

**Written Comments of NorthWestern Energy
For New and Amended Rules Related to PURPA
Rulemaking MAR Notice # 38-5-240**

Introduction

On March 21, 2018, the Montana Public Service Commission (“Commission”) published a Notice of Public Hearing on Proposed Adoption and Amendment in which it proposed two new administrative rules and an amendment to ARM 38.5.1901. New Rule I pertains to the creation of a legally enforceable obligation (“LEO”); New Rule II pertains to access to avoided cost modeling data, and the amendment to ARM 38.5.1901 adds a definition of “production profile.” NorthWestern Corporation d/b/a NorthWestern Energy (“NorthWestern”) thanks the Commission for addressing these issues.

The Commission held a hearing on the proposed rules on April 9, 2018. At the hearing, John Bushnell on behalf of NorthWestern, Jason Brown on behalf of the Montana Consumer Counsel, and Mike Uda offered comments. In these written comments, NorthWestern expands its comments and responds to other oral comments.

Background

PURPA matters are demanding an increasing amount of time and resources from NorthWestern and the Commission. The Commission adopted its qualifying facility (“QF”) rules in 1981, amended them in 1992, and amended the operational safety rule in 2006. Since 2007, the Commission amended its QF rules three times, in 2007, 2013, and 2015. Now the Commission is proposing a fourth QF rulemaking in eleven years. From 1990 to 2007, the Commission issued orders in four dockets involving petitions to set the terms and conditions of individual QF contracts. Since 2008, the Commission has processed eight such petitions. In addition, NorthWestern is required to file a QF-1 application within 30 days of filing a resource procurement plan, usually every two years, an update to QF-1 rates every six months, and a QFLT-1 application every year.

Discussion

NorthWestern believes that if the Commission adopts the right rules, then the demands placed on the Commission, on QF developers, and on NorthWestern can be reduced. Right rules are those that (1) treat customers, developers, and utilities fairly; (2) remove uncertainty by providing clarity; and (3) facilitate implementation without undue burden. Right rules should minimize repetitive litigation of the same issues.

When NorthWestern and developers disagree, the disagreements generally involve (1) projected market prices, (2) the amount of capacity that the QF will provide, and (3) the

periods when the QF will displace an economically dispatched owned resource rather than market purchases. Recent Commission orders have established the acceptable method of projecting market prices; the rules should eliminate this issue. Similarly, recent Commission orders established the method for determining the amount of capacity that a QF will provide; the rules should eliminate this issue. And finally, although NorthWestern needs to run PowerSimm™ to determine the actual hours that a QF will displace owned generation, it can estimate the number of those hours relatively accurately without resorting to the model. With these issues in mind, NorthWestern offers the following comments on the specific rules.

- NEW RULE I CREATION OF A LEGALLY ENFORCEABLE OBLIGATION

New Rule I, as drafted, does not distinguish between QFs that are eligible for standard rates and those that are not. Nor does New Rule I have the specificity needed to clarify the areas which are being litigated repeatedly between NorthWestern and QF developers.

- Requirement for a power purchase agreement executed by the QF

New Rule I(1)(a) requires a QF to tender an executed power purchase agreement to the purchasing utility. NorthWestern recommends that the Commission modify section (1)(a) of this rule to distinguish between the two sizes of QFs. Schedule QF-1 sets the price for standard rate QFs. Therefore, neither the QF, nor NorthWestern, calculates the avoided costs. For other QFs, the rule should have more specificity to avoid re-litigating decided issues. In addition to recognizing the two sizes of QFs, NorthWestern recommends that the Commission modify New Rule 1 to (1) include a limit on the time between the execution of a power purchase agreement and the commercial operation date of the QF, (2) establish a maximum contract term, (3) require that the QF use market price projections consistent with the method most recently authorized by the Commission, and (4) recognize that a QF may displace both market purchases and economically dispatched owned generation.

NorthWestern offers the following alternative New Rule I(1)(a) in legislative format.

(1) A legally enforceable obligation, as that term is used in 18 C.F.R. § 292.304, is created when a qualifying facility has:

(a) tendered an executed power purchase agreement to the purchasing utility with a price term consistent with: ~~the purchasing utility's avoided costs, calculated within 14 days of the date the power purchase agreement is tendered with specific beginning and ending dates;~~

(i) if the qualifying facility is eligible for standard offer rates pursuant to ARM 38.5.1902, the applicable rate in the purchasing utility's standard rate tariff, with a

specific beginning date not later than 12 months after the date the qualifying facility executed the power purchase agreement, and with an ending date not later than 15 years after the beginning date; or
(ii) if the qualifying facility is not eligible for standard offer rates pursuant to ARM 38.5.1902, the purchasing utility's market price projections determined in accordance with the method most recently authorized by the commission for the purchasing utility with inputs from a date within 14 days of the date that the qualifying facility executed the power purchase agreement and the purchasing utility's estimate of annual hours during which the qualifying facility will displace economically dispatched owned generation; with a specific beginning date not later than 15 months after the date the qualifying facility executed the purchase power agreement; and with an ending date not later than 15 years after the beginning date.

NorthWestern believes that this rule will provide adequate clarity, eliminate needless litigation, and implement the Commission's decisions regarding QFs.

- o Requirement to undertake work toward interconnection

New Rule I(1)(b) requires a QF to undertake certain work within its control toward interconnection. As with the previous section, New Rule I(1)(b) makes no distinction between different sized QFs and is not specific enough to provide clarity and guidance. NorthWestern suggests that there are three sizes of QFs: (1) those eligible for standard rates, (2) those larger than the standard rate threshold but 20 MW or smaller and therefore eligible for small generator interconnection procedures and agreements ("SGIP" and "SGIA", respectively), and (3) those larger than 20 MW that require large generator interconnection procedures and agreements ("LGIP" and "LGIA" respectively).

The applications, study processes, and interconnection agreements are similar.¹ A description of the processes and timelines may help the Commission understand NorthWestern's concerns and suggestions. Generally, the process begins with a developer submitting an Interconnection Request to NorthWestern's transmission department, which triggers timelines. FERC rules specify what a developer must include in a complete Interconnection Request.² The following table shows the various events and deadlines under the SGIP and LGIP.

¹ The SGIP provides for a Fast Track Process for projects that can pass certain screens. NorthWestern has not had any QF meet the requirements for Fast Track process. The discussion above reflects the study process.

² NorthWestern's Interconnection Request forms are attached as Exhibits A (Small Generating Facility) and B (Large Generating Facility).

Event	LGIP Deadline	SGIP Deadline
Application Process		
Interconnection Request Received	\$10,000 deposit	\$1,000 deposit
Acknowledge Receipt of Request	5 Business Days	3 Business Days
Notification of Incomplete Request	5 Business Days	10 Business Days
Time to cure incomplete request	10 Business Days	10 Business Days
Study Process (After Completed Application)		
Scoping Meeting	Not later than 30 days (established within 10 days)	10 Business Days (or as agreed)
<i>Feasibility Study (May be omitted)</i>		
Provide Feasibility Study Agreements	Simultaneous to acknowledgment of complete request	5 Business days after the Scoping Meeting
Identification of interconnection points by QF	5 Business Days after scoping meeting	
Signed Study Agreement Good faith estimate of cost to QF	5 Business Days	Included above
Signed Study Agreement to utility	30 Calendar Days with \$10,000 deposit	15 Business Days
Feasibility Study Completed	45 Calendar Days (reasonable efforts – may take longer)	
<i>System Impact Study</i>		
System Impact Study Agreement to QF	Simultaneous with delivery of Feasibility Study	No impacts – No additional facilities – Interconnection Agreement within 5 Business Days
		Distribution impacts – Distribution System Impact Study Agreement within 15 Business Days
		Transmission impacts – 5 Business Days
Good faith estimate of cost and timeframe for completion	3 Business Days	Included above
Executed System Impact Study Agreement to utility	30 Calendar Days with \$50,000 deposit	30 Business Days
System Impact Study Completed	90 Calendar Days (reasonable efforts)	
System Impact Study Meeting	10 Business Days	None

Event	LGIP Deadline	SGIP Deadline
<i>Facilities Study</i>		
Facilities Study Agreement to QF	Simultaneous with delivery of System Impact Study	5 Business Days
Good faith estimate of cost and timeframe for completion	3 Business Days	Included above
Executed Facilities Study Agreement to utility	30 Calendar Days with greater of QF portion of monthly cost or \$100,000	30 Business Days
Facilities Study Completed	90 Calendar Days with +/- 20% cost estimate or 180 Calendar Days with +/- 10% cost estimate	
QF tender comments on Facilities Study	30 Calendar Days	None
<i>Interconnection Agreement</i>		
Draft LGIA with appendices to QF	30 Calendar Days	5 Business Days after completion of study and QF agreement to pay for interconnection facilities and upgrades
Executed LGIA to utility	30 Calendar Days	30 Business Days

As the above table illustrates, the first study completed may be either a Feasibility Study or a System Impact Study. Neither of these involves costs for the QF that are significant when viewed in light of the total project cost. An LGIA project of more than 20 MW up to 80 MW will likely cost between \$30 million and \$160 million. A Feasibility study for an SGIA project will cost about \$2,500, and a System Impact Study will cost about \$3,500. Adding an optional study for an SGIA project or a network resource study for an LGIA project will cost an additional \$10,000. After receiving the results of the first study, the developer can walk away from the project.

NorthWestern’s experience is that developers abandon many projects either after the scoping meeting or when the first study reveals adverse system impacts. New Rule I(1)(b) actually requires nothing more than that the developer submit an interconnection request and not even a complete one at that. First, NorthWestern suggests that the Commission require at least a complete application for interconnection. NorthWestern believes that the Commission should strengthen New Rule I(1)(b) to require that QFs

that are not eligible for standard rates must be studied either as a network resource or under an optional study that provides the same information. This is critical to provide NorthWestern's supply business the information it needs to plan and to calculate a correct avoided cost. In addition, NorthWestern strongly recommends that the Commission require a QF to have agreed to the first step past the first study before creating an LEO. This will ensure that developers have considered the costs of interconnection and are committed to continuing when they know the first estimate of the costs to do so.

To achieve the items listed above, NorthWestern requests that the Commission amend proposed New Rule I(1)(b) to read as follows, which is in legislative format.

(1) A legally enforceable obligation, as that term is used in 18 C.F.R. § 292.304, is created when a qualifying facility has:

...

(b) undertaken at least the following work toward interconnection:

- (i) ~~submitted an~~ either a completed Large Generator Interconnection Request that requested study for network resource interconnection service (NRIS), or a completed Small Generator Interconnection Request that, if the qualifying facility is not eligible for standard rates pursuant to ARM 38.5.1902, requested an optional study equivalent to NRIS interconnection request to the interconnecting utility which has been signed by the qualifying facility in accordance with the generator interconnection procedures of the interconnecting utility's Open Access Transmission Tariff (OATT);
- (ii) ~~paid any required deposit fee after receiving the first study report, executed and returned~~ either a System Impact Study Agreement, with any required deposit, or a Facilities Study Agreement, with any required deposit; and
- (iii) ~~provided information sufficient to demonstrate that the qualifying facility has complied with the deadlines for an Interconnection Customer specified in the OATT~~ all technical data necessary to complete the System Impact Study or the Facilities Study, as applicable;
- (iv) ~~provided information sufficient to demonstrate that the qualifying facility has not waived deadlines applicable to the interconnecting utility, except that if such deadline or deadlines have been waived by the Interconnection Customer, or an alternative timeline has been agreed to by the Interconnection Customer, that a legally enforceable obligation will be created, for the purposes of this subsection, at the date of dates by which the Interconnection Customer agreed to in lieu of the deadlines specified in the OATT; and~~

This proposed interconnection rule will ensure that the QF developer is committed to a real, rather than paper, project and incorporates the LGIP and SGIP requirements

without repeating them. The rule is simpler and clearer than the Commission's original proposal.

- o Requirement for site control

New Rule I(1)(c) requires that a QF have a legally recognized interest in the real property on which the QF will be built, all required government land use approvals, and all necessary environmental permits. NorthWestern agrees with the Commission that these are important factors in determining whether a developer is actually committed to delivering the output of a QF. Recently, some developers have asserted that they had created an LEO and signed PPAs without having a lease or other interest in the land, or without having land use approvals. In some instances, even after a developer asserted that it had created an LEO and signed a PPA, a governmental body has refused a zoning change or a conditional use permit. In one case, a developer signed both a PPA and an Interconnection Agreement without having an executed lease. When NorthWestern's engineering crew went to the site to begin study for the interconnection facilities, the landowner informed the crew that the developer did not have a lease.

Although both the LGIP and the SGIP require a developer to provide evidence of site control to the utility's transmission group, NorthWestern believes that this is not sufficient. NorthWestern's transmission group does not, and should not, review FERC Forms 556³ filed by QF developers. The transmission group, with the lands and permitting group, reviews site control documents for legal sufficiency. But the transmission group cannot review the site control documents for practical, operational sufficiency. NorthWestern's supply group, which negotiates PPAs, can compare site control documents with the size of the facility and information listed on FERC Forms 556. NorthWestern believes that with minor modifications shown below, New Rule I(1)(c) will achieve the purposes that the Commission intends.

(1) A legally enforceable obligation, as that term is used in 18 C.F.R. § 292.304, is created when a qualifying facility has:

...

(c) provided to the resource procurement group of the purchasing utility written documents evincing control of the site for the length of the asserted legally enforceable obligation and permission to construct the qualifying facility ~~including that establish~~, at a minimum:

(i) a legally recognized interest in the real property on which the qualifying facility will be sited, for the length of the power purchase agreement or asserted legally

³ FERC Form 556 is the document that a QF developer files to self-certify a facility as a QF.

enforceable obligation, such as a lease or fee ownership interest in the real property;

(ii) all ~~required~~ government land use approvals necessary to construct and operate the qualifying facility; and

(iii) all ~~necessary~~ environmental permits necessary to build and operate the qualifying facility.

New Rule 1, with the revisions suggested above, would treat customers, developers, and utilities fairly. With the revisions customers would be protected from QF rates that do not reflect a public utility's avoided costs. With the revisions, developers control the creation of an LEO. With the revisions, utilities will be assured that a developer who asserts the creation of an LEO truly intends to go forward. With the revisions, the Commission, the developers, the utility, and other interested parties will be protected from repetitive litigation of the same issues.

- NEW RULE II QUALIFYING FACILITY ACCESS TO AVOIDED COST MODELING DATA

New Rule II, while well-intended, has many problems and may result in an uncompensated taking of utility property or a software developer's property. New Rule II ignores that most of the information it purports to require is publicly available or is protected by patent and copyright laws. New Rule II demands careful consideration and revision or it will lead to more, not less, litigation with the associated delay and expense for all involved.

- Requirement for reasonably transparent data

New Rule II(1) requires a utility to provide reasonably transparent data concerning the utility's avoided cost. NorthWestern notes that the major determinants of its avoided cost calculations are transparent and public and do not need to be provided to a QF.

One important determinant is the projected price of energy. For many years and in many dockets, NorthWestern has used a variation of the Pindyck method of projecting energy prices that the Commission has approved. The Pindyck method starts with the assumption that markets are efficient and include all known factors and escalates current forward market prices by the expected economic growth rate. NorthWestern starts with the Intercontinental Exchange (ICE) forward prices for heavy-load and light-load hours and, for years after the forward market is thin or illiquid, escalates the forward market prices at the Energy Information Administration's projected nominal escalation rate for natural gas.

A second major determinant is NorthWestern's variable cost of generating electricity, which is primarily the fuel cost that can be saved. The fuel costs along with the

expense per net KWh for each of its generating plants are publicly available in NorthWestern's FERC Form 1. In 2017, according to the FERC Form 1, NorthWestern's fuel cost for thermal plants in Montana was \$0.016/KWh at Colstrip Unit 4 and \$0.027/KWh at Dave Gates Generating Station ("DGGS"), and its total production cost per KWh at all plants ranged from \$0.0013/KWh at Cochrane Dam to \$0.0490/KWh at DGGS.

A third major determinant is NorthWestern load relative to its resources. NorthWestern presents this information in its Electricity Supply Resource Procurement Plans, and thus it is publicly available.

NorthWestern believes that this publicly available information allows a QF to estimate NorthWestern's avoided cost for energy.

- o Requirement to provide initial avoided cost calculation

New Rule II(2) requires a utility to provide an initial avoided cost within 14 days of receipt of a QF's production profile. While this is a laudable goal, as Mr. Bushnell described at the hearing on the proposed rules, in many cases, it is simply not achievable for reasons beyond a utility's control. NorthWestern may be unable to meet the 14-day deadline due to PowerSimm being off-line for upgrades, other projects in the queue for modeling and validation, and non-standard resource configurations, which are proliferating.

NorthWestern appreciates that developers want to receive information as soon as possible. However, a recent experience with one developer demonstrates the impossibility of always providing complete avoided costs within 14 days. In February 2017, the developer filed a Form 556 indicating that its project would be a "[w]ind farm consisting of up to 32 2.5 MW wind turbine generators, collector system and line from the project to a meter tie to the project located at a shared substation." Many months later, the developer requested an avoided cost for a wind/battery project in which the battery would be used to store energy during light-load hours and to deliver energy on a firm day-ahead schedule. After several requests, the developer provided its production profile and the battery specifications. NorthWestern recently spent several months to develop and validate an appropriate model for this combination of resources. In April 2018, the developer filed a revised Form 556 in which it described the battery storage system with specifications that do not match those provided to NorthWestern earlier. NorthWestern believes that the new battery specifications will require a run of the model. NorthWestern requests that New Rule II(2) be revised to reflect these realities as shown below.

~~(2) The utility must provide an initial avoided cost calculation within 14 days of receipt of a qualifying facility's production profile at no cost to the qualifying~~

~~facility. In providing an initial avoided cost calculation to the qualifying facility, the utility must use the methodologies most recently approved by the commission for that utility. Upon request from a qualifying facility that is not eligible for standard offer rates pursuant to ARM 38.5.1902, and upon receipt of the qualifying facility's production profile, a utility:~~

- ~~(i) may request the underlying resource data from which the qualifying facility determined its production profile;~~
- ~~(ii) shall establish the business day before the receipt of the production profile as the Input Day;~~
- ~~(iii) within seven business days, provide the qualifying facility the market projection inputs as of the Input Day that the utility will use to determine the utility's avoided cost and the utility's initial estimate of the percentage of hours that the utility expects the qualifying facility's production to offset market purchases and owned generation broken down by heavy-load hours and light-load hours; and~~
- ~~(iv) within 21 business days, provide the qualifying facility either the avoided cost calculated by the utility using the Input Day data or a good faith estimate of when it will provide the avoided cost and an explanation of why it could not provide the avoided cost within 21 business days.~~

The revisions to New Rule II(2) will establish the date at which the inputs for calculating avoided cost are fixed, provide timely information about the values of those inputs to a QF, and provide a utility adequate time to calculate its avoided cost for a QF that is not eligible for standard offer rates.

- o *Requirement to provide access to proprietary modeling software*

New Rule II(3) requires a utility to make proprietary software available to a QF for 14 days without charge for one avoided cost calculation and to accommodate costs for additional avoided cost calculations at “a reasonable price.” New Rule II(3), as proposed, establishes bad public policy, imposes unreasonable costs on either the utility or its customers, invites additional litigation, could have unintended consequences, and may violate constitutional restrictions against taking property without just compensation.

Proprietary software is just that—the property of the software developer. Utilities use proprietary software because it provides more robust tools and analysis than simple spreadsheets and because it is more cost-effective than developing similar in-house software. The software developer, not the utility, controls who can access and how they can access its software. NorthWestern recommends that the Commission modify New Rule II(3) to provide that (1) costs incurred for QFs to access proprietary software for an alternative avoided cost calculation are recoverable in a tracking mechanism, (2) the QF

is responsible for the actual cost of any additional avoided cost calculations after the first alternative calculation, and (3) the utility require the software developer to separately invoice costs for calculations requested by a QF.

NorthWestern requests that New Rule II(3) be revised as shown below.

(3) If a utility uses a proprietary modeling software to calculate its avoided cost, the utility must:

(i) require the owner of the proprietary software to separately invoice the utility for any access to or calculations made by the proprietary software at the request of a qualifying facility;

(ii) allow a qualifying facility that is not eligible for standard offer rates pursuant to ARM 38.5.1902, upon request, to conduct one avoided cost calculation using the utility proprietary modeling software with the qualifying facility's own assumptions and inputs at no cost to the qualifying facility;

(iii) facilitate, with the software developer, the qualifying facility's access to the proprietary software as expeditiously as reasonable after the qualifying facility's request to conduct an alternative avoided cost calculation;

(iv) facilitate, with the software developer, the qualifying facility's requests to conduct additional avoided cost calculations using the proprietary software and charge the qualifying facility the actual cost for the additional calculations as shown on the invoices required by (i). ~~The utility must make its modeling software accessible to the qualifying facility within 14 days of the qualifying facility's request to conduct an alternative avoided cost calculation. The qualifying facility must have access to the modeling software for 14 days after the utility makes it available to the qualifying facility to conduct an alternative avoided cost calculation. A utility must accommodate reasonable requests by a qualifying facility to conduct additional avoided cost calculations using the utility's modeling software and may charge the qualifying facility a reasonable price for use of the modeling software beyond the single avoided cost calculation identified in this subsection.~~

The utility may recover in its rates the costs invoiced to it by the software developer for any avoided cost calculations or access to proprietary software that are not paid by the qualifying facility.

New Rule 2(3), as revised, will not have the problems identified above that the proposed rule has.

- o Petition for fines

New Rule II(4) purports to permit either a QF or utility to petition the Commission for fines against the other for violations of New Rule II and cites §§ 69-3-206 and 69-3-

209, MCA. The part of New Rule II(4) that allows a utility to petition for fines against a QF is illusory and not authorized by law. The Commission only has the powers granted to it by statute. No statute authorizes the Commission to impose any fine on a QF. Section 69-3-206, MCA, subjects officers, agents, and persons in charge of books, accounts, records or papers who fail to furnish reports required by Title 69, chapter 3, MCA, or who refuse to permit a commissioner or other person duly authorized by the commission to inspect such documents to a fine that may only be recovered in a civil action in court upon complaint of the commission. No language in § 69-3-206, MCA, permits the Commission to impose or seek to recover a fine against a QF.

Similarly, § 69-3-209, MCA, subjects a public utility that violates law, lawful orders and or lawful requirement to the same penalty described in § 69-3-206, MCA. A QF is not a public utility. Nothing in § 69-3-209, MCA, authorizes the Commission to impose a fine against a QF. In addition, New Rule II does not impose any obligations on a QF, and therefore, a QF could not fail to adhere to New Rule II.

NorthWestern believes that New Rule II(4) will cause it to become embroiled in defending against nuisance petitions by QFs. This will require NorthWestern to divert resources from its primary responsibility of providing safe and reliable utility service to its customers. New Rule II(4) will exacerbate tensions between utilities and QF developers and is inimical to the Commission's stated expectation "that utilities and qualifying facilities engage in a 'robust bilateral negotiation process, centered around sound avoided cost principles.'"

Finally, New Rule II(4) is not necessary and needlessly invites additional litigation. Current statute, § 69-3-321, MCA, permits an interested person who is directly affected to make a complaint against a public utility.

NorthWestern requests that New Rule II(4) be deleted.

Conclusion

As Mr. Bushnell said at the hearing, "rules done right will lead to less litigation, but if not done right will inevitably lead to more litigation." NorthWestern believes that its suggestions and recommendations as presented above will make the rules more right, more effective, and fairer to customers, QF developers, and utilities. NorthWestern respectfully requests that the Commission revise New Rule I and New Rule II as described or, if that is not possible in this rulemaking proceeding, to forbear from adopting these rules and convene a roundtable of interested parties to develop workable, fair rules.



Received:

**SMALL GENERATOR INTERCONNECTION REQUEST
(Application Form)**

Transmission Provider: NorthWestern Energy

Designated Contact Person: Autumn Mueller

Address: 40 East Broadway
Butte, MT 59701

Telephone Number: 406-497-3174

Fax: 406-497-3002

E-Mail Address: autumn.mueller@northwestern.com

An Interconnection Request is considered complete when it provides all applicable and correct information required below. Per SGIP section 1.5, documentation of site control must be submitted with the Interconnection Request.

Preamble and Instructions

An Interconnection Customer who requests a Federal Energy Regulatory Commission jurisdictional interconnection must submit this Interconnection Request by hand delivery, mail, e-mail, or fax to the Transmission Provider.

Processing Fee or Deposit:

If the Interconnection Request is submitted under the Fast Track Process, the non-refundable processing fee is \$500.

If the Interconnection Request is submitted under the Study Process, whether a new submission or an Interconnection Request that did not pass the Fast Track Process, the Interconnection Customer shall submit to the Transmission Provider a deposit not to exceed \$1,000 towards the cost of the feasibility study.

Interconnection Customer Information

Legal Name of the Interconnection Customer (or, if an individual, individual's name)

Name:

Contact Person:

Mailing Address:

City: State: Zip:

Facility Location (if different from above):

Telephone (Day): Telephone (Evening):

Fax: E-Mail Address:

Alternative Contact Information (if different from the Interconnection Customer)

Contact Name:

Title:

Address:

Telephone (Day): Telephone (Evening):

Fax: E-Mail Address:

Application is for: New Small Generating Facility
 Capacity addition to Existing Small Generating Facility

If capacity addition to existing facility, please describe:

Will the Small Generating Facility be used for any of the following?

Net Metering? Yes No
To Supply Power to the Interconnection Customer? Yes No
To Supply Power to Others? Yes No

For installations at locations with existing electric service to which the proposed Small Generating Facility will interconnect, provide:

(Local Electric Service Provider*)

(Existing Account Number*)

[*To be provided by the Interconnection Customer if the local electric service provider is different from the Transmission Provider]

Contact Name:

Title:

Address:

Telephone (Day):

Telephone (Evening):

Fax:

E-Mail Address:

Requested Point of Interconnection:

Interconnection Customer's Requested In-Service Date:

Small Generating Facility Information

Data apply only to the Small Generating Facility, not the Interconnection Facilities.

Energy Source: Solar Wind Hydro Hydro Type (e.g. Run-of-River):
 Diesel Natural Gas Fuel Oil Other (state type)

Prime Mover: Fuel Cell Recip Engine Gas Turb Steam Turb
 Microturbine PV Other

Type of Generator: Synchronous Induction Inverter

Generator Nameplate Rating: kW (Typical) Generator Nameplate kVAR:

Interconnection Customer or Customer-Site Load: kW (if none, so state)

Typical Reactive Load (if known):

Maximum Physical Export Capability Requested: kW

List components of the Small Generating Facility equipment package that are currently certified:

Equipment Type	Certifying Entity
1.	
2.	
3.	

- 4.
- 5.

Is the prime mover compatible with the certified protective relay package? Yes No

Generator (or solar collector)
 Manufacturer, Model Name & Number:
 Version Number:

Nameplate Output Power Rating in kW: (Summer) (Winter)
 Nameplate Output Power Rating in kVA: (Summer) (Winter)

Individual Generator Power Factor
 Rated Power Factor: Leading: Lagging:

Total Number of Generators in wind farm to be interconnected pursuant to this
 Interconnection Request: Elevation: Single phase Three phase

Inverter Manufacturer, Model Name & Number (if used):

List of adjustable set points for the protective equipment or software:

Note: A completed Power Systems Load Flow data sheet must be supplied with the Interconnection Request.

Small Generating Facility Characteristic Data (for inverter-based machines)

Max design fault contribution current: Instantaneous or RMS?

Harmonics Characteristics:

Start-up requirements:

Small Generating Facility Characteristic Data (for rotating machines)

RPM Frequency:
 (*) Neutral Grounding Resistor (If Applicable):

Synchronous Generators:

Direct Axis Synchronous Reactance, X_d : P.U.
 Direct Axis Transient Reactance, X'_d : P.U.
 Direct Axis Subtransient Reactance, X''_d : P.U.
 Negative Sequence Reactance, X_2 : P.U.
 Zero Sequence Reactance, X_0 : P.U.
 KVA Base:

Field Volts:
Field Amperes:

Induction Generators:

Motoring Power (kW):
 I_2^2t or K (Heating Time Constant):
 Rotor Resistance, Rr:
 Stator Resistance, Rs:
 Stator Reactance, Xs:
 Rotor Reactance, Xr:
 Magnetizing Reactance, Xm:
 Short Circuit Reactance, Xd":
 Exciting Current:
 Temperature Rise:
 Frame Size:
 Design Letter:
 Reactive Power Required In Vars (No Load):
 Reactive Power Required In Vars (Full Load):
 Total Rotating Inertia, H: Per Unit on kVA Base

Note: Please contact the Transmission Provider prior to submitting the Interconnection Request to determine if the specified information above is required.

Excitation and Governor System Data for Synchronous Generators Only

Provide appropriate IEEE model block diagram of excitation system, governor system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be determined to be required by applicable studies. A copy of the manufacturer's block diagram may not be substituted.

Interconnection Facilities Information

Will a transformer be used between the generator and the point of common coupling? Yes No

Will the transformer be provided by the Interconnection Customer? Yes No

Transformer Data (If Applicable, for Interconnection Customer-Owned Transformer):

Is the transformer: single phase three phase? Size: kVA
 Transformer Impedance: _____% on _____kVA Base

If Three Phase:

Transformer Primary:	Volts	Delta	Wye	Wye Grounded
Transformer Secondary:	Volts	Delta	Wye	Wye Grounded
Transformer Tertiary:	Volts	Delta	Wye	Wye Grounded

Transformer Fuse Data (If Applicable, for Interconnection Customer-Owned Fuse):

(Attach copy of fuse manufacturer's Minimum Melt and Total Clearing Time-Current Curves)

Manufacturer: Type: Size: Speed:

Interconnecting Circuit Breaker (if applicable):

Manufacturer: _____ Type: _____
 Load Rating (Amps): _____ Interrupting Rating (Amps): _____ Trip Speed (Cycles): _____

Interconnection Protective Relays (If Applicable):

If Microprocessor-Controlled:

List of Functions and Adjustable Setpoints for the protective equipment or software:

Setpoint Function	Minimum	Maximum
1.		
2.		
3.		
4.		
5.		
6.		

If Discrete Components:

(Enclose Copy of any Proposed Time-Overcurrent Coordination Curves)

Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:
Manufacturer:	Type:	Style/Catalog No.:	Proposed Setting:

Current Transformer Data (If Applicable):

(Enclose Copy of Manufacturer's Excitation and Ratio Correction Curves)

Manufacturer:		
Type:	Accuracy Class:	Proposed Ratio Connection:
Manufacturer:		
Type:	Accuracy Class:	Proposed Ratio Connection:

Potential Transformer Data (If Applicable):

Manufacturer:

Type: Accuracy Class: Proposed Ratio Connection:

Manufacturer: :

Type: Accuracy Class: Proposed Ratio Connection:

General Information

Enclose copy of site electrical one-line diagram showing the configuration of all Small Generating Facility equipment, current and potential circuits, and protection and control schemes. This one-line diagram must be signed and stamped by a licensed Professional Engineer if the Small Generating Facility is larger than 50 kW. Is One-Line Diagram Enclosed? Yes No

Enclose copy of any site documentation that indicates the precise physical location of the proposed Small Generating Facility (e.g., USGS topographic map or other diagram or documentation).

Proposed location of protective interface equipment on property (include address if different from the Interconnection Customer's address)

Enclose copy of any site documentation that describes and details the operation of the protection and control schemes. Is Available Documentation Enclosed? Yes No

Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable). Are Schematic Drawings Enclosed? Yes No

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Request is true and correct.

For Interconnection Customer:

Date:



Received:

**APPENDIX 1 to LGIP
INTERCONNECTION REQUEST FOR A
LARGE GENERATING FACILITY**

1. The undersigned Interconnection Customer submits this request to interconnect its Large Generating Facility with Transmission Provider's Transmission System pursuant to a Tariff.
2. This Interconnection Request is for (check one):
 - A proposed new Large Generating Facility.
 - An increase in the generating capacity or a Material Modification of an existing Generating Facility.
3. The type of interconnection service requested (check one):
 - Energy Resource Interconnection Service
 - Network Resource Interconnection Service
4. Check here only if Interconnection Customer requesting Network Resource Interconnection Service also seeks to have its Generating Facility studied for Energy Resource Interconnection Service
5. Interconnection Customer provides the following information:
 - a. Address or location or the proposed new Large Generating Facility site (to the extent known) or, in the case of an existing Generating Facility, the name and specific location of the existing Generating Facility;
 - b. Maximum summer at _____ degrees C and winter at _____ degrees C megawatt electrical output of the proposed new Large Generating Facility or the amount of megawatt increase in the generating capacity of an existing Generating Facility;

- c. General description of the equipment configuration;
 - d. Commercial Operation Date (Day, Month, and Year);
 - e. Name, address, telephone number, and e-mail address of Interconnection Customer's contact person;
 - f. Approximate location of the proposed Point of Interconnection (optional); and
 - g. Interconnection Customer Data (set forth in Attachment A)
6. Applicable deposit amount as specified in the LGIP.
7. Evidence of Site Control as specified in the LGIP (check one)
- Is attached to this Interconnection Request
 - Will be provided at a later date in accordance with this LGIP
8. This Interconnection Request shall be submitted to the representative indicated below:

**NorthWestern Energy
Autumn Mueller
40 E. Broadway
Butte, MT 59701**

**Phone: 406-497-3174
Fax: 406-497-3002
Autumn.mueller@northwestern.com**

9. Representative of Interconnection Customer to contact:

10. This Interconnection Request is submitted by:

Name of Interconnection Customer:

By (signature):

Name (type or print):

Title:

Date:

**Attachment A to Appendix 1
Interconnection Request**

LARGE GENERATING FACILITY DATA

UNIT RATINGS

KVA _____ °F _____ Voltage _____
 Power Factor _____
 Speed (RPM) _____ Connection (e.g. Wye) _____
 Short Circuit Ratio _____ Frequency, Hertz _____
 Stator Amperes at Rated kVA _____ Field Volts _____
 Max Turbine MW _____ °F _____

COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA

Inertia Constant, H = _____ kW sec/kVA
 Moment-of-Inertia, $WR^2 =$ _____ lb. ft.²

REACTANCE DATA (PER UNIT-RATED KVA)

	DIRECT AXIS	QUADRATURE AXIS
Synchronous – saturated	X_{dv} _____	X_{qv} _____
Synchronous – unsaturated	X_{di} _____	X_{qi} _____
Transient – saturated	X'_{dv} _____	X'_{qv} _____
Transient – unsaturated	X'_{di} _____	X'_{qi} _____
Subtransient – saturated	X''_{dv} _____	X''_{qv} _____
Subtransient – unsaturated	X''_{di} _____	X''_{qi} _____
Negative Sequence – saturated	X_{2v} _____	
Negative Sequence – unsaturated	X_{2i} _____	
Zero Sequence – saturated	X_{0v} _____	
Zero Sequence – unsaturated	X_{0i} _____	
Leakage Reactance	X_{lm} _____	

FIELD TIME CONSTANT DATA (SEC)

Open Circuit	T'_{do}	_____	T'_{qo}	_____
Three-Phase Short Circuit Transient	T'_{d3}	_____	T'_q	_____
Line to Line Short Circuit Transient	T'_{d2}	_____		
Line to Neutral Short Circuit Transient	T'_{d1}	_____		
Short Circuit Subtransient	T''_d	_____	T''_q	_____
Open Circuit Subtransient	T''_{do}	_____	T''_{qo}	_____

ARMATURE TIME CONSTANT DATA (SEC)

Three Phase Short Circuit	T_{a3}	_____
Line to Line Short Circuit	T_{a2}	_____
Line to Neutral Short Circuit	T_{a1}	_____

NOTE: If requested information is not applicable, indicate by marking "N/A."

**MW CAPABILITY AND PLANT CONFIGURATION
LARGE GENERATING FACILITY DATA**

ARMATURE WINDING RESISTANCE DATA (PER UNIT)

Positive	R_1	_____
Negative	R_2	_____
Zero	R_0	_____

Rotor Short Time Thermal Capacity $I_2^2t =$ _____
 Field Current at Rated kVA, Armature Voltage and PF = _____ amps
 Field Current at Rated kVA and Armature Voltage, 0 PF = _____ amps
 Three Phase Armature Winding Capacitance = _____ microfarad
 Field Winding Resistance = _____ ohms _____ °C
 Armature Winding Resistance (Per Phase) = _____ ohms _____ °C

CURVES

Provide Saturation, Vee, Reactive Capability, Capacity Temperature Correction curves. Designate normal and emergency Hydrogen Pressure operating range for multiple curves.

GENERATOR STEP-UP TRANSFORMER DATA RATINGS

Capacity Self-cooled/
 Maximum Nameplate
 _____/_____ kVA

Voltage Ratio(Generator Side/System side/Tertiary)
 _____/_____/_____ kV

Winding Connections (Low V/High V/Tertiary V (Delta or Wye))
 _____/_____/_____

Fixed Taps Available

Present Tap Setting

IMPEDANCE

Positive Z_1 (on self-cooled kVA rating) _____ % _____ X/R

Zero Z_0 (on self-cooled kVA rating) _____ % _____ X/R

EXCITATION SYSTEM DATA

Identify appropriate IEEE model block diagram of excitation system and power system stabilizer (PSS) for computer representation in power system stability simulations and the corresponding excitation system and PSS constants for use in the model.

GOVERNOR SYSTEM DATA

Identify appropriate IEEE model block diagram of governor system for computer representation in power system stability simulations and the corresponding governor system constants for use in the model.

WIND GENERATORS

Number of generators to be interconnected pursuant to this Interconnection Request:

Elevation: _____ Single Phase Three Phase

Inverter manufacturer, model name, number, and version:

List of adjustable setpoints for the protective equipment or software:

Note: A completed General Electric Company Power Systems Load Flow (PSLF) data sheet or other compatible formats, such as IEEE and PTI power flow models, must be supplied with the Interconnection Request. If other data sheets are more appropriate to the proposed device, then they shall be provided and discussed at Scoping Meeting.

INDUCTION GENERATORS

- (* Field Volts: _____
- (* Field Amperes: _____
- (* Motoring Power (kW): _____
- (* Neutral Grounding Resistor (If Applicable): _____
- (* I_2^2t or K (Heating Time Constant): _____
- (* Rotor Resistance: _____
- (* Stator Resistance: _____
- (* Stator Reactance: _____
- (* Rotor Reactance: _____
- (* Magnetizing Reactance: _____
- (* Short Circuit Reactance: _____
- (* Exciting Current: _____
- (* Temperature Rise: _____
- (* Frame Size: _____
- (* Design Letter: _____
- (* Reactive Power Required In Vars (No Load): _____
- (* Reactive Power Required In Vars (Full Load): _____
- (* Total Rotating Inertia, H: _____ Per Unit on KVA Base

Note: Please consult Transmission Provider prior to submitting the Interconnection Request to determine if the information designated by (*) is required.