energy on the Transmission system is regulated by the area reliability council and FERC. Those contractual requirements are not included in this standard. Minnesota Power will provide these additional contractual requirements during the interconnection approval process.

B) For Inverter based, closed transfer and soft loading interconnections - The following additional requirements apply:

i) Fault and Line Clearing - The Generation System shall be removed from Minnesota Power's distribution system for any faults, or outages occurring on the electrical circuit serving the Generation System

ii) Operating Limits in order to minimize objectionable and adverse operating conditions on the electric service provided to other customers connected to Minnesota Power, the Generation System shall meet the Voltage, Frequency, Harmonic and Flicker operating criteria as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with Minnesota Power.

If the Generation System creates voltage changes greater than 4% on Minnesota Power's distribution system, it is the responsibility of the Interconnection Customer to correct these voltage sag/swell problems caused by the operation of the Generation System. If the operation of the interconnected Generation System causes flicker, which causes problems for others customer's interconnected to Minnesota Power, the Interconnection Customer is responsible for correcting the problem.

iii) Flicker - The operation of Generation System is not allowed to produce excessive flicker to adjacent customers. See the IEEE 1547 standard for a more complete discussion on this requirement.

The stiffer Minnesota Power's distribution system, the larger a block load change that it will be able to handle. For any of the transfer systems the Minnesota Power voltage shall not drop or rise greater than 4% when the load is added or removed from Minnesota Power. It is important to note, that if another interconnected customer complains about the voltage change caused by the Generation System, even if the voltage change is below the 4% level, it is the Interconnection Customer's responsibility to correct or pay for correcting the problem. Utility experience has shown that customers have seldom objected to instantaneous voltage changes of less then 2% on Minnesota Power's distribution system, so Minnesota Power uses a 2% design criteria.

iv) Interference - The Interconnection Customer shall disconnect the Distributed Generation from Minnesota Power if the Distributed Generation causes radio, television or electrical service interference to other customers, via the EPS or interference with the operation of Minnesota Power's distribution system. The Interconnection Customer shall either effect repairs to the Generation System or reimburse Minnesota Power for the cost of any required Minnesota Power modifications due to the interference.

v) Synchronization of Customer Generation-

(1) An automatic synchronizer with synch-check relaying is required for unattended automatic quick open transition, closed transition or soft loading transfer systems.

(2) To prevent unnecessary voltage fluctuations on Minnesota Power's distribution system, it is required that the synchronizing equipment be capable of closing the Distributed Generation into Minnesota Power's distribution system within the limits defined in IEEE 1547. Actual settings shall be determined by the Registered Professional Engineer establishing the protective settings for the installation.

(3) Unintended Islanding – Under certain conditions with extended parallel operation, it would be possible for a part of Minnesota Power's distribution system to be disconnected from the rest of Minnesota Power's distribution system and have the Generation System continue to operate and provide power to a portion of the isolated circuit. This condition is called "islanding". It is not possible to successfully reconnect the energized isolated circuit to the rest of Minnesota Power's distribution system since there are no synchronizing controls associated with all of the possible locations of disconnection. Therefore, it is a requirement that the Generation System be automatically disconnected from Minnesota Power's distribution system immediately by protective relays for any condition that would cause Minnesota Power's distribution system to be de-energized. The Generation System must either isolate with the customer's load or trip. The Generation System must also be blocked from closing back into Minnesota Power's distribution system until Minnesota Power's distribution system is reenergized and the Minnesota Power voltage is within Range B of ANSI C84.1 Table 1 for a minimum of 1 minute. Depending upon the size of the Generation System it may be necessary to install direct transfer trip equipment from the Minnesota Power source(s) to remotely trip the generation interconnection to prevent islanding for certain conditions

vi) Disconnection – Minnesota Power may refuse to connect or may disconnect a Generation System from Minnesota Power under the following conditions:

(1) Lack of approved Standard Application Form and Standard Interconnection Agreement.

(2) Termination of interconnection by mutual agreement.

(3) Non-Compliance with the technical or contractual requirements.

(4) System Emergency or for imminent danger to the public or Minnesota Power personnel (Safety).

(5) Routine maintenance, repairs and modifications to Minnesota Power's distribution system. Minnesota Power shall coordinate planned outages with the Interconnection Customer to the extent possible.

5. Generation Metering, Monitoring and Control

Metering, Monitoring and Control – Depending upon the method of interconnection and the size of the Generation System, there are different metering, monitoring and control requirements Table 5A is a table summarizing the metering, monitoring and control requirements..

Due to the variation in Generation Systems and Minnesota Power operational needs, the requirements for metering, monitoring and control listed in this document are the expected maximum requirements that Minnesota Power will apply to the Generation System. It is important to note that for some Generation System installations Minnesota Power may wave some of the requirements of this section if they are not needed. An example of this is with rural or low capacity feeders which require more monitoring then larger capacity, typically urban feeders.

Another factor which will effect the metering, monitoring and control requirements will be the tariff under which the Interconnection Customer is supplied by Minnesota Power. Table 5A has been written to cover most application, but some Minnesota Power tariffs may have greater or less metering, monitoring and control requirements then, as shown in Table 5A. .

TABLE 5A
Metering, Monitoring and Control Requirements

Generation System Capacity at Point of Common Coupling	Metering	Generation Remote Monitoring	Generation Remote Control
< 40 kW with all sales to Minnesota Power	Bi-Directional metering at the point of common coupling	None Required	None Required
< 40 kW with Sales to a party other then Minnesota Power	Recording metering on the Generation System and a separate recording meter on the load	Interconnection Customer supplied direct dial phone line.	None Required
40 – 250kW with limited parallel	Detented Minnesota Power Metering at the Point of Common Coupling	None Required	None Required
40 – 250kW with extended parallel	Recording metering on the Generation System and a separate recording meter on the load	Interconnection Customer supplied direct dial phone line. Minnesota Power to supply it's own monitoring equipment	None Required
250 – 1000 kW with limited parallel	Detented Minnesota Power Metering at the Point of Common Coupling	Interconnection Customer supplied direct dial phone line and monitoring points available. See B (i)	None Required
250 – 1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load.	Required Minnesota Power remote monitoring system See B (i)	None Required
>1000 kW With limited parallel Operation	Detented Minnesota Power Metering at the Point of Common Coupling	Required Minnesota Power SCADA monitoring system. See B (i)	None required
>1000 kW With extended parallel operation	Recording metering on the Generation System and a separate recording meter on the load.	Required Minnesota Power SCADA monitoring system See B (i)	Direct Control via SCADA by Minnesota Power of interface breaker.

"Detented" = A meter which is detented will record power flow in only one direction.

A) Metering

i) As shown in Table 5A the requirements for metering will depend up on the type of generation and the type of interconnection. For most installations, the requirement is a single point of metering at the Point of Common Coupling. Minnesota Power will install a special meter that is capable of measuring and recording energy flow in both directions, for three phase installations or two detented meters wired in series, for single phase installations.. A dedicated - direct dial phone line may be required to be supplied to the meter for Minnesota Power's use to read the metering. Some monitoring may be done through the meter and the dedicated – direct dial phone line, so in many installations the remote monitoring and the meter reading can be done using the same dial-up phone line.

ii) Depending upon which tariff the Generation System and/or customer's load is being supplied under, additional metering requirements may result. Contact Minnesota Power for tariff requirements. In some cases, the direct dial-phone line requirement may be waived by Minnesota Power for smaller Generation Systems.

iii) All Minnesota Power's revenue meters shall be supplied, owned and maintained by Minnesota Power. All voltage transformers (VT) and current transformers (CT), used for revenue metering shall be approved and/or supplied by Minnesota Power. Minnesota Power's standard practices for instrument transformer location and wiring shall be followed for the revenue metering.

iv) For Generation Systems that sell power and are greater then 40kW in size, separate metering of the generation and of the load is required. A single meter recording the power flow at the Point of Common Coupling for both the Generation and the load, is not allowed by the rules under which the area transmission system is operated. Minnesota Power is required to report to the regional reliability council (MAPP) the total peak load requirements and is also required to own or have contracted for, accredited generation capacity of 115% of the experienced peak load level for each month of the year. Failure to meet this requirement results in a large monetary penalty for Minnesota Power.

v) For Generation Systems which are less then 40kW in rated capacity and are qualified facilities under PURPA (Public Utilities Regulatory Power Act – Federal Gov. 1978), net metering is allowed and provides the generation system the ability to back feed Minnesota Power at some times and bank that energy for use at other times. Some of the qualified facilities under PURPA are solar, wind, hydro, and biomass. For these net-metered installations, Minnesota Power may use a single meter to record the bi-directional flow or Minnesota Power may elect to use two detented meters, each one to record the flow of energy in one direction.

B) Monitoring (SCADA) is required as shown in table 5A. The need for monitoring is based on the need of the system control center to have the information necessary for the reliable operation of Minnesota Power's. This remote monitoring is especially important during periods of abnormal and emergency operation.

The difference in Table 5A between remote monitoring and SCADA is that SCADA typically is a system that is in continuous communication with a central computer and provides updated values and status, to Minnesota Power, within several seconds of the changes in the field. Remote monitoring on the other hand will tend to provide updated values and status within minutes of the change in state of the field. Remote monitoring is typically less expensive to install and operate.

i) Where Remote Monitoring or SCADA is required, as shown in Table 5A, the following monitored and control points are required:

(1) Real and reactive power flow for each Generation System (kW and kVAR). Only required

if separate metering of the Generation and the load is required, otherwise #4 monitored at the point of Common Coupling will meet the requirements.

(2) Phase voltage representative of Minnesota Power's service to the facility.

(3) Status (open/close) of Distributed Generation and interconnection breaker(s) or if transfer switch is used, status of transfer switch(s).

(4) Customer load from Minnesota Power service (kW and kVAR).

(5) Control of interconnection breaker - if required by Minnesota Power.

When telemetry is required, the Interconnection Customer must provide the communications medium to Minnesota Power's Control Center. This could be radio, dedicated phone circuit or other form of communication. If a telephone circuit is used, the Interconnection Customer must also provide the telephone circuit protection. The Interconnection Customer shall coordinate the RTU (remote terminal unit) addition with Minnesota Power. Minnesota Power may require a specific RTU and/or protocol to match their SCADA or remote monitoring system.

6. Protective Devices and Systems

A) Protective devices required to permit safe and proper operation of Minnesota Power's distribution system while interconnected with customer's Generation System are shown in the figures at the end of this document. In general, an increased degree of protection is required for increased Distributed Generation size. This is due to the greater magnitude of short circuit currents and the potential impact to system stability from these installations. Medium and large installations require more sensitive and faster protection to minimize damage and ensure safety.

If a transfer system is installed which has a user accessible selection of several transfer modes, the transfer mode which has the greatest protection requirements will establish the protection requirements for that transfer system.

The Interconnection Customer shall provide protective devices and systems to detect the Voltage, Frequency, Harmonic and Flicker levels as defined in the IEEE 1547 standard during periods when the Generation System is operated in parallel with Minnesota Power. The Interconnection Customer shall be responsible for the purchase, installation, and maintenance of these devices. Discussion on the requirements for these protective devices and systems follows:

i) Relay settings

(1) If the Generation System is utilizing a Type-Certified system, such as a UL listed inverter a Professional Electrical Engineer is not required to review and approve the design of the interconnecting system. If the Generation System interconnecting device is not Type-Certified or if the Type-Certified Generation System interconnecting device has additional design modifications made, the Generation System control, the protective system, and the interconnecting device(s) shall be reviewed and approved by a Professional Electrical Engineer, registered in the State of Minnesota.

(2) A copy of the proposed protective relay settings shall be supplied to Minnesota Power for review and approval, to ensure proper coordination between the generation system and Minnesota Power.

ii) Relays

(1) All equipment providing relaying functions shall meet or exceed ANSI/IEEE Standards for protective relays, i.e., C37.90, C37.90.1 and C37.90.2.

(2) Required relays that are not "draw-out" cased relays shall have test plugs or test switches installed to permit field testing and maintenance of the relay without unwiring or disassembling the equipment. Inverter based protection is excluded from this requirement for Generation Systems <40kW at the Point of Common Coupling.

(3) Three phase interconnections shall utilize three phase power relays, which monitor all three phases of voltage and current, unless so noted in the appendix one-lines.

(4) All relays shall be equipped with setting limit ranges at least as wide as specified in IEEE 1547, and meet other requirements as specified in the Minnesota Power interconnect study. Setting limit ranges are not to be confused with the actual relay settings required for the proper operation of the installation. At a minimum, all protective systems shall meet the requirements established in IEEE 1547 .

(a) Over-current relays (IEEE Device 50/51 or 50/51V) shall operate to trip the protecting

breaker at a level to ensure protection of the equipment and at a speed to allow proper coordination with other protective devices. For example, the over-current relay monitoring the interconnection breaker shall operate fast enough for a fault on the customer's equipment, so that no protective devices will operate on Minnesota Power's distribution system. 51V is a voltage restrained or controlled over-current relay and may be required to provide proper coordination with Minnesota Power.

(b) Over-voltage relays (IEEE Device 59) shall operate to trip the Distributed Generation per the requirements of IEEE 1547.

(c) Under-voltage relays (IEEE Device 27) shall operate to trip the Distributed Generation per the requirements of IEEE 1547

(d) Over-frequency relays (IEEE Device 81O) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547.

(e) Under-frequency relay (IEEE Device 81U) shall operate to trip the Distributed Generation off-line per the requirements of IEEE 1547. For Generation Systems with an aggregate capacity greater then 30kW, the Distribution Generation shall trip off-line when the frequency drops below 57.0-59.8 Hz. typically this is set at 59.5 Hz, with a trip time of 0.16 seconds, but coordination with Minnesota Power is required for this setting.

Minnesota Power will provide the reference frequency of 60 Hz. The Distributed Generation control system must be used to match this reference. The protective relaying in the interconnection system will be expected to maintain the frequency of the output of the Generation.

(f) Reverse power relays (IEEE Device 32) (power flowing from the Generation System to Minnesota Power shall operate to trip the Distributed Generation off-line for a power flow to the system with a maximum time delay of 2.0 seconds.

(g) Lockout Relay (IEEE Device 86) is a mechanically locking device which is wired into the close circuit of a breaker or switch and when tripped will prevent any close signal from closing that device. This relay requires that a person manually resets the lockout relay before that device can be reclosed. These relays are used to ensure that a denergized system is not reenergized by automatic control action, and prevents a failed control from auto-reclosing an open breaker or switch.

(h) Transfer Trip – All Generation Systems are required to disconnect from Minnesota Power's distribution system when Minnesota Power's distribution system is disconnected from its source, to avoid unintentional islanding. With larger Generation Systems, which remain in parallel with Minnesota Power, a transfer trip system may be required to sense the loss of the Minnesota Power source. When the Minnesota Power source is lost, a signal is sent to the Generation System to separate the Generation from Minnesota Power. The size of the Generation System versus the capacity and minimum loading on the feeder will dictate the need for transfer trip installation. The Minnesota Power interconnection study will identify the specific requirements.

If multiple Minnesota Power sources are available or multiple points of sectionalizing on Minnesota Power's distribution system, then more then one transfer trip system may be required. The Minnesota Power interconnection study will identify the specific requirements. For some installations the alternate Minnesota Power source(s) may not be utilized except in rare occasions. If this is the situation, the Interconnection Customer may elect to have the Generation System locked out when

the alternate source(s) are utilized, if agreeable to Minnesota Power.

(i) Parallel limit timing relay (IEEE Device 62PL) set at a maximum of 120 seconds for soft transfer installations and set no longer then 100ms for quick transfer installations, shall trip the Distributed Generation circuit breaker on limited parallel interconnection systems. Power for the 62 PL relay must be independent of the transfer switch control power. The 62PL timing must be an independent device from the transfer control and shall not be part of the generation PLC or other control system.

TABLE 6A
SUMMARY OF RELAYING REQUIREMENTS

Type of Interconnection	Over-current (50/51)	Voltage (27/59)	Frequency (81 0/U)	Reverse Power (32)	Lockout (86)	Parallel Limit Timer	Sync-Check (25)	Transfer Trip
Open Transition Mechanically Interlocked (Fig. 1)	—	—	—	—	—	—	—	—
Quick Open Transition Mechanically Interlocked (Fig. 2)	—	—	—	—	Yes	Yes	Yes	—
Closed Transition (Fig. 2)	—	—	—	—	Yes	Yes	Yes	—
Soft Loading Limited Parallel Operation (Fig. 3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—
Soft Loading Extended Parallel < 250 kW (Fig. 4)	Yes	Yes	Yes	—	Yes	—	Yes	—
Soft Loading Extended Parallel >250kW (Fig.4)	Yes	Yes	Yes	—	Yes	—	Yes	Yes
Inverter Connection (Fig. 5)								
< 40 kW	Yes	Yes	Yes	—	Yes	—	—	—
40 kW – 250kW	Yes	Yes	Yes	—	Yes	—	—	—
> 250 kW	Yes	Yes	Yes	—	Yes	—	—	Yes

7. Agreements

A) Interconnection Agreement – This agreement is required for all Generation Systems that parallel with Minnesota Power. Minnesota Power's tariffs contain standard interconnection agreements. There are different interconnection agreements depending upon the size and type of Generation System. This agreement contains the terms and conditions upon which the Generation System is to be connected, constructed and maintained, when operated in parallel with Minnesota Power. Some of the issues covered in the interconnection agreement are as follows;

i) Construction Process

ii) Testing Requirements

iii) Maintenance Requirements

iv) Firm Operating Requirements such as Power Factor

v) Access requirements for Minnesota Power personnel

vi) Disconnection of the Generation System (Emergency and Non-emergency)

vii) Term of Agreement

viii) Insurance Requirements

ix) Dispute Resolution Procedures

B) Operating Agreement – For Generation Systems that normally operate in parallel with Minnesota Power, an agreement separate from the interconnection agreement, called the "operating agreement", is usually created. This agreement is created for the benefit of both the Interconnection Customer and Minnesota Power and will be agreed to between the Parties. This agreement will be dynamic and is intended to be updated and reviewed annually. For some smaller systems, the operating agreement can simply be a letter agreement for larger and more intergraded Generation Systems the operating agreement will tend to be more involved and more formal. The operating agreement covers items that are necessary for the reliable operation of the Local EPS and Minnesota Power. The items typically included in the operating agreement are as follows;

i) Emergency and normal contact information for both Minnesota Power's operations center and for the Interconnection Customer.

ii) Procedures for periodic Generation System test runs.

iii) Procedures for maintenance on Minnesota Power's distribution system that effect the Generation System.

iv) Emergency Generation Operation Procedures.

8. Testing Requirements

A) Pre-Certification of equipment

The most important part of the process to interconnect generation with Local EPS and Minnesota Power is safety. One of the key components of ensuring the safety of the public and employees is to ensure that the design and implementation of the elements connected to the electrical power system operate as required. To meet this goal, all of the electrical wiring in a business or residence, is required by the State of Minnesota to be listed by a recognized testing and certification laboratory, for its intended purpose. Typically we see this as "UL" listed. Since Generation Systems have tended to be uniquely designed for each installation they have been designed and approved by Professional Engineers. As the number of Generation Systems installed increase, vendors are working towards creating equipment packages which can be tested in the factory and then will only require limited field testing. This will allow us to move towards "plug and play" installations. For this reason, this standard recognizes the efficiency of "pre-certification" of Generation System equipment packages that will help streamline the design and installation process.

An equipment package shall be considered certified for interconnected operation if it has been submitted by a manufacture, tested and listed by a nationally recognized testing and certification laboratory (NRTL) for continuous utility interactive operation in compliance with the applicable codes and standards. Presently generation paralleling equipment that is listed by a nationally recognized testing laboratory as having met the applicable type-testing requirements of UL 1741 and IEEE 929, shall be acceptable for interconnection without additional protection system requirements. An "equipment package" shall include all interface components including switchgear, inverters, or other interface devices and may include an integrated generator or electric source. If the equipment package has been tested and listed as an integrated package which includes a generator or other electric source, it shall not required further design review, testing or additional equipment to meet the certification requirements for interconnection. If the equipment package includes only the interface components (switchgear, inverters, or other interface devices), then the Interconnection Customer shall show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and consistent with the testing and listing specified for the package. Provided the generator or electric source combined with the equipment package is consistent with the testing ad listing performed by the nationally recognized testing and certification laboratory, no further design review, testing or additional equipment shall be required to meet the certification requirements of this interconnection procedure. A certified equipment package does not include equipment provided by Minnesota Power.

The use of Pre-Certified equipment does not automatically qualify the Interconnection Customer to be interconnected to Minnesota Power. An application will still need to be submitted and an interconnection review may still need to be performed, to determine the compatibility of the Generation System with Minnesota Power.

B) Pre-Commissioning Tests

i) Non-Certified Equipment

(1) Protective Relaying and Equipment Related to Islanding

(a) Distributed generation that is not Type-Certified (type tested), shall be equipped with protective hardware and/or software designed to prevent the Generation from being connected to a de-energized Minnesota Power's distribution system.

(b) The Generation may not close into a de-energized Minnesota Power distribution system and protection provided to prevent this from occurring. It is the Interconnection Customer's responsibility to provide a final design and to install the protective measures required by Minnesota Power. Minnesota Power will review and approve the design, the types of relays specified, and the installation. Mutually agreed upon exceptions may at times be necessary and desirable. It is strongly recommended that the Interconnection Customer obtain Minnesota Power written approval prior to ordering protective equipment for parallel operation. The Interconnection Customer will own these protective measures installed at their facility.

(c) The Interconnection Customer shall obtain prior approval from Minnesota Power for any revisions to the specified relay calibrations.

C) Commissioning Testing

The following tests shall be completed by the Interconnection Customer. All of the required tests in each section shall be completed prior to moving on to the next section of tests. Minnesota Power has the right to witness all field testing and to review all records prior to allowing the system to be made ready for normal operation. Minnesota Power shall be notified, with sufficient lead time to allow the opportunity for Minnesota Power personnel to witness any or all of the testing.

i) Pre-testing – The following tests are required to be completed on the Generation System prior to energization by the Generator or Minnesota Power. Some of these tests may be completed in the factory if no additional wiring or connections were made to that component. These tests are marked with a "*"

(1) Grounding shall be verified to ensure that it complies with this standard, the NESC and the NEC.

(2) * CT's (Current Transformers) and VT's (Voltage Transformers) used for monitoring and protection, shall be tested to ensure correct polarity, ratio and wiring

(3) CT's shall be visually inspected to ensure that all grounding and shorting connections have been removed where required.

(4) Breaker / Switch tests – Verify that the breaker or switch cannot be operated with interlocks in place or that the breaker or switch cannot be automatically operated when in manual mode. Various Generation Systems have different interlocks, local or manual modes etc. The intent of this section is to ensure that the breaker or switches controls are operating properly.

(5) * Relay Tests – All Protective relays shall be calibrated and tested to ensure the correct operation of the protective element. Documentation of all relay calibration tests and settings shall be furnished to Minnesota Power.

(6) Trip Checks - Protective relaying shall functionally tested to ensure the correct operation of the complete system. Functional testing requires that the complete system is operated by the injection of current and/or voltage to trigger the relay element and proving that the relay element trips the required breaker, lockout relay or provides the correct signal to the next control element. Trip circuits shall be proven through the entire scheme (including breaker trip)

For factory assembled systems, such as inverters the setting of the protective elements may occur at the factory. This section requires that the complete system including the wiring and the device being tripped or activated is proven to be in working condition

through the injection of current and/or voltage.

(7) Remote Control, SCADA and Remote Monitoring tests – All remote control functions and remote monitoring points shall be verified operational. In some cases, it may not be possible to verify all of the analog values prior to energization. Where appropriate, those points may be verified during the energization process

(8) Phase Tests – the Interconnection Customer shall work with Minnesota Power to complete the phase test to ensure proper phase rotation of the Generation and wiring.

(9) Synchronizing test – The following tests shall be done across an open switch or racked out breaker. The switch or breaker shall be in a position that it is incapable of closing between the Generation System and Minnesota Power for this test. This test shall demonstrate that at the moment of the paralleling-device closure, the frequency, voltage and phase angle are within the required ranges, stated in IEEE 1547 . This test shall also demonstrate that is any of the parameters are outside of the ranges stated; the paralleling-device shall not close. For inverter-based interconnected systems this test may not be required unless the inverter creates fundamental voltages before the paralleling device is closed.

ii) On-Line Commissioning Test – The following tests will proceed once the Generation System has completed Pre-testing and the results have been reviewed and approved by Minnesota Power. For smaller Generation Systems Minnesota Power may have a set of standard interconnection tests that will be required. On larger and more complex Generation Systems the Interconnection Customer and Minnesota Power will get together to develop the required testing procedure. All on-line commissioning test shall be based on written test procedures agreed to between Minnesota Power and the Interconnection Customer.

Generation System functionally shall be verified for specific interconnections as follows:

(1) Anti-Islanding Test – For Generation Systems that parallel with the utility for longer then 100msec.

(a) The Generation System shall be started and connected in parallel with the Minnesota Power source

(b) The Minnesota Power source shall be removed by opening a switch, breaker etc.

(c) The Generation System shall either separate with the local load or stop generating

(d) The device that was opened to remove the Minnesota Power source shall be closed and the Generation System shall not reparallel with Minnesota Power for at least 5 minutes.

iii) Final System Sign-off.

(1) To ensure the safety of the public, all interconnected customer owned generation systems which do not utilize a Type-Certified system shall be certified as ready to operate by a Professional Electrical Engineer registered in the State of Minnesota, prior to the installation being considered ready for commercial use.

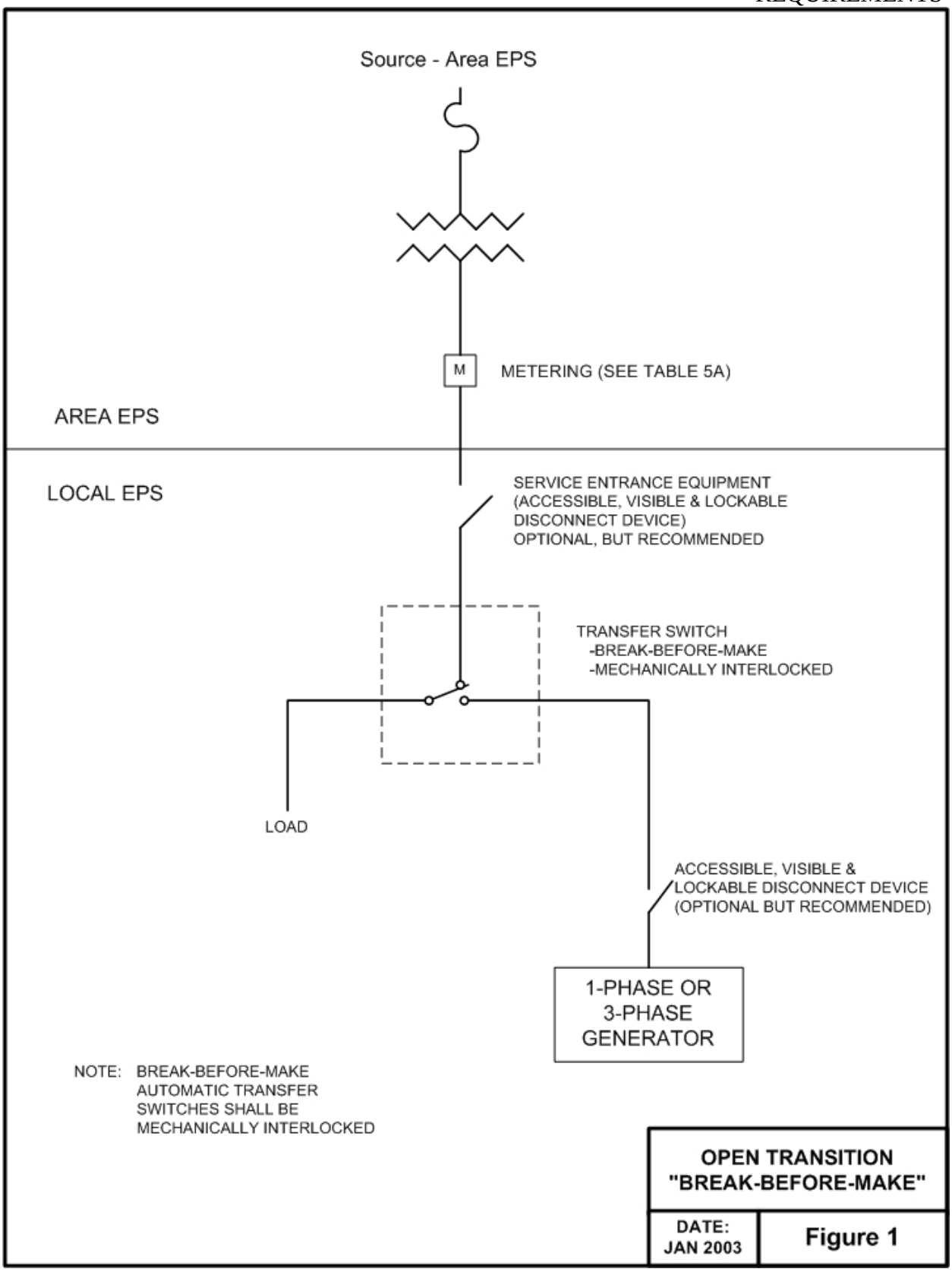
iv) Periodic Testing and Record Keeping

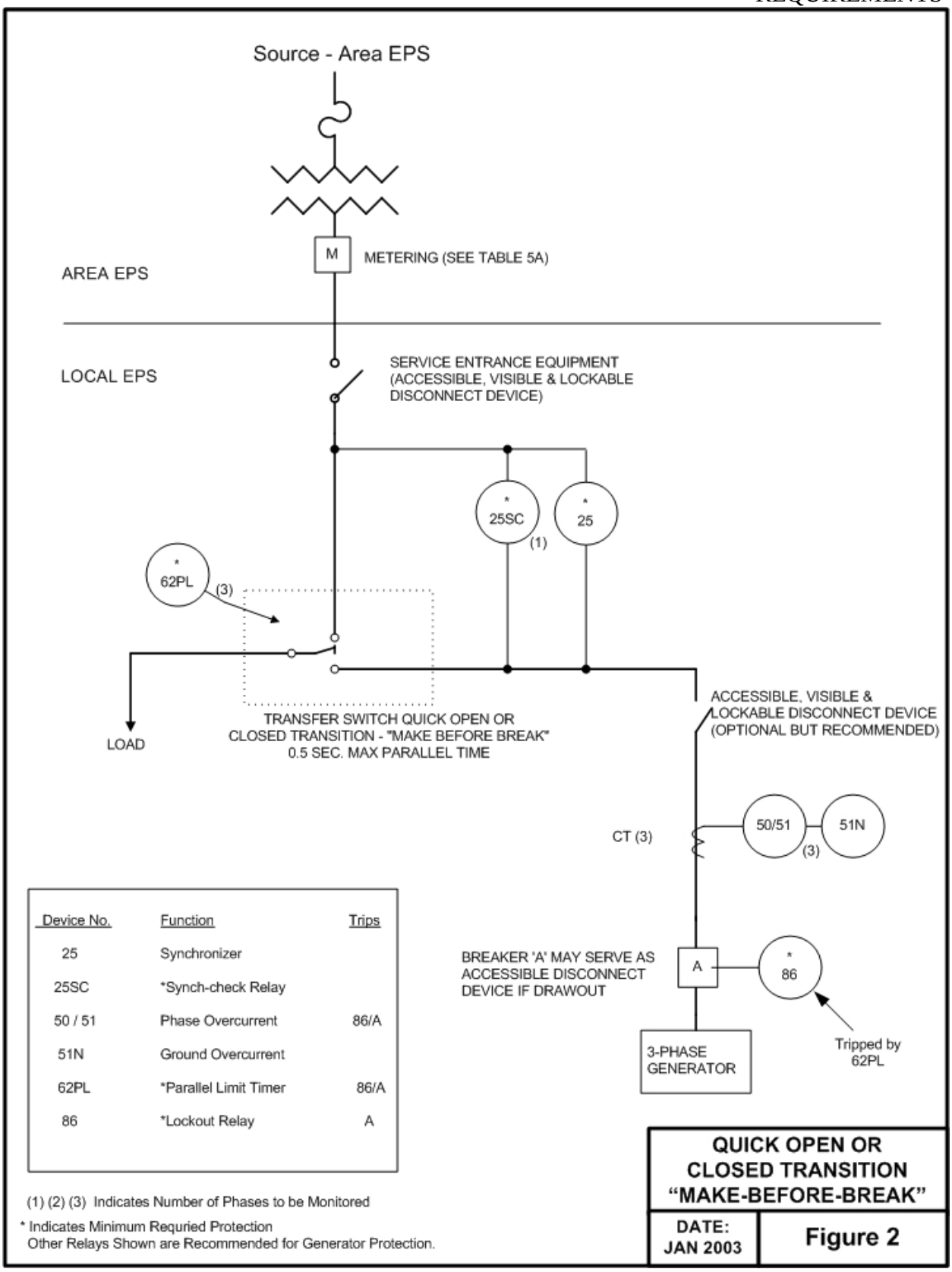
(1) Any time the interface hardware or software, including protective relaying and generation control systems are replaced and/or modified, Minnesota Power shall be notified. This notification shall, if possible, be with sufficient warning so that Minnesota Power personnel can be involved in the planning for the modification and/or witness the verification testing. Verification testing shall be completed on the replaced and/or modified equipment and systems. The involvement of Minnesota Power personnel will depend upon the complexity of the Generation System and the component being replaced and/or modified. Since the Interconnection Customer and Minnesota Power are now operating an interconnected system. It is important for each to communicate changes in operation, procedures and/or equipment to ensure the safety and reliability of the Local EPS and Minnesota Power.

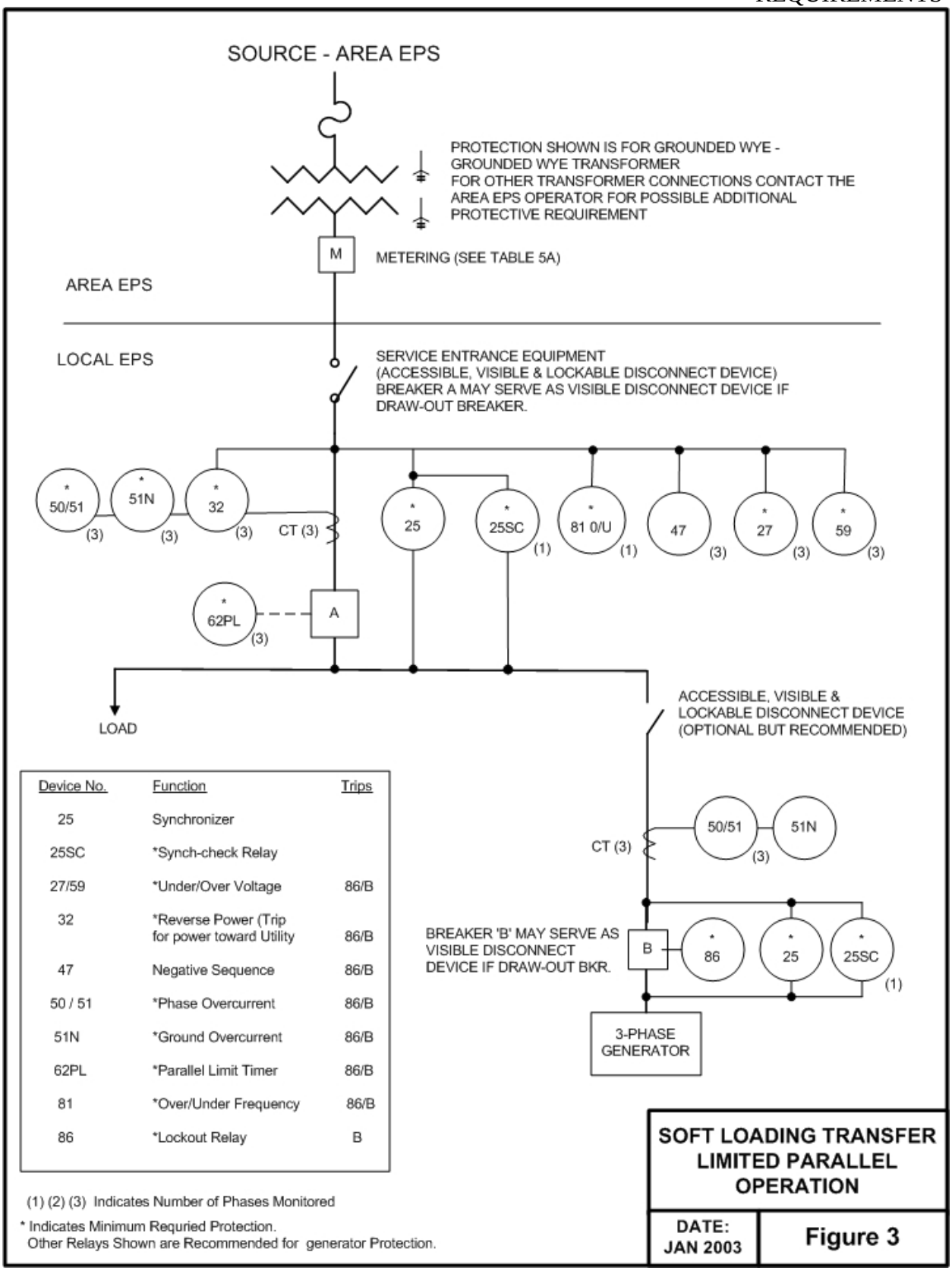
(2) All interconnection-related protection systems shall be periodically tested and maintained, by the Interconnection Customer, at intervals specified by the manufacture or system integrator. These intervals shall not exceed 5 years. Periodic test reports and a log of inspections shall be maintained, by the Interconnection Customer and made available to Minnesota Power upon request. Minnesota Power shall be notified prior to the period testing of the protective systems, so that Minnesota Power personnel may witness the testing if so desired.

(a) Verification of inverter connected system rated 15kVA and below may be completed as follows; The Interconnection Customer shall operate the load break disconnect switch and verify the Generator automatically shuts down and does not restart for at least 5 minutes after the switch is close

(b) Any system that depends upon a battery for trip/protection power shall be checked and logged once per month for proper voltage. Once every four years the battery(s) must be either replaced or a discharge test performed. Longer intervals are possible through the use of “station class batteries” and Minnesota Power approval.


Source - Area EPS
M
METERING (SEE TABLE 5A)
AREA EPS
LOCAL EPS
SERVICE ENTRANCE EQUIPMENT
(ACCESSIBLE, VISIBLE & LOCKABLE
DISCONNECT DEVICE)
OPTIONAL, BUT RECOMMENDED
TRANSFER SWITCH
-BREAK-BEFORE-MAKE
-MECHANICALLY INTERLOCKED
LOAD
ACCESSIBLE, VISIBLE &
LOCKABLE DISCONNECT DEVICE
(OPTIONAL BUT RECOMMENDED)
1-PHASE OR
3-PHASE
GENERATOR
NOTE: BREAK-BEFORE-MAKE
AUTOMATIC TRANSFER
SWITCHES SHALL BE
MECHANICALLY INTERLOCKED
OPEN TRANSITION
"BREAK-BEFORE-MAKE"
DATE:
JAN 2003
Figure 1


Source - Area EPS
M
METERING (SEE TABLE 5A)
AREA EPS
LOCAL EPS
SERVICE ENTRANCE EQUIPMENT
(ACCESSIBLE, VISIBLE & LOCKABLE
DISCONNECT DEVICE)
* 25SC
(1)
* 25
* 62PL
(3)
LOAD
TRANSFER SWITCH QUICK OPEN OR
CLOSED TRANSITION - "MAKE BEFORE BREAK"
0.5 SEC. MAX PARALLEL TIME
ACCESSIBLE, VISIBLE &
LOCKABLE DISCONNECT DEVICE
(OPTIONAL BUT RECOMMENDED)
CT (3)
50/51
(3)
51N
BREAKER 'A' MAY SERVE AS
ACCESSIBLE DISCONNECT
DEVICE IF DRAWOUT
A
* 86
Tripped by
62PL
3-PHASE
GENERATOR
Device No. | Function | Trips
25 | Synchronizer |
25SC | *Synch-check Relay |
50 / 51 | Phase Overcurrent | 86/A
51N | Ground Overcurrent |
62PL | *Parallel Limit Timer | 86/A
86 | *Lockout Relay | A
(1) (2) (3) Indicates Number of Phases to be Monitored
* Indicates Minimum Requried Protection
Other Relays Shown are Recommended for Generator Protection.
QUICK OPEN OR
CLOSED TRANSITION
"MAKE-BEFORE-BREAK"
DATE:
JAN 2003
Figure 2



Device No.	Function	Trips
25	Synchronizer	
25SC	*Synch-check Relay	
27/59	*Under/Over Voltage	86/B
32	*Reverse Power (Trip for power toward Utility	86/B
47	Negative Sequence	86/B
50 / 51	*Phase Overcurrent	86/B
51N	*Ground Overcurrent	86/B
62PL	*Parallel Limit Timer	86/B
81	*Over/Under Frequency	86/B
86	*Lockout Relay	B

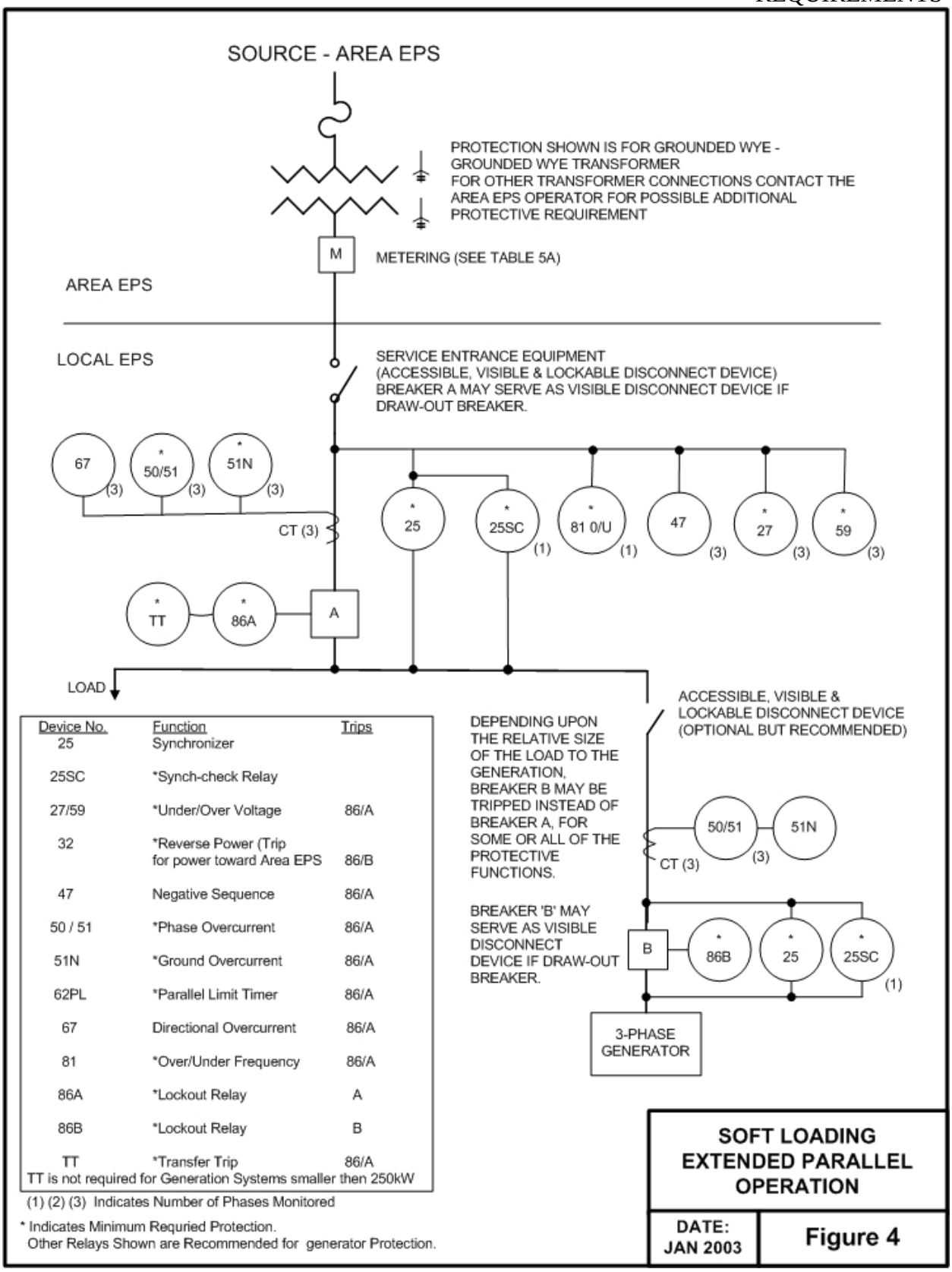
(1) (2) (3) Indicates Number of Phases Monitored

* Indicates Minimum Requried Protection.
Other Relays Shown are Recommended for generator Protection.

SOFT LOADING TRANSFER LIMITED PARALLEL OPERATION

DATE: JAN 2003

Figure 3



Device No.	Function	Trips
25	Synchronizer	
25SC	*Synch-check Relay	
27/59	*Under/Over Voltage	86/A
32	*Reverse Power (Trip for power toward Area EPS	86/B
47	Negative Sequence	86/A
50 / 51	*Phase Overcurrent	86/A
51N	*Ground Overcurrent	86/A
62PL	*Parallel Limit Timer	86/A
67	Directional Overcurrent	86/A
81	*Over/Under Frequency	86/A
86A	*Lockout Relay	A
86B	*Lockout Relay	B
TT	*Transfer Trip	86/A

TT is not required for Generation Systems smaller then 250kW

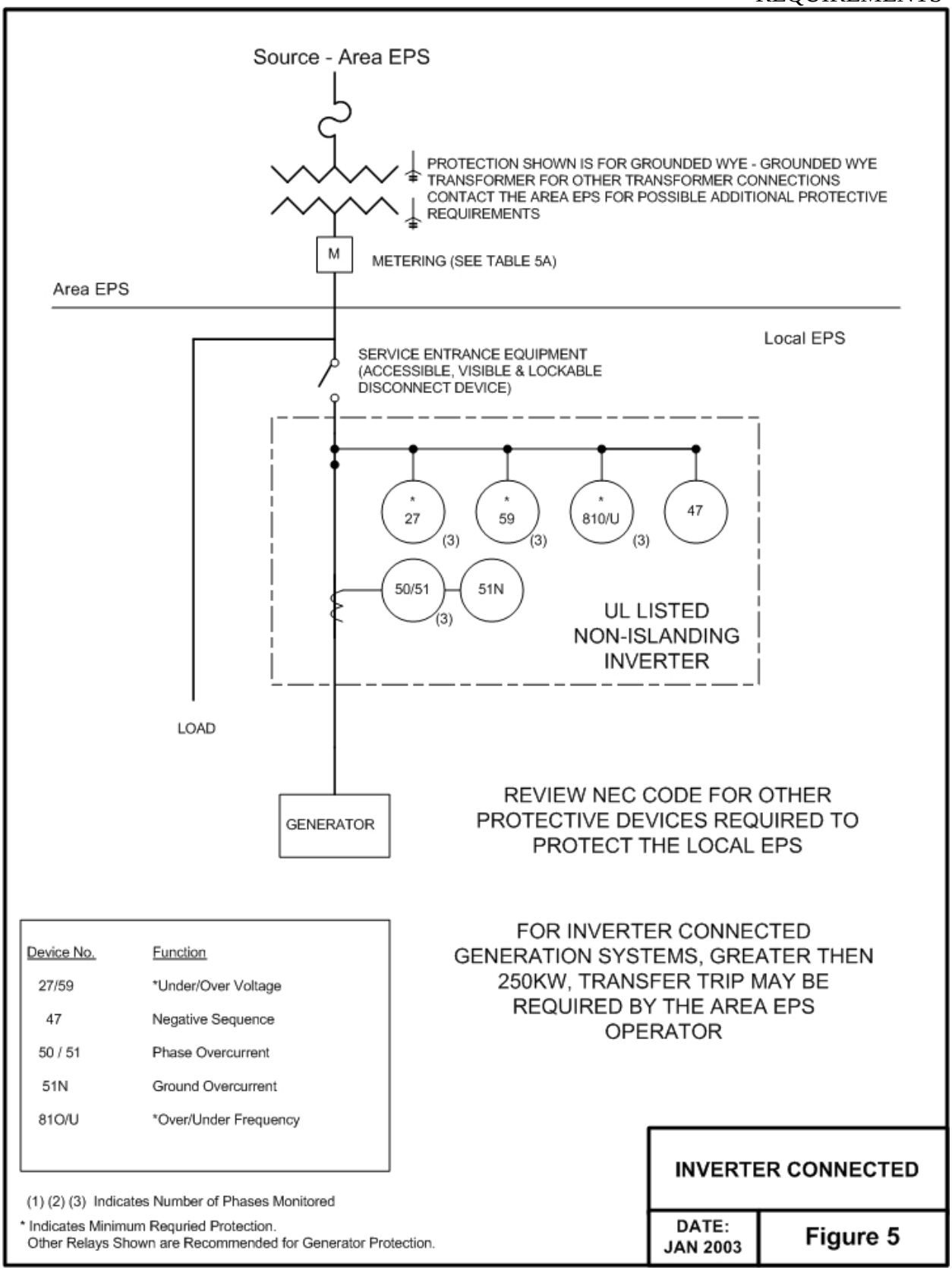
(1) (2) (3) Indicates Number of Phases Monitored

* Indicates Minimum Requried Protection.
Other Relays Shown are Recommended for generator Protection.

SOFT LOADING EXTENDED PARALLEL OPERATION

DATE: JAN 2003

Figure 4


Source - Area EPS
PROTECTION SHOWN IS FOR GROUNDED WYE - GROUNDED WYE TRANSFORMER FOR OTHER TRANSFORMER CONNECTIONS CONTACT THE AREA EPS FOR POSSIBLE ADDITIONAL PROTECTIVE REQUIREMENTS
M
METERING (SEE TABLE 5A)
Area EPS
Local EPS
SERVICE ENTRANCE EQUIPMENT (ACCESSIBLE, VISIBLE & LOCKABLE DISCONNECT DEVICE)
* 27 (3)
* 59 (3)
* 810/U (3)
47
50/51 (3)
51N
UL LISTED NON-ISLANDING INVERTER
LOAD
GENERATOR
REVIEW NEC CODE FOR OTHER PROTECTIVE DEVICES REQUIRED TO PROTECT THE LOCAL EPS
FOR INVERTER CONNECTED GENERATION SYSTEMS, GREATER THEN 250KW, TRANSFER TRIP MAY BE REQUIRED BY THE AREA EPS OPERATOR
Device No. Function
27/59 *Under/Over Voltage
47 Negative Sequence
50 / 51 Phase Overcurrent
51N Ground Overcurrent
81O/U *Over/Under Frequency
(1) (2) (3) Indicates Number of Phases Monitored
* Indicates Minimum Requried Protection.
Other Relays Shown are Recommended for Generator Protection.
INVERTER CONNECTED
DATE: JAN 2003
Figure 5

Generation Interconnection Application to Minnesota Power

WHO SHOULD FILE THIS APPLICATION: Anyone expressing interest to install generation which will interconnect with Minnesota Power (Local electric utility). This application should be completed and returned to Minnesota Power's Generation Interconnection Coordinator, in order to begin processing the request.

INFORMATION: This application is used by Minnesota Power to perform a preliminary interconnection review. The Applicant shall complete as much of the form as possible. The fields in BOLD are required to be completed to the best of the Applicant's ability. The Applicant will be contacted if additional information is required. The response may take up to 15 business days after receipt of all the required information.

COST: A payment to cover the application fee shall be included with this application. The application fee amount is outlined in the "State of Minnesota Interconnection Process for Distributed Generation Systems".

OWNER/APPLICANT		
Company / Applicant's Name:		
Representative:	**Phone Number:**	**FAX Number:**
Title:		
Mailing Address:		
Email Address:		

LOCATION OF GENERATION SYSTEM INTERCONNECTION
Street Address, legal description or GPS coordinates:

PROJECT DESIGN / ENGINEERING (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

ELECTRICAL CONTRACTOR (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

GENERATOR		
Manufacturer:		Model:
Type (Synchronous Induction, Inverter, etc):		**Phases: 1 or 3**
Rated Output (Prime kW):	**(Standby kW):**	**Frequency:**
Rated Power Factor (%):	**Rated Voltage (Volts):**	Rated Current (Amperes):
Energy Source (gas, steam, hydro, wind, etc.)		

TYPE OF INTERCONNECTED OPERATION	
Interconnection / Transfer method: **□ Open □ Quick Open □ Closed □ Soft Loading □ Inverter**	
Proposed use of generation: (Check all that may apply) **□ Peak Reduction □ Standby □ Energy Sales** **□ Cover Load**	**Duration Parallel:** **□ None □ Limited □ Continuous**
Pre-Certified System: Yes / No (Circle one)	**Exporting Energy Yes / No (Circle one)**

Generation Interconnection Application to Minnesota Power

ESTIMATED LOAD INFORMATION		
The following information will be used to help properly design the interconnection. This Information is not intended as a commitment or contract for billing purposes.		
Minimum anticipated load (generation not operating):	**kW:**	**kVA:**
Maximum anticipated load (generation not operating):	**kW:**	**kVA:**

ESTIMATED START/COMPLETION DATES	
Construction start date:	**Completion (operational) date:**

DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION
Attach a single line diagram showing the switchgear, transformers, and generation facilities. Give a general description of the manner of operation of the generation (cogeneration, closed-transition peak shaving, open-transition peak shaving, emergency power, etc.). Also, does the Applicant intend to sell power and energy or ancillary services and/or wheel power over Minnesota Power's facilities. If there is an intent to sell power and energy, also define the target market.

SIGN OFF AREA:

With this Application, we are requesting Minnesota Power to review the proposed Generation System Interconnection. We request that Minnesota Power identifies the additional equipment and costs involved with the interconnection of this system and to provide a budgetary estimate of those costs. We understand that the estimated costs supplied by Minnesota Power, will be estimated using the information provided. We also agree that we will supply, as requested, additional information, to allow Minnesota Power to better review this proposed Generation System interconnection. We have read the "State of Minnesota Distributed Generation Interconnection Requirements" and will design the Generation System and interconnection to meet those requirements.

Applicant Name (print):

Applicant Signature: **Date:**

SEND THIS COMPLETED & SIGNED APPLICATION AND ATTACHMENTS TO MINNESOTA POWER'S GENERATION INTERCONNECTION COORDINATOR

20kW (and under) Solar/Inverter Installations

Generation Interconnection Application to Minnesota Power

minnesota power
AN ALLETE COMPANY

power of one
a conservation program

WHO SHOULD FILE THIS APPLICATION: Anyone expressing interest to install generation which will interconnect with Minnesota Power (local electric utility). This application should be completed and returned to Minnesota Power in order to begin processing the request.

INFORMATION: This application is used by Minnesota Power to perform a preliminary interconnection review. The Applicant shall complete as much of the form as possible. The fields in BOLD are required to be completed for application processing. The Applicant will be contacted if additional information is required. The response may take up to 15 business days after receipt of all the required information.

For further details regarding Minnesota Power's interconnection processes and standards, refer to the "State of Minnesota Power Interconnection Application for Distributed Generation Systems", the "State of Minnesota Distributed Generation Interconnection Requirements", the terms and conditions outlined in this application and other interconnection information. These documents can be found on Minnesota Power's website at: **www.mnpower.com/DistributedGeneration**

COST: Customer will be notified of cost, if any, by Minnesota Power during the approval process. The application fee amount is outlined in the "State of Minnesota Power Interconnection Application for Distributed Generation Systems".

Owner / Applicant		
MP Customer Name:		
Account Number:	Meter Number:	
Representative:	Phone Number:	FAX Number:
Title:		
Mailing Address:		
Email Address:		

Location of Generation System Interconnection
Street Address, legal description or GPS coordinates:

Project Design / Engineering (if applicable) / Installer		
Company:		
Representative:	Phone Number:	FAX Number:
Mailing Address:		
Email Address:		

Electrical Contractor (if applicable)		
Company:		
Representative:	Phone Number:	FAX Number:
Mailing Address:		
Email Address:		

20kW (and under) Solar/Inverter Installations

Generation Interconnection Application to Minnesota Power

Solar Panel	
Manufacturer:	**Model:**
Rated Output (prime kW):	Estimated Annual kWh production:

Inverter (if applicable)	
Manufacturer:	**Model:**

System Design Specifications	
Tilt Angle:	Azimuth:

Transfer Switch (if applicable) Visible Lockable Disconnect Switch (within ten feet of utility meter)	
Model Number:	Type:
Manufacturer:	Rating (amps):

Estimated Start / Completion Dates	
Construction Start Date:	Completion (operational) Date:

Please attach the following documents to this application:

- Attach a 1-line diagram using MP preferred symbology (see page 5 for sample drawing and preferred symbology)
- Attach a site drawing (see page 6 for sample)
- Attach shade drawing
- Attach solar panel spec sheet**
- Attach inverter spec sheet**
- Attach evidence of intent*
- Attach site photos

Prior to engergizing the system the following will be provided:

- Proof of liability insurance
- Electrical inspection
- Signed Uniform Statewide Contract

*Proof of intent to proceed, I.E. signed purchase agreement.

**Please submit new specification sheets and any other changes to the proposed installation as soon as possible so that MP can determine the status of the current application.

Terms & Conditions

Eligible Equipment

1. Photovoltaic modules must be certified as meeting the most current edition of Underwriters Laboratory Standard 1703 (UL1703)
2. All inverters must be certified as meeting the current edition of Underwriters Laboratory 1741 (UL1741).

Installation Requirements

1. A visible open, lockable disconnect must be installed within 10' of the utility meter(s).
2. A production meter must be installed within 10' from the existing utility meter as described in Minnesota Power's Distribution Construction Standards (DCS) 4800.
3. All systems must have a Preliminary Review conducted by Minnesota Power and approved prior to installation. During the review, the service will be analyzed and the customer will be notified if modifications or upgrades are required.
4. Customers must obtain liability insurance against personal or property damage due to the installation, interconnection, and operation of its electric generating facilities. The amount of liability insurance required is covered in the interconnection contract. DG systems 40 kW and under require $300,000.00 liability insurance.
5. Installations must comply with all applicable building and zoning codes. Proof of an approved electrical inspection must be submitted prior to energizing the system.
6. Installations are subject to the requirements and provisions of Minnesota Statute (216B.164), Minnesota Rules (Chapter 7835), the currently adopted edition of the National Electrical Code (NEC), IEEE 1547 and electric utility requirements.

SolarSense Rebate Requirements (applicable to customers awarded SolarSense funds only)

1. Be a Minnesota Power retail customer. Rebates are typically limited to one rebate per customer per year.
2. Submit interconnection application to Minnesota Power between January 1–February 28.
3. Get pre-approval of application prior to purchase of equipment and installation.
4. Own the PV system and the property/building where the system will be installed.
5. Complete or have completed an energy analysis within 24 months prior to installation.
6. All of the major system components including modules and inverters must be new.
7. Photovoltaic modules must come with a 20-year or greater manufacturer's performance warranty. All inverters must come with a minimum 5 year manufacturer's performance warranty.
8. You may not install a system with kWh generation capacity of more than 120% of the premise's twelve month energy consumption.
9. Installers are responsible for informing the customer of system location and design characteristics that may affect the overall system production.
10. Submit final installation costs to Minnesota Power.
11. Complete and submit the SolarSense Renewable Energy Credit Contract once installation is finished.

Declaration

The undersigned warrants, certifies and represents the following:

1. The information provided in this form is true and correct to the best of my knowledge; and
2. The installation will meet all SolarSense Rebate Program requirements, if applying for rebate.
3. Any substantive changes to the system design, equipment, or other specifications may require submittal of a new application and restart the review process. Contact Minnesota Power regarding any scope changes.

Sign Off Area:	
With this Application, we are requesting Minnesota Power to review the proposed Generation System Interconnection. We request that Minnesota Power identifies the additional equipment and costs involved with the interconnection of this system and to provide a budgetary estimate of those costs. We understand that the estimated costs supplied by Minnesota Power, will be estimated using the information provided. We also agree that we will supply, as requested, additional information, to allow Minnesota Power to better review this proposed Generation System Interconnection. We have read the "State of Minnesota Power Interconnection Application for Distributed Generation Systems", the "State of Minnesota Distributed Generation Interconnection Requirements", the terms and conditions outlined in this application and other interconnection information and will design the Generation System and interconnection to meet those requirements.	
MP Customer Name (print):	
MP Customer Signature:	Date:
Installer Name (print):	
Installer Signature:	Date:

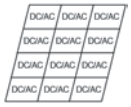
Send this completed & signed application and attachments to:

Minnesota Power
ATTN: Katie Gascoigne
30 West Superior Street
Duluth, MN 55802-2093

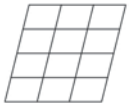
DG Symbols

Minnesota Power Preferred Symbology

Solar Array with Micro Inverters

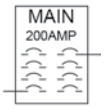


Solar Array



Transformer
Type:
Rating:

Main Service Panel



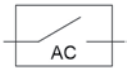
Breaker Panel

Breaker

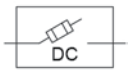
Junction Box

DC Disconnect Switch

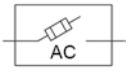
AC Disconnect Switch



DC Fused Disconnect Switch



AC Fused Disconnect Switch



Battery

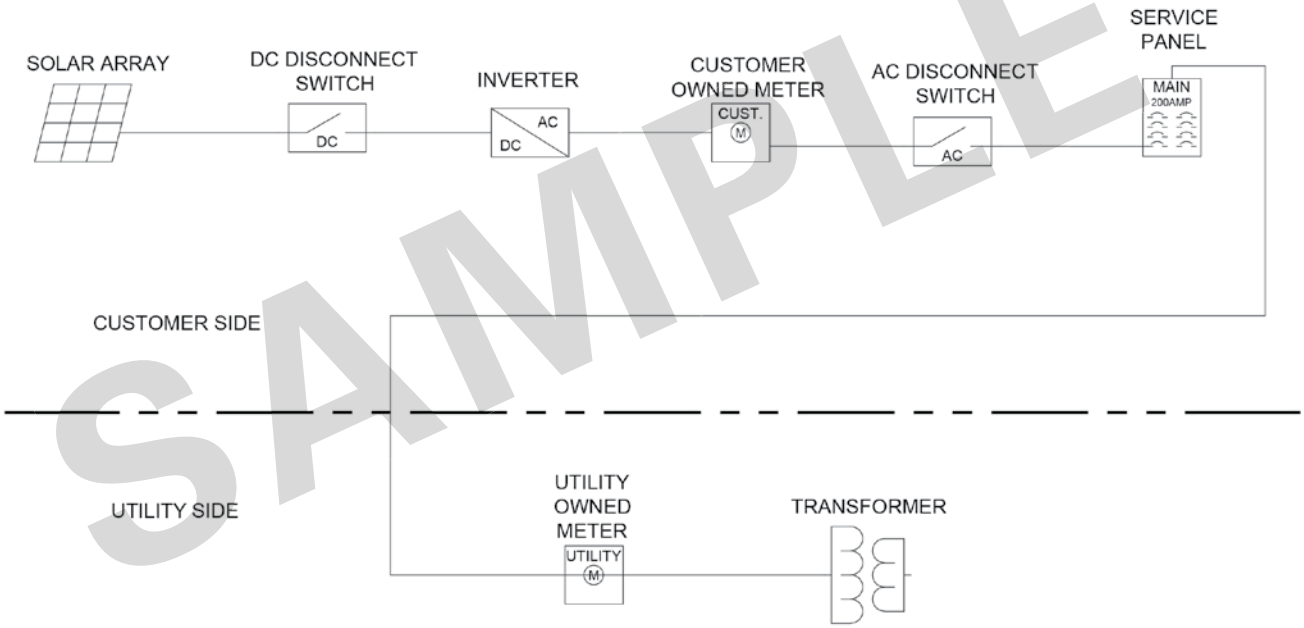
Inverter

Ground

Utility Owned Meter

Customer Owned Meter

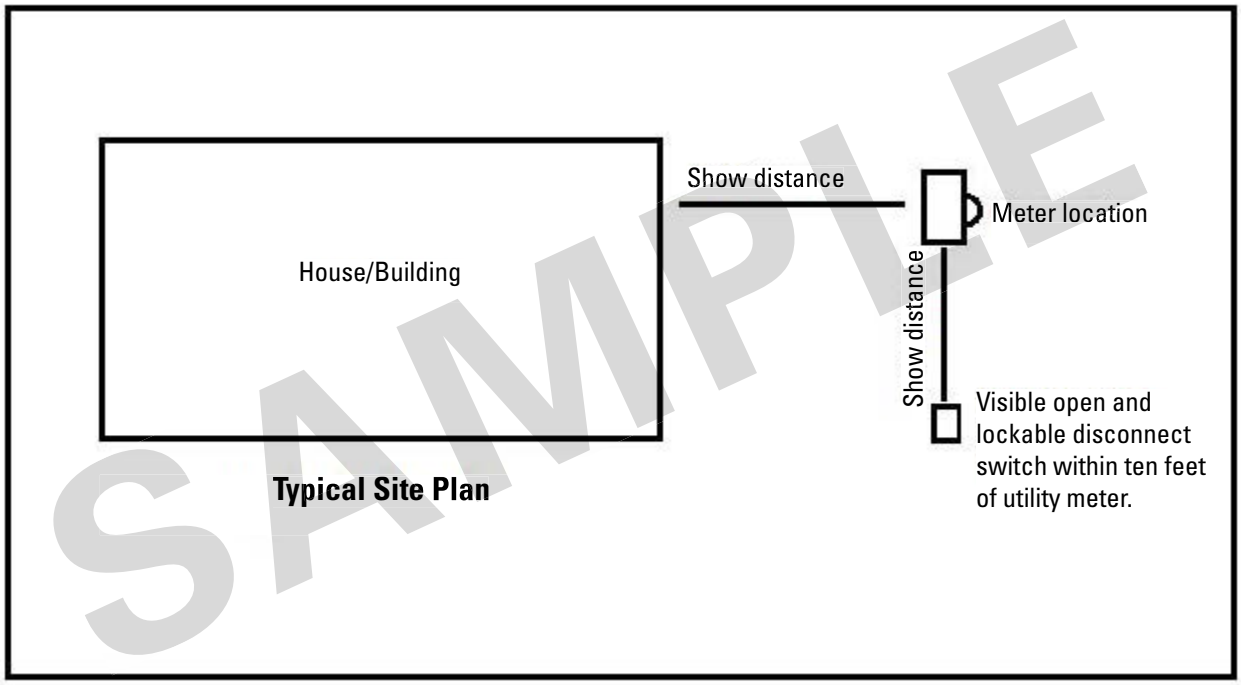
TYPICAL SOLAR SYSTEM ONE LINE



SAMPLE

Label visible, open and lockable disconnect switch shown on site plan.

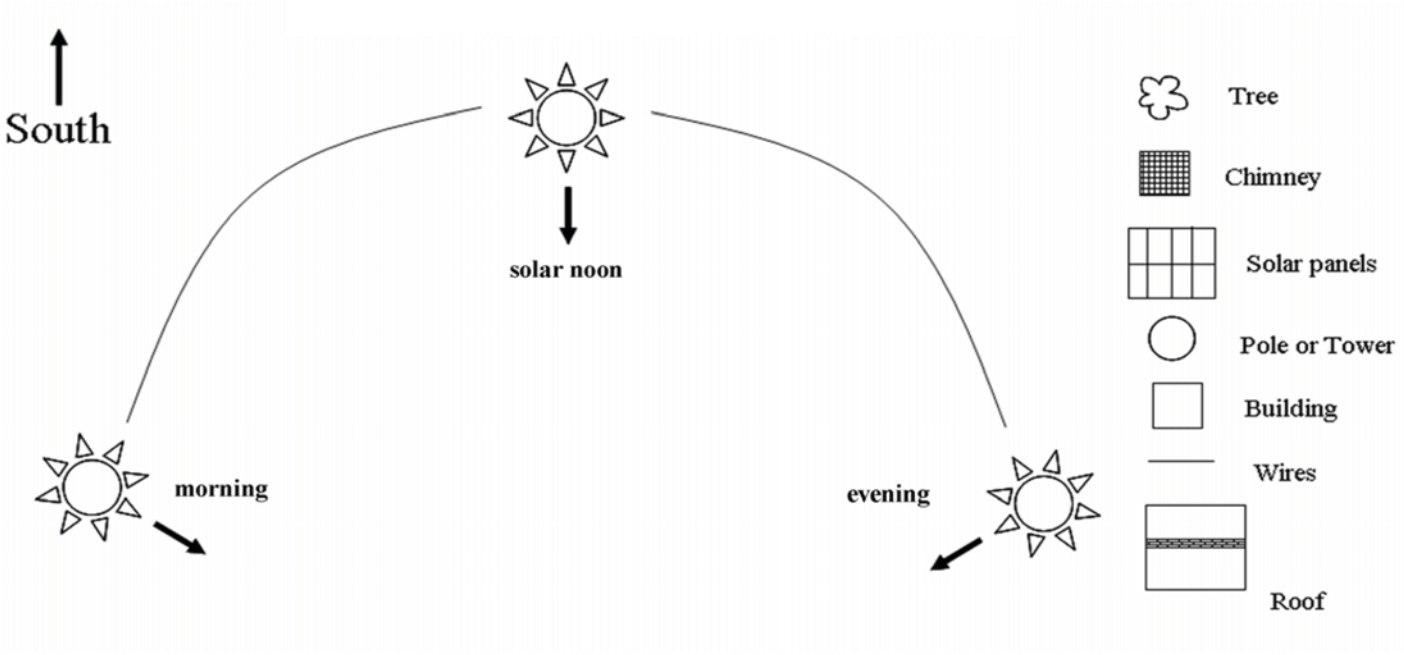
Site Drawing



Typical Site Plan

SAMPLE

Solar Site Diagram - Top View



This Diagram must be completed as part of the Minnesota Power SolarSense Application. Using the symbols (at right of the diagram) sketch the locations and distances between the proposed array and surrounding objects. Include estimated heights above ground for all objects.

What angle will the array face?_____(180º - due south)

1. Draw the proposed location of the solar system using the appropriate symbols.
2. Determine the orientation of the system.
3. Draw any objects that appear in the photos of the horizon. Pay particular attention to those objects which may appear to present a shading obstruction in the horizon photos.

    a. You do not need to draw objects that are located behind the solar panels unless they reach over the top of the solar panels.
    b. Estimate the appropriate width at the widest point of each object.
    c. Measure and make note of the distance from the solar array to each object on the diagram.
    d. Include heights of objects and the height of the lowest point of the PV array.

This site diagram must accompany the application. The site diagram is a representation of the solar installation's location along with nearby objects that might shade the system. It is designed to help interpret the photos included with the application form and as a cross reference to the shading analysis.

Definitions

Anti-islanding test – a utility representative will test the completed system for safety before an interconnection contract is processed

Azimuth – the direction measured in degrees from North that the solar installation is oriented

Building code – check with city and/or county to identify permits needed for the solar installation

DC rating – solar capacity, measured in watts

Evidence of Intent – evidence that the applicant is serious about participating in the solar rebate program: $500 down payment to the installer or utility interconnection application is acceptable

Grid connected – PV system is interconnected to an electric utility; grid connected systems in Minnesota benefit from net metering if the capacity is not more than 40 kW

Interconnection agreement – a contract with the electric utility to let a customer sell electricity back to the utility; utilities must use standard state contract (MN Rule 7835.9910 www.leg.state.mn.us)

Interconnection guidelines – safety and technical requirements for the solar installation

Inverter – converts DC electricity from the solar panels into AC electricity

Kilowatt (kW) – 1000 watts (five 200 watt solar modules = 1 kilowatt)

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

WHO SHOULD FILE THIS SUBMITTAL: Anyone in the final stages of interconnecting a Generation System with the Minnesota Power. This submittal shall be completed and provided to Minnesota Power's Generation Interconnection Coordinator during the design of the Generation System, as established in the "State of Minnesota Interconnection Process for Distributed Generation Systems".

INFORMATION: This submittal is used to document the interconnected Generation System. The Applicant shall complete as much of the form as applicable. The Applicant will be contacted if additional information is required.

OWNER / APPLICANT		
Company / Applicant:		
Representative:	Phone Number:	FAX Number:
Title:		
Mailing Address:		
Email Address:		

PROPOSED LOCATION OF GENERATION SYSTEM INTERCONNECTION
Street Address, Legal Description or GPS coordinates:

PROJECT DESIGN / ENGINEERING (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

ELECTRICAL CONTRACTOR (if applicable)		
Company:		
Representative:	Phone:	FAX Number:
Mailing Address:		
Email Address:		

TYPE OF INTERCONNECTED OPERATION	
Interconnection / Transfer method: □ Open □ Quick Open □ Closed □ Soft Loading □ Inverter	
Proposed use of generation: (Check all that may apply) □ Peak Reduction □ Standby □ Energy Sales □ Cover Load	Duration Parallel: □ None □ Limited □ Continuous
Pre-Certified System: Yes / No (Circle one)	Exporting Energy Yes / No (Circle one)

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

GENERATION SYSTEM OPERATION / MAINTENANCE CONTACT INFORMATION		
Maintenance Provider:	Phone #:	Pager #:
Operator Name:	Phone #:	Pager #:
Person to Contact before remote starting of units		
Contact Name:	Phone #:	Pager #:
	24hr Phone #:	

GENERATION SYSTEM OPERATING INFORMATION	
Fuel Capacity (gals):	Full Fuel Run-time (hrs):
Engine Cool Down Duration (Minutes):	Start time Delay on Load Shed signal:
Start Time Delay on Outage (Seconds):	

ESTIMATED LOAD		
The following information will be used to help properly design the interconnection. This Information is not intended as a commitment or contract for billing purposes.		
Minimum anticipated load (generation not operating):	kW:	kVA:
Maximum anticipated load (generation not operating):	kW:	kVA:

REQUESTED CONSTRUCTION START/COMPLETION DATES	
Design Completion:	
Construction Start Date:	
Footings in place:	
Primary Wiring Completion:	
Control Wiring Completion:	
Start Acceptance Testing:	
Generation operational (In-service):	

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

(Complete all applicable items, Copy this page as required for additional generators)

SYNCHRONOUS GENERATOR (if applicable)

Unit Number:	Total number of units with listed specifications on site:		
Manufacturer:	Type:	Phases: 1 or 3	
Serial Number (each)	Date of manufacture:	Speed (RPM):	Freq. (Hz);
Rated Output (each unit) kW Standby:	kW Prime:	kVA:	
Rated Power Factor (%):	Rated Voltage(Volts):	Rated Current (Amperes):	
Field Voltage (Volts):	Field Current (Amperes):	Motoring Power (kW):	

Synchronous Reactance (X_d):	% on	kVA base
Transient Reactance (X'_d):	% on	kVA base
Subtransient Reactance (X''_d):	% on	kVA base
Negative Sequence Reactance (X_s):	% on	kVA base
Zero Sequence Reactance (X_o):	% on	kVA base

Neutral Grounding Resistor (if applicable):

I^2t or K (heating time constant):

Exciter data:

Governor data:

Additional Information:

INDUCTION GENERATOR (if applicable)

Rotor Resistance (R_r):	Ohms	Stator Resistance (R_s):	Ohms
Rotor Reactance (X_r):	Ohms	Stator Reactance (X_s):	Ohms
Magnetizing Reactance (X_m):	Ohms	Short Circuit Reactance (X_d''):	Ohms
Design Letter:		Frame Size:	
Exciting Current:		Temp Rise (deg C°):	

Rated Output (kW):

Reactive Power Required: k Vars (no Load) kVars (full load)

If this is a wound-rotor machine, describe any external equipment to be connected (resistor, rheostat, power converter, etc.) to rotor circuit, and circuit configuration. Describe ability, if any, to adjust generator reactive output to provide power system voltage regulation.

Additional Information:

PRIME MOVER (Complete all applicable items)

Unit Number:	Type:
Manufacturer:	
Serial Number:	Date of Manufacture:

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

H.P. Rated:	H.P. Max:	Inertia Constant: lb.-ft.^{2}
Energy Source (hydro, steam, wind etc.):		

INTERCONNECTION (STEP-UP) TRANSFORMER (If applicable)			
Manufacturer:		kVA:	
Date of Manufacture:	Serial Number:		
High Voltage: kV	Connection: delta wye	Neutral solidly grounded?	
Low Voltage: kV	Connection: delta wye	Neutral solidly grounded?	
Transformer Impedance (Z):	% on	kVA base	
Transformer Resistance (R):	% on	kVA base	
Transformer Reactance (X):	% on	kVA base	
Neutral Grounding Resistor (if applicable)			

TRANSFER SWITCH (If applicable)	
Model Number:	Type:
Manufacturer:	Rating(amps):

INVERTER (If applicable)		
Manufacturer:	Model:	
Rated Power Factor (%):	Rated Voltage (Volts):	Rated Current (Amperes):
Inverter Type (ferroresonant, step, pulse-width modulation, etc.):		
Type of Commutation: forced line	Minimum Short Circuit Ratio required:	
Minimum voltage for successful commutation:		
Current Harmonic Distortion	Maximum Individual Harmonic (%): Maximum Total Harmonic Distortion (%):	
Voltage Harmonic Distortion	Maximum Individual Harmonic (%): Maximum Total Harmonic Distortion (%):	
Describe capability, if any, to adjust reactive output to provide voltage regulation:		
NOTE: *Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.*		

POWER CIRCUIT BREAKER (if applicable)					
Manufacturer:			Model:		
Rated Voltage (kilovolts):			Rated Ampacity (Amperes):		
Interrupting Rating (Amperes):			BIL Rating:		
Interrupting Medium (vacuum, oil, gas, etc.)			Insulating Medium (vacuum, oil, gas, etc.)		
Control Voltage (Closing):	(Volts)	AC	DC		
Control Voltage (Tripping):	(Volts)	AC	DC	Battery	Charged Capacitor
Close Energy (circle one):	Spring	Motor	Hydraulic	Pneumatic	Other
Trip Energy (circle one):	Spring	Motor	Hydraulic	Pneumatic	Other

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

Bushing Current Transformers (Max. ratio):	Relay Accuracy Class:
CT'S Multi Ratio? (circle one); No / Yes: (Available taps):	

ENGINEERING DATA SUBMITTAL

For the Interconnection of Distributed Generation to Minnesota Power

MISCELLANEOUS (Use this area and any additional sheets for applicable notes and comments)

SIGN OFF AREA
This Engineering Data Submittal documents the equipment and design of the Generation System. We agree to supply Minnesota Power with an updated Engineering Data Submittal any time significant changes are made in the equipment used or the design of the proposed Generation System. The Applicant agrees to design, operate and maintain the Generation System within the requirements set forth by the "State of Minnesota Distributed Generation Interconnection Requirements".
Applicant Name (print):
Applicant Signature: **Date:**

SEND THIS COMPLETED & SIGNED ENGINEERING DATA SUBMITTAL AND ANY ATTACHMENTS TO MINNESOTA POWER'S GENERATION INTERCONNECTION COORDINATOR

State of Minnesota

Interconnection Agreement

For the Interconnection of Extended Parallel Distributed Generation Systems With Minnesota Power

This Generating System Interconnection Agreement is entered into by and between Minnesota Power and the Interconnection Customer "_____". The Interconnection Customer and Minnesota Power are sometimes also referred to in this Agreement jointly as "Parties" or individually as "Party".

In consideration of the mutual promises and obligations stated in this Agreement and its attachments, the Parties agree as follows:

I. SCOPE AND PURPOSE

A) Establishment of Point of Common Coupling. This Agreement is intended to provide for the Interconnection Customer to interconnect and operate a Generation System with a total Nameplate Capacity of 10MWs or less in parallel with Minnesota Power at the location identified in Exhibit C and shown in the Exhibit A one-line diagram.

B) This Agreement governs the facilities required to and contains the terms and condition under which the Interconnection Customer may interconnect the Generation System to Minnesota Power. This Agreement does not authorize the Interconnection Customer to export power or constitute an agreement to purchase or wheel the Interconnection Customer's power. Other services that the Interconnection Customer may require from Minnesota Power, or others, may be covered under separate agreements.

C) To facilitate the operation of the Generation System, this agreement also allows for the occasional and inadvertent export of energy to Minnesota Power. The amount, metering, billing and accounting of such inadvertent energy exporting shall be governed by Exhibit D (Operating Agreement). This Agreement does not constitute an agreement by Minnesota Power to purchase or pay for any energy, inadvertently or intentionally exported, unless expressly noted in Exhibit D or under a separately executed power purchase agreement (PPA).

D) This agreement does not constitute a request for, nor the provision of any transmission delivery service or any local distribution delivery service.

E) The Technical Requirements for interconnection are covered in a separate Technical Requirements document know as, the "State of Minnesota Distributed Generation Interconnection Requirements", a copy of which as been made available to the Interconnection Customer and incorporated and made part of this Agreement by this reference.

II. DEFINITIONS

A) "Area EPS" an electric power system (EPS) that serves Local EPS's. Note: Typically, an Area EPS has primary access to public rights-of-way, priority crossing of property boundaries, etc. Minnesota Power's distribution system is an Area EPS.

B) "Area EPS Operator" the entity that operates the Area EPS, here Minnesota Power.

C) "Dedicated Facilities" the equipment that is installed due to the interconnection of the Generation System and not required to serve other Minnesota Power customers.

D) "EPS" (Electric Power System) facilities that deliver electric power to a load. Note: This may include generation units.

E) "Extended Parallel" means the Generation System is designed to remain connected with Minnesota Power for an extended period of time.

F) "Generation" any device producing electrical energy, i.e., rotating generators driven by wind, steam turbines, internal combustion engines, hydraulic turbines, solar, fuel cells, etc.; or any other electric producing device, including energy storage technologies.

G) "Generation Interconnection Coordinator" the person or persons designated by Minnesota Power to provide a single point of coordination with the Applicant for the generation interconnection process.

H) "Generation System" the interconnected generator(s), controls, relays, switches, breakers, transformers, inverters and associated wiring and cables, up to the Point of Common Coupling.

I) "Interconnection Customer" the party or parties who will own/operate the Generation System and are responsible for meeting the requirements of the agreements and Technical Requirements. This could be the Generation System applicant, installer, owner, designer, or operator.

J) "Local EPS" an electric power system (EPS) contained entirely within a single premises or group of premises.

K) "Nameplate Capacity" the total nameplate capacity rating of all the Generation included in the Generation System. For this definition the "standby" and/or maximum rated kW capacity on the nameplate shall be used.

L) "Point of Common Coupling" the point where the Local EPS is connected to Minnesota Power.

M) "Point of Delivery" the point where the energy changes possession from one party to the other. Typically this will be where the metering is installed but it is not required that the Point of Delivery is the same as where the energy is metered.

N) "Technical Requirements" "State of Minnesota Requirements for Interconnection of Distributed Generation.

III. DESCRIPTION OF INTERCONNECTION CUSTOMER'S GENERATION SYSTEM

A) A description of the Generation System, including a single-line diagram showing the general arrangement of how the Interconnection Customer's Generation System is interconnected with Minnesota Power's distribution system, is attached to and made part of this Agreement as Exhibit A. The single-line diagram shows the following;

1) Point of Delivery (if applicable)

2) Point of Common Coupling

3) Location of Meter(s)

4) Ownership of the equipment.

5) Generation System total Nameplate Capacity _____ kW

6) Scheduled operational (on-line) date for the Generation System.

IV. RESPONSIBILITIES OF THE PARTIES

A) The Parties shall perform all obligations of this Agreement in accordance with all applicable laws and regulations, operating requirements and good utility practices.

B) Interconnection Customer shall construct, operate and maintain the Generation System in accordance with the applicable manufacture's recommend maintenance schedule, the Technical Requirements and in accordance with this Agreement.

C) Minnesota Power shall carry out the construction of the Dedicated Facilities in a good and workmanlike manner, and in accordance with standard design and engineering practices.

V. CONSTRUCTION

The Parties agree to cause their facilities or systems to be constructed in accordance with the laws of the State of Minnesota and to meet or exceed applicable codes and standards provided by the NESC (National Electrical Safety Code), ANSI (American National Standards Institute), IEEE (Institute of Electrical and Electronic Engineers), NEC (National Electrical Code), UL (Underwriter's Laboratory), Technical Requirements and local building codes and other applicable ordinances in effect at the time of the installation of the Generation System.

A) Charges and payments

The Interconnection Customer is responsible for the actual costs to interconnect the Generation System with Minnesota Power, including, but not limited to any Dedicated Facilities attributable to the addition of the Generation System, Minnesota Power labor for

installation coordination, installation testing and engineering review of the Generation System and interconnection design. Estimates of these costs are outlined in Exhibit B. While estimates, for budgeting purposes, have been provided in Exhibit B, the actual costs are still the responsibility of the Interconnection Customer, even if they exceed the estimated amount(s). All costs, for which the Interconnection Customer is responsible for, must be reasonable under the circumstances of the design and construction.

1) Dedicated Facilities
   a) During the term of this Agreement, Minnesota Power shall design, construct and install the Dedicated Facilities outlined in Exhibit B. The Interconnection Customer shall be responsible for paying the actual costs of the Dedicated Facilities attributable to the addition of the Generation System.

   b) Once installed, the Dedicated Facilities shall be owned and operated by Minnesota Power and all costs associated with the operating and maintenance of the Dedicated Facilities, after the Generation System is operational, shall be the responsibility of Minnesota Power, unless otherwise agreed.

   c) By executing this Agreement, the Interconnection Customer grants permission for Minnesota Power to begin construction and to procure the necessary facilities and equipment to complete the installation of the Dedicated Facilities, as outlined in Exhibit B. If for any reason, the Generation System project is canceled or modified, so that any or all of the Dedicated Facilities are not required, the Interconnection Customer shall be responsible for all costs incurred by Minnesota Power, including, but not limited to the additional costs to remove and/or complete the installation of the Dedicated Facilities. The Interconnection Customer may, for any reason, cancel the Generation System project, so that any or all of the Dedicated Facilities are not required to be installed. The Interconnection Customer shall provide written notice to Minnesota Power of cancellation. Upon receipt of a cancellation notice, Minnesota Power shall take reasonable steps to minimize additional costs to the Interconnection Customer, where reasonably possible.

2) Payments

   a) The Interconnection Customer shall provide reasonable adequate assurances of credit, including a letter of credit or personal guaranty of payment and performance from a creditworthy entity acceptable under Minnesota Power's credit policy and procedures for the unpaid balance of the estimated amount shown in Exhibit B.

   b) The payment for the costs outlined in Exhibit B, shall be as follows;

      i. 1/3 of estimated costs, outlined in Exhibit B, shall be due upon execution of this agreement.

      ii. 1/3 of estimated costs, outlined in Exhibit B, shall be due prior to initial energization of the Generation System, with Minnesota Power.

      iii. Remainder of actual costs, incurred by Minnesota Power, shall be due within 30 days from the date the bill is mailed by Minnesota Power after project completion.

VI. DOCUMENTS INCLUDED WITH THIS AGREEMENT

A) This agreement includes the following exhibits, which are specifically incorporated herein and made part of this Agreement by this reference*: (if any of these Exhibits are deemed not applicable for this Generation System installation they may be omitted from the final Agreement by Minnesota Power.)*

1) Exhibit A – Description of Generation System and single-line diagram. This diagram shows all major equipment, including, visual isolation equipment, Point of Common Coupling, Point of Delivery for Generation Systems that intentionally export, ownership of equipment and the location of metering.

2) Exhibit B – Estimated installation and testing costs payable by the Interconnection Customer. Included in this listing shall be the description and estimated costs for the required Dedicated Facilities being installed by Minnesota Power for the interconnection of the Generation System and a description and estimate for the final acceptance testing work to be done by Minnesota Power.

3) Exhibit C – Engineering Data Submittal – A standard form that provides the engineering and operating information about the Generation System.

4) Exhibit D – Operating Agreement – This provides specific operating information and requirements for this Generation System interconnection. This Exhibit has a separate signature section and may be modified, in writing, from time to time with the agreement of both parties.

5) Exhibit E – Maintenance Agreement – This provides specific maintenance requirements for this Generation System interconnection. This Exhibit has a separate signature section and may be modified, in writing, from time to time with the agreement of both parties.

VII. TERMS AND TERMINATION

A) This Agreement shall become effective as of the date when both the Interconnection Customer and Minnesota Power have both signed this Agreement. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:

1) The Parties agree in writing to terminate the Agreement; or

2) The Interconnection Customer may terminate this agreement at any time, by written notice to Minnesota Power, prior to the completion of the final acceptance testing of the Generation System by Minnesota Power. Once the Generation System is operational then VII.A.3 applies. Upon receipt of a cancellation notice, Minnesota Power shall take reasonable steps to minimize additional costs to the Interconnection Customer, where reasonably possible.

3) Once the Generation System is operational the Interconnection Customer may terminate this agreement after 30 days written notice to Minnesota Power, unless otherwise agreed to within the Exhibit D, Operating Agreement; or

4) Minnesota Power may terminate this agreement after 30 days written notice to the Interconnection Customer if:

a) The Interconnection Customer fails to interconnect and operate the Generation System per the terms of this Agreement; or

b) The Interconnection Customer fails to take all corrective actions specified in Minnesota Power's written notice that the Generation System is out of compliance with the terms of this Agreement, within the time frame set forth in such notice, or

c) If the Interconnection Customer fails to complete Minnesota Power's final acceptance testing of the generation system within 24 months of the date proposed under section III.A.5.

B) Upon termination of this Agreement the Generation System shall be disconnected from Minnesota Power. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing, at the time of the termination.

VIII. OPERATIONAL ISSUES

Each Party will, at its own cost and expense, operate, maintain, repair and inspect, and shall be fully responsible for, the facilities which it now or hereafter may own, unless otherwise specified.

A) Technical Standards: The Generation System shall be installed and operated by the Interconnection Customer consistent with the requirements of this Agreement; the Technical Requirements; the applicable requirements located in the National Electrical Code (NEC); the applicable standards published by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE); and local building and other applicable ordinances in effect at the time of the installation of the Generation System.

B) Right of Access: At all times, Minnesota Power's personnel shall have access to the disconnect switch of the Generation System for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate Minnesota Power safely and to provide service to its customers. If necessary for the purposes of this Agreement, the Interconnection Customer shall allow Minnesota Power access to Minnesota Power's equipment and facilities located on the premises.

C) Electric Service Supplied: Minnesota Power will supply the electrical requirements of the Local EPS that are not supplied by the Generation System. Such electric service shall be supplied, to the Interconnection Customer's Local EPS, under the rate schedules applicable to the Customer's class of service as revised from time to time by Minnesota Power.

D) Operation and Maintenance: The Generation System shall be operated and maintained, by the Interconnection Customer in accordance with the Technical Standards and any additional requirements of Exhibit D and Exhibit E, attached to this document, as amended, in writing, from time to time.

E) Cooperation and Coordination: Both Minnesota Power and the Interconnection Customer shall communicate and coordinate their operations, so that the normal operation of Minnesota Power does not unduly effect or interfere with the normal operation of the Generation System and the Generation System does not unduly effect or interfere with the normal operation of Minnesota Power. Under abnormal operations of either the Generation System or Minnesota Power's system, the responsible Party shall provide reasonably timely communication to the other Party to allow mitigation of any potentially negative effects of the abnormal operation of their system.

F) Disconnection of Unit: Minnesota Power may disconnect the Generation System as reasonably necessary, for termination of this Agreement; non-compliance with this Agreement; system emergency, imminent danger to the public or Minnesota Power personnel; routine maintenance, repairs and modifications to Minnesota Power's distribution system. When reasonably possible Minnesota Power shall provide prior notice to the Interconnection Customer explaining the reason for the disconnection. If prior notice is not reasonably possible Minnesota Power shall after the fact, provide information to the Interconnection Customer as to why the disconnection was required. It is agreed that Minnesota Power shall have no liability for any loss of sales or other damages, including all consequential damages for the loss of business opportunity, profits or other losses, regardless of whether such damages were foreseeable, for the disconnection of the Generation System per this Agreement. Minnesota Power shall expend reasonable effort to reconnect the Generation System in a timely manner and to work towards mitigating damages and losses to the Interconnection Customer where reasonably possible.

G) Modifications to the Generation System: When reasonably possible the Interconnection Customer shall notify Minnesota Power, in writing, of plans for any modifications to the Generation System interconnection equipment, including all information needed by Minnesota Power as part of the review described in this paragraph, at least twenty (20) business days prior to undertaking such modification(s). Modifications to any of the interconnection equipment, including, all interconnection required protective systems, the generation control systems, the transfer switches/breakers, interconnection protection VT's & CT's, and Generation System capacity, shall be included in the notification to Minnesota Power. When reasonably possible the Interconnection Customer agrees not to commence installation of any modifications to the Generating System until Minnesota Power has approved the modification, in writing, which approval shall not be unreasonably withheld. Minnesota Power shall have a minimum of five (5) business days to review and respond to the planned modification. Minnesota Power shall not take longer then a maximum of ten (10) business days, to review and respond to the modification after the receipt of the information required to review the modifications. When it is not reasonably possible for the Interconnection Customer to provide prior written notice, the Interconnection Customer shall provide written notice to Minnesota Power as soon as reasonably possible, after the completion of the modification(s).

H) Permits and Approvals: The Interconnection Customer shall obtain all environmental and other permits lawfully required by governmental authorities prior to the construction of the Generation System. The Interconnection Customer shall also maintain these applicable permits and compliance with these permits during the term of this Agreement.

IX. LIMITATION OF LIABILITY

A) Each Party shall at all times indemnify, defend, and save the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, costs and expenses, reasonable attorneys'

fees and court costs, arising out of or resulting from the Party's performance of its obligations under this agreement, except to the extent that such damages, losses or claims were caused by the negligence or intentional acts of the other Party.

B) Each Party's liability to the other Party for failure to perform its obligations under this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any punitive, incidental, indirect, special, or consequential damages of any kind whatsoever, including for loss of business opportunity or profits, regardless of whether such damages were foreseen.

C) Notwithstanding any other provision in this Agreement, with respect to Minnesota Power's provision of electric service to any customer including the Interconnection Customer, Minnesota Power's liability to such customer shall be limited as set forth in Minnesota Power's tariffs and terms and conditions for electric service, and shall not be affected by the terms of this Agreement.

X. DISPUTE RESOLUTION

A) Each Party agrees to attempt to resolve all disputes arising hereunder promptly, equitably and in a good faith manner.

B) In the event a dispute arises under this Agreement, and if it cannot be resolved by the Parties within thirty (30) days after written notice of the dispute to the other Party, the Parties agree to submit the dispute to mediation by a mutually acceptable mediator, in a mutually convenient location in the State of Minnesota. The Parties agree to participate in good faith in the mediation for a period of 90 days. If the parties are not successful in resolving their disputes through mediation, then the Parties may refer the dispute for resolution to the Minnesota Public Utilities Commission (MPUC), which shall maintain continuing jurisdiction over this Agreement.

XI. INSURANCE

A) At a minimum, In connection with the Interconnection Customer's performance of its duties and obligations under this Agreement, the Interconnection Customer shall maintain, during the term of the Agreement, general liability insurance, from a qualified insurance agency with a B+ or better rating by "Best" and with a combined single limit of not less then:

1) Two million dollars ($2,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is greater then 250kW.

2) One million dollars ($1,000,000) for each occurrence if the Gross Nameplate Rating of the Generation System is between 40kW and 250kW.

3) Three hundred thousand ($300,000) for each occurrence if the Gross Nameplate Rating of the Generation System is less then 40kW.

4) Such general liability insurance shall include coverage against claims for damages resulting from (i) bodily injury, including wrongful death; and (ii) property damage arising out of the Interconnection Customer's ownership and/or operating of the Generation System under this agreement.

B) The general liability insurance required shall, by endorsement to the policy or policies, (a) include Minnesota Power as an additional insured; (b) contain a severability of interest clause or cross-liability clause; (c) provide that Minnesota Power shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to Minnesota Power prior to cancellation, termination, alteration, or material change of such insurance.

C) If the Generation System is connected to an account receiving residential service from Minnesota Power and its total generating capacity is smaller then 40kW, then the endorsements required in Section XI.B shall not apply.

D) The Interconnection Customer shall furnish the required insurance certificates and endorsements to Minnesota Power prior to the initial operation of the Generation System. Thereafter, Minnesota Power shall have the right to periodically inspect or obtain a copy of the original policy or policies of insurance.

E) Evidence of the insurance required in Section XI.A. shall state that coverage provided is primary and is not excess to or contributing with any insurance or self-insurance maintained by Minnesota Power.

F) If the Interconnection Customer is self-insured with an established record of self-insurance, the Interconnection Customer may comply with the following in lieu of Section XI.A – E:

1) Interconnection Customer shall provide to Minnesota Power, at least thirty (30) days prior to the date of initial operation, evidence of an acceptable plan to self-insure to a level of coverage equivalent to that required under section XI.A.

2) If Interconnection Customer ceases to self-insure to the level required hereunder, or if the Interconnection Customer is unable to provide continuing evidence of its ability to self-insure, the Interconnection Customer agrees to immediately obtain the coverage required under Section XI.A.

G) Failure of the Interconnection Customer or Minnesota Power to enforce the minimum levels of insurance does not relieve the Interconnection Customer from maintaining such levels of insurance or relieve the Interconnection Customer of any liability.

H) All insurance certificates, statements of self-insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the following:

Minnesota Power
Attention: Purchasing Manager
30 West Superior Street
Duluth, MN 55802

XII. MISCELLANEOUS

A) FORCE MAJEURE

1) An event of Force Majeure means any act of God, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. An event of Force Majeure does not include an act of negligence or intentional wrongdoing. Neither Party will be considered in default as to any obligation hereunder if such Party is prevented from fulfilling the obligation due to an event of Force Majeure. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations hereunder.

2) Neither Party will be considered in default of any obligation hereunder if such Party is prevented from fulfilling the obligation due to an event of Force Majeure. However, a Party whose performance under this Agreement is hindered by an event of Force Majeure shall make all reasonable efforts to perform its obligations hereunder.

B) NOTICES

1) Any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person or sent by first class mail, postage prepaid, to the person specified below:

   a) If to Minnesota Power:
      Minnesota Power
      Attention: Frank Kornbaum
      PO Box 60,
      Little Falls, MN 56345

   b) If to Interconnection Customer:
      _____
      Attention: Generation Coordinator
      _____
      _____, MN _____

2) A Party may change its address for notices at any time by providing the other Party written notice of the change, in accordance with this Section.

3) The Parties may also designate operating representatives to conduct the daily communications which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's notice to the other Party.

C) ASSIGNMENT

The Interconnection Customer shall not assign its rights nor delegate its duties under this Agreement without Minnesota Power's written consent. Any assignment or delegation the Interconnection Customer makes without Minnesota Power's written consent shall not be valid. Minnesota Power shall not unreasonably withhold its consent to the Generating Entities assignment of this Agreement.

D) NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

E) GOVERNING LAW AND INCLUSION OF MINNESOTA POWER'S TARIFFS AND RULES

1) This Agreement shall be interpreted, governed and construed under the laws of the State of Minnesota as if executed and to be performed wholly within the State of Minnesota without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.

2) The interconnection and services provided under this Agreement shall at all times be subject to the terms and conditions set forth in the tariff schedules and rules applicable to the electric service provided by Minnesota Power, which tariff schedules and rules are hereby incorporated into this Agreement by this reference.

3) Notwithstanding any other provisions of this Agreement, Minnesota Power shall have the right to unilaterally file with the MPUC, pursuant to the MPUC's rules and regulations, an application for change in rates, charges, classification, service, tariff or rule or any agreement relating thereto.

F) AMENDMENT AND MODIFICATION

This Agreement can only be amended or modified by a writing signed by both Parties.

G) ENTIRE AGREEMENT

This Agreement, including all attachments, exhibits, and appendices, constitutes the entire Agreement between the Parties with regard to the interconnection of the Generation System of the Parties at the Point(s) of Common Coupling expressly provided for in this Agreement and supersedes all prior agreements or understandings, whether verbal or written. It is expressly acknowledged that the Parties may have other agreements covering other services not expressly provided for herein, which agreements are unaffected by this Agreement. Each party also represents that in entering into this Agreement, it has not relied on the promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the incorporated attachments, exhibits and appendices.

H) CONFIDENTIAL INFORMATION

Except as otherwise agreed or provided herein, each Party shall hold in confidence and shall not disclose confidential information, to any person (except employees, officers, representatives and agents, who agree to be bound by this section). Confidential information shall be clearly marked as such on each page or otherwise affirmatively identified. If a court, government agency or entity with the right, power, and authority to do so, requests or requires either Party, by subpoena, oral disposition, interrogatories, requests for production of documents, administrative order, or otherwise, to disclose Confidential Information, that Party shall provide the other Party with prompt notice of such request(s) or requirements(s) so that the other Party may seek an appropriate protective order or waive compliance with the terms of this Agreement. In the absence of a protective order or waiver the Party shall disclose such confidential information which,

in the opinion of its counsel, the party is legally compelled to disclose. Each Party will use reasonable efforts to obtain reliable assurance that confidential treatment will be accorded any confidential information so furnished.

I) NON-WARRANTY

Neither by inspection, if any, or non-rejection, nor in any other way, does Minnesota Power give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any structures, equipment, wires, appliances or devices owned, installed or maintained by the Interconnection Customer or leased by the Interconnection Customer from third parties, including without limitation the Generation System and any structures, equipment, wires, appliances or devices appurtenant thereto.

J) NO PARTNERSHIP

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

XIII. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Minnesota Power

By: _____

Name: _____

Title: _____

Date: _____

EXHIBIT A

GENERATION SYSTEM DESCRIPTION
AND SINGLE-LINE DIAGRAM

EXHIBIT B

SUMMARY OF MINNESOTA POWER COSTS AND DESCRIPTION OF DEDICATED FACILITIES BEING INSTALLED BY MINNESOTA POWER FOR THE INTERCONNECTION OF THE GENERATION SYSTEM

This Exhibit shall provide the estimated total costs that will be the responsibility of the Interconnection Customer. It is assumed that the Initial application has been filed and the engineering studies have been paid for and completed, so those costs are not included on this listing.

What is listed below is a general outline of some of the major areas where costs could occur. Other costs then those listed below may be included by Minnesota Power, provided that those costs are a direct result from the request to interconnect the Generation System. The following list is only a guideline and Minnesota Power, for each installation, will be creating a unique Exhibit B that is tailored for that specific Generation System interconnection.

A) Dedicated Facilities (equipment, design and installation labor)

B) Monitoring & Control System (equipment, design and installation labor)

C) Design Coordination and Review

D) Construction Coordination labor costs

E) Testing (development of tests and physical testing)

F) Contingency

EXHIBIT C

ENGINEERING DATA SUBMITTAL

Attach a completed Engineering Data Submittal form from Appendix C of “State of Minnesota Interconnection Process for Distributed Generation Systems”.

EXHIBIT D

OPERATING AGREEMENT

Each Generation System interconnection will be unique and will require a unique Operating Agreement. The following is a listing of some of the possible areas that will be covered in a operating agreement. The following has not been developed into a standard agreement due to the unique nature of each Generation System. It is envisioned that this Exhibit will be tailored by Minnesota Power for each Generation System interconnection. It is also intended that this Operating Agreement Exhibit will be reviewed and updated periodically, to allow the operation of the Generation System, to change to meet the needs of both Minnesota Power and the Interconnection Customer, provided that the change does not negatively affect the other Party. There may also be operating changes required by outside issues, such has changes in FERC and MISO requirements and/or policies which will require this Operating Agreement to be modified.

The following items are provided to show the general types of items which may be included in this Operating Agreement. The items included in the Operating Agreement shall not be limited to the items shown on this list.

A) Applicable Minnesota Power Tariffs – discussion on which tariffs are being applied for this installation and possibly how they will be applied.

B) Var Requirements – How will the Generation System be required to operate so as to control the power factor of the energy flowing in either direction across the interconnection?

C) Inadvertent Energy – This Operating Agreement needs to provide the method(s) that will be used to monitor, meter and account for the inadvertent energy used or supplied by the Generation System. Tariffs and operating rules that apply for this Generation System interconnection shall be discussed in this Operating Agreement.

D) Control Issues - Starting and stopping of the generation, including the remote starting and stopping, if applicable.

E) Dispatch of Generation Resources - What are the dispatch requirements for the Generation System, Can it only run during Peak Hours? Are there a limited number of hours that it can run? Is it required to have met an availability percentage? This will greatly depend upon the PPA and other requirements. Is the Interconnection Customer required to coordinate outages of the Generation System, with Minnesota Power?

F) Outages of Distribution System – How are emergency outages handled? How are other outages scheduled? If the Interconnection Customer requires Minnesota Power to schedule the outages during after-hours, who pays for Minnesota Power's overtime?

G) Notification / Contacts - Who should be notified? How should they be notified? When should they be notified? For what reasons, should the notification take place?

   1) Starting of the Generation

2) Dispatching of Generation

3) Notification of failures (both Minnesota Power and Generation System failures)

H) Documentation of Operational Settings – How much fuel will the generation System typically have on hand? How long can it run with this fuel capacity? How is the generation system set to operate for a power failure? These may be issues that should be documented in the Operating Agreement. The following are a couple of examples:

1) "The Generation System will monitor Minnesota Power phase voltage and after 2 seconds of any phase voltage below 90% the generation will be started and the load transferred to the generator, if the generation is not already running."

2) "The Generation System will wait for 30 minutes after it senses the return of Minnesota Power frequency and voltage, before it will automatically reconnect to Minnesota Power"

I) Cost of testing for future failures – If a component of the Generation System fails or needs to be replaced, which effects the interconnection with Minnesota Power, what is the process for retesting, and for replacement? Who pays for the additional costs of Minnesota Power to work with the Interconnection Customer to resolve these problems and/or to complete retesting of the modified equipment?

J) Right of Access: At all times, Minnesota Power shall have access to the disconnect switch of the Generation System for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement, to meet its obligation to operate Minnesota Power's distribution system safely and to provide service to its customers, at all times. If necessary for the purpose of this Agreement, the Interconnection Customer shall allow Minnesota Power access to Minnesota Power's equipment and facilities located on the premises.

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Minnesota Power

By: _____

Name: _____

Title: _____

Date: _____

EXHIBIT E

MAINTENANCE AGREEMENT

Each Generation System interconnection will be unique and will require a unique Maintenance Agreement. It is envisioned that this Exhibit will be tailored for each Generation System interconnection. It is also intended that this Maintenance Agreement Exhibit will be reviewed and updated periodically, to allow the maintenance of the Generation System be allowed to change to meet the needs of both Minnesota Power and the Interconnection Customer, provided that change does not negatively affect the other Party. There may also be changes required by outside issues; such has changes in FERC and MISO requirements and/or policies which will require this agreement to be modified.

A) Routine Maintenance Requirements –

1) Who is providing maintenance – Contact information

2) Periods of maintenance

B) Modifications to the Generation System - The Interconnection Customer shall notify Minnesota Power, in writing of plans for any modifications to the Generation System interconnection equipment at least twenty (20) business days prior to undertaking such modification. Modifications to any of the interconnection equipment, including all required protective systems, the generation control systems, the transfer switches/breakers, VT's & CT's, generating capacity and associated wiring shall be included in the notification to Minnesota Power. The Interconnection Customer agrees not to commence installation of any modifications to the Generating System until Minnesota Power has approved the modification, in writing. Minnesota Power shall have a minimum of five (5) business days and a maximum of ten (10) business days, to review and respond to the modification, after the receipt of the information required to review the modifications.

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

Interconnection Customer

By: _____

Name: _____

Title: _____

Date: _____

Minnesota Power

By: _____

Name: _____

Title: _____

Date: _____

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

December 29, 2014

PUBLIC DOCUMENT – TRADE SECRET DATA HAS BEEN EXCISED

Dr. Burl Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: In the Matter of the Annual Filing of Cogeneration and Small Power Production rates for Otter Tail Power Company
Docket No. E999/PR-14-09
Annual Rate Filing

Dear Dr. Haar:

In accordance with Minnesota Administrative Rules, Chapter 7835, Public Utilities Commission Cogeneration and Small Power Production, Otter Tail Power Company ("Otter Tail") has prepared the enclosed annual rate filing for 2015.

The enclosed filing for 2015 includes the annual updates to energy and capacity rate payments. In the past, Otter Tail has not received an Order from the Commission approving the annual updates. The updates to energy and capacity rate payments are developed in accordance with Minnesota Administrative Rules, Chapter 7835. Otter Tail expects to make a miscellaneous filing with these riders after an order is received "In the Matter of Possible Amendments to Rules Governing Cogeneration and Small Power Production, Minnesota Rules, Chapter 7835", Docket E-999/R-13-729.

This filing includes both Redline and Final versions of the Small Power Producer rate schedules (Sections 12.01, 12.02, and 12.03). The rate schedules have been marked with a January 1, 2015 effective date. All required supporting data schedules are included.

Please note that Otter Tail has marked the required schedules (Schedules A, B and G) on the nonpublic document version of this filing with the caption **NONPUBLIC DOCUMENT – CONTAINS TRADE SECRET DATA,** according to Minn. Stat. § 13.37, subd. 1(b). This statute protects certain "government data," as that term is defined at Minn. Stat. § 13.02, subd. 7, from being disclosed by an administrative agency to the public. The information being supplied in

these schedules is considered to be a "compilation" of data that (1) was supplied by Otter Tail, (2) is the subject of reasonable efforts by Otter Tail to maintain its secrecy, and (3) derives independent economic value, actual or potential, from not being generally known to or accessible to the public.

It is Otter Tail's understanding that marking the filing in this manner is consistent with the revised procedures for handling trade secret and privileged data, as announced in the joint memorandum of the Department of Public Service and Public Utilities Commission dated August 18, 1999 and which became effective September 1, 1999.

A Certificate of Service on all parties is also enclosed.

Should you have any questions regarding this filing, please contact me at 218-739-8606 or dopatz@otpco.com.

Sincerely,

/s/ DEBRA K. OPATZ
Debra K. Opatz
Pricing Analyst
Regulatory Administration

wao
Enclosures
By electronic filing
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Annual Filing of Cogeneration and Small Power Production Rates for Otter Tail Power Company	Docket No. E999/PR-14-09

SUMMARY OF FILING

Otter Tail Power Company, in compliance with Minnesota Administrative Rules, Chapter 7835, Public Utilities Commission Cogeneration and Small Power Production has filed with the Minnesota Public Utilities Commission its annual filing for 2015. The proposed effective date for these rates is for all bills rendered on or after January 1, 2015. The filing consists of the revised Cogeneration and Small Power Production tariff sheets for Net Energy Billing, Simultaneous Purchase and Sale, and Time of Day, plus the associated schedules.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Annual Filing of
Cogeneration and Small Power Production Rates for Otter Tail Power Company

Docket No. E999/PR-14-09

PETITION OF OTTER TAIL POWER COMPANY

I. INTRODUCTION

Otter Tail Power Company ("Otter Tail"), in compliance with Minnesota Administrative Rules, Chapter 7835, Public Utilities Commission Cogeneration and Small Power Production has filed with the Minnesota Public Utilities Commission its annual filing for 2015. The proposed effective date for these rates is for all bills rendered on or after January 1, 2015. The filing consists of the revised Cogeneration and Small Power Production tariff sheets for Net Energy Billing, Simultaneous Purchase and Sale, and Time of Day, plus the associated schedules.

II. GENERAL FILING INFORMATION

Pursuant to Minnesota Rule 7829.1300, subp. 3, Otter Tail provides the following general information:

A. Name, Address, and Telephone Number of Utility.

Otter Tail Power Company
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8200

B. Name, Address, and Telephone Number of Utility Attorney.

Bruce Gerhardson
Otter Tail Power Company
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8475

C. Date of Filing, Effective Date and Customer Notification.

This petition is being filed on December 29, 2014. The proposed effective date for these rates is for all bills rendered on or after January 1, 2015. An approved customer bill insert is sent to our Minnesota customers each February, notifying customers of our obligation to interconnect and purchase electricity from cogenerators and small power producers. This customer bill insert has also been included in this filing as Exhibit 1.

D. Statute Controlling Schedule for Processing the Filing.

The filing is considered an annual compliance tariff filing under Minnesota Rule 7835.0300.

E. Title of Utility Employee Responsible for Filing.

Debra K. Opatz
Pricing Analyst, Regulatory Administration
Otter Tail Power Company
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8606

F. Effect of the Change in Rates (Minn. Rule 7825.3500 (D).

The effect of the change in rates is difficult to predict, as it is the customer's decision on what to generate. Otter Tail will report on the general change in the energy credit rate for each group of customers.

Otter Tail has 19 customers on the Net Energy Billing Rate, Section 12.01. They are as follows:

Rate Code	# of Customers	Change in Energy Rate
31-910 (Residential):	4 Customers	Increase
31-930 (Farm):	3 Customer	Increase
31-940 (General Service):	11 Customers	Increase
31-960 (Large General Service):	1 Customer	Increase

Otter Tail currently has no customers on the Simultaneous Purchase and Sale Billing Rate, Section 12.02.

There is 1 customer on the Time of Day Purchase Rates, Section 12.03. This customer is on the Nonfirm Power Rate 31-983. This customer will see an increase in both their on-peak and off-peak energy credit rate in 2015.

III. DESCRIPTION OF FILING

Rate schedule Section 12.01, 12.02, 12.03 – Small Power Producer Riders

A. Background.

Otter Tail filed the 2014 annual filing of Cogeneration and Small Power Production rates on December 31, 2013. These updates to Cogeneration and Small Power Production rates became effective on January 1, 2014.

B. 2014 Compliance Filing.

The enclosed 2015 filing includes the annual updates to energy and capacity rate payments. In the past, Otter Tail has not received an Order from the Commission approving the annual updates. The updates to energy and capacity rate payments are developed in accordance with Minnesota Administrative Rules, Chapter 7835.

This filing includes both Redline (Appendix A) and Final (Appendix B) versions of the Small Power Producer rate schedules (Sections 12.01, 12.02, and 12.03). Appendix C includes Schedules A through G and Exhibit 1. The trade secret information on these schedules has been excised from the public version of the filing. These schedules are part of the annual filing which updates the energy and capacity payments for the rate schedules.

IV. MISCELLANEOUS INFORMATION

A. Pursuant to Minnesota Rule 7829.0700, Otter Tail Requests that the Following Persons be Placed on the Commission's Official Service List for this Proceeding:

Bruce Gerhardson
Associate General Counsel
Otter Tail Power Company
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496

Debra K. Opatz
Pricing Analyst, Regulatory Administration
Otter Tail Power Company
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496

David G. Prazak
Supervisor Pricing & Tariff Administration
Regulatory Administration
Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496

B. Service on Other Parties.

Pursuant to Minn. Rule Pt. 7829.1300, subp. 2, Otter Tail has served a copy of this filing on the Minnesota Department of Commerce, Division of Energy Resources and the Office of Attorney General, Antitrust and Utilities Division, and a summary of the filing on all parties on the attached general service list.

C. Summary of Filing.

A one-paragraph summary of the petition is attached pursuant to Minn. Rule Pt. 7829.1300, subp. 1.

OTTER TAIL POWER COMPANY

By: */s/ DEBRA K. OPATZ*

Pricing Analyst, Regulatory Administration
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8606

Appendix A
Redline Versions

SMALL POWER PRODUCER RIDER
(Net Energy Billing Rate)

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity not exceeding 40 kW.

CUSTOMER CHARGE: $3.70 per month

PAYMENT SCHEDULE: Payment per kWh for energy delivered to utility in excess used.

DESCRIPTION	ENERGY CREDIT	RATE CODE	
Residential	~~8.370~~8.660¢ per kWh	31-910	R
Farm	~~8.530~~8.770¢ per kWh	31-930	R
General Service	~~8.370~~8.690¢ per kWh	31-940	R
Large General Service	~~8.260~~8.530¢ per kWh	31-960	R

SPECIAL CONDITIONS OF SERVICE: The Customer will be required to sign a contract, agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

TERMS AND CONDITIONS: The use of this rider requires that special precautions be taken in the design of associated metering and control systems. The following terms and conditions describe these precautions and shall be followed on all Customer-owned small qualifying facilities (SQF).

1. The Customer will be compensated monthly for all energy received from the SQF less the Customer Charge. The schedule for these payments is subject to annual review.

2. If the SQF is located at a site outside of the Company's service territory and energy is delivered to the Company through facilities owned by another utility, energy payments will be adjusted downward reflecting losses occurring between the point of metering and the point of delivery.

3. A SQF must have a generation Capacity of at least 30 kW to qualify for wheeling by the Company of the SQF output. In the event that the SQF desires, and qualifies for, wheeling by the Company of the SQF output, arrangements will be made subject to special provisions to be determined by all utilities involved. This also applies to SQF's outside the Company's service territory.

SMALL POWER PRODUCER RIDER
SIMULTANEOUS PURCHASE AND SALE BILLING RATE

DESCRIPTION	RATE CODE
Firm Power	31-981
Nonfirm Power	31-984

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity not exceeding 40 kW.

CUSTOMER CHARGE:

Firm Power	$8.87 per month
Nonfirm Power	$1.40 per month

PAYMENT SCHEDULE: For energy delivered to the utility.

DESCRIPTION	SUMMER CAPACITY CREDIT	WINTER CAPACITY CREDIT	SUMMER ENERGY CREDIT	WINTER ENERGY CREDIT
Firm and Non-Firm Power	~~1.34~~1.45¢ per kWh	~~1.34~~1.45¢ per kWh	~~3.305~~3.606¢ per kWh	~~3.296~~3.505¢ per kWh

R

SPECIAL CONDITIONS OF SERVICE:

1. The Customer will sign a contract agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

2. If the qualifying facility does not meet the 65% on-peak Capacity requirement in any month, the compensation will be the energy portion only.

SMALL POWER PRODUCER RIDER
TIME OF DAY PURCHASE RATES

DESCRIPTION	RATE CODE
Firm Power	
On-Peak	31-982
Off- Peak	31-985
Nonfirm Power	
On-Peak	31-983
Off-Peak	31-986

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity of 100 kW or less, and available to qualifying facilities with Capacity of more than 100 kW if firm power is provided.

CUSTOMER CHARGE:	Firm Power	$8.87 per month
	Nonfirm Power	$3.25 per month

PAYMENT SCHEDULE: For energy delivered to the utility.

DESCRIPTION	CAPACITY PAYMENT (ON-PEAK ONLY)	ENERGY CREDIT ON-PEAK	ENERGY CREDIT OFF-PEAK	
Summer (Firm Power and Non-Firm Power)	~~2.95~~3.18¢ per kWh	~~4.118~~4.535¢ per kWh	~~2.677~~2.859¢ per kWh	**R**
Winter (Firm Power and Non-Firm Power)	~~2.95~~3.18¢ per kWh	~~3.759~~4.127¢ per kWh	~~2.883~~2.968¢ per kWh	**R**

SPECIAL CONDITIONS OF SERVICE:

1. The Customer will sign a contract agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

2. If the qualifying facility does not meet the 65% on-peak Capacity requirement in any month, the compensation will be the energy portion only.

Appendix B
Final Versions

SMALL POWER PRODUCER RIDER
(Net Energy Billing Rate)

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity not exceeding 40 kW.

CUSTOMER CHARGE: $3.70 per month

PAYMENT SCHEDULE: Payment per kWh for energy delivered to utility in excess used.

DESCRIPTION	ENERGY CREDIT	RATE CODE	
Residential	8.660¢ per kWh	31-910	R
Farm	8.770¢ per kWh	31-930	R
General Service	8.690¢ per kWh	31-940	R
Large General Service	8.530¢ per kWh	31-960	R

SPECIAL CONDITIONS OF SERVICE: The Customer will be required to sign a contract, agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

TERMS AND CONDITIONS: The use of this rider requires that special precautions be taken in the design of associated metering and control systems. The following terms and conditions describe these precautions and shall be followed on all Customer-owned small qualifying facilities (SQF).

1. The Customer will be compensated monthly for all energy received from the SQF less the Customer Charge. The schedule for these payments is subject to annual review.

2. If the SQF is located at a site outside of the Company's service territory and energy is delivered to the Company through facilities owned by another utility, energy payments will be adjusted downward reflecting losses occurring between the point of metering and the point of delivery.

3. A SQF must have a generation Capacity of at least 30 kW to qualify for wheeling by the Company of the SQF output. In the event that the SQF desires, and qualifies for, wheeling by the Company of the SQF output, arrangements will be made subject to special provisions to be determined by all utilities involved. This also applies to SQF's outside the Company's service territory.

SMALL POWER PRODUCER RIDER
SIMULTANEOUS PURCHASE AND SALE BILLING RATE

DESCRIPTION	RATE CODE
Firm Power	31-981
Nonfirm Power	31-984

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity not exceeding 40 kW.

CUSTOMER CHARGE:

Firm Power	$8.87 per month
Nonfirm Power	$1.40 per month

PAYMENT SCHEDULE: For energy delivered to the utility.

DESCRIPTION	SUMMER CAPACITY CREDIT	WINTER CAPACITY CREDIT	SUMMER ENERGY CREDIT	WINTER ENERGY CREDIT	
Firm and Non-Firm Power	1.45¢ per kWh	1.45¢ per kWh	3.606¢ per kWh	3.505¢ per kWh	**R**

SPECIAL CONDITIONS OF SERVICE:

1. The Customer will sign a contract agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

2. If the qualifying facility does not meet the 65% on-peak Capacity requirement in any month, the compensation will be the energy portion only.

SMALL POWER PRODUCER RIDER
TIME OF DAY PURCHASE RATES

DESCRIPTION	RATE CODE
Firm Power	
On-Peak	31-982
Off- Peak	31-985
Nonfirm Power	
On-Peak	31-983
Off-Peak	31-986

RULES AND REGULATIONS: Terms and conditions of this electric rate schedule and the General Rules and Regulations govern use of this rider.

AVAILABILITY: This rider is available to any qualifying facility with generation Capacity of 100 kW or less, and available to qualifying facilities with Capacity of more than 100 kW if firm power is provided.

CUSTOMER CHARGE:

Firm Power	$8.87 per month
Nonfirm Power	$3.25 per month

PAYMENT SCHEDULE: For energy delivered to the utility.

DESCRIPTION	CAPACITY PAYMENT (ON-PEAK ONLY)	ENERGY CREDIT ON-PEAK	ENERGY CREDIT OFF-PEAK	
Summer (Firm Power and Non-Firm Power)	3.18¢ per kWh	4.535¢ per kWh	2.859¢ per kWh	**R**
Winter (Firm Power and Non-Firm Power)	3.18¢ per kWh	4.127¢ per kWh	2.968¢ per kWh	**R**

SPECIAL CONDITIONS OF SERVICE:

1. The Customer will sign a contract agreeing to terms and conditions specified for small power producers. The minimum term of the contract is 12 months.

2. If the qualifying facility does not meet the 65% on-peak Capacity requirement in any month, the compensation will be the energy portion only.

Appendix C

Schedule A, B, C, D, E, F & G

Exhibit #1

PUBLIC DOCUMENT-TRADE SECRET
DATA HAS BEEN EXCISED

SCHEDULE A

SYSTEM INCREMENTAL ENERGY COSTS*
(Dollars/MWh)

	2015	2016	2017	2018	2019
SUMMER					
	[TRADE SECRET DATA BEGINS…				
	…TRADE SECRET DATA ENDS]				
WINTER					
	[TRADE SECRET DATA BEGINS…				
	…TRADE SECRET DATA ENDS]				
	[TRADE SECRET DATA BEGINS…				
	…TRADE SECRET DATA ENDS]				

SUMMER: THE PERIOD OF JUNE 1st THROUGH SEPTEMBER 30th.
WINTER: THE PERIOD OF OCTOBER 1st THROUGH MAY 31st.

ON-PEAK PERIODS IN SUMMER INCLUDE THOSE HOURS ENDING 0900 TO 2300 (EXCLUSIVE OF WEEKENDS AND HOLIDAYS).
ON-PEAK PERIODS IN WINTER INCLUDE THOSE HOURS ENDING 0800 TO 2300 (EXCLUSIVE OF WEEKENDS AND HOLIDAYS).
ALL OTHER HOURS ARE OFF-PEAK.

* INCLUDES 50% OF LINE LOSSES FROM SCHEDULE B

SCHEDULE B

NET ANNUAL AVOIDED CAPACITY COST

Subp. 2 PLANNED UTILITY GENERATING FACILITY ADDITIONS:

Otter Tail Power Company's most recent integrated resource plan (Docket E017/RP-13-961) which was filed on December 2, 2013 and approved with modifications (order dated December 5th, 2014) , identifies resource needs for the company. The 2013 IRP calls for construction of new natural gas generation to be operational in the 2019 to 2021timeframe. Otter Tail is also authorized to obtain cost effective wind energy and enough solar energy to comply with the Solar Energy Standard by 2020.

[TRADE SECRET DATA BEGINS…

…TRADE SECRET DATA ENDS]

Subp. 3 PLANNED FIRM CAPACITY PURCHASES:

Otter Tail Power Company has secured the following purchases prior to this filing.

A. Year	12/1/2010 to 12/31/2014
B. Name of Seller	Great River Energy
C. Capacity	50,000 kW year-round 12/01/10 to 12/31/14
	50,000 kW year-round 6/01/13 to 12/31/14
	100,000 kW year-round 1/01/15 to 5/31/16
	100,000 kW year-round 6/01/16 to 5/31/17
	25,000kW year-round 6/01/17 to 5/31/18
	25,000kW year-round 6/01/18 to 5/31/19
	50,000kW year-round 6/01/19 to 5/31/20
	50,000kW year-round 6/01/20 to 5/31/21

[TRADE SECRET DATA BEGINS…

…TRADE SECRET DATA ENDS]

Subp. 4 PERCENTAGE OF LINE LOSSES:

Annual average line losses are equal to 7.64% of the total generated energy.

Subp. 5 NET ANNUAL AVOIDED CAPACITY COST:

Otter Tail Power Company's most recent integrated resource plan (Docket E017/RP-13-961) which was filed on December 2, 2013, identifies resource needs for the company. The 2013 IRP calls for construction of new gas generation to be operational in the 2019 to 2021timeframe.

A. **[TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
B. **[TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
C. **[TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS**
D. **[TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
E. **TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
F. **TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
G. **TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]**
H. **TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]** averaged over on-peak hours
I. **TRADE SECRET DATA BEGINS… …TRADE SECRET DATA ENDS]** averaged over all hours

Subp. 6 NET ANNUAL AVOIDED CAPACITY COST:

The purchases listed in Subp. 3 are planned during the ensuing ten years. No other additional capacity purchases are planned during the ensuing ten years.

SCHEDULE C

Calculation of the Average Retail Energy Rate

For the 12 months ending 11/30/2014 Minnesota Operating Results

	(1)	(2)	(3)	(4)	(5)	(6)
RATE CLASS	**TOTAL KWH**	**INTERIM REVENUE**	**TOTAL REVENUE**	**FIXED CHARGE**	**REVENUE FROM ENERGY (3) MINUS (4)**	**AVERAGE RATE (5)/(1)**
Residential	491,542,395	$0	$ 44,791,767	$5,024,077.50	$42,549,330.19	$0.0866
Farm	40,323,209	$0	$ 3,039,004	$201,988.00	$3,534,401.51	$0.0877
Small Commercial	232,422,489	$0	$ 20,906,864	$1,950,304.50	$20,188,775.60	$0.0869
Large Commercial	620,742,694	$0	$ 48,357,839	$356,414.00	$52,960,827.18	$0.0853
	1,385,030,787	0	**$ 117,095,473**	**$ 7,532,784**	**$ 119,233,334**	**$0.08609**

OTHER REMAINING SCHEDULES (D, E & F)

7835.0700 Schedule D: Otter Tail utilizes the standard contracts per 7835.6100, which is available on our website at https://www.otpco.com/media/278256/DG_MNsmallPowerProducerContract.pdf

7835.0800 Schedule E: The standards and procedures utilized are provided on our website at https://www.otpco.com/about-us/generator-interconnection/minnesota/

7835.0900 Schedule F: The notification procedures utilized are provided on our website as described in 7835.0800 Schedule E (above) as well as the terms and conditions stated in each rate schedule. Moreover, see the Interconnection Agreement, VIII. OPERATIONAL ISSUES at https://www.otpco.com/media/278240/DG_InterconnectionAgreement.pdf

PUBLIC DOCUMENT –
TRADE SECRET DATA HAS BEEN EXCISED

SCHEDULE G

COMPUTATIONS FROM SCHEDULES A AND B

Schedule A:

The Schedule A incremental energy costs are averages calculated from projections of incremental costs and hourly load levels. These projections include fuel and variable operating and maintenance expenses.

For each seasonal period, incremental costs that occurred during the on-peak period were averaged, as were those for the off-peak period over the entire season. Overall average line losses are included in the figures.

Schedule B:

Otter Tail Power Company's most recent integrated resource plan (Docket E017/RP-13-961) which was filed on December 2, 2013 and approved with modifications (order dated December 5th, 2014) , identifies resource needs for the company. The 2013 IRP calls for construction of new natural gas generation to be operational in the 2019 to 2021 timeframe. Otter Tail is also authorized to obtain cost effective wind energy and enough solar energy to comply with the Solar Energy Standard by 2020.

Otter Tail's calculation process and results are shown below;

[TRADE SECRET DATA BEGINS…

…TRADE SECRET DATA ENDS]

Notice to our Minnesota customers

The Minnesota Public Utilities Commission has issued the following notice:

1. Each utility is obligated to interconnect with and purchase electricity from cogenerators and small power producers.
2. Any disputes over interconnection, sales, and purchases are subject to resolution by the Commission upon complaint.

Small power producers interested in information (free of charge) regarding the sale of electricity by cogeneration should contact the Otter Tail Power Company Customer Service Center in their area.

2/14

OTTER TAIL POWER COMPANY

CERTIFICATE OF SERVICE

RE: In the Matter of the Annual Filing of Cogeneration and Small Power Production rates for Otter Tail Power Company
Docket No. E999/PR-14-09

I, Wendi A. Olson, hereby certify that I have this day served a copy of the following, or a summary thereof, on Dr. Burl W. Haar and Sharon Ferguson by e-filing, and to all other persons on the attached service list by electronic service or by First Class mail.

Otter Tail Power Company
Annual Filing

Dated this **29th** day of **December**, **2014**.

/s/ WENDI A. OLSON
Wendi A. Olson
Regulatory Filing Coordinator
Otter Tail Power Company
215 South Cascade Street
Fergus Falls MN 56537
(218) 739-8699

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Michael	Bradley	mike.bradley@lawmoss.com	Moss & Barnett	150 S. 5th Street, #1200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
James C.	Erickson	jericksonkbc@gmail.com	Kelly Bay Consulting	17 Quechee St Superior, WI 54880-4421	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Burl W.	Haar	burl.haar@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Shane	Henriksen	shane.henriksen@enbridge.com	Enbridge Energy Company, Inc.	1409 Hammond Ave FL 2 Superior, WI 54880	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Gary	Oetken	goetken@agp.com	Ag Processing, Inc.	12700 West Dodge Road P.O. Box 2047 Omaha, NE 681032047	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Debra	Opatz	dopatz@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	12 S 6th St Ste 1137 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing
Stuart	Tommerdahl	stommerdahl@otpco.com	Otter Tail Power Company	215 S Cascade St PO Box 496 Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Otter Tail Power Company_General Service List - Tariff Filing

414 Nicollet Mall
Minneapolis, Minnesota 55401

January 2, 2015

PUBLIC DOCUMENT –
TRADE SECRET DATA EXCISED

Dr. Burl Haar, Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-1247

RE: COGENERATION AND SMALL POWER PRODUCTION REPORT

Dear Dr. Haar:

Pursuant to Minn. Rules 7835.0300 through 7835.1100, 7829.1300 and 7825.3200 (B), Northern States Power Company, doing business as Xcel Energy, files with the Minnesota Public Utilities Commission the annual cogeneration and small power production tariffs.

This filing is a miscellaneous tariff change under MPUC rules. A summary of this filing has been served on all the applicable parties on the miscellaneous electric service list.

In addition, certain information provided in Schedules A, B and G of this filing meet the definition of trade secret information pursuant to Minnesota Statutes §13.37. In particular, release of this information would undermine the Company's resource bidding process by providing potential suppliers with a compilation of competitive information that derives independent economic value from not being generally known or ascertainable. This information includes data regarding costs of energy from possible new generating facilities that is not otherwise public. Disclosure of this information could result in higher costs of energy for Xcel Energy customers by allowing potential suppliers to modify their pricing from what they would otherwise bid. Therefore, the Company has designated certain portions of this filing as trade secret.

Please feel free to contact me at 612-330-7529 if you have any questions.

SINCERELY,

/S/

PAUL J LEHMAN
MANAGER, REGULATORY COMPLIANCE AND FILINGS

ENCLOSURE

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF 2015 COGENERATION AND SMALL POWER PRODUCTION RATES IN COMPLIANCE WITH MINNESOTA RULES	DOCKET NO. E999/PR-15-9 PETITION

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this filing of our 2015 cogeneration and small power production rates in compliance with Minnesota Statute Section 216B.164 and Minn. Rules 7835.0300 through 7835.1100, 7829.1300 and 7825.3200 (B).

During the 2013 legislative session, the Legislature amended Minn. Stat. § 216B.164 governing cogeneration and small power production. The changes increase the net-metering threshold capacity for qualifying facilities and net-metered facilities interconnecting to a public utility. Most notably, the threshold increased from less than 40 kW to less than 1,000 kW. Pursuant to the statutory changes, the Commission has opened a rulemaking docket (Docket No. E999/R-13-729) to consider rule amendments for incorporating the legislative changes affecting cogeneration and small power production. On July 31, 2013 the Company petitioned for approval of tariff modifications to implement the net-metering, standby charge exemption and meter aggregation changes contained in the 2013 Omnibus Energy Bill. On December 29, 2014, the Commission issued its STATEMENT OF NEED AND REASONABLENESS regarding this rulemaking and also issued its NOTICE OF INTENT TO ADOPT RULES WITHOUT A PUBLIC HEARING UNLESS 25 OR MORE PERSONS REQUEST A HEARING. Once the rulemaking is officially adopted, Xcel Energy will file a supplement or update to this report, file a new petition, or take other appropriate action as indicated by the Commission to reflect any changes as necessary.

I. SUMMARY OF FILING

A one-paragraph summary of the filing accompanies this Petition pursuant to Minn. R. 7829.1300, subp. 1.

II. SERVICE ON OTHER PARTIES

Pursuant to Minn. Stat. § 216B.17, subd.3, and 7829.1300, subp. 2, we have electronically filed this Petition. A Summary of the filing has been provided to all persons on the Company's miscellaneous electric service list.

III. GENERAL FILING INFORMATION

Pursuant to Minn. R. 7825.1400 and 7829.1300, subp. 3, the Company provides the following required information. The descriptive title of the Petition (Minn. R. 7825.1400, Part A) is set forth in the caption of this Petition, and the table of contents (Minn. R. 7825.1400, Part B) is set forth above.

A. Name, Address, and Telephone Number of Utility

Northern States Power Company, doing business as:
Xcel Energy
414 Nicollet Mall
Minneapolis, Minnesota 55401
(612) 330-5500

B. Name, Address, and Telephone Number of Utility Attorney

James Denniston
Assistant General Counsel
Xcel Energy
414 Nicollet Mall, 5th Floor
Minneapolis, MN 55401
(612) 215-4656

C. Date of Filing and Date Modified Rates Take Effect

The date of the filing is January 2, 2015. The Company proposes that the miscellaneous rate changes become effective on March 1, 2015.

D. Statute Controlling the Schedule for Processing the Filing

Minn. Stat. Section 216B.16, subd. 1 requires 60 days notice to the Commission of a proposed rate change, after which time the proposed rate change takes effect unless suspended. Under Commission Rules, the proposed rate change discussed in this Petition falls within the definition of a "miscellaneous tariff filing" under either Minn. Rule 7825.3100, subp. 9 or Minn. Rule 7829.0100, subp. 11, since no determination of Xcel Energy's general revenue requirement is necessary. Under Commission Rules, Comments on a miscellaneous filing are due within 30 days of its filing, with Reply Comments due 10 days thereafter (Minn. Rule 7829.1400, subparts 1 and 4.) This permits the Commission to act within the 60-day notice period.

E. Utility Employee Responsible for Filing

Paul J Lehman
Manager, Regulatory Compliance and Filings
Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401
(612) 330-7529

IV. MISCELLANEOUS INFORMATION

Pursuant to Minn. Rule 7829.0700, Xcel Energy requests that the following persons be placed on the Commission's official service list for this proceeding:

James Denniston
Assistant General Counsel
Xcel Energy Services Inc.
414 Nicollet Mall, 5th Floor
Minneapolis, Minnesota 55401
james.r.denniston@xcelenergy.com

Tiffany Hughes
Records Analyst
Xcel Energy Services Inc.
414 Nicollet Mall, 7th Floor
Minneapolis, Minnesota 55401
regulatory.records@xcelenergy.com

V. DESCRIPTION AND PURPOSE OF FILING

A. Background

Pursuant to Minn. Rules 7825.3200, 7825.3500 and 7829.1300, subp. 3, the Company provides the following required information.

B. Description of Filing

The revised rates reflect the latest cost that Xcel Energy would incur if they were to internally provide this energy or capacity. The purpose is to insure that whenever the Company buys energy or capacity from a Qualifying Facility, the price will reflect Xcel Energy's true avoided cost.

C. Proposed Tariff Sheets

Exhibit 1 contains proposed tariff Sheet 9-2, 18th Revision, Net Energy Billing Service; Sheet 9-3, 19th Revision, Purchase and Sales Billing Service; and Sheet 9-4, 18th Revision, Time of Day Purchase Service.

VI. EFFECT OF CHANGE UPON XCEL ENERGY REVENUE

Xcel Energy only receives customer charge revenue from these rates. Those charges will remain unchanged in 2015 and the corresponding increase in gross revenue is expected to be immaterial. The majority of revenues that flow under these rates are demand and energy charges, and they flow from Xcel Energy to the customers. These latter revenues are tied to the Company's avoided costs, so theoretically there should be no additional net revenue effect because Xcel Energy would have incurred a similar expense if this capacity and energy had been procured internally.

A. Supporting Documents

Pursuant to Minn. Rules 7835.0300 to 7835.1100, the following documents have been provided for Commission review:

Schedule A contains the estimated system average incremental energy costs by season, for daily on-peak hours, daily off-peak hours, and all hours in each season. It also contains incremental energy costs increased by a factor of 50 percent of the losses, and a summary description of the method used to determine the seasonal and diurnal periods.

Schedule B contains a description of all potential generating facility additions and all planned firm capacity purchases during the next ten years. Since the data is a compilation of competitively valuable information, Xcel Energy has designated Section 2 of Schedule B as trade secret information pursuant to Minn. Stat. Section 13.37 and Minn. Rule 7829.0500. Sections 3 and 4 of Schedule B, contain the Company's overall percentage losses for the seasonal on-peak and off-peak periods,

and the Company's net annual avoided capacity cost stated in dollars per kilowatt-hour averaged over the on-peak hours and averaged over all hours.

Schedule C contains the "average retail utility energy rate" for each customer class and the calculations made to obtain these rates.

Schedule D is unchanged from the existing tariff pages and includes the "Uniform Statewide Contract for Cogeneration and Small Power Production Facilities" which applies to Qualified Facilities (QFs) of less than 40 kW and Xcel Energy Rules and Regulations applicable to QFs.

Schedule E is unchanged from last year's compliance filing and includes the Company's safety standards, required operating procedures for interconnected operations, and functions to be performed by control and protective apparatus.

Schedule F is unchanged from last year's compliance filing and includes a statement regarding procedures for notifying QFs of time periods when the Company would not purchase electric energy or capacity.

Schedule G contains Company computations made for determining Schedules A and B.

Exhibit 1 contains the Company's Cogeneration and Small Power Production tariff pages for 2015. These tariff pages reflect rate changes based on the latest avoided cost calculations. The following tariff sheets have been updated:

Minnesota Electric Rate Book—MPUC No. 2

Sheet No. 9-2, revision 18

Sheet No. 9-3, revision 19

Sheet No. 9-4, revision 18

Exhibit 2 contains a copy of the required customer notification.

Schedules A through G are those described in Minn. Rules 7835.0500 to 7835.1000. Schedule H, required by Minn. Rule 7835.1100, does not apply in this case since Xcel Energy is a generating utility.

The contents of the written notice, which must be sent to all customers, and a listing of items included in the package of additional information, which will be sent to

customers upon request, are included as Exhibit 2. Exhibit 2 is a copy of the bill insert, a version of which was approved by the Commission in 1983 and which Xcel Energy has been sending to its customers each year to comply with the cogeneration rules. Customers will receive this written notice by means of a bill insert within 60 days after this filing.

CONCLUSION

Xcel Energy respectfully requests that the Commission approve the Company's proposed tariff revision for cogeneration and small power production.

Dated: January 2, 2015

Northern States Power Company

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF 2015 COGENERATION AND SMALL POWER PRODUCTION RATES IN COMPLIANCE WITH MINNESOTA RULES	DOCKET NO. E999/PR-15-9 **PETITION**

SUMMARY OF FILING

On January 2, 2015, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission a petition for approval of 2015 Cogeneration and Small Power Production Rates in compliance with Minnesota Rules.

RATE SHEETS

Attached are the rate sheets containing the three standard rates for purchase:

A. Net Energy Billing Service,
B. Purchase and Sale Billing Service, and
C. Time of Day Purchase Service.

Redline

NET ENERGY BILLING SERVICE Section No. 9
RATE CODE A50 ~~17th~~18th Revised Sheet No. 2

AVAILABILITY

Available to any small qualifying facility (SQF) of less than 40 kW capacity who receives non-time of day retail electric service from Company and offsets energy delivered by Company.

RATE

Metering Charge per Month

Single Phase	$3.15
Three Phase	$6.40

Payment per kWh for Energy Delivered to Company in Excess of Energy Used	Oct-May	Jun-Sep	
With Retail Non-Demand Metered Service	~~$0.10575~~$0.11223	~~$0.11334~~$0.11643	R
With Retail Demand Metered Service	~~$0.06266~~$0.06700	~~$0.06593~~$0.06562	R

TERMS AND CONDITIONS OF SERVICE

1. Energy used by customer in excess of energy delivered by the SQF at the same site during the same billing period shall be billed in accordance with the appropriate non-time of day retail electric rate.

   For demand metered General Service customers, the entire kW demand supplied by the Company at the same site during the same billing period shall be billed to the customer according to the appropriate general service demand charge rate.

2. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the SQF. The net interconnection charge is the responsibility of the SQF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

AVAILABILITY

Available to any small qualifying facility (SQF) of less than 40 kW capacity who receives non-time of day retail electric service.

RATE

Metering Charge per Month

Single Phase	$5.50
Three Phase	$8.00

Payment Schedule for Energy Delivered to Company	Oct-May	Jun-Sep	
Energy Payment per kWh	~~$0.02707~~$0.03270	~~$0.02687~~$0.03487	R
Capacity Payment for Firm Power per kWh	~~$0.00291~~$0.00283	~~$0.01549~~$0.01506	R

DETERMINATION OF FIRM POWER

The SQF will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

TERMS AND CONDITIONS OF SERVICE

1. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the SQF. The net interconnection charge is the responsibility of the SQF.

2. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

3. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

TIME OF DAY PURCHASE SERVICE Section No. 9
RATE CODE A52 ~~17th~~18th Revised Sheet No. 4

AVAILABILITY

Available to any qualifying facility (QF) of 100 kW capacity or less, and available to QF's with capacity of more than 100 kW if firm power is provided.

RATE

Metering Charge per Month

Single Phase	$5.50
Three Phase	$8.00

Payment Schedule for Energy Delivered to Company	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	~~$0.03764~~$0.04162	~~$0.04138~~$0.05281	R
Off Peak Energy Payment per kWh	~~$0.02358~~$0.02798	~~$0.02215~~$0.02500	R
Capacity Payment for Firm Power per On Peak kWh	~~$0.00611~~$0.00815	~~$0.03253~~$0.04315	R

DETERMINATION OF FIRM POWER

The QF will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

TERMS AND CONDITIONS OF SERVICE

1. Electric service provided by Company to customer at the same site shall be billed in accordance with the appropriate time of day retail electric rate.

2. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the QF. The net interconnection charge is the responsibility of the QF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

Clean

NET ENERGY BILLING SERVICE Section No. 9
RATE CODE A50 18th Revised Sheet No. 2

AVAILABILITY
Available to any small qualifying facility (SQF) of less than 40 kW capacity who receives non-time of day retail electric service from Company and offsets energy delivered by Company.

RATE
Metering Charge per Month

Single Phase	$3.15
Three Phase	$6.40

Payment per kWh for Energy Delivered to Company in Excess of Energy Used	Oct-May	Jun-Sep	
With Retail Non-Demand Metered Service	$0.11223	$0.11643	R
With Retail Demand Metered Service	$0.06700	$0.06562	R

TERMS AND CONDITIONS OF SERVICE

1. Energy used by customer in excess of energy delivered by the SQF at the same site during the same billing period shall be billed in accordance with the appropriate non-time of day retail electric rate.

   For demand metered General Service customers, the entire kW demand supplied by the Company at the same site during the same billing period shall be billed to the customer according to the appropriate general service demand charge rate.

2. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the SQF. The net interconnection charge is the responsibility of the SQF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

PURCHASE AND SALE BILLING SERVICE Section No. 9
RATE CODE A51 19th Revised Sheet No. 3

AVAILABILITY
Available to any small qualifying facility (SQF) of less than 40 kW capacity who receives non-time of day retail electric service.

RATE
Metering Charge per Month

Single Phase	$5.50
Three Phase	$8.00

Payment Schedule for Energy Delivered to Company	Oct-May	Jun-Sep	
Energy Payment per kWh	$0.03270	$0.03487	R
Capacity Payment for Firm Power per kWh	$0.00283	$0.01506	R

DETERMINATION OF FIRM POWER
The SQF will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

TERMS AND CONDITIONS OF SERVICE
1. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the SQF. The net interconnection charge is the responsibility of the SQF.

2. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

3. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

TIME OF DAY PURCHASE SERVICE Section No. 9
RATE CODE A52 18th Revised Sheet No. 4

AVAILABILITY
Available to any qualifying facility (QF) of 100 kW capacity or less, and available to QF's with capacity of more than 100 kW if firm power is provided.

RATE
Metering Charge per Month

Single Phase	$5.50
Three Phase	$8.00

Payment Schedule for Energy Delivered to Company	Oct-May	Jun-Sep	
On Peak Energy Payment per kWh	$0.04162	$0.05281	R
Off Peak Energy Payment per kWh	$0.02798	$0.02500	R
Capacity Payment for Firm Power per On Peak kWh	$0.00815	$0.04315	R

DETERMINATION OF FIRM POWER
The QF will have supplied firm power if during the billing period an on peak capacity factor of at least 65% was achieved. The calculation of the on peak capacity factor will be as follows: the average on peak period metered capacity delivered to the Company for the on peak period of the billing period divided by the greatest 15 minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

TERMS AND CONDITIONS OF SERVICE
1. Electric service provided by Company to customer at the same site shall be billed in accordance with the appropriate time of day retail electric rate.

2. Interconnection charges will be assessed by the Company on an individual basis for all costs associated with addition to or modification of Company facilities to accommodate the QF. The net interconnection charge is the responsibility of the QF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by the Company.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Company operating standards.

NOTIFICATION TO CUSTOMERS

1. Contents of Written Notice which will be mailed to all customers. This is a sample of the bill insert:

Xcel Energy®

TO SMALL POWER PRODUCERS AND COGENERATORS

Federal and state laws require Xcel Energy and other utilities to buy all electric energy that qualified small power producers and cogenerators offer for sale. Qualified facilities may be interconnected with our system for this purpose.

Small power producers generate 80 megawatts of electricity or less, using a renewable resource or waste product as fuel: garbage, peat, wood by-products, wind, water or sun. An example is a wind generator.

Cogenerators produce sequentially both electricity and useful heat energy. These facilities may use a non-renewable fuel, such as oil, natural gas or coal. An example is a paper mill that makes steam for electrical generation and, secondarily, for paper production.

The Minnesota Public Utilities Commission regulates the purchase price and service interconnection requirements between qualifying facilities and utilities. The Commission also resolves disputes that might arise.

Customers who are interested in parallel generation options, may obtain Xcel Energy's interconnection guidelines materials for information on interconnection requirements.

To find out more about qualifying facilities and requirements for interconnection, please call **1-800-895-4999 (for residential customers) or 1-800-481-4700 (for all other customers)**.

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Northern States Power Company-Minnesota, an Xcel Energy Company.

14-11-325 | 1/15 | 1.2 MM | 00130297

2. Contents of the information to be sent to interested customers:

A. Copy of the rate sheets (i.e., Exhibit 1) which include definitions, the standard rates for purchase, a standard contract form, and the rules and regulations of service.

B. The statement: "Inquiries can be directed to Xcel Energy, Service Policy Department, 414 Nicollet Mall, Minneapolis, MN 55401, telephone number (612) 330-6216."

C. The statement: "The Minnesota Public Utilities Commission is available to resolve disputes upon written request. You may address your complaint to Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147 or call (651) 296-7124."

PUBLIC DOCUMENT –TRADE SECRET DATA EXCISED

1. Estimated system average incremental energy costs ($/KWh)

[TRADE SECRET BEGINS

Year	Summer On-Peak	Summer Off-Peak	Average Summer	Winter On-Peak	Winter Off-Peak	Average Winter
2015						
2016						
2017						
2018						
2019						

TRADE SECRET ENDS]

2. Estimated system average incremental energy costs adjusted by 50 percent of losses

[TRADE SECRET BEGINS

Year	Summer On-Peak	Summer Off-Peak	Average Summer	Winter On-Peak	Winter Off-Peak	Average Winter
2015						
2016						
2017						
2018						
2019						

TRADE SECRET ENDS]

3. Definitions of the seasons and on-peak and off-peak periods

Summer season: Those calendar months of June, July, August and September.
Winter season: Those calendar months of January, February, March, April, May, October, November and December.

On-peak period: All hours between 9 a.m. and 9 p.m., Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday.

Off-peak period: All other hours not included in the on-peak period. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

PUBLIC DOCUMENT –TRADE SECRET DATA EXCISED

The Company instituted summer/winter pricing in 1974 in response to our growing summer peak. The Company utilizes seasonal rates as a price signal to the customer to reflect the higher power supply costs associated with meeting high summer demands.

The maximum peak for the NSP system is established partially as a result of weather-sensitive load and correlates with extended periods of hot, humid weather. The June through September period was established as the summer season by reviewing the distribution of cooling degree days, a measurement of cooling requirements. The existing seasonal period provides the best correlation to reflect the heating and cooling requirements.

The Company supported their seasonal definitions in April 1978 in its "Application of Northern States Power Company for Rehearing and Reconsideration" in Docket No. E002/GR-77-611 and again in July 1980 in the Prepared Supplemental Testimony of Elizabeth E. Dupay in Docket No. E002/GR-80-316.

Analysis of system load data and system lambdas provided the primary basis for the definition of the on-peak and off-peak periods. Hourly system load data was analyzed for the years 1975 to 1979. Hourly system lambdas were examined for the years 1977 to 1979.

In defining the on-peak and off-peak periods, it was important that the periods be defined with care so that new peaks are not created just outside of the on-peak period due to load shifting. This is particularly critical at the end of the on-peak period where the deferred loads would begin to come back on line; i.e., recharging of depleted water heaters, storage space heating, etc.

If the on-peak period were defined to contain a wider band of hours, new peripheral peaks would be less likely to occur, but customers would be more restricted in their ability to alter their usage patterns on a cost-effective basis.

Defining the on-peak period to be the non-holiday weekday hours of 9 a.m. to 9 p.m. captures the recorded daily peaks, the hours of elevated system demands and the hours of highest system cost giving consumers information concerning the daily 12-hour on-peak period.

A detailed description of the method used to determine on-peak and off-peak periods was submitted to Docket No. E002/GR-80-316 as Schedule 6 of Exhibit 48 (DLP-1).

1. 7835.0600 SCHEDULE B Subp. 2

Possible planned utility generating facility additions anticipated during the next ten years.

A. Name of Unit	TBD CT (4)	TBD CC
B. Nameplate Rating (MW)	226	650
C. Fuel Type	Natural Gas	Natural Gas
D. In-Service Date	2025	2031
E. Completed Cost in $/kW (1)	$612	$1,109
F. Average Annual O&M Cost in $/kW (2)	$2.61	$11.56
G. Energy Cost including fuel and VOM $/MWh (3)	$53.53	$34.72
H. Projected Average Annual Generation MWh/yr (4)	11,884	210,613
I. Average Annual Fuel Savings $/kW (5)	NA	NA

Notes:

(1) completed cost in dollars per kilowatt in the year in which the plant is expected to be put in service, including allowance for funds used during construction

(2) anticipated average annual fixed operating and maintenance costs in dollars per kilowatt

(3) energy costs associated with the unit, including fuel costs and variable operating and maintenance costs

(4) projected average number of kilowatt-hours per year the plant will generate during its useful life

(5) average annual fuel savings resulting from the addition of this generating facility, stated in dollars per kilowatt

2. 7835.0600 SCHEDULE B Subp. 3
Possible planned firm capacity purchases during the next ten years

A. Year of purchase	1992-Unspecified	1987-2033	1987-2020	1984-2017
B. Name of Seller	Byllesby Neshkoro Power Associates	Hastings Utilities Department	Neshonoc Neshkoro	Rapidan Hydro
C. Capacity to be purchased	2.36 MW	3.30 MW	0.40 MW	2.80 MW
	[TRADE SECRET BEGINS			
D. Capacity Cost				
E. Energy Cost				
				TRADE SECRET ENDS]

A. Year of purchase	2005-2015	2005-2015	2005-2015	2015-2025
B. Name of Seller	Manitoba Hydro	Manitoba Hydro	Manitoba Hydro	Manitoba Hydro
C. Capacity to be purchased	500 MW	150 MW	200 MW	375/325 MW
	[TRADE SECRET BEGINS			
D. Capacity Cost				
E. Energy Cost				
				TRADE SECRET ENDS]

A. Year of purchase	1990-2017	1992-2015	1997-2017	2006-2026	2008-2025
B. Name of Seller	Hennepin Energy Resource Recovery	Minnkota Power – Coyote 1	LS Power Cottage Grove	Calpine Mankato Energy Center	Invenergy Cannon Falls
C. Capacity to be purchased	33.70 MW	100 MW	245.1 MW	375 MW	357 MW
	[TRADE SECRET BEGINS				
D. Capacity Cost					
E. Energy Cost					
					TRADE SECRET ENDS]

3. 7835.0600 SCHEDULE B Subp. 4
Overall average percentage of losses due to the distribution, transmission, and transformation of electric energy

	Summer On-Peak	Summer Off-Peak	Average Summer	Winter On-Peak	Winter Off-Peak	Average Winter	Annual Average
Loss factors	0.9240	0.9374	0.9327	0.9288	0.9388	0.9359	0.9348

4. 7835.0600 SCHEDULE B Subp. 5 & 6
Net annual avoided capacity costs ($/kWh)

	Winter	Summer	Annual
Averaged over on-peak hours	See Schedule G, page 3 of 3		
Average over all hours	See Schedule G, page 3 of 3		

SCHEDULE C

AVERAGE RETAIL UTILITY ENERGY RATES ($/KWH)				
Class	**Rate Code**	**Annual**	**Winter**	**Summer**
Residential	A01, A03	0.11379	0.11245	0.11617
Small General	A10	0.11311	0.10999	0.11949
Non-Demand Metered		**0.11373**	**0.11223**	**0.11643**
Demand Metered	A14S	**0.06672**	**0.06700**	**0.06562**

CALCULATION OF AVERAGE RETAIL UTILITY ENERGY RATES

Based on 12 Months Ending November 2014 *

Class	KWH Sales	Revenue Net of Fixed Charges	Average Retail Utility Rate
(1)	(2)	(3)	(4) (3)/(2)
ANNUAL			
Residential	8,740,388,483	$994,578,368	0.11379
Small General	822,924,852	$93,078,201	0.11311
Non-Demand Metered	9,563,313,335	$1,087,656,570	0.11373
General (Sec Volt)	7,988,426,793	$533,008,712	0.06672
Demand Metered	7,988,426,793	$533,008,712	0.06672
WINTER (Oct-May)			
Residential	5,590,892,288	$628,697,435	0.11245
Small General	553,122,447	$60,840,553	0.10999
Non-Demand Metered	6,144,014,735	$689,537,988	0.11223
General (Sec Volt)	5,119,934,225	$343,056,689	0.06700
Demand Metered	5,119,934,225	$343,056,689	0.06700
SUMMER (Jun-Sep)			
Residential	3,149,496,195	$365,880,934	0.11617
Small General	269,802,405	$32,237,648	0.11949
Non-Demand Metered	3,419,298,600	$398,118,582	0.11643
General (Sec Volt)	2,868,492,568	$188,230,030	0.06562
Demand Metered	2,868,492,568	$188,230,030	0.06562

Notes:

Includes Fuel Cost Charges
Includes Net Interim Revenue
Includes Res Savers Switch
Includes Riders
Excludes Low Income Discounts
Excludes C&I Savers Switch/Ton

Data Sources:

CoGenMn14ResSum.xls
CoGenMn14SGS_Sum.xls
CoGenMn14GSSum.xls

UNIFORM STATEWIDE CONTRACT AND XCEL ENERGY'S RULES AND REGULATIONS FOR COGENERATION AND SMALL POWER PRODUCTION FACILITIES

**UNIFORM STATEWIDE CONTRACT FOR
COGENERATION AND SMALL POWER PRODUCTION FACILITIES**

THIS CONTRACT is entered into _____ , _____ , by Northern States Power Company (hereafter called "Utility") and _____ (hereafter called "QF").

RECITALS

The QF has installed electric generating facilities, consisting of _____ (Description of facilities), rated at less than 40 kilowatts of electricity, on property located at _____ _____ .

The QF is prepared to generate electricity in parallel with the Utility.

The QF's electric generating facilities meet the requirements of the Minnesota Public Utilities Commission (hereafter called "Commission") rules on Cogeneration and Small Power Production and any technical standards for interconnection the Utility has established that are authorized by those rules.

The Utility is obligated under federal and Minnesota law to interconnect with the QF and to purchase electricity offered for sale by the QF.

A contract between the QF and the Utility is required by the Commission's rules.

AGREEMENTS

The QF and the Utility agree:

1. The Utility will sell electricity to the QF under the rate schedule in force for the class of customer to which the QF belongs.

2. The Utility will buy electricity from the QF under the current rate schedule filed with the Commission. The QF has elected the rate schedule category hereinafter indicated (select one):

_____ a. Net energy billing rate under part 7835.3300.
_____ b. Simultaneous purchase and sale billing rate under part 7835.3400.
_____ c. Time of day purchase rates under part 7835.3500.

A copy of the presently filed rate schedule is attached to this contract.

3. The rates for sales and purchases of electricity may change over the time this contract is in force, due to actions of the Utility or of the Commission, and the QF and the Utility agree that sales and purchases will be made under the rates in effect each month during the time this contract is in force.

4. The Utility will compute the charges and payments for purchases and sales for each billing period. Any net credit to the QF will be made under one of the following options as chosen by the QF.

_____ a. Credit to the QF's account with the Utility.
_____ b. Paid by check to the QF within 15 days of the billing date.

5. The QF must operate its electric generating facilities within any rules, regulations, and policies adopted by the Utility not prohibited by the Commission's rules on Cogeneration and Small Power Production which provide reasonable technical connection and operating specifications for the QF (Northern States Power Company's Rules and Regulations Applicable to Cogeneration and Small Power Production Facilities are

attached). This agreement does not waive the QF's right to bring a dispute before the Commission as authorized by Minnesota Rules, parts 7835.4800, 7835.5800, and 7835.4500, and any other provision of the Commission's rules on Cogeneration and Small Power Production authorizing Commission resolution of a dispute.

6. The Utility's rules, regulations, and policies must conform to the Commission's rules on Cogeneration and Small Power Production.

7. The QF will operate its electric generating facilities so that they conform to the national, state, and local electric and safety codes, and will be responsible for the costs of conformance.

8. The QF is responsible for the actual, reasonable costs of interconnection which are estimated to be $ _____ . The QF will pay the Utility in this way: _____
_____ .

9. The QF will give the Utility reasonable access to its property and electric generating facilities if the configuration of those facilities does not permit disconnection or testing from the Utility's side of the interconnection. If the Utility enters the QF's property, the Utility will remain responsible for its personnel.

10. The Utility may stop providing electricity to the QF during a system emergency. The Utility will not discriminate against the QF when it stops providing electricity or when it resumes providing electricity.

11. The Utility may stop purchasing electricity from the QF when necessary for the Utility to construct, install, maintain, repair, replace, remove, investigate, or inspect any equipment or facilities within its electric system. The Utility will notify the QF before it stops purchasing electricity in this way: _____
_____ .

12. The QF will keep in force liability insurance against personal or property damage due to the installation, interconnection, and operation of its electric generating facilities. The amount of insurance coverage will be $ _____ (the Utility may not require an amount greater than $300,000).

13. This contract becomes effective as soon as it is signed by the QF and the Utility. This contract will remain in force until either the QF or the Utility gives written notice to the other that the contract is canceled. This contract will be canceled 30 days after notice is given.

14. This contract contains all the agreements made between the QF and the Utility except that this contract shall at all times be subject to all rules and orders issued by the Public Utilities Commission or other government agency having jurisdiction over the subject matter of this contract. The QF and the Utility are not responsible for any agreements other than those stated in this contract.

THE QF AND THE UTILITY HAVE READ THIS CONTRACT AND AGREE TO BE BOUND BY ITS TERMS. AS EVIDENCE OF THEIR AGREEMENT, THEY HAVE EACH SIGNED THIS CONTRACT BELOW ON THE DATE WRITTEN AT THE BEGINNING OF THIS CONTRACT.

QF _____ **NORTHERN STATES POWER COMPANY**

By _____ By _____

_____ _____
(Title) (Title)

Rules and Regulations Applicable to Cogeneration and Small Power Production Facilities

FACILITY LOCATION AND COMPLIANCE. Customer agrees to locate the qualifying facility (QF) so as to not cause a hazard to the Xcel Energy distribution system. Wind generators may only be installed at Xcel Energy-approved locations that preclude any possibility of the generation system contracting any Xcel Energy facilities if the system accidentally topples over. The total tower height, including the propeller when in the highest position, must be used in the determination. Customer agrees that the installation shall be in compliance with all applicable electric codes and the QF will be operated only after the installation has been inspected and approved by the appropriate authorities. Customer understands and agrees that Company approval of the proposed or installed QF does not preclude the necessity of customer obtaining all required permits, building and zoning variations, and applicable inspections.

CONNECTION. Xcel Energy agrees to permit customer to connect the proposed qualifying facility (QF) to the Xcel Energy distribution system on the load side of customer's meter.

DISTRIBUTION SYSTEM ADEQUACY. The proposed qualifying facility (QF) installation will be reviewed by Xcel Energy to determine adequacy of the associated Xcel Energy distribution system components. The customer agrees to reimburse Xcel Energy for the addition, modification, or replacement of any distribution system components made necessary by customer's QF installation.

INTERFERENCE. Customer agrees to disconnect the qualifying facility (QF) from the Xcel Energy distribution system or to reimburse Xcel Energy for cost of necessary system modifications if operation of the QF causes radio, television, or electrical service interference to other customers or interference with the operation of Xcel Energy's system.

SPECIAL METERING. Customer agrees to allow Xcel Energy at Xcel Energy's expense to install necessary special metering and measuring equipment at the above address to provide information on the effect of the qualifying facility.

PROVISION TO SELECT METERING. (CUSTOMER TO CHOOSE ONE OF THE FOLLOWING)

(a) DETENTING OF METER FOR PARALLEL WITH NO SALE TO COMPANY. Because customer does not intend to sell energy to Company, the billing of customer's electric consumption provided by Xcel Energy will be on the available retail rates and the electric meter measuring this consumption will, at this time, be detented to allow measurement only of energy flow into the customer's premises. Customer will provide all meter socket replacement and rewiring required to accommodate a detented meter.

(b) METERING FOR PARALLEL OPERATION WITH SALE OR WHEELAGE OF EXCESS OR ALL OR A PART OF CUSTOMER-PRODUCED ENERGY. Two meters will be installed in series. One meter will record energy delivered by Company. The second

meter will record energy delivered by customer. Customer will provide all meter socket replacement and rewiring required to install these meters.

REVENUE LOSS. Company shall not be liable for revenue lost by customer due to Company's inability to purchase or wheel customer-generated energy for any reason not within Company's reasonable control.

LIGHTNING PROTECTION. Customer agrees to effectively ground the qualifying facility installation and to provide and install adequate surge arrester protection to prevent lightning damage to any Xcel Energy distribution system equipment.

BACKFEED PREVENTION. Customer agrees to supply Xcel Energy a schematic diagram and associated equipment list for the qualifying facility (QF) control circuitry to enable Xcel Energy to determine if the QF safety equipment provides a level of safety consistent with the safety level required by Xcel Energy in its electrical equipment. If further analysis of the proposed QF by Xcel Energy reveals that it is capable of backfeed into the Xcel Energy lines during distribution outages, customer shall immediately disconnect the QF from Xcel Energy distribution system and shall only reconnect the QF through a customer-provided, Xcel Energy-approved, interconnect device that will prevent backfeed.

ADDITIONAL SAFETY DEVICES. Customer understands and agrees that as additional qualifying facilities are connected to the Xcel Energy distribution system, Xcel Energy may require customer to install additional safety devices at customer expense.

KIND OF CUSTOMER SERVICE SUPPLIED TO COMPANY. Customer agrees to supply, and Company agrees to accept, electric service in the form of ___ phase, ___ wire, alternating current at a nominal frequency of 60 hertz, and at a nominal voltage of ___ located at _____.

PARALLEL OPERATION. Customer shall provide the necessary equipment as approved by Xcel Energy to operate the qualifying facility (QF) in parallel with Xcel Energy's distribution system. The QF shall be equipped to instantaneously discontinue all output to and energization of Xcel Energy's distribution system under the following conditions:

A. De-energized Xcel Energy system
B. Sustained line faults on Xcel Energy system
C. Faults on customer's system

Customer shall consult with Xcel Energy regarding these minimum requirements, additional protection recommended, and proper operation of customer's generating system.

INSURANCE. The customer shall maintain during the term of this agreement liability insurance which insures customer against all claims for property damage and for personal injury or death arising out of, resulting from, or in any manner connected with the installation, operation, and maintenance of the qualifying facility. The amount of such insurance coverage shall be at least

$300,000 per occurrence. Customer shall furnish a certificate from its insurance carrier showing that it has complied with the provisions of this section and providing that the insurance policy will not be changed or cancelled during its term without written, 90-day notice to Xcel Energy.

SPECIAL LOSS FACTOR ADJUSTMENT. If the small qualifying facility is located at a site outside Company service territory and energy is delivered to Company through facilities owned by another utility, energy payments will be adjusted downward reflecting losses occurring between point of generation and point of receipt by Company.

SPECIAL INTERCONNECTION FACILITIES. The metering charge assumes common use of all company facilities, up to the metering point, for both receipt and delivery of energy. Any additional facilities required by Company to accommodate the small qualifying facility (SQF) will require SQF to pay a net interconnection charge in advance.

METERING REQUIREMENTS. The SQF shall make provision for on-site metering. All energy delivered and sold to Company shall be separately metered. On-site use of SQF output shall be unmetered for purposes of compensation. SQF shall cooperate with and allow Company to install and have access to on-site monitoring equipment for purposes of gathering SQF performance data.

The safety standards, required operating procedures for interconnected operations, and the functions to be performed by any control and protective apparatus follow:

SAFETY STANDARDS

1. Customer agrees to locate the qualifying facility so as to not cause a hazard to the Xcel Energy distribution system. Wind generators may only be installed at Xcel Energy-approved locations that preclude any possibility of the generation system contacting any Xcel Energy facilities if the system accidentally topples over. The total tower height, including the propeller when in the highest position, must be used in the determination.

2. The connection of the qualifying facility (QF) to the Xcel Energy distribution system must be made through a customer-provided, customer-installed, manual safety disconnect switch of adequate ampere capacity. The switch shall not open the neutral when the switch is open and must provide a visible disconnect. This switch shall have provisions for being padlocked in the open position with a standard Xcel Energy padlock. Customer agrees to locate the switch in a position accessible to Xcel Energy personnel, and further agrees the switch may be operated by Xcel Energy personnel at all times that such operation is deemed necessary by Xcel Energy for safety and operating reasons. QF's using line-commutated synchronous inverters shall have the inverters connected on the load side (QF side) of the safety disconnect switch.

3. Customer agrees to supply Xcel Energy a schematic diagram and associated equipment list for the qualifying facility (QF) control circuitry to enable Xcel Energy to determine if the QF's safety equipment provides a level of safety consistent with the safety level required by Xcel Energy in its electric equipment. If further analysis of the proposed QF by Xcel Energy reveals that it is capable of backfeed into the Xcel Energy lines during distribution outages, customer shall immediately disconnect the QF from Xcel Energy distribution system and shall only reconnect the QF through a customer-provided, Xcel Energy-approved, interconnect device that will prevent said backfeed.

4. Customer understands and agrees that as additional qualifying facilities are connected to the Xcel Energy distribution system, Xcel Energy may require customer to install further additional safety devices at customer expense.

OPERATING PROCEDURES

1. Customer agrees to disconnect the qualifying facility (QF) from the Xcel Energy distribution system or to reimburse Xcel Energy for cost of necessary system modifications if operation of the QF causes radio, television, or electrical service interference to other customer or interference with the operation of Xcel Energy's system.

2. Since the power factor and the voltage at which Company's system and customer's system are operated will vary, each party agrees to operate his system at a power factor as near unity as possible in such manner as to absorb his share of the reactive power, and voltage as conducive to the best operating standards.

FUNCTIONS OF REQUIRED CONTROL & PROTECTIVE EQUIPMENT

1. Customer shall provide the necessary equipment as approved by Xcel Energy to operate the qualifying facility (QF) in parallel with Xcel Energy's distribution system. The QF shall be equipped to instantaneously discontinue all output to and energization of Xcel Energy's distribution system under the following conditions:

   A. De-energized Xcel Energy system
   B. Sustained line faults on Xcel Energy system
   C. Faults on customer's system

2. Customer agrees to effectively ground the qualifying facility installation and to provide and install adequate surge arrester protection to prevent lightning damage to any Xcel Energy distribution system equipment.

3. Customer shall consult with Xcel Energy regarding these minimum requirements, additional protection recommended, and proper operation of customer's generating system.

At this time, the Company has no plans to interrupt the purchase of electric energy or capacity from qualifying facilities because of extraordinary operational circumstances which would make the costs of purchases during those periods greater than the costs of internal generation. Therefore, no procedures exist for notifying qualifying facilities of such interruptions.

PUBLIC DOCUMENT - TRADE SECRET DATA EXCISED

I. COMPUTATION USED IN SCHEDULE A

Table 1

Adjusting System Average Incremental Energy Cost
by Loss Factors Representing 50% of Losses

[TRADE SECRET BEGINS

	Year	Unadjusted $/kWh (Column A)	Loss Factor [1] (Column B)	Adjusted $/kWh [2] (Column C)
Summer On-Peak	2015			
	2016			
	2017			
	2018			
	2019			
Summer Off-Peak	2015			
	2016			
	2017			
	2018			
	2019			
Average Summer	2015			
	2016			
	2017			
	2018			
	2019			
Winter On-Peak	2015			
	2016			
	2017			
	2018			
	2019			
Winter Off-Peak	2015			
	2016			
	2017			
	2018			
	2019			
Average Winter	2015			
	2016			
	2017			
	2018			
	2019			

TRADE SECRET ENDS]

Notes:
1. Loss factor development shown in Table 2.
2. Column C = Column A/Column B

I. COMPUTATION USED IN SCHEDULE A (Continued)

Table 2

Overall Average Percentage of Losses Due to the Distribution, Transmission, and Transformation of Electric Energy

	Summer On-Peak	Summer Off-Peak	Average Summer	Winter On-Peak	Winter Off-Peak	Average Winter	Annual
Overall Loss Factors	0.9240	0.9374	0.9327	0.9288	0.9388	0.9359	0.9348
Loss Factors Repres. 50% of overall Loss Factors	0.9620	0.9687	0.9664	0.9644	0.9694	0.9680	0.9674

II. COMPUTATION USED IN SCHEDULE B

Calculation of Net Annual Avoided Capacity Costs

(a)	(1) Completed Cost of C.T. Unit (2015 $)	**$612**	/kW
(b)	(2) Inflation Net of Technical Progress	**1.98%**	
(c)	(3) Average Service Life	**35**	Years
(d)	(4) Discount Rate (After Tax)	**6.51%**	
	Calculation of Marginal Capital Carry Charge Rate		
(e)	(5) Present Value of Revenue Requirements	**$840**	/kW
	(6) Annuity Factor Adjustment for Inflation **	**0.05796**	
	(7) Present Value of Revenue Requirements Adjusted for Inflation (5)*(6)	**$48.69**	
	(8) Marginal Capital Carrying Charge Rate (7)/(1)	**0.07956**	
	(9) First Year Revenue Requirement (1)*(8)	**$48.69**	/kW (2015 $)
(f)	(10) Present Value at 6.51% for 0 years	**$48.69**	/kW
(g)	(11) Present Value of Average Annual Fuel Savings	**$0.00**	/kW
	(12) Annual Avoided Capacity Cost (10)-(11)	**$48.69**	/kW
(h)	(13) Adjusted for 15% Reserve Margin	**$55.99**	/kW
(i)	(12)*1.15		
	(14) Plus $2.61/kW Fixed O & M (2015 $)	**$58.60**	/kW
(j)	(13)+2.61		
(k)	(15) Adjusted for losses (14)/0.9674	**$60.58**	/kW
	(16) NET ANNUAL AVOIDED CAPACITY COST	**$60.58**	/kW
	(17) Net Winter On-Peak Avoided Capacity Cost (TOD PURCHASE) (16)*0.2723*100/2023	0.00815	$/kWh
	(18) Net Summer On-Peak Avoided Capacity Cost (TOD PURCHASE) (16)*0.7277*100/1022	0.04315	$/kWh
	(19) Net Annual On-Peak Avoided Capacity Cost (16)*100/3045	0.01990	$/kWh
	(20) Net Winter Avoided Capacity Cost Averaged Over All Winter Hours (PURCHASE & SALE BILLING) (16)*0.2723*100/5832	0.00283	$/kWh
	(21) Net Summer Avoided Capacity Cost Averaged Over All Summer Hours (PURCHASE & SALE BILLING) (16)*0.7277*100/2928	0.01506	$/kWh
	(22) Net Annual Avoided Capacity Cost Average Over All Hours (16)*100/8760	0.00692	$/kWh

Note: The weighting factors 0.7277 and 0.2723 are obtained from NSP's most recent Cost of Service Study. These rations represent relative summer and winter season capacity costs on NSP's System.

** AC = k*(r-j)*(1+j)^(t-1)*[1/(1-(1+j)^n/(1+r)^n)]
Where AC = Annual Charge in year t
t = Year (=1)
K = Total Present Value Cost of Original Investment
r = Discount Rate (Overall Marginal Cost of Capital) (6.51%)
j = Inflation Rate Net of Technology Progress (1.98%)
n = Expected Service Life of Investment (35 Years)

(l)	Summer Percent:	72.77%
(m	Winter Percent:	27.23%
	Total:	100.00%
(n)	O & M	2.611676249

CERTIFICATE OF SERVICE

I, Tiffany Hughes, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota;

xx by electronic filing.

DOCKET NO.: E999/PR-15-9
MISCELLANEOUS ELECTRIC SERVICE LIST

Dated this 2nd day of January 2015

/s/
_____
Tiffany Hughes

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
James J.	Bertrand	james.bertrand@leonard.com	Leonard Street & Deinard	150 South Fifth Street, Suite 2300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Bradley	mike.bradley@lawmoss.com	Moss & Barnett	150 S. 5th Street, #1200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Jeffrey A.	Daugherty	jeffrey.daugherty@centerpointenergy.com	CenterPoint Energy	800 LaSalle Ave Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Ian	Dobson	ian.dobson@ag.state.mn.us	Office of the Attorney General-RUD	Antitrust and Utilities Division 445 Minnesota Street, 1400 BRM Tower St. Paul, MN 55101	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Burl W.	Haar	burl.haar@state.mn.us	Public Utilities Commission	Suite 350 121 7th Place East St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Hoppe	il23@mtn.org	Local Union 23, I.B.E.W.	932 Payne Avenue St. Paul, MN 55130	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Tiffany	Hughes	Regulatory.Records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law	2265 Roswell Road Suite 100 Marietta, GA 30062	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Richard	Johnson	Rick.Johnson@lawmoss.com	Moss & Barnett	150 S. 5th Street Suite 1200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Mark J.	Kaufman	mkaufman@ibewlocal949.org	IBEW Local Union 949	12908 Nicollet Avenue South Burnsville, MN 55337	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Thomas G.	Koehler	TGK@IBEW160.org	Local Union #160, IBEW	2909 Anthony Ln St Anthony Village, MN 55418-3238	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
David W.	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	Suite 300 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.	76 W Kellogg Blvd St. Paul, MN 55102	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Ron	Spangler, Jr.	rlspangler@otpco.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Byron E.	Starns	byron.starns@leonard.com	Leonard Street and Deinard	150 South 5th Street Suite 2300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
James M.	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered	470 U.S. Bank Plaza 200 South Sixth Street Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Lisa	Veith	lisa.veith@ci.stpaul.mn.us	City of St. Paul	400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric

CONNEXUS® ENERGY
Your Community Energy Partner

14601 Ramsey Boulevard
Ramsey, Minnesota 55303
763.323.2600
Fax: 763.323.2603
www.connexusenergy.com
info@connexusenergy.com

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

March 18, 2015

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
350 Metro Square Building
121 7th Place East
St. Paul, Minnesota 55101-2147

Dear Dr. Haar:

Subject: Annual Cogeneration Filing

Enclosed is the annual cogeneration filing for our cooperative pursuant to Minnesota Rules part 7835.0600. It includes appropriate Schedules C for various customer classes. It also includes Schedules A, B and H.

This filing includes data from our wholesale energy supplier, Great River Energy (GRE), which has been classified as trade secret data. GRE's classification of the data as trade secret meets the three criteria of Minnesota Statute §13.37 for designating information as trade secret. First, we are supplying the data as part of our compliance with Minnesota Rules part 7835. Second, GRE has taken steps in the relevant proceedings to maintain the confidentiality of the information. Finally, GRE derives economic value from the information remaining confidential.

If there are any questions with respect to Schedules A, B and H please contact Tanya Schwartz at Great River Energy (763-445-6117).

Sincerely,

/s/John Gasal, P.E.
Vice President, Power Supply

Enc.

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

SCHEDULE A

Estimated Energy Costs

Great River Energy's avoided or incremental energy cost is expected to be the price of energy in the Midcontinent Independent System Operator (MISO) energy market. The Great River Energy estimate of those market prices for the next five (5) years is listed below.

Summer season is defined as May through October and Winter season is defined as November through April.

On Peak periods are defined as Monday through Friday beginning at 10:00 a.m. and ending at 8:00 p.m. (for a total of 10 hours per day), excluding NERC holidays. Off Peak periods are defined as all other days and hours.

ESTIMATED MARKET ENERGY COSTS* ($/MWh)

	2015	2016	2017	2018	2019
	[TRADE SECRET DATA BEGINS ----------				
Summer					
On Peak					
Off Peak					
All Hours					
Winter					
On Peak					
Off Peak					
All Hours					
Annual					
All Hours					
	---------- TRADE SECRET DATA ENDS]				

** All prices in nominal dollars and adjusted to reflect line losses shown in Schedule B.*

SCHEDULE B

Estimated Capacity Costs

The following is provided in response to Rule 7835.0600.

Planned Utility Generating Facility Additions

Great River Energy has no planned generating facility additions, other than from qualifying facilities, in the next 10 years.

1a. Name: N/A
1b. Nameplate rating: N/A
1c. Fuel Type: N/A
1d. In-service Date: N/A
1e. N/A
1f. N/A
1g. N/A
1h. N/A
1i. N/A.

Planned Firm Capacity Purchases

Great River Energy (GRE) has no planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

Percentage of Line Losses

Overall line losses, from generator bus bar to consumer end use were 9.1% in 2013.

Net Annual Avoided Capacity Cost

Great River Energy (GRE) has no planned generating facility additions or planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

The annual avoided capacity cost for GRE is $0.00/kW-year.

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class: $12.50 Residential (2014)

Total Class Revenue	$ 144,776,611
Fixed Charges	$ 15,970,558
kWh Sales	1,086,653,268 kWh

$$\frac{\text{Total Class Revenue} - \text{Fixed Charges}}{\text{kWh Sales}} = \frac{\$144,776,611 - \$15,970,558}{1,086,653,268}$$

Average Retail Cooperative Energy Rate = $0.119 /kWh

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class: $12.50 Small Commercial (2014)

Total Class Revenue	$ 8,218,474
Fixed Charges	$ 782,446
kWh Sales	62,921,281 kWh

$$\frac{\text{Total Class Revenue – Fixed Charges}}{\text{kWh Sales}} = \frac{\$8,218,474 - \$782,446}{62,921,281}$$

Average Retail Cooperative Energy Rate = $0.118 /kWh

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class $30.00 Large Commercial (2014)

Total Class Revenue	$	67,508,058	
Demand Charges	$	18,483,977	
Fixed Charges	$	1,326,315	
kWh Sales		701,267,129	kWh

ARCER= Total Class Revenue – Demand Charges – Fixed Charges = / kWh Sales

$$\frac{\$67,508,058 - \$18,483,977 - \$1,326,315}{701,267,129}$$

Average Retail Cooperative Energy Rate = $0.068/kWh

SCHEDULE D

(To be completed by the Member)

SCHEDULE E

Application for Interconnection
Member Owned Qualifying Facility - 100 Kilowatt or Less

_____ _____
(Member Name) (Location Number)

_____ _____
(Address) (Type Consumer)

Phone_____

Manufacturer of Qualifying Facility:_____

Nameplate Rating:_____

Listing Authority (UL or other):_____

Energy Source_____

Type of Generator:_____

Inverter:_____

Operational Data:
1. _____ Voltage
2. _____ Phase (single, three-phase)
3. _____ Maximum Amperage
4. _____ % Power Factor

Is a copy of Manufacturer Technical Specifications Attached?_____
Description of Interconnection Equipment, including location of manual disconnect switch:

_____

_____

Proposed Interconnection Date: _____, 20___

Estimated Site Energy Consumption:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Energy Production:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Demand _____kW Estimated Site Capacity _____kW
(if capable of supplying firm power)

I, the undersigned, have completed the Application for Interconnection, which accurately describes the equipment to be interconnected and operated in parallel with the Cooperative's distribution system. I have read and understand the Cooperative's Requirements for Interconnection and understand that approval of this Application is dependent on compliance with these requirements and the accuracy of the information as included in this Application.

_____ _____
Member's Signature Effective Date

1 REQUIREMENT FOR INTERCONNECTION

1.1 Cooperative Membership

Any individual, corporation or partnership wishing to interconnect with the Cooperative's electric system shall become a Member of the Cooperative in accordance with the Bylaws of the Cooperative.

1.2 Contracts/Agreements

The owner of a QF wishing to interconnect with the Cooperative's system will be required to sign a Uniform Statewide Contract for Cogeneration and Small Power Production Facilities. For QFs of 40 kW or more, an Electric Service Agreement is required. For QFs 101 to 1000 kW, the Standard Offer for cogenerators and small power producers may be used. The Contract/Agreement commits the Cooperative and the Member to operate under the terms and conditions of the Contract/Agreement and in full compliance with Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.0100-7835.6100. Copies of the Uniform Statewide Contract and the Electric Service Agreement are included in Schedule D.

1.3 Application for Interconnection

The Cooperative requires that all QFs file an Application for Interconnection not less than 30, nor more than 90 days prior to the proposed date of an interconnection. The Application includes the Cooperative's Requirements for Interconnection. All QFs are required to abide by the requirements stated, and provide the Cooperative with the following information.

A. Technical specifications of all power production and interconnection equipment.
B. Proposed date of interconnection.
C. Projected net output or consumption by the QF.

A copy of the Application for Interconnection is included in Schedule E.

The Cooperative shall accept or reject the Application for Interconnection within 30 days. Acceptance depends on the accuracy of information provided on the Application, and on the QFs proposed compliance with the National Electric Code, the National Electrical Safety Code, the Cooperative Service Rules and Regulations and other local codes which apply to cogeneration and small power production facilities. If in the Cooperative's opinion, the proposed facility does not qualify, the Cooperative will provide the Member with a written explanation. Acceptance of the Application shall not be construed as permission to interconnect with the Cooperative's system.

1.4 Inspection

An inspection certificate issued by the state electrical inspector having jurisdiction of the QF's area is required to assure wiring complies with the National Electrical Safety Code, and other applicable local electrical codes.

An inspection certificate issued by the local governing agency is required to assure compliance with building codes and environmental rules and regulations where applicable.

1.5 Interconnection Costs

The Member shall reimburse the Cooperative for its incremental cost resulting from interconnecting with the QF. The incremental interconnection cost shall include all reasonable costs of connection, switching, metering, transmission, distribution, safety provisions and administrative costs incurred by the Cooperative directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with the QF, to the extent such costs are in excess of the corresponding costs which the Cooperative would have incurred had it not interconnected with the QF.

1.6 Interconnection

Interconnection is permitted only after all of the requirements stated in Sections 1 and 2 of the Terms and Conditions are met, and only after written authorization to interconnect is issued by the Cooperative. This authorization cannot be issued until all interconnection costs are paid, and does not relieve the Member from the responsibility of installing, operating and maintaining the facilities in a responsible and safe manner.

If in the opinion of the Cooperative, the Member fails to abide by the terms and conditions of the Uniform Statewide Contract or the Electric Service Agreement, including subsequent operation of his generating facilities in a nonqualifying manner, the Cooperative will no longer be obligated to operate in parallel with nor purchase any capacity and energy made available from the QF. The Cooperative will notify the Member to disconnect the generating facilities from the Cooperative's system. In the event the Member fails to immediately comply with a disconnect notice, the Cooperative reserves the right to make such disconnection including the termination of electric service if necessary.

2 SAFETY AND OPERATING STANDARDS

Safety and Operating Standards under which the Cooperative operates are imposed to protect Cooperative employees and the general public, and are intended to guarantee a quality of service to the consumer members. All QFs must operate in a manner which will insure the safety of employees and the general public, and must allow electric service to other consumers to remain within prescribed limits.

2.1 Cooperative Access

Employees and authorized representatives of the Cooperative have the right to enter upon Member's property at any reasonable time to insure continued compliance with the Cooperative Safety and Operating Standards and the accuracy of its meters. Such inspection by the Cooperative shall not relieve the Member from the responsibility of installing, operating, and maintaining the facilities in a responsible and safe manner.

2.2 Disconnect Requirements

In order to provide adequate safety to the Cooperative's employees when performing certain operation and maintenance on the Cooperative's system, it is essential the following two requirements be met:

1. The QF shall be designed and operated to automatically disconnect or shut down during scheduled or unscheduled outages to insure that it will not backfeed any part of the Cooperative's distribution system.

2. That a means be available to positively disconnect the QF from the system such that there is no possibility that the QF could backfeed through the service transformer and energize the primary system. This requirement shall be met with a Member furnished and installed Underwriter's Laboratory (UL) listed manual disconnect switch which shall be located between the Member's QF and the Cooperative's system. The location of the switch shall be approved by the Cooperative and shall be housed in an approved enclosure which can be secured with a padlock or locking device. When feasible and with mutual consent, the Cooperative may permit the use of service transformer disconnect, in place of the Member furnished disconnect switch.

2.2.1 Isolation of qualifying facility

The Cooperative reserves the right to open the disconnect switch (i.e., isolating the Member's QF) without prior notice for any of the following reasons:

A. System emergency and/or maintenance operations require such action.
B. A potentially hazardous condition relating to the QF is discovered.

The Cooperative will notify the QF following such emergency disconnects as soon as possible.

2.2.2 Single-phase limitations

The rated capacity of the QF to be connected in parallel with a low voltage service shall be no greater than 10 kW for single-phase installations, unless authorized in writing by the Cooperative consistent with the Cooperative's limitation for single-phase motors. Single-phase installations greater than 10 kW will be permitted if engineering calculations indicate that the installation will not adversely affect the operational characteristics of the Cooperative's system.

2.2.3 Quality of service

Operation of the QF must not cause any reduction in the quality of service provided to other consumers nor interfere with the operation of the Cooperative's system. The Member shall be responsible for taking whatever corrective action may be required and/or reimbursing the Cooperative for the cost of corrective action which it deems necessary to restore service to prescribed limits.

2.2.4 Electrical characteristics

The electrical characteristics of the QF shall conform with standards established by the Cooperative. The standards include voltage, current, frequency, harmonics, and automatic synchronization, etc. Wherever possible the Cooperative will base its standards on industry wide standards.

2.2.5 Power factor

The Member shall endeavor to operate the QF as near unity power factor as possible. For QFs with rated capacity above 10 kW, the Cooperative reserves the right to require the Member to install power factor correction equipment or reimburse the Cooperative for its cost of installing power factor correction equipment.

2.3 Metering

The Cooperative will meter the QF to obtain billing data and to fulfill its reporting requirements to the Minnesota Public Utility Commission as specified in Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.1300.

2.3.1 Required metering

Two meters are required. One meter will be installed in such a manner that it records only the energy sold by the Cooperative to the QF. The second meter will be installed in such a manner that it records only the energy sold by the QF to the Cooperative. The QF shall pay for the requisite metering as an interconnection cost. In addition to required metering, the Cooperative at its option and consent of the QF, shall have the right to install additional metering equipment for the collection of data for research purposes. The Cooperative will furnish such metering equipment and pay all associated operation and maintenance.

2.3.2 Meter reading

The meters shall be read monthly, or as mutually agreed upon by the consumer and Cooperative, at the same time and in the same manner as prescribed for other Members of the Cooperative in the same consumer classification. Monthly meter readings are required from all consumer classifications. Metering records shall be available for inspection at all reasonable times.

2.3.3 Metering configuration

The metering schematic for interconnections under the standard rate schedules are found in Schedule D as part of the Uniform Statewide Contract and the Electric Service Agreement Terms and Conditions.

SCHEDULE F

Procedure for notifying Qualifying Facilities of periods when the Cooperative will not purchase electric energy or capacity due to operational circumstances that would make the cost of purchases during those periods greater than the cost of internal generation.

1. Qualifying Facilities 100 kW and Smaller:

   The Cooperative does not plan to discontinue purchases of energy and capacity at this time. The current expected cost of supplying such notification would exceed any savings from not purchasing from the QF. At such time as it becomes economic to provide such notice, the Cooperative will develop the necessary procedure.

2. Qualifying Facilities Greater than 100 kW:

   Discontinuing purchases by the Cooperative will become part of the negotiated contract.

SCHEDULE G

Computation Descriptions

Schedule G contains a description of all computations made by the Cooperative in determining Schedules A and B.

Schedule A

Schedule A is based on GRE's expectations of market prices as described in Schedule A.

Schedule B

Schedule B is self-explanatory.

SCHEDULE H

Wholesale Power Rates
For All-Requirements Distribution Member Cooperatives
(2015 Schedule of Wholesale Rates)

Availability
Applicable to any Distribution Member (Member) that has executed a Power Purchase Contract (PPC) and/or Transmission Service Contact (TSC) with Great River Energy (GRE).

Character of Service
Electric power and energy furnished hereunder shall be alternating current, three-phase, sixty-Hertz furnished pursuant to the terms and conditions of the PPC and delivered pursuant to the terms and conditions of the TSC.

Billing Month
The billing month will be defined as the period between 00:00:01 CPT on the first day of each calendar month and ending at 24:00:00 CPT on the last day of the same month.

Metering
Metering ownership, readings, tests, accuracy, and adjustments must conform to the requirements specified in the PPC and/or TSC.

Monthly Rates

Members shall pay GRE each month for all power and energy furnished at the following rates:

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

Great River Energy
2015 Wholesale Rate Summary
for All-Requirements Distribution Member Cooperatives

Capacity Charge: (per kW-month)	
	[TRADE SECRET DATA BEGINS
Summer (Jun, Jul, Aug)	
Winter (Jan, Feb, Dec)	
Spring/Fall (Mar, Apr, May, Sep, Oct, Nov)	
Energy Charge: (per kWh)	
Off-Peak Energy Rate	
On-Peak Energy Rate	
Critical-Peak Energy Rate	
Delivery Services	
1. Transmission Charge: (per kW-month)	
2. Ancillary Service Charges: (per kW-month)	
Scheduling & Dispatch	
Reactive Supply and Voltage Control	
3. Ancillary Service Charges (per kWh)	
Regulation and Frequency Response	
Operating Reserve - Spinning	
Operating Reserve - Supplemental	
TRADE SECRET DATA ENDS]	

NET ENERGY BILLING SERVICE

Availability

Available to any small qualifying facility (SQF) of less than 40 kW who receives non-time of day retail electric service from Connexus Energy and offsets energy delivered by Connexus Energy.

Rate

Meter Charge per Month:

Single Phase	$2.65
Three Phase	$5.90

Payment per kWh for energy delivered to Connexus Energy in excess of energy used:

With Retail Non-Demand Metered Service	$0.119
With Retail Demand Metered Service	$0.068

Conditions of Service

1. Energy used by the customer in excess of energy delivered by the SQF at the same site during the same billing period shall be billed in accordance with the appropriate non-time of day retail electric rate.

   For demand metered General Commercial customers, the entire kW demand supplied by the Connexus Energy at the same site during the same billing period shall be billed to the customer in according to the appropriate general commercial demand charge rate.

2. Interconnection charges will be assessed by the Connexus Energy on an individual basis for all costs associated with addition to or modification of Connexus Energy facilities to accommodate SQF. The interconnection charge is the responsibility of the SQF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by the Connexus Energy.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Connexus Energy operating standards.

5. The customer must maintain and operate the generation system per the Connexus Energy Distributed Generation Technical Requirements and Interconnection Agreements.

SIMULTANEOUS PURCHASE AND SALE

Availability
Available to any small qualifying facility (SQF) of less than 40 kW who receives non-time of day retail electric service.

Rate

Meter Charge per Month:

Single Phase	$5.00
Three Phase	$7.50

Payment Schedule for Energy Delivered to Connexus Energy:

	Nov-Apr	May-Oct
Energy Payment per kWh	$0.03437	$0.03068
Capacity Payment for Firm Power/kWh	$0.00	$0.00

Determination of Firm Power
The SQF will have supplied firm power if during the billing period an on-peak capacity factor of at least 65 percent was achieved. The calculation of the on-peak capacity factor will be as follows: the average on-peak period metered capacity delivered to Connexus Energy for the on-peak period of the billing period divided by the greatest 15-minute metered capacity delivered for the on-peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

Conditions of Service

1. Electric service provided by Connexus Energy to the customer at the same site shall be billed in accordance with the appropriate non-time of day retail electric rate.

2. Interconnection charges will be assessed by Connexus Energy on an individual basis for all costs associated (with addition to or modification of) Connexus Energy facilities to accommodate SQF. The interconnection charge is the responsibility of the SQF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by Connexus Energy.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Connexus Energy operating standards.

5. The customer must maintain and operate the generation system per the Connexus Energy Distributed Generation Technical Requirements and Interconnection Agreements.

TIME-OF-DAY PURCHASE SERVICE

Availability

Available to any small qualifying facility (SQF) of 100 kW capacity or less, and available to QFs with capacity more than 100 kW if firm power is provided. The size of the OF will determine whom the QF has the agreement with:

- If the QF capacity is less than 40 kW, Connexus will enter into agreements with, and purchase all energy and capacity made available by the QF.
- If the QF capacity is 40 kW or greater – Connexus Energy's power supplier, Great River Energy (GRE) will enter into agreements with, and purchase all energy and capacity made available by the QF.

Rate

Meter Charge per Month:

Single Phase	$5.00
Three Phase	$7.50

Payment Schedule for Energy Delivered to Connexus Energy:

	Nov-Apr	May-Oct
On Peak Energy Payment per kWh	$0.04379	$0.04158
Off Peak Energy Payment per kWh	$0.02668	$0.0219
Capacity Payment for Firm Power per On Peak kWh	$0.00	$0.00

Determination of Firm Power

The SQF will have supplied firm power if during the billing period an on-peak capacity factor of at least 65 percent was achieved. The calculation of the on-peak capacity factor will be as follows: the average on-peak period metered capacity delivered to Connexus Energy for the on-peak period of the billing period divided by the greatest 15-minute metered capacity delivered for the on peak period of the same billing period expressed in percent and rounded to the nearest whole percent. If the percent calculated is 65 or greater, capacity payment will be made. If the percent calculated is less than 65, capacity payment will not be made.

Conditions of Service

1. Electric service provided by Connexus Energy to the customer at the same site shall be billed in accordance with the appropriate retail electric rate.

2. Interconnection charges will be assessed by the Connexus Energy on an individual basis for all costs associated (with addition to or modification of) Connexus Energy facilities to accommodate SQF. The net interconnection charge is the responsibility of the SQF.

3. The voltage and phase of customer's generator must be consistent with existing service and approved by Connexus Energy.

4. The customer must maintain a power factor of the generator as close to unity as is consistent with Connexus Energy operating standards.

5. The customer must maintain and operate the generation system per the Connexus Energy Distributed Generation Technical Requirements and Interconnection Agreements.

Goodhue County Cooperative Electric

A Touchstone Energy™ Partner

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

December 29, 2014

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
350 Metro Square Building
121 7th Place East
St. Paul, Minnesota 55101-2147

Dear Dr. Haar:

Subject: Annual Cogeneration Filing –

Enclosed is the annual cogeneration filing for our cooperative pursuant to Minnesota Rules part 7835.0600. It includes appropriate Schedules C for various customer classes. It also includes Schedules A, B and H.

This filing includes data from our wholesale energy supplier, Great River Energy (GRE), which has been classified as trade secret data. GRE's classification of the data as trade secret meets the three criteria of Minnesota Statute §13.37 for designating information as trade secret. First, we are supplying the data as part of our compliance with Minnesota Rules part 7835. Second, GRE has taken steps in the relevant proceedings to maintain the confidentiality of the information. Finally, GRE derives economic value from the information remaining confidential.

If there are any questions with respect to Schedules A, B and H please contact Tanya Schwartz at Great River Energy (763-445-6117).

Sincerely,

Douglas Fingerson

Douglas Fingerson
General Manager

Website • www.gccea.com
Phone (507) 732-5117 • (800) 927-6864 • Fax (507) 732-5110
1410 NORTHSTAR DRIVE • P.O. BOX 99 • ZUMBROTA, MN 55992-0099

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

SCHEDULE A

Estimated Energy Costs

Great River Energy's avoided or incremental energy cost is expected to be the price of energy in the Midcontinent Independent System Operator (MISO) energy market. The Great River Energy estimate of those market prices for the next five (5) years is listed below.

Summer season is defined as May through October and Winter season is defined as November through April.

On Peak periods are defined as Monday through Friday beginning at 10:00 a.m. and ending at 8:00 p.m. (for a total of 10 hours per day), excluding NERC holidays. Off Peak periods are defined as all other days and hours.

ESTIMATED MARKET ENERGY COSTS* ($/MWh)

	2015	2016	2017	2018	2019
	[TRADE SECRET DATA BEGINS ----------				
Summer					
On Peak					
Off Peak					
All Hours					
Winter					
On Peak					
Off Peak					
All Hours					
Annual					
All Hours					
	---------- TRADE SECRET DATA ENDS]				

** All prices in nominal dollars and adjusted to reflect line losses shown in Schedule B.*

SCHEDULE B

Estimated Capacity Costs

The following is provided in response to Rule 7835.0600.

Planned Utility Generating Facility Additions

Great River Energy has no planned generating facility additions, other than from qualifying facilities, in the next 10 years.

1a. Name: N/A
1b. Nameplate rating: N/A
1c. Fuel Type: N/A
1d. In-service Date: N/A
1e. N/A
1f. N/A
1g. N/A
1h. N/A
1i. N/A.

Planned Firm Capacity Purchases

Great River Energy (GRE) has no planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

Percentage of Line Losses

Overall line losses, from generator bus bar to consumer end use were 9.1% in 2013.

Net Annual Avoided Capacity Cost

Great River Energy (GRE) has no planned generating facility additions or planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

The annual avoided capacity cost for GRE is $0.00/kW-year.

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class: Single Phase

Total Class Revenue	$ 10,189,574
Fixed Charges	$ 1,373,952
kWh Sales	76,816,433 kWh

$$\text{ARCER} = \frac{\text{TOTAL CLASS REVENUES - FIXED CHARGES}}{\text{kWh SALES}}$$

Average Retail Cooperative Energy Rate = $. 0.1148/kWh

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class: Three Phase

Total Class Revenue	$ 349,851
Fixed Charges	$ 48,105
kWh Sales	2,632,966 kWh

$$ARCER = \frac{\text{TOTAL CLASS REVENUES - FIXED CHARGES}}{\text{kWh SALES}}$$

Average Retail Cooperative Energy Rate = $. 0.1146/kWh

SCHEDULE D

(To be completed by the Member)

SCHEDULE E

Application for Interconnection
Member Owned Qualifying Facility - 100 Kilowatt or Less

_____ _____
(Member Name) (Location Number)

_____ _____
(Address) (Type Consumer)

Phone_____

Manufacturer of Qualifying Facility:_____

Nameplate Rating:_____

Listing Authority (UL or other):_____

Energy Source_____

Type of Generator:_____

Inverter:_____

Operational Data:
1. _____ Voltage
2. _____ Phase (single, three-phase)
3. _____ Maximum Amperage
4. _____ % Power Factor

Is a copy of Manufacturer Technical Specifications Attached?_____
Description of Interconnection Equipment, including location of manual disconnect switch:

_____

_____

Proposed Interconnection Date: _____, 20___

Estimated Site Energy Consumption:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Energy Production:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Demand _____kW Estimated Site Capacity _____kW
(if capable of supplying firm power)

I, the undersigned, have completed the Application for Interconnection, which accurately describes the equipment to be interconnected and operated in parallel with the Cooperative's distribution system. I have read and understand the Cooperative's Requirements for Interconnection and understand that approval of this Application is dependent on compliance with these requirements and the accuracy of the information as included in this Application.

_____ _____
Member's Signature Effective Date

1 REQUIREMENT FOR INTERCONNECTION

1.1 Cooperative Membership

Any individual, corporation or partnership wishing to interconnect with the Cooperative's electric system shall become a Member of the Cooperative in accordance with the Bylaws of the Cooperative.

1.2 Contracts/Agreements

The owner of a QF wishing to interconnect with the Cooperative's system will be required to sign a Uniform Statewide Contract for Cogeneration and Small Power Production Facilities. For QFs of 40 kW or more, an Electric Service Agreement is required. For QFs 101 to 1000 kW, the Standard Offer for cogenerators and small power producers may be used. The Contract/Agreement commits the Cooperative and the Member to operate under the terms and conditions of the Contract/Agreement and in full compliance with Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.0100-7835.6100. Copies of the Uniform Statewide Contract and the Electric Service Agreement are included in Schedule D.

1.3 Application for Interconnection

The Cooperative requires that all QFs file an Application for Interconnection not less than 30, nor more than 90 days prior to the proposed date of an interconnection. The Application includes the Cooperative's Requirements for Interconnection. All QFs are required to abide by the requirements stated, and provide the Cooperative with the following information.

A. Technical specifications of all power production and interconnection equipment.
B. Proposed date of interconnection.
C. Projected net output or consumption by the QF.

A copy of the Application for Interconnection is included in Schedule E.

The Cooperative shall accept or reject the Application for Interconnection within 30 days. Acceptance depends on the accuracy of information provided on the Application, and on the QFs proposed compliance with the National Electric Code, the National Electrical Safety Code, the Cooperative Service Rules and Regulations and other local codes which apply to cogeneration and small power production facilities. If in the Cooperative's opinion, the proposed facility does not qualify, the Cooperative will provide the Member with a written explanation. Acceptance of the Application shall not be construed as permission to interconnect with the Cooperative's system.

1.4 Inspection

An inspection certificate issued by the state electrical inspector having jurisdiction of the QF's area is required to assure wiring complies with the National Electrical Safety Code, and other applicable local electrical codes.

An inspection certificate issued by the local governing agency is required to assure compliance with building codes and environmental rules and regulations where applicable.

1.5 Interconnection Costs

The Member shall reimburse the Cooperative for its incremental cost resulting from interconnecting with the QF. The incremental interconnection cost shall include all reasonable costs of connection, switching, metering, transmission, distribution, safety provisions and administrative costs incurred by the Cooperative directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with the QF, to the extent such costs are in excess of the corresponding costs which the Cooperative would have incurred had it not interconnected with the QF.

1.6 Interconnection

Interconnection is permitted only after all of the requirements stated in Sections 1 and 2 of the Terms and Conditions are met, and only after written authorization to interconnect is issued by the Cooperative. This authorization cannot be issued until all interconnection costs are paid, and does not relieve the Member from the responsibility of installing, operating and maintaining the facilities in a responsible and safe manner.

If in the opinion of the Cooperative, the Member fails to abide by the terms and conditions of the Uniform Statewide Contract or the Electric Service Agreement, including subsequent operation of his generating facilities in a nonqualifying manner, the Cooperative will no longer be obligated to operate in parallel with nor purchase any capacity and energy made available from the QF. The Cooperative will notify the Member to disconnect the generating facilities from the Cooperative's system. In the event the Member fails to immediately comply with a disconnect notice, the Cooperative reserves the right to make such disconnection including the termination of electric service if necessary.

2 SAFETY AND OPERATING STANDARDS

Safety and Operating Standards under which the Cooperative operates are imposed to protect Cooperative employees and the general public, and are intended to guarantee a quality of service to the consumer members. All QFs must operate in a manner which will insure the safety of employees and the general public, and must allow electric service to other consumers to remain within prescribed limits.

2.1 Cooperative Access

Employees and authorized representatives of the Cooperative have the right to enter upon Member's property at any reasonable time to insure continued compliance with the Cooperative Safety and Operating Standards and the accuracy of its meters. Such inspection by the Cooperative shall not relieve the Member from the responsibility of installing, operating, and maintaining the facilities in a responsible and safe manner.

2.2 Disconnect Requirements

In order to provide adequate safety to the Cooperative's employees when performing certain operation and maintenance on the Cooperative's system, it is essential the following two requirements be met:

1. The QF shall be designed and operated to automatically disconnect or shut down during scheduled or unscheduled outages to insure that it will not backfeed any part of the Cooperative's distribution system.

2. That a means be available to positively disconnect the QF from the system such that there is no possibility that the QF could backfeed through the service transformer and energize the primary system. This requirement shall be met with a Member furnished and installed Underwriter's Laboratory (UL) listed manual disconnect switch which shall be located between the Member's QF and the Cooperative's system. The location of the switch shall be approved by the Cooperative and shall be housed in an approved enclosure which can be secured with a padlock or locking device. When feasible and with mutual consent, the Cooperative may permit the use of service transformer disconnect, in place of the Member furnished disconnect switch.

2.2.1 Isolation of qualifying facility

The Cooperative reserves the right to open the disconnect switch (i.e., isolating the Member's QF) without prior notice for any of the following reasons:

A. System emergency and/or maintenance operations require such action.
B. A potentially hazardous condition relating to the QF is discovered.

The Cooperative will notify the QF following such emergency disconnects as soon as possible.

2.2.2 Single-phase limitations

The rated capacity of the QF to be connected in parallel with a low voltage service shall be no greater than 10 kW for single-phase installations, unless authorized in writing by the Cooperative consistent with the Cooperative's limitation for single-phase motors. Single-phase installations greater than 10 kW will be permitted if engineering calculations indicate that the installation will not adversely affect the operational characteristics of the Cooperative's system.

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Operation of the QF must not cause any reduction in the quality of service provided to other consumers nor interfere with the operation of the Cooperative's system. The Member shall be responsible for taking whatever corrective action may be required and/or reimbursing the Cooperative for the cost of corrective action which it deems necessary to restore service to prescribed limits.

2.2.4 Electrical characteristics

The electrical characteristics of the QF shall conform with standards established by the Cooperative. The standards include voltage, current, frequency, harmonics, and automatic synchronization, etc. Wherever possible the Cooperative will base its standards on industry wide standards.

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The Member shall endeavor to operate the QF as near unity power factor as possible. For QFs with rated capacity above 10 kW, the Cooperative reserves the right to require the Member to install power factor correction equipment or reimburse the Cooperative for its cost of installing power factor correction equipment.

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The Cooperative will meter the QF to obtain billing data and to fulfill its reporting requirements to the Minnesota Public Utility Commission as specified in Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.1300.

2.3.1 Required metering

Two meters are required. One meter will be installed in such a manner that it records only the energy sold by the Cooperative to the QF. The second meter will be installed in such a manner that it records only the energy sold by the QF to the Cooperative. The QF shall pay for the requisite metering as an interconnection cost. In addition to required metering, the Cooperative at its option and consent of the QF, shall have the right to install additional metering equipment for the collection of data for research purposes. The Cooperative will furnish such metering equipment and pay all associated operation and maintenance.

2.3.2 Meter reading

The meters shall be read monthly, or as mutually agreed upon by the consumer and Cooperative, at the same time and in the same manner as prescribed for other Members of the Cooperative in the same consumer classification. Monthly meter readings are required from all consumer classifications. Metering records shall be available for inspection at all reasonable times.

2.3.3 Metering configuration

The metering schematic for interconnections under the standard rate schedules are found in Schedule D as part of the Uniform Statewide Contract and the Electric Service Agreement Terms and Conditions.

SCHEDULE F

Procedure for notifying Qualifying Facilities of periods when the Cooperative will not purchase electric energy or capacity due to operational circumstances that would make the cost of purchases during those periods greater than the cost of internal generation.

1. Qualifying Facilities 100 kW and Smaller:

   The Cooperative does not plan to discontinue purchases of energy and capacity at this time. The current expected cost of supplying such notification would exceed any savings from not purchasing from the QF. At such time as it becomes economic to provide such notice, the Cooperative will develop the necessary procedure.

2. Qualifying Facilities Greater than 100 kW:

   Discontinuing purchases by the Cooperative will become part of the negotiated contract.

SCHEDULE G

Computation Descriptions

Schedule G contains a description of all computations made by the Cooperative in determining Schedules A and B.

Schedule A

Schedule A is based on GRE's expectations of market prices as described in Schedule A.

Schedule B

Schedule B is self-explanatory.

SCHEDULE H

Wholesale Power Rates
For All-Requirements Distribution Member Cooperatives
(2015 Schedule of Wholesale Rates)

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Applicable to any Distribution Member (Member) that has executed a Power Purchase Contract (PPC) and/or Transmission Service Contact (TSC) with Great River Energy (GRE).

Character of Service
Electric power and energy furnished hereunder shall be alternating current, three-phase, sixty-Hertz furnished pursuant to the terms and conditions of the PPC and delivered pursuant to the terms and conditions of the TSC.

Billing Month
The billing month will be defined as the period between 00:00:01 CPT on the first day of each calendar month and ending at 24:00:00 CPT on the last day of the same month.

Metering
Metering ownership, readings, tests, accuracy, and adjustments must conform to the requirements specified in the PPC and/or TSC.

Monthly Rates

Members shall pay GRE each month for all power and energy furnished at the following rates:

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

Great River Energy
2015 Wholesale Rate Summary
for All-Requirements Distribution Member Cooperatives

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Winter (Jan, Feb, Dec)	
Spring/Fall (Mar, Apr, May, Sep, Oct, Nov)	
Energy Charge: (per kWh)	
Off-Peak Energy Rate	
On-Peak Energy Rate	
Critical-Peak Energy Rate	
Delivery Services	
1. Transmission Charge: (per kW-month)	
2. Ancillary Service Charges: (per kW-month)	
Scheduling & Dispatch	
Reactive Supply and Voltage Control	
3. Ancillary Service Charges (per kWh)	
Regulation and Frequency Response	
Operating Reserve - Spinning	
Operating Reserve - Supplemental	
TRADE SECRET DATA ENDS]	

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

March 23, 2015

Dr. Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
350 Metro Square Building
121 7th Place East
St. Paul, Minnesota 55101-2147

Dear Dr. Haar:

Subject: Annual Cogeneration Filing –

Enclosed is the annual cogeneration filing for our cooperative pursuant to Minnesota Rules part 7835.0600. It includes appropriate Schedules C for various customer classes. It also includes Schedules A, B and H.

This filing includes data from our wholesale energy supplier, Great River Energy (GRE), which has been classified as trade secret data. GRE's classification of the data as trade secret meets the three criteria of Minnesota Statute §13.37 for designating information as trade secret. First, we are supplying the data as part of our compliance with Minnesota Rules part 7835. Second, GRE has taken steps in the relevant proceedings to maintain the confidentiality of the information. Finally, GRE derives economic value from the information remaining confidential.

If there are any questions with respect to Schedules A, B and H please contact Tanya Schwartz at Great River Energy (763-445-6117).

Sincerely,

Jay Porter
General Manager

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

SCHEDULE A

Estimated Energy Costs

Great River Energy's avoided or incremental energy cost is expected to be the price of energy in the Midcontinent Independent System Operator (MISO) energy market. The Great River Energy estimate of those market prices for the next five (5) years is listed below.

Summer season is defined as May through October and Winter season is defined as November through April.

On Peak periods are defined as Monday through Friday beginning at 10:00 a.m. and ending at 8:00 p.m. (for a total of 10 hours per day), excluding NERC holidays. Off Peak periods are defined as all other days and hours.

ESTIMATED MARKET ENERGY COSTS* ($/MWh)

	2015	2016	2017	2018	2019
	[TRADE SECRET DATA BEGINS ----------				
Summer					
On Peak					
Off Peak					
All Hours					
Winter					
On Peak					
Off Peak					
All Hours					
Annual					
All Hours					
	---------- TRADE SECRET DATA ENDS]				

** All prices in nominal dollars and adjusted to reflect line losses shown in Schedule B.*

SCHEDULE B

Estimated Capacity Costs

The following is provided in response to Rule 7835.0600.

Planned Utility Generating Facility Additions

Great River Energy has no planned generating facility additions, other than from qualifying facilities, in the next 10 years.

1a. Name: N/A
1b. Nameplate rating: N/A
1c. Fuel Type: N/A
1d. In-service Date: N/A
1e. N/A
1f. N/A
1g. N/A
1h. N/A
1i. N/A.

Planned Firm Capacity Purchases

Great River Energy (GRE) has no planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

Percentage of Line Losses

Overall line losses, from generator bus bar to consumer end use were 9.1% in 2013.

Net Annual Avoided Capacity Cost

Great River Energy (GRE) has no planned generating facility additions or planned firm capacity purchases, other than from qualifying facilities, in the next 10 years.

The annual avoided capacity cost for GRE is $0.00/kW-year.

SCHEDULE C

Calculation
Average Retail Cooperative Energy Rate
(ARCER)

Rate Class: Residential, Small Commercial and Large Commerical

[TRADE SECRET DATA BEGINS

Total Class Revenue $ _____

Fixed Charges $ _____

kWh Sales _____ kWh

$$ARCER = \frac{\text{TOTAL CLASS REVENUES - FIXED CHARGES}}{\text{kWh SALES}}$$

Average Retail Cooperative Energy Rate = $._____ /kWh

TRADE SECRET DATA ENDS]

SCHEDULE D

UNIFORM STATEWIDE CONTRACT FOR COGENERATION AND SMALL POWER PRODUCTION FACILITIES OF LESS THAN 40 KW

THIS CONTRACT is entered into _____, 20____, by Mille Lacs Energy Cooperative (hereinafter called *Cooperative* and _____ (hereinafter called *QF*).

RECITALS

The QF has installed electric generating facilities, consisting of:

_____
_____

(Description of facilities), rated less than 40 kilowatts of electricity, on property located at:

_____
_____

The QF is prepared to generate electricity in parallel with Cooperative.

The QF's electric generating facilities meet the requirements of the Minnesota Public Utilities Commission (hereinafter called Commission) rules on Cogeneration and Small Power Production and any technical standards for interconnection the Cooperative has established at are authorized by those rules.

The Cooperative is obligated under federal and Minnesota law to interconnect with the QF and to purchase electricity offered for sale by the QF.

A contract between the QF and the Cooperative is required by the Commission's rules.

AGREEMENTS

The QF and the Cooperative agree:

1. The Cooperative will sell electricity to the QF under the rate schedule in force for the class of customer to which the QF belongs.

2. The Cooperative will buy electricity from the QF under the current rate schedule filed with the Commission. The QF has elected the rate schedule category hereinafter indicated (select one):

_X_a. Net energy billing rate under part 7835.3300.

___b. Simultaneous purchase and sale billing rate under part 7835.3400.

___c. Time-of-day purchase rates under 7835.3500.

A copy of the presently filed rate schedule is attached to this contract.

3. The rates for sales and purchased of electricity may change over time this contract is in force, due to actions of the Cooperative or of the Commission, and the QF and the Cooperative agree that sales and purchases will be made under the rates in effect each month during the time this contract is in force.

4. The cooperative will compute the charges and payments for purchases and sales for each billing period. Any net credit to the QF will be made under one of the following options as chosen by the QF:

   _X_ 1. Credit to the QF's account with the Cooperative
   ___ 2. Paid by check to the QF within 15 days of the billing date.

5. The QF must operate its electric generating facilities within any rules, regulations, and policies adopted by the Cooperative not prohibited by the Commission's rules on Cogeneration and Small Power Production which provide reasonable technical connection and operating specifications for the QF. This agreement does not waive the QF's right to bring a dispute before the Commission as authorized by Minnesota Rules, part 7835.4800, 7835.5800 and 7835.4500 and any other provision of the Commission's rules on Cogeneration and Small Power Production authorizing Commission resolution of a dispute.

6. The Cooperative's rules, regulations, and policies must conform to the Commission's rules and Cogeneration and Small Power Production.

7. The QF will operate its electric generating facilities so that they conform to the national, state and local electric and safety codes, and will be responsible for the costs of conformance.

8. The QF is responsible for the actual, reasonable cost of interconnection which are estimated to be $____NA_____. The QF will pay the Cooperative in this way:
   _____
   _____
   _____
   _____

9. The QF will give the Cooperative reasonable access to its property and electric generating facilities if the configuration of those facilities does not permit disconnection or testing from the Cooperative's side of the interconnection. If the Cooperative enters the QF's property, the Cooperative will remain responsible for its personnel.

10. The Cooperative my stop providing electricity to the QF during a system emergency. The Cooperative will not discriminate against the QF when it stops providing electricity or when it resumes providing electricity.

11. The Cooperative may stop purchasing electricity from the QF when necessary for the Cooperative to construct, install, maintain, repair, replace, remove, investigate, or inspect any equipment or facilities within its electric system. The Cooperative will

notify the QF before it stops purchasing electricity in this way: The Cooperative will notify the QF in a manner consistent with that of notifying all other member-consumers in that consumer class.

12. The QF will keep in force liability insurance against personal property damage due to the installation, interconnection and operation of its electric generating facilities. The amount of insurance coverage will be $300,000. (The Cooperative many not require an amount greater than $300,000).

13. This contract becomes effective as soon as it is signed by the QF and the Cooperative. This contract will remain in force until either the QF or the Cooperative gives written notice to the other that the contract is cancelled. This contract will be cancelled 30 days after notice is given.

14. This contract contains all the agreements made between the QF and the Cooperative except that this contract shall at all times be subject to all rules and orders issued by the Public Utilities Commission or other government agency having jurisdiction over the subject matter of this contract. The QF and the Cooperative are not responsible for any agreements other than those stated in this contract.

THE QF AND THE COOPERATIVE HAVE READ THIS CONTRACT AND AGREE TO BE BOUND BY ITS TERMS. AS EVIDENCE OF THEIR AGREEMENT, THEY HAVE EACH SIGNED THIS CONTRACT BELOW ON THAT DATE WRITTEN AT THE BEGINNING OF THIS CONTRACT.

QF
By:_____
_____

COOPERATIVE
By:_____

_____

ELECTRIC SERVICE AGREEMENT
With
Operator of a Cogeneration or Small Power Production
Facility 40 Kilowatts, But Not Greater Than 100 Kilowatts.

THIS AGREEMENT, made this _____ day of _____, 20____, between Mille Lacs Energy Cooperative, a Minnesota Cooperative corporation, hereinafter called *Cooperative*, and_____, a member of the Cooperative hereinafter called *Member*.

WITNESSETH:

WHEREAS, the Cooperative owns, operates and maintains an electric distribution system and provides electric service to its members, and

WHEREAS, Member desires to install and operate an electrical generating facility and to interconnect said facility to the electric system of the Cooperative, and

WHEREAS, the Member's generating facilities, hereinafter called Qualifying Facility or QF, must qualify as a QF in accordance with the requirements of the Federal Energy Regulatory Commission as set forth in Title 18 Code of Federal Regulations Chapter 1, part 292 (18 CFR Part 292), and

WHEREAS, the Cooperative and the Member will comply with the rules of the Minnesota Public Utilities Commission (MPUC) governing cogeneration and small power production generators, and the Cooperative Service Rules and Regulation, and

WHEREAS, the Cooperative is willing to purchase energy and capacity from the QF that is in excess of the Member's needs, and

WHEREAS, the Cooperative is willing to interconnect and operate in parallel with the QF and to furnish parallel electric service to the Member.

NOW, THEREFORE, the Cooperative and the Member agree as follows:

1.1 Point of Interconnection: The Point of Interconnection shall mean that point at which the facilities provided by Cooperative and the facilities provided by Member are interconnected. The location of the Point of Interconnection is as follows:

_____
_____
_____
_____

2.1 Metering Diagram: A one-line diagram that shows the metering and protective equipment installed for the QF is shown on Attachment A, attached hereto. The QF and its characteristics are also described in Attachment A.

3.1 Electric Service Supplied to Member: The Cooperative will supply the electrical requirements of the Member that are not supplied by the QF. Such electric service shall be supplied under the rate schedules applicable to the Consumer's class of service as revised from time to time by the Cooperative.

4.1 Electric Service Supplied to Cooperative: The Cooperative will purchase all energy and capacity supplied to the Cooperative by the QF under the Standard Rate set forth in the Rate Schedule PG-1, Option _____, which is attached hereto as part of this Agreement. The Cooperative will at the option of the Member either:

___ pay the Member for electric service supplied the previous month within fifteen (15) days after the date of the monthly meter reading, or

___ credit the Member for the electric service supplied on the following monthly billing.

5.1 Terms and Conditions: The terms and conditions attached to this Agreement are incorporated herein and made a part hereof.

6.1 Correction of Trouble: The QF shall be operated so that it shall not cause any reduction in the quality of service provided by the Cooperative's system. If the operation of the QF causes a hazardous condition on the Cooperative's system or if any emergency arises that may result in a hazardous condition, the Cooperative has the right top open the disconnect switch that isolates the QF, without notice to the Member or liability to the Member for any loss of revenue or damage to the QF. It is the Member's sole responsibility to correct any hazardous or unsafe condition that operation of the QF may impose on the system of the Cooperative.

7.1 Successors and Assigns: This Agreement shall be binding upon and inure to the benefit of the respective successors and assigns of the parties hereto, save that no assignment of hereof by the Member shall be effective without the written consent of Cooperative being first obtained.

8.1 Term of Agreement: This Agreement shall become effective upon the first date above written and shall continue in full force and effect until terminated by less than thirty (30) days prior written notice given by either party to the other party. Upon termination of this Agreement, the QF shall be disconnected from the electric system of the Cooperative at the Members sole risk, cost and expense.

9.1 Regulation and Administrative Approval: This Agreement is subject to the regulations and of any regulatory body or bodies having jurisdiction thereof.

IN WITNESS WHEREOF, the parties have caused the Agreement to be duly executed as of the day and year first above written.

ATTEST: COOPERATIVE

_____ By_____

ATTEST: MEMBER

_____ By_____

SCHEDULE E

Application for Interconnection
Member Owned Qualifying Facility - 100 Kilowatt or Less

_____ _____
(Member Name) (Location Number)

_____ _____
(Address) (Type Consumer)

Phone_____

Manufacturer of Qualifying Facility:_____

Nameplate Rating:_____

Listing Authority (UL or other):_____

Energy Source_____

Type of Generator:_____

Inverter:_____

Operational Data:
1. _____ Voltage
2. _____ Phase (single, three-phase)
3. _____ Maximum Amperage
4. _____ % Power Factor

Is a copy of Manufacturer Technical Specifications Attached?_____
Description of Interconnection Equipment, including location of manual disconnect switch:
_____

_____

Proposed Interconnection Date: _____, 20___

Estimated Site Energy Consumption:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Energy Production:

_____kWh	_____kWh	_____kWh	_____kWh
Dec-Feb	Mar-May	Jun-Aug	Sep-Nov

Estimated Site Demand _____kW Estimated Site Capacity _____kW
(if capable of supplying firm power)

I, the undersigned, have completed the Application for Interconnection, which accurately describes the equipment to be interconnected and operated in parallel with the Cooperative's distribution system. I have read and understand the Cooperative's Requirements for Interconnection and understand that approval of this Application is dependent on compliance with these requirements and the accuracy of the information as included in this Application.

_____ _____
Member's Signature Effective Date

1 REQUIREMENT FOR INTERCONNECTION

1.1 Cooperative Membership

Any individual, corporation or partnership wishing to interconnect with the Cooperative's electric system shall become a Member of the Cooperative in accordance with the Bylaws of the Cooperative.

1.2 Contracts/Agreements

The owner of a QF wishing to interconnect with the Cooperative's system will be required to sign a Uniform Statewide Contract for Cogeneration and Small Power Production Facilities. For QFs of 40 kW or more, an Electric Service Agreement is required. For QFs 101 to 1000 kW, the Standard Offer for cogenerators and small power producers may be used. The Contract/Agreement commits the Cooperative and the Member to operate under the terms and conditions of the Contract/Agreement and in full compliance with Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.0100-7835.6100. Copies of the Uniform Statewide Contract and the Electric Service Agreement are included in Schedule D.

1.3 Application for Interconnection

The Cooperative requires that all QFs file an Application for Interconnection not less than 30, nor more than 90 days prior to the proposed date of an interconnection. The Application includes the Cooperative's Requirements for Interconnection. All QFs are required to abide by the requirements stated, and provide the Cooperative with the following information.

A. Technical specifications of all power production and interconnection equipment.
B. Proposed date of interconnection.
C. Projected net output or consumption by the QF.

A copy of the Application for Interconnection is included in Schedule E.

The Cooperative shall accept or reject the Application for Interconnection within 30 days. Acceptance depends on the accuracy of information provided on the Application, and on the QFs proposed compliance with the National Electric Code, the National Electrical Safety Code, the Cooperative Service Rules and Regulations and other local codes which apply to cogeneration and small power production facilities. If in the Cooperative's opinion, the proposed facility does not qualify, the Cooperative will provide the Member with a written explanation. Acceptance of the Application shall not be construed as permission to interconnect with the Cooperative's system.

1.4 Inspection

An inspection certificate issued by the state electrical inspector having jurisdiction of the QF's area is required to assure wiring complies with the National Electrical Safety Code, and other applicable local electrical codes.

An inspection certificate issued by the local governing agency is required to assure compliance with building codes and environmental rules and regulations where applicable.

1.5 Interconnection Costs

The Member shall reimburse the Cooperative for its incremental cost resulting from interconnecting with the QF. The incremental interconnection cost shall include all reasonable costs of connection, switching, metering, transmission, distribution, safety provisions and administrative costs incurred by the Cooperative directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with the QF, to the extent such costs are in excess of the corresponding costs which the Cooperative would have incurred had it not interconnected with the QF.

1.6 Interconnection

Interconnection is permitted only after all of the requirements stated in Sections 1 and 2 of the Terms and Conditions are met, and only after written authorization to interconnect is issued by the Cooperative. This authorization cannot be issued until all interconnection costs are paid, and does not relieve the Member from the responsibility of installing, operating and maintaining the facilities in a responsible and safe manner.

If in the opinion of the Cooperative, the Member fails to abide by the terms and conditions of the Uniform Statewide Contract or the Electric Service Agreement, including subsequent operation of his generating facilities in a nonqualifying manner, the Cooperative will no longer be obligated to operate in parallel with nor purchase any capacity and energy made available from the QF. The Cooperative will notify the Member to disconnect the generating facilities from the Cooperative's system. In the event the Member fails to immediately comply with a disconnect notice, the Cooperative reserves the right to make such disconnection including the termination of electric service if necessary.

2 SAFETY AND OPERATING STANDARDS

Safety and Operating Standards under which the Cooperative operates are imposed to protect Cooperative employees and the general public, and are intended to guarantee a quality of service to the consumer members. All QFs must operate in a manner which will insure the safety of employees and the general public, and must allow electric service to other consumers to remain within prescribed limits.

2.1 Cooperative Access

Employees and authorized representatives of the Cooperative have the right to enter upon Member's property at any reasonable time to insure continued compliance with the Cooperative Safety and Operating Standards and the accuracy of its meters. Such inspection by the Cooperative shall not relieve the Member from the responsibility of installing, operating, and maintaining the facilities in a responsible and safe manner.

2.2 Disconnect Requirements

In order to provide adequate safety to the Cooperative's employees when performing certain operation and maintenance on the Cooperative's system, it is essential the following two requirements be met:

1. The QF shall be designed and operated to automatically disconnect or shut down during scheduled or unscheduled outages to insure that it will not backfeed any part of the Cooperative's distribution system.

2. That a means be available to positively disconnect the QF from the system such that there is no possibility that the QF could backfeed through the service transformer and energize the primary system. This requirement shall be met with a Member furnished and installed Underwriter's Laboratory (UL) listed manual disconnect switch which shall be located between the Member's QF and the Cooperative's system. The location of the switch shall be approved by the Cooperative and shall be housed in an approved enclosure which can be secured with a padlock or locking device. When feasible and with mutual consent, the Cooperative may permit the use of service transformer disconnect, in place of the Member furnished disconnect switch.

2.2.1 Isolation of qualifying facility

The Cooperative reserves the right to open the disconnect switch (i.e., isolating the Member's QF) without prior notice for any of the following reasons:

A. System emergency and/or maintenance operations require such action.
B. A potentially hazardous condition relating to the QF is discovered.

The Cooperative will notify the QF following such emergency disconnects as soon as possible.

2.2.2 Single-phase limitations

The rated capacity of the QF to be connected in parallel with a low voltage service shall be no greater than 10 kW for single-phase installations, unless authorized in writing by the Cooperative consistent with the Cooperative's limitation for single-phase motors. Single-phase installations greater than 10 kW will be permitted if engineering calculations indicate that the installation will not adversely affect the operational characteristics of the Cooperative's system.

2.2.3 Quality of service

Operation of the QF must not cause any reduction in the quality of service provided to other consumers nor interfere with the operation of the Cooperative's system. The Member shall be responsible for taking whatever corrective action may be required and/or reimbursing the Cooperative for the cost of corrective action which it deems necessary to restore service to prescribed limits.

2.2.4 Electrical characteristics

The electrical characteristics of the QF shall conform with standards established by the Cooperative. The standards include voltage, current, frequency, harmonics, and automatic synchronization, etc. Wherever possible the Cooperative will base its standards on industry wide standards.

2.2.5 Power factor

The Member shall endeavor to operate the QF as near unity power factor as possible. For QFs with rated capacity above 10 kW, the Cooperative reserves the right to require the Member to install power factor correction equipment or reimburse the Cooperative for its cost of installing power factor correction equipment.

2.3 Metering

The Cooperative will meter the QF to obtain billing data and to fulfill its reporting requirements to the Minnesota Public Utility Commission as specified in Minnesota Adopted Rules Relating to Cogeneration and Small Power Production 7835.1300.

2.3.1 Required metering

Two meters are required. One meter will be installed in such a manner that it records only the energy sold by the Cooperative to the QF. The second meter will be installed in such a manner that it records only the energy sold by the QF to the Cooperative. The QF shall pay for the requisite metering as an interconnection cost. In addition to required metering, the Cooperative at its option and consent of the QF, shall have the right to install additional metering equipment for the collection of data for research purposes. The Cooperative will furnish such metering equipment and pay all associated operation and maintenance.

2.3.2 Meter reading

The meters shall be read monthly, or as mutually agreed upon by the consumer and Cooperative, at the same time and in the same manner as prescribed for other Members of the Cooperative in the same consumer classification. Monthly meter readings are required from all consumer classifications. Metering records shall be available for inspection at all reasonable times.

2.3.3 Metering configuration

The metering schematic for interconnections under the standard rate schedules are found in Schedule D as part of the Uniform Statewide Contract and the Electric Service Agreement Terms and Conditions.

SCHEDULE F

Procedure for notifying Qualifying Facilities of periods when the Cooperative will not purchase electric energy or capacity due to operational circumstances that would make the cost of purchases during those periods greater than the cost of internal generation.

1. Qualifying Facilities 100 kW and Smaller:

   The Cooperative does not plan to discontinue purchases of energy and capacity at this time. The current expected cost of supplying such notification would exceed any savings from not purchasing from the QF. At such time as it becomes economic to provide such notice, the Cooperative will develop the necessary procedure.

2. Qualifying Facilities Greater than 100 kW:

   Discontinuing purchases by the Cooperative will become part of the negotiated contract.

SCHEDULE G

Computation Descriptions

Schedule G contains a description of all computations made by the Cooperative in determining Schedules A and B.

Schedule A

Schedule A is based on GRE's expectations of market prices as described in Schedule A.

Schedule B

Schedule B is self-explanatory.

SCHEDULE H

Wholesale Power Rates
For All-Requirements Distribution Member Cooperatives
(2015 Schedule of Wholesale Rates)

Availability
Applicable to any Distribution Member (Member) that has executed a Power Purchase Contract (PPC) and/or Transmission Service Contact (TSC) with Great River Energy (GRE).

Character of Service
Electric power and energy furnished hereunder shall be alternating current, three-phase, sixty-Hertz furnished pursuant to the terms and conditions of the PPC and delivered pursuant to the terms and conditions of the TSC.

Billing Month
The billing month will be defined as the period between 00:00:01 CPT on the first day of each calendar month and ending at 24:00:00 CPT on the last day of the same month.

Metering
Metering ownership, readings, tests, accuracy, and adjustments must conform to the requirements specified in the PPC and/or TSC.

Monthly Rates

Members shall pay GRE each month for all power and energy furnished at the following rates:

PUBLIC DOCUMENT - TRADE SECRET [or PRIVILEGED] DATA HAS BEEN EXCISED

Great River Energy
2015 Wholesale Rate Summary
for All-Requirements Distribution Member Cooperatives

Capacity Charge: (per kW-month)	
	[TRADE SECRET DATA BEGINS
Summer (Jun, Jul, Aug)	
Winter (Jan, Feb, Dec)	
Spring/Fall (Mar, Apr, May, Sep, Oct, Nov)	
Energy Charge: (per kWh)	
Off-Peak Energy Rate	
On-Peak Energy Rate	
Critical-Peak Energy Rate	
Delivery Services	
1. Transmission Charge: (per kW-month)	
2. Ancillary Service Charges: (per kW-month)	
Scheduling & Dispatch	
Reactive Supply and Voltage Control	
3. Ancillary Service Charges (per kWh)	
Regulation and Frequency Response	
Operating Reserve - Spinning	
Operating Reserve - Supplemental	
TRADE SECRET DATA ENDS]	

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Comments

Docket No. E999/CI-15-755

Dated this 17th day of October 2016

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Michael	Allen	michael.allen@allenergysolar.com	All Energy Solar	721 W 26th st Suite 211 Minneapolis, Minnesota 55405	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_15-755_Official Service List _PUC
Sara	Baldwin Auck	sarab@irecusa.org	Interstate Renewable Energy Council, Inc.	PO Box 1156 Latham, NY 12110	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Derek	Bertsch	derek.bertsch@mrenergy.com	Missouri River Energy Services	3724 West Avera Drive PO Box 88920 Sioux Falls, SD 57109-8920	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
William A.	Blazar	bblazar@mnchamber.com	Minnesota Chamber Of Commerce	Suite 1500 400 Robert Street North St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kenneth	Bradley	kbradley1965@gmail.com		2837 Emerson Ave S Apt CW112 Minneapolis, MN 55408	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kathleen M.	Brennan	kmb@mcgrannshea.com	McGrann Shea Carnival, Straughn & Lamb, Chartered	N/A	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Michael J.	Bull	mbull@mncee.org	Center for Energy and Environment	212 Third Ave N Ste 560 Minneapolis, MN 55401	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jessica	Burdette	jessica.burdette@state.mn.us	Department of Commerce	85 7th Place East Suite 500 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Joel	Cannon	jcannon@tenksolar.com	Tenk Solar, Inc.	9549 Penn Avenue S Bloomington, MN 55431	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Douglas M.	Carnival	dmc@mcgrannshea.com	McGrann Shea Carnival Straughn & Lamb	N/A	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John J.	Carroll	BADEMAIL-jcarroll@newportpartners.com	Newport Partners, LLC	9 Cushing, Suite 200 Irvine, California 92618	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
Kenneth A.	Colburn	kcolburn@symbioticstrategies.com	Symbiotic Strategies, LLC	26 Winton Road Meredith, NH 32535413	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
George	Crocker	gwillc@nawo.org	North American Water Office	PO Box 174 Lake Elmo, MN 55042	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Carl	Cronin	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Arthur	Crowell	Crowell.arthur@yahoo.com	A Work of Art Solar	14333 Orchard Rd. Minnetonka, MN 55345	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Leigh	Currie	lcurrie@mncenter.org	Minnesota Center for Environmental Advocacy	26 E. Exchange St., Suite 206 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
James	Darabi	james.darabi@solarfarm.com	Solar Farm, LLC	2355 Fairview Ave #101 St. Paul, MN 55113	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dustin	Denison	dustin@appliedenergyinnovations.org	Applied Energy Innovations	4000 Minnehaha Ave S Minneapolis, MN 55406	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
James	Denniston	james.r.denniston@xcelenergy.com	Xcel Energy Services, Inc.	414 Nicollet Mall, Fifth Floor Minneapolis, MN 55401	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Ian	Dobson	ian.dobson@ag.state.mn.us	Office of the Attorney General-RUD	Antitrust and Utilities Division 445 Minnesota Street, 1400 BRM Tower St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Mike	Eggl	meggl@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58503	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kristen	Eide Tollefson	N/A	R-CURE	28477 N Lake Ave Frontenac, MN 55026-1044	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
Betsy	Engelking	betsy@geronimoenergy.com	Geronimo Energy	7650 Edinborough Way Suite 725 Edina, MN 55435	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Oncu	Er	oncu.er@avantenergy.com	Avant Energy, Agent for MMPA	220 S. Sixth St. Ste. 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
John	Farrell	jfarrell@ilsr.org	Institute for Local Self-Reliance	1313 5th St SE #303 Minneapolis, MN 55414	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Emma	Fazio	emma.fazio@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kevin T.	Fox	kfox@kfwlaw.com	KEYES, FOX & WIEDMAN, LLP	1580 N. Lincoln St Ste 880 Denver, CO 80203	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Nathan	Franzen	nathan@geronimoenergy.com	Geronimo Energy	7650 Edinborough Way Suite 725 Edina, MN 55435	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Amy	Fredregill	Amy.S.Fredregill@xcelenergy.com	Xcel Energy	414 Nicollet Mall Minneapolis, MN 55401	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Karen	Gados	karen@mysunshare.com	SunShare, LLC	1441 18th Street Suite 400 Denver, CO 80202	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Hal	Galvin	halgalvin@comcast.net	Provectus Energy Development llc	1936 Kenwood Parkway Minneapolis, MN 55405	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Elaine	Garry	egarry@peoplesrec.com	Peoples Energy Cooperative	1775 Lake Shady Ave S Oronoco, MN 55960-2351	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy	408 St. Peter Street Ste 220 Saint Paul, Minnesota 55102	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Bryan	Gower	bgower@apx.com	APX, Inc.	N/A	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Timothy	Gulden	info@winonarenewableenergy.com	Winona Renewable Energy, LLC	1449 Ridgewood Dr Winona, MN 55987	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Tony	Hainault	anthony.hainault@co.hennepin.mn.us	Hennepin County DES	701 4th Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Duane	Hebert	duane.hebert@novelenergy.biz	Novel Energy Solutions	1628 2nd Ave SE Rochester, MN 55904	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John	Helmers	helmers.john@co.olmsted.mn.us	Olmsted County Waste to Energy	2122 Campus Drive SE Rochester, MN 55904-4744	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jared	Hendricks	hendricksj@owatonnautilities.com	Owatonna Public Utilities	PO Box 800 208 S Walnut Ave Owatonna, MN 55060-2940	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Annete	Henkel	mui@mnutilityinvestors.org	Minnesota Utility Investors	413 Wacouta Street #230 St.Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Lynn	Hinkle	lhinkle@mnseia.org	Minnesota Solar Energy Industries Association	2512 33rd Ave South #2 Minneapolis, MN 55406	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jim	Horan	Jim@MREA.org	Minnesota Rural Electric Association	11640 73rd Ave N Maple Grove, MN 55369	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jan	Hubbard	jan.hubbard@comcast.net		7730 Mississippi Lane Brooklyn Park, MN 55444	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John S.	Jaffray	jjaffray@jjrpower.com	JJR Power	350 Highway 7 Suite 236 Excelsior, MN 55331	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Nate	Jones	njones@hcpd.com	Heartland Consumers Power	PO Box 248 Madison, SD 57042	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Michael	Kampmeyer	mkampmeyer@a-e-group.com	AEG Group, LLC	260 Salem Church Road Sunfish Lake, Minnesota 55118	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John	Kearney	jmkearney@MnSEIA.org	MnSEIA	2512 33rd Ave S Minneapolis, MN 55406	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kevin	Keene	kevin.keene@cummins.com		N/A	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jack	Kegel	jkegel@mmua.org	MMUA	3025 Harbor Lane N Suite 400 Plymouth, MN 55447-5142	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Julie	Ketchum	N/A	Waste Management	20520 Keokuk Ave Lakeville, MN 55044	Paper Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Brad	Klein	bklein@elpc.org	Environmental Law & Policy Center	35 E. Wacker Drive, Suite 1600 Suite 1600 Chicago, IL 60601	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Madeleine	Klein	mklein@socoreenergy.com	SoCore Energy	225 W Hubbard Street Suite 200 Chicago, IL 60654	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John	Kluempke	jwkluempke@winlectric.com	Elk River Winlectric	12777 Meadowvale Rd Elk River, MN 55330	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jon	Kramer	jk2surf@aol.com	Sundial Solar	4708 york ave. S Minneapolis, MN 55410	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Michael	Krause	michaelkrause61@yahoo.com	Kandiyo Consulting, LLC	433 S 7th Street Suite 2025 Minneapolis, Minnesota 55415	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jeffrey L.	Landsman	jlandsman@wheelerlaw.com	Wheeler, Van Sickle & Anderson, S.C.	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dean	Leischow	dean@sunriseenergyventures.com	Sunrise Energy Ventures	601 Carlson Parkway, Suite 1050 Minneapolis, MN 55305	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Deborah Fohr	Levchak	N/A	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 585030564	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
John	Lindell	john.lindell@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Phillip	Lipetsky	greenenergyproductsllc@gmail.com	Green Energy Products	PO Box 108 Springfield, MN 56087	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Erica	McConnell	mcconnell@smwlaw.com	Shute, Mihaly & Weinberger LLP	396 Hayes St San Francisco, California 94102-4421	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Sara G	McGrane	smcgrane@felhaber.com	Felhaber Larson	220 S 6th St Ste 2200 Minneapolis, MN 55420	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dave	McNary	David.McNary@hennepin.us	Hennepin County DES	701 Fourth Ave S Ste 700 Minneapolis, MN 55415-1842	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John	McWilliams	jmm@dairynet.com	Dairyland Power Cooperative	3200 East Ave SPO Box 817 La Crosse, WI 54601-7227	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Thomas	Melone	Thomas.Melone@AllcoUS.com	Minnesota Go Solar LLC	222 South 9th Street Suite 1600 Minneapolis, Minnesota 55120	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Alan	Miller	N/A		2210 20th St NE Stewartville, MN 55976	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
Stacy	Miller	stacy.miller@state.mn.us	Department of Commerce	State Energy Office 85 7th Place East, Suite 500 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
David	Moe	momentums@aol.com		2825 28th Ave S Minneapolis, MN 55406	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Darrick	Moe	darrick@mrea.org	Minnesota Rural Electric Association	11640 73rd Avenue North Maple Grove, MN 55369	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dalene	Monsebroten	dalene@mncable.net	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Martin	Morud	mmorud@trunorthsolar.com	Tru North Solar	5115 45th Ave S Minneapolis, MN 55417	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Ben	Nelson		CMMPA	459 South Grove Street Blue Earth, MN 56013	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Will	Nissen	nissen@fresh-energy.org	Fresh Energy	408 St. Peter Street Ste 220 Saint Paul, MN 55102	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Michael	Noble	noble@fresh-energy.org	Fresh Energy	Hamm Bldg., Suite 220 408 St. Peter Street St. Paul, MN 55102	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute	2801 21ST AVE S STE 220 Minneapolis, MN 55407-1229	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jeff	O'Neill	jeff.oneill@ci.monticello.mn.us	City of Monticello	505 Walnut Street Suite 1 Monticelllo, Minnesota 55362	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dan	Patry	dpatry@sunedison.com	SunEdison	600 Clipper Drive Belmont, CA 94002	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jeffrey C	Paulson	jeff.jcplaw@comcast.net	Paulson Law Office, Ltd.	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John	Pendray	john.pendray@cummins.com		N/A	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Donna	Pickard	dpickardgsss@gmail.com	Citizen	1215 Lilac Lane Excelsior, MN 55331	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
David G.	Prazak	dprazak@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Gayle	Prest	gayle.prest@minneapolismn.gov	City of Mpls Sustainability	350 South 5th St, #315 Minneapolis, MN 55415	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Mark	Rathbun	mrathbun@grenergy.com	Great River Energy	12300 Elm Creek Blvd Maple Grove, MN 55369	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Michael	Reinertson	michael.reinertson@avantenergy.com	Avant Energy	220 S. Sixth St. Ste 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
John C.	Reinhardt		Laura A. Reinhardt	3552 26Th Avenue South Minneapolis, MN 55406	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy	26 E Exchange St, Ste 206 St. Paul, MN 551011667	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Craig	Rustad	crustad@minnkota.com	Minnkota Power	1822 Mill Road PO Box 13200 Grand Forks, ND 582083200	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Richard	Savelkoul	rsavelkoul@martinsquires.com	Martin & Squires, P.A.	332 Minnesota Street Ste W2750 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Kenric	Scheevel	kjs@dairynet.com	Dairyland Power Cooperative	3200 East Avenue South PO Box 817 La Crosse, Wisconsin 54602	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jacob J.	Schlesinger	jschlesinger@kfwlaw.com	Keyes & Fox LLP	1580 Lincoln St., Suite 880 Denver, CO 80203	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Dean	Sedgwick	N/A	Itasca Power Company	PO Box 457 Bigfork, MN 56628-0457	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
David	Shaffer	DShaffer@MnSEIA.org	Minnesota Solar Energy Industries Project	2952 Beechwood Ave Wayzata, MN 55391	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Doug	Shoemaker	dougs@mnRenewables.org	MRES	2928 5th Ave S Minneapolis, MN 55408	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Mrg	Simon	mrgsimon@mrenergy.com	Missouri River Energy Services	3724 W. Avera Drive P.O. Box 88920 Sioux Falls, SD 571098920	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Trevor	Smith	trevor.smith@avantenergy.com	Avant Energy, Inc.	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Beth H.	Soholt	bsoholt@windonthewires.org	Wind on the Wires	570 Asbury Street Suite 201 St. Paul, MN 55104	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Cary	Stephenson	cStephenson@otpco.com	Otter Tail Power Company	215 South Cascade Street Fergus Falls, MN 56537	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Thomas P.	Sweeney III	tom.sweeney@easycleanenergy.com	Clean Energy Collective	P O Box 1828 Boulder, CO 80306-1828	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Steve	Thompson	BADEMAIL-stevet@cmmpa.org	Central Minnesota Municipal Power Agency	459 S Grove St Blue Earth, MN 56013-2629	Paper Service	No	OFF_SL_15-755_Official Service List _PUC
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Sam	Villella	sdvillella@gmail.com		10534 Alamo Street NE Blaine, MN 55449	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Roger	Warehime	warehimer@owatonnautilities.com	Owatonna Public Utilities	208 South WalnutPO Box 800 Owatonna, MN 55060	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Paul	White	paul.white@prcwind.com	Project Resources Corp./Tamarac Line LLC/Ridgewind	618 2nd Ave SE Minneapolis, MN 55414	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Jason	Willett	jason.willett@metc.state.mn.us	Metropolitan Council	390 Robert St N Saint Paul, MN 55101-1805	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Randi	Winter	rwinter@felhaber.com	Felhaber Larson	Felhaber Larson 220 South Sixth Street, Suite 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Cam	Winton	cwinton@mnchamber.com	Minnesota Chamber of Commerce	400 Robert Street North Suite 1500 St. Paul, Minnesota 55101	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_15-755_Official Service List _PUC

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Thomas J.	Zaremba	TZaremba@wheelerlaw.com	WHEELER, VAN SICKLE & ANDERSON	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_15-755_Official Service List _PUC