



August 17, 2016

Mr. Will Rosquist
Administrator, Regulatory Division
Montana Public Service Commission
1701 Prospect Avenue
PO Box 2022601
Helena, Montana 59620-2601

Re: Docket No. D2016.5.39
QF-1 Avoided Cost Rate Filing
PSC Set 1 Data Requests (001-020)

Dear Mr. Rosquist:

Enclosed for filing is a copy of NorthWestern Energy's responses to the PSC Set 1 Data Requests in Docket No. D2016.5.39. It has been hand delivered to the Montana Public Service Commission and the Montana Consumer Counsel this date. It has also been e-filed on the PSC website and sent via First Class Mail to attached service list.

Should you have questions please contact Joe Schwartzenberger at (406) 497-3362.

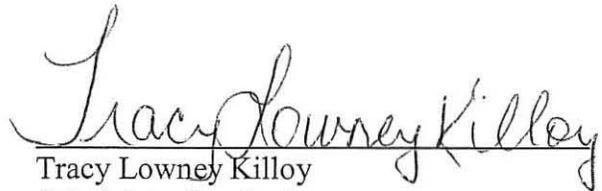
Sincerely,

Tracy Lowney Killoy
Administrative Assistant

CERTIFICATE OF SERVICE

I hereby certify that a copy of NorthWestern Energy's responses to PSC Set 1 in Docket No. D2016.5.39, the QF-1 Avoided Cost Rate Filing, has been hand-delivered to the Montana Public Service Commission and one copy has been hand-delivered to the Montana Consumer Counsel this date. It has also been e-filed on the Commission website and sent via First Class Mail to the attached service list.

Date: August 17, 2016

A handwritten signature in cursive script that reads "Tracy Lowney Killoy". The signature is written in black ink and is positioned above the printed name and title.

Tracy Lowney Killoy
Administrative Assistant
Regulatory Affairs

Docket Service List
Docket No. D2016.5.39

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PSC-001

Regarding: Electronic Files

Witnesses: All

- a. Please provide Excel-readable files of all Figures, Tables, avoided cost calculations, and ancillary information included in the application, with all calculations traceable.
- b. Please provide Excel-readable files of all Figures, Tables, and cost calculations used in the 2015 Plan, with all calculations traceable.
- c. Please provide Excel-readable monthly summaries of all PowerSimm input and output files related to this proceeding and the 2015 Plan.

RESPONSE:

- a. See the response to Data Requests VS-001 for worksheets and calculations and VS-002 for the prices.
- b. See the response to Data Request VS-002 and the folder labeled PSC-001b on the attached CD.
- c. The PowerSimm outputs for this proceeding were included in the response to Data Request VS-001. The PowerSimm input and output files related to the 2015 Plan were included in response to Data Request VS-002.

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PSC-002

Regarding: Suspended Rate Identifications
Witness: NorthWestern Legal Department

Please identify the project name, location, and developer and/or owner of each QF that NorthWestern believes has a right to the suspended QF-1 Option 1(a) rate pursuant to the Commission's *Notice of Commission Action* of June 16, 2016.

RESPONSE:

NorthWestern provides the requested information in the following table that contains the solar facilities that met the requirements for the Option 1a rate established in the Notice of Commission Action dated June 16, 2016.

Facility	Location	Developer/Owner
River Bend Solar LLC	1.14 miles west of Reed Point, MT	Cypress Creek Renewables LLC
Green Meadow Solar LLC	7.2 miles north of Helena, MT	Cypress Creek Renewables LLC
Deer Creek Road Solar 1 LLC	1.4 miles east of East Missoula, MT	Cypress Creek Renewables LLC
Ragen Ranch Solar 1 LLC	1 mile north of Townsend, MT	Cypress Creek Renewables LLC
South Mills Solar 1 LLC	1.16 miles west of Hardin, MT	Cypress Creek Renewables LLC
Magpie Solar LLC	0.25 miles south of Lavina, MT	Cypress Creek Renewables LLC
Great Divide Solar LLC	4.52 miles north of Marysville, MT	Cypress Creek Renewables LLC
Black Eagle Solar LLC	4 miles north of Great Falls, MT	Cypress Creek Renewables LLC
Fox Solar LLC	3.62 miles southwest of Great Falls, MT	Cypress Creek Renewables LLC

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PSC-003

Regarding: Contract Negotiations

Witness: Bushnell

Please describe any attempts by NorthWestern to enter into negotiations with the QFs that NorthWestern believes cannot contract at QF-1 Option 1 rate due to the June 16, 2016 *Notice of Commission Action* suspending the availability of the standard-offer rate for certain QFs.

RESPONSE:

Each of the QF developers impacted by the Commission's Notice of Commission Action dated June 16, 2016, and subsequent Order 7500, have focused their efforts on preserving their claim of entitlement to the currently suspended QF-1 rate. Accordingly, there have been no negotiations for a new power purchase agreement at a lower rate.

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PSC-004

Regarding: Interconnection Agreements
Witness: Mueller

Please refer to affidavit of Mr. Casey (p. 5) in FLS's Motion for Rehearing.

- a. Please confirm or deny with explanation whether NorthWestern's Transmission Department failed to provide an executable interconnection agreement within a required five business days of when the customer indicated that they would move forward with the interconnection agreement following the facilities study.
- b. If confirmed, please identify each interconnection customer who requested an executable interconnection agreement, for whom NorthWestern did not provide one. Please explain when that customer was, in the end, provided such a document.
- c. Please provide any notifications that NorthWestern provided any customers who were not provided executable interconnection agreements within five days.
- d. Did the notification that NorthWestern made to any interconnection customers who requested an executable interconnection agreement, but did not receive one within five business days, include an explanation of the reason for the failure to meet the deadline and an estimated time by which NorthWestern would complete the procedure?

RESPONSE:

- a. Denied. NorthWestern follows the FERC-established protocols for interconnection, under which the referenced 5 day rule effectively applies as a default provision when the interconnection customer is not provided with advance notice of a different work flow. It is virtually impossible to develop in five days a mutually acceptable construction schedule for interconnection work considering the limited resources of both the QF developer and NorthWestern. Items such as a mutually acceptable construction schedule and payment provisions must be finalized before an interconnection agreement can be offered, as they are part of the interconnection agreement. In general terms, the FERC-established protocols require NorthWestern to advise its interconnection customers, up front, of the time intervals in the work flow which will be applied to an interconnection request. All of the Small Generation Interconnection Customers which applied for interconnection on NorthWestern's distribution system were notified, in advance,

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PSC-004 cont.

and in accordance with the FERC- established protocols, of the work flows which NorthWestern could meet.

- b. NA
- c. NorthWestern provided an email to all customers who were affected by the stay order notifying them that, as long as the stay is in place, NorthWestern cannot execute a new Interconnection Agreement for them. NorthWestern used a form notice so each project received the same email. NorthWestern has provided a copy that was sent to each developer in its queue. See the folder labeled PSC-004c on the CD attached to Data Request PSC-001b.
- d. Yes, NorthWestern Energy communicates this information to all interconnection customers in project scoping meetings. This include any small generator interconnection customers that enter into NorthWestern Energy's queue and is not specific to solar requests. In the case of the many solar applications that were received by NorthWestern Energy, this was especially the case. Each developer submitted several applications at the same time, all requesting the same Commercial Operation Date (COD), and many of the dates were not feasible, even if it was a single interconnection request. NorthWestern Energy does not have the right to reject these applications, even when it is not possible for the requested dates to be met. Therefore, NorthWestern Energy explains up front, that, once the study work is complete, NorthWestern Energy will work with its internal team to establish a proposed milestone schedule. This schedule will be part of the negotiation process for interconnection agreements. The timelines for this process are communicated to the interconnection customers. Additionally, as each study is completed for projects, a results meeting is held. The final discussion in all meetings is an identification of next steps. Set out below is a timeline for each of the three solar QF developers who submitted large numbers of interconnection requests.

Cypress Creek Renewables

Cypress Creek submitted its first interconnection applications to NorthWestern Energy on January 28, 2015. They submitted the following:

- Two 3 MW requests on January 28, 2016, both with a June 30, 2015 COD
- Three 3 MW requests on February 9, 2015, all with a June 30, 2015 COD

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- Six 3 MW requests on February 20, 2015, all with an April 1, 2016 COD
- Nine 3 MW requests on February 23, 2015, all with an April 1, 2016 COD
- Three 3 MW requests on February 27, 2015, all with an April 1, 2016 COD

On December 29, 2014, Amy Berg Pickett from Cypress Creek Renewables requested an overview of the timelines for projects in NorthWestern's queue. NorthWestern provided a copy of the procedures that are followed for interconnection of small projects (see attachment) . On February 23, 2015, David Bunge from Cypress Creek met with NorthWestern Energy's interconnection team and walked through the interconnection process and construction process. Mr. Bunge was also provided the overview of the timelines that NorthWestern Energy would be following for the many requests that his team had submitted. NorthWestern Energy notified this customer that it was not able to commit to the requested dates in the interconnection requests. It was explained that, once the projects finished the Facilities Studies phase, NorthWestern Energy would work internally to determine scheduling for these projects based on internal construction resources. The interconnection agreements for these requests would go out in draft form and the parties would negotiate the dates for the final agreements., as well as other contract terms. As NorthWestern Energy received interconnection requests from Cypress, project scoping meetings were held. At each of the scoping meetings, the interconnection group reiterated that NorthWestern Energy was not able to commit to meeting the requested dates for any of Cypress Creek's projects and again, that the milestone schedules for each of the individual projects would be determined during negotiations of the interconnection agreement. Also, at the end of each study, results meetings are held. The last item discussed in meetings is next steps. In each of the meetings, the customer is made aware of the timelines and next steps for both groups. The timelines that were in the originally provided document were reviewed and covered throughout the process. NorthWestern Energy also communicated this information in email correspondence.

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Cypress Creek Renewables has entered into several interconnection agreements for their projects. NorthWestern Energy handled the interconnection agreement and procedures as per the timelines that were provided to the customer up front, including the negotiations process for their Small Generator Interconnection Agreements.

FLS Energy

NorthWestern Energy held a meeting on October 14, 2015 with Mr. Casey May from FLS Energy. This meeting was attended by Autumn Mueller, Kelly Lovell, Cheslea Loomis, and Casey May. In this discussion, Kelly Lovell printed a copy of NorthWestern Energy's overview of timelines for interconnection requests (see Attachment) and provided it to Casey May. NorthWestern Energy's team walked through these timelines with Mr. May, item by item, explaining what he could expect for timelines for his projects. Mr. May indicated that he would be submitting several requests seeking, Commercial Operating Dates in 2016.

Commercial Operation Dates. The interconnection group reviewed the process with Mr. May and explained that his team was welcome to submit applications with these dates, but NorthWestern Energy would not likely be able to meet these dates, particularly with the projects ahead of his company in the queue. It was explained that, once NorthWestern finished the Facilities Studies, NorthWestern Energy would work internally to determine scheduling for these projects based on internal construction resources. The interconnection agreements for these requests would go out in draft form and the parties would negotiate the dates for the final agreements as well as other contract terms.

On November 16, 2015, the FLS team submitted 12 interconnection requests, all with November 1, 2016 Commercial Operation Dates. These dates were clearly not feasible Commercial Operation Dates. A project scoping meeting was held with the FLS team on December 4, 2016, discussing all of these requests. Autumn Mueller reiterated that NorthWestern Energy was not able to commit to meeting the requested dates for any of FLS's projects and again, that the milestone schedules for each of the individual projects would be determined during negotiations of the interconnection procedures.

Glass Solar #219

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PSC-004 cont.

- Draft Facilities Study issued to the customer May 11, 2016.
- Facilities Study results meeting held May 16, 2016 – next steps discussed with customer. FLS's comments were due back to NorthWestern Energy by June 10, 2016. NorthWestern Energy communicated with the customer that the Facilities Study would be finalized with the comments and, within 30 days, a draft SGIA would be issued to the customer, which would include a draft construction schedule based on construction availability.
- The customer said they had no further comments and would like to move forward with requesting the SGIA for this project on June 1, 2016.
- NorthWestern Energy issued the final Facilities Study to the customer on June 9, 2016. The e-mail indicated that NorthWestern Energy would follow up with a draft SGIA for their review.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Martin Solar #215

- Draft Facilities Study issued to the customer May 11, 2016.
- Facilities Study results meeting held May 16, 2016 – next steps discussed with customer. FLS's comments were due back to NorthWestern Energy by June 10, 2016. NorthWestern Energy communicated with the customer that the Facilities Study would be finalized with the comments and, within 30 days, a draft SGIA would be issued to the customer, which would include a draft construction schedule based on construction availability.
- Customer provided notice of no further comments on Facilities Study report and requested SGIA on June 1, 2016.
- NorthWestern Energy issued the final Facilities Study to the customer on June 7, 2016. The e-mail indicated that NorthWestern Energy would send a draft SGIA to the customer by July 1, 2016.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

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Canyon Creek Solar #221

- Draft Facilities Study issued to the customer May 11, 2016.
- Facilities Study results meeting held May 16, 2016 – next steps discussed with customer. FLS's comments were due back to NorthWestern Energy by June 10, 2016. NorthWestern Energy communicated with the customer that the Facilities Study would be finalized with the comments and, within 30 days, a draft SGIA would be issued to the customer, which would include a draft construction schedule based on construction availability.
- Customer provided notice of no further comments on Facilities Study report and requested SGIA on June 1, 2016.
- NorthWestern Energy issued the final Facilities Study to the customer on June 9, 2016. The e-mail indicated that NorthWestern Energy would issue a draft SGIA for their review.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

River Solar #216

- Project was in Facilities Study on date of stay order. The report was due to the customer on June 20, 2016. The draft report was issued on June 17, 2016.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Malt Solar #222

- Draft Facilities Study issued to the customer May 12, 2016.
- Facilities Study results meeting held May 16, 2016 – next steps discussed with customer. FLS's comments were due back to NorthWestern Energy by June 10, 2016. NorthWestern Energy communicated with the customer that the Facilities Study would be finalized with the comments and, within 30 days, a draft SGIA would be issued to the customer, which would include a draft construction schedule based on construction availability.
- Customer provided notice of no further comments on Facilities Study report and requested SGIA on June 1, 2016.
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PSC-004 cont

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- A revised Facilities Study was issued to the customer on June 15, 2016, indicating that the report had been corrected to reflect appropriate cost sharing information. Customer was asked to provide comments on revised report before NorthWestern Energy would finalize.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Fox Farm Solar #223

- Draft Facilities Study issued to the customer May 9, 2016.
- Customer submitted a Material Modification review request to determine if they could potentially move the point of interconnection to a new location on June 7, 2016. The response was due back to the customer by July 6, 2016.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Valley View Solar #225

- Draft Facilities Study issued to the customer May 19, 2016
- Results meeting was scheduled for June 3, 2016 but cancelled at customer's request.
- Customer provided notice of no further comments on Facilities Study report and requested SGIA on June 8, 2016.
- NorthWestern Energy issued the final Facilities Study to the customer. E-mail indicated that NorthWestern Energy would issue a draft SGIA by July 8, 2016.
- NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Couch Solar #225

- Project was in Facilities Study on date of stay order. The report was due to the customer on June 20, 2016. The draft report was issued on June 17, 2016.

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- PSC-004 cont.
- - NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Ulm Solar #231

- Draft Facilities Study issued to the customer May 9, 2016. Facilities Study results meeting held May 16, 2016 – next steps discussed with customer. FLS’s comments were due back to NorthWestern Energy by June 10, 2016. NorthWestern Energy communicated with the customer that the Facilities Study would be finalized with the comments and, within 30 days, a draft SGIA would be issued to the customer, which would include a draft construction schedule based on construction availability.
- Customer provided notice of no further comments on Facilities Study report and requested SGIA on June 1, 2016.
- NorthWestern Energy issued the final Facilities Study to the customer on June 10, 2016. E-mail indicated that NorthWestern Energy would issue a draft SGIA for their review. NorthWestern Energy issued notice to FLS Energy that an interconnection would not be sent at this time, as per the stay order, on June 28, 2016.

Small Generator Interconnection Procedures (SGIP) Timelines and Amounts

Application Request/Feasibility Study \$1,000 Deposit (invoice/refund-remaining balance)

The original date and time-stamp applied to the Interconnection Request at the time of its original submission shall be accepted as the qualifying date and time-stamp for the purposes of any timetable in these procedures.

- A scoping meeting will be held within 10 Business Days after the Interconnection Request is deemed complete, or as otherwise mutually agreed to by the parties.
- Within 5 Business Days after the Scoping meeting, Customer will receive a Feasibility Study Agreement
- Customer is required to return the executed Feasibility Study agreement within 15 Business Days
- Planning Engineer will perform Feasibility Study and return to Customer within 30 Business Days from receipt of Agreement
- A Feasibility Study results meeting will be held within 10 Business Days

System Impact Study \$5,000 Deposit (invoice/refund-remaining balance)

- Within 5 Business Days after the Feasibility Study results meeting, Customer will receive a System Impact Study Agreement
- Customer is required to return the executed System Impact Study agreement, along with \$5,000 deposit within 30 Business Days
- Planning Engineer will perform System Impact Study and return to Customer within 45 Business Days (Transmission) or 30 Business Days (Distribution) from receipt of Agreement
- A System Impact study results meeting will be held within 10 Business Days

Facilities Study \$10,000 Deposit (invoice/refund-remaining balance)

- Within 5 Business Days after the System Impact Study results meeting, Customer will receive a Facilities Study Agreement
- Customer is required to return the executed Facilities Study agreement, along with \$10,000 deposit within 30 Business Days
- Planning Engineer will perform a Draft Facilities Study and return to Customer within 45 Business Days from receipt of Agreement
- A Facilities Study results meeting will be held within 10 Business Days
- Interconnection Customer may, within 30 Calendar Days after receipt of the draft report, provide written comments to Transmission Provider, which Transmission Provider shall include in the final report.

- Transmission Provider shall issue the final Interconnection Facilities Study report within 15 Business Days of receiving Interconnection Customer's comments or promptly upon receiving Interconnection Customer's statement that it will not provide comments.

Small Generator Interconnection Agreement (SGIA)

- Tender Customer Draft SGIA 30 calendar days from receipt of Facilities Study comments
- Customer has 30 calendar days to provide comments on the Draft SGIA
- Negotiations, if need be, 60 calendar days from the Final Facilities study report
- Transmission Provider shall tender Customer Final SGIA within 15 Business Days after negotiations.
- If the Interconnection Customer does not sign the Interconnection Agreement, or ask that it be filed unexecuted by the Transmission Provider within 30 Business Days, the Interconnection Request shall be deemed withdrawn. After the Interconnection Agreement is signed by the Parties, the interconnection of the Small Generating Facility shall proceed under the provisions of the Interconnection Agreement.

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PSC-005

Regarding: Interconnection Agreements and PPAs
Witness: Mueller, parts a & c/ Hines, parts b & d

- a. Please provide the name of the project and date the interconnection agreement was signed for the six fully executed interconnection agreements you reference at 7:17-18.
- b. Please provide project name and execution date for the five executed purchased power agreements you reference on lines 7:18-19.
- c. Has NorthWestern executed any additional interconnection agreements with QFs since you submitted testimony in this docket? If so, please provide details for each executed interconnection agreement.
- d. Has NorthWestern executed any additional purchase power agreements with QFs since you submitted testimony in this docket? If so, please provide details for each executed purchase power agreement.

RESPONSE:

a.

<u>Facility</u>	<u>NorthWestern Execution</u>
Magpie Solar	January 19, 2016
Green Meadow Solar	December 15, 2015
Deer Creek Solar	December 15, 2015
Ragen Ranch Solar	December 15, 2015
South Mills Solar	December 15, 2015
River Bend Solar	January 19, 2016

- b. The Prefiled Direct Testimony of John D. Hines on page JDH-7, lines 17 and 18 is referring to the following power purchase agreements:

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Facility	NorthWestern Execution
River Bend Solar LLC	October 2, 2015
Green Meadow Solar LLC	October 2, 2015
Deer Creek Road Solar 1 LLC	November 13, 2015
Ragen Ranch Solar 1 LLC	November 13, 2015
South Mills Solar 1 LLC	November 13, 2015

c.

Facility	NorthWestern Execution	Notes
Magpie Solar	January 19, 2016	
Green Meadow Solar	December 15, 2015	
Deer Creek Solar	December 15, 2015	
Ragen Ranch Solar	December 15, 2015	
South Mills Solar	December 15, 2015	
River Bend Solar	January 19, 2016	
Black Eagle Solar	July 5, 2016	Executed by customer June 8, 2016 - waited for approval to execute agreement
Great Divide Solar	April 26, 2016	
Fox Farm		Draft SGIA was sent to customer August 3, 2016

d. Yes. NorthWestern executed an additional four power purchase agreements after submitting its QF-1 filing. They are listed in the table below.

Facility	NorthWestern Execution
Magpie Solar LLC	June 8, 2016
Great Divide Solar LLC	June 8, 2016
Black Eagle Solar LLC	June 8, 2016
Fox Solar LLC	June 8, 2016

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PSC-006

Regarding: OATT Responsibility Identification
Witness: Mueller

Please identify the employees of NorthWestern who are responsible for compliance with Section 3.5.7 (and any other sections related to the FLS allegations) of Attachment N of NWMT's Open Access Transmission Tariff.

RESPONSE:

The four employees responsible for administering Section 3.5.7 of Attachment N of NWMT's Open Access Transmission Tariff are:

Coordinator, Generation and Transmission Interconnection
Coordinator, Electric Transmission Planning
Analyst, Planning
Manager, Regional System Planning

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PSC-007

Regarding: Correspondence with FLS
Witness: NorthWestern Legal Department

Please confirm or deny with explanation that you asserted to an interconnection customer that a Notice of Commission Action issued by this Commission allows you to deny an interconnection agreement. If confirmed please provide for the record copies of written or electronic communications including this assertion.

RESPONSE:

Confirm. To be effective as written, the Commission's Notice of Commission Action, and its subsequent Order 7500, require NorthWestern to deny interconnection agreements which match to the PPAs previously tendered by QF developers, and not executed by NorthWestern, prior to June 16, 2016. As the Commission is aware, NorthWestern must purchase power from a QF which has entered into a legally enforceable obligation (LEO) to sell power to NorthWestern, even if there is not a fully executed agreement between the parties. The Commission has defined the elements of a LEO in Montana as a commitment to sell power at the utility's avoided cost through the tender of a PPA and interconnection agreement signed by the QF developer. If NorthWestern provides interconnection agreements, after June 16, 2016, to the three QF developers who tendered signed PPAs prior to June 16th, the three QF developers will sign them, tender them to NorthWestern, and establish approximately 37 LEOs under the Commission established standard for LEOs. Those 37 LEOs would be in addition to the 9 PPAs already executed by NorthWestern. Unless the Commission wants NorthWestern to ignore Order 7500, NorthWestern cannot provide to the three QF developers interconnection agreements which match to the PPAs previously tendered by them.

See also the attachments provided in response to Data Request PSC-004c.

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PSC-008

Regarding: Contract Length and Reopeners
Witness: Hines

- a. Please affirm if NorthWestern supports a maximum contract length of 25 years. If not, please describe and support an alternative.
- b. Please describe NorthWestern's position on contract reopeners. If NorthWestern supports reopeners, please describe its preferred reopening trigger events.
- c. Please state NorthWestern's position on annual updates to tariffed avoided cost rates, based on a Commission-specified procedure set in a proceeding such as this.

RESPONSE:

- a. NorthWestern's filing in this docket does not address contract durations in power purchase agreements with QFs. Section 69-3-604, MCA directs the Commission to establish the criteria for setting avoided cost rates, and includes a provision which encourages long term contracts.
- b. NorthWestern doubts that contract reopeners are permissible under PURPA.
- c. Annual avoided cost updates, on a simple, programmatic basis, such as updating for changes in the market prices of electricity and gas would be desirable. However, if they are only going to be implemented after a contested case proceeding lasting 270 days, they may not be practical.

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PSC-009

Regarding: Carbon Costs
Witness: Hines

Would NorthWestern support the elimination of a without-carbon alternative from the tariff? Please explain why or why not.

RESPONSE:

No. The Commission has historically not included the cost of carbon in the calculation of avoided costs:

In prior avoided cost dockets, QF intervenors favored policies allowing QFs to control the disposition of RECs through separate transactions not covered by QF tariffs. Ord. 6501f pp. 24, 72 (Dec. 12, 2006). The Commission has implemented that approach. The QF-1 tariff allows but does not require QFs to sell their RECs to NWE. The Commission continues that practice in this Order. (Docket No. D2012.1.3, Order No. 7199d)

Since the current QF-1 Tariff does not include a with-carbon alternative, NorthWestern assumes that the question is directed at the tariff proposals advanced in this filing. NorthWestern's preference is to receive the environmental benefits associated with QFs production and it would not oppose the elimination of the without-carbon alternative for QF resources that do not emit carbon. However, a without-carbon QF-1 Tariff option needs to be maintained for carbon emitting QF technologies (e.g., waste fuel facilities).

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PSC-010

Regarding: Exhibit_JBB-1
 Witness: Bushnell

- a. Please provide an avoided cost calculation using the blended market-combined cycle method approved in D2012.1.3, modified as follows:
 - i. Begin the forecast in 2016, using a 308 MW CCCT installed in 2025 as anticipated in the 2015 Plan;
 - ii. calculate costs with and without the 2015 Plan market carbon adder and CCCT emissions costs; and
 - iii. use anticipated CCCT production rather than production at 90% of nameplate capacity.
- b. Please use the generation output information for the three projects contained in the tables on the bottom of page 4 of your direct testimony to calculate an all-in rate for the projects under the avoided cost method requested in part (a) to this question.
- c. Please add a rate which is specific to solar projects using the same method that is currently used to calculate the Option 1(c) rate, with the assumption that the capacity value of a solar project is 7.8%.
- d. Please provide Excel copies of supporting workpapers with links intact.

RESPONSE:

a.-d. See the folder labeled PSC-010 on the CD attached to the response to Data Request PSC-001b. The resulting rates are shown below:

Current Tariffed Rates		
Resource Type	Without Carbon	With Carbon
Non-Wind ¹	\$0.06235	NA
Wind ¹	\$0.05439	NA
Non-Wind (Solar) ²	\$0.06609	NA

PSC-010a Construct		
Resource Type	Without Carbon	With Carbon
Non-Wind ¹	\$0.04521	\$0.04708
Wind ¹	\$0.03515	\$0.03702
Solar ²	\$0.03828	\$0.04015

¹ Annual average rate

² Modeled production

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PSC-011

Regarding: Market Prices
Witness: Hansen

- a. Please describe in detail the methods and logic supporting all market price streams used to generate your estimates, including any differences between market hub prices and Montana purchase and sale prices.
- b. If not already provided, please provide all natural gas and electricity market forecasts used as PowerSimm inputs in in this application and NorthWestern's 2015 Plan.
- c. For each of the last five years, please provide monthly average day-ahead AECO wholesale natural gas index prices, monthly average day-ahead Mid-C on-peak and off-peak wholesale electricity index prices; and NorthWestern's monthly weighted average actual day-ahead on-peak and off-peak wholesale electricity purchase prices.

RESPONSE:

- a. NorthWestern's long-term natural gas and electric forecasts are a combination of current forward market prices and the application of long-term price escalation factors. The near-term AECO and Mid-C forward prices are obtained from the Intercontinental Exchange ("ICE"). These forecasts are used to compose a forward price curve from January 2016 until July 2020. The forward curve is then escalated after July 2020 through the remainder of the planning horizon at the average escalation rate from the Energy Information Administration ("EIA") 2015 Annual Energy Outlook nominal Henry Hub gas price projection.

NorthWestern has been able to purchase power within the state of Montana. As these are bilateral negotiations with other parties, NorthWestern receives a discount to Mid-C because the selling party does not have to pay transmission charges in order to move the power to Mid-C. The variance between Mid-C and the sales price is represented by the transmission charges that NorthWestern must incur in order to move the power to Mid-C for resale. NorthWestern's current FERC approved tariff is \$4.33 per MWh plus 4% losses.

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- b. See response to VS-0002 for the prices used in the modeling. The electric and natural gas prices used for the high gas and power case were 22% higher than the base case.
- c. See Attachment. NorthWestern is relying on the “fair use” exemption of federal copyright law to provide it for purposes of this docket only. No copies should be made, nor should the parties receiving this information use the copyrighted material for any purposes other than for use in this docket. This document has not been e-filed on the Commission website.

Because it is copyright-protected, PSC-011c has not been efiled.

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PSC-012

Regarding: Portfolio Net Purchase and Sale Positions
Witness: Hansen

- a. When NorthWestern's portfolio is long, and the variable cost of the marginal resource is less than the market price, does NorthWestern reduce generation of the marginal resource or sell the excess power into the market to take advantage of the price differential between that of the marginal resource and the market price?
- b. Please provide a table which shows the number of hours the wind, solar, and hydro/other projects which you modeled the energy price for fell into each of the three categories contained in the table on page LPH-6 (Short, Long-1, and Long-2).

RESPONSE:

- a. NorthWestern will sell excess power if the market price less transmission is above the variable cost of a generating resource.
- b. See response to Data Request VS-008c.

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PSC-013

Regarding: Avoided Cost Calculation
Witness: Hansen

For the wind, solar, and hydro/other resources, please calculate avoided costs using market sale price as the value of production under all long conditions, and market purchase price when short. Please calculate with and without a carbon adder.

RESPONSE:

RESOURCE	ENERGY RATE WITHOUT CARBON (\$/MWh)	ENERGY RATE WITH CARBON (\$/MWh)
HYDRO	\$ 33.84	\$ 43.77
SOLAR	\$ 35.10	\$ 45.02
WIND	\$ 35.69	\$ 45.62

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PSC-014

Regarding: PowerSimm Modeling and Resource Displacement
Witness: Bushnell

At 5:12-16 you testify that the base portfolio is the Economically Optimal Portfolio (EOP) adjusted to maintain RPS compliance for 25 years.

- a. Please confirm or deny, with explanation, that the PowerSimm model did not allow the QF resources to displace or postpone development of planned acquisitions in the EOP, including the renewable resources forced into the model.
- b. If confirmed, please explain how the chosen model allows for the estimation of avoided long-run energy related capital costs.
- c. If denied, please describe how the avoided cost savings of resource displacement or postponement is captured in NorthWestern's static "net purchase or sale position" analysis.
- d. Please confirm or deny, with explanation, that the PowerSimm package available to NorthWestern is capable of capacity expansion differential revenue requirement analysis, with complete opportunity for the modeled resource to optimally displace or postpone development of other avoidable resources.
- e. If confirmed, please explain why NorthWestern is not providing this analysis as an alternative method to estimate avoided costs.

RESPONSE:

- a. Confirm. However, the Optimal Resource Expansion module did consider renewable resources when selecting the optimal expansion and did not choose any renewable resources due to their low capacity contribution. The models did not directly model QF resources' ability to defer capacity additions. As explained in the 2015 Resource Plan, capacity additions were constrained to prevent an unrealistic build out schedule. To the extent that QF resources provide reliable capacity during peak load hours, they will not defer any planned capacity resource additions. Instead, they simply help NorthWestern achieve minimal resource adequacy by 2025 and could potentially provide a contribution to planning reserve margins by the end of the study period.

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- b. The avoided cost of capacity is not derived from PowerSimm. The avoided cost of capacity is determined using the cost of an Internal Combustion Engine and payment is based upon measured capacity contribution. These calculations are contained in Exhibit__ (JBB-2).
- c. See the response to Data Request PSC-014b.
- d. Confirmed. The PowerSimm package does have the ability to optimally displace or postpone the development of other avoidable resources through the Optimal Resource Expansion module, but NorthWestern does not have this software in its current license agreement with Ascend. The Optimal Resource Expansion module was used for the 2015 Resource Plan with an additional charge. NorthWestern is in discussions to have the Optimal Resource Expansion module added to the license agreement with Ascend.
- e. See the response to Data Request PSC-014a.

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PSC-015

Regarding: Modeled Generation
Witness: Bushnell

- a. Please provide the generation output for the 3 MW solar project used to calculate the rates contained in the tables at the bottom of page JBB-4.
- b. Please provide the generation output for the 3 MW wind project used to calculate the rates contained in the tables at the bottom page JBB-4. Please explain how NorthWestern estimated the output for the 3 MW solar wind project.
- c. Please describe and provide the historical production of small hydroelectric facilities referred to at 5:11-12.

RESPONSE:

- a. See response to Data Request VS-001a.
- b. See response to Data Request VS-001d.
- c. See response to Data Request VS-001d.

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PSC-016

Regarding: Exceedance Model
Witness: Bushnell

If possible, please provide examples where the exceedance model has been used by regulating bodies to establish capacity contribution. In each case, describe the parameter values employed.

RESPONSE:

The SouthWest Power Pool (“SPP”) is a good example of a regulating body that establishes a capacity contribution using an exceedance method. Also refer to section 12.1.5.3 of the SPP Criteria in the folder labeled PSC-016 on the attached CD.

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PSC-017

Regarding: Exceedance Model
Witness: Bushnell

- a. Please provide the dates on which NorthWestern experienced the highest 10% of on-peak hours over the previous 10 years.
- b. Please provide the measured capacity for all NorthWestern-owned resources over the previous 5 years using the definition of measured capacity in NorthWestern's proposed QF-1 tariff.
- c. Why was 10% selected as the level for the number of on-peak load hours that would be used to determine a QF capacity payment?
- d. Please provide a sensitivity analysis to estimate the change to capacity contribution of the selected resources given changes to the model parameters of exceedance level and top percentage of On-Peak load hours. For instance, changing exceedance level to 80% and 90%, and percent load hours to 5%, 15%, and 20%.

RESPONSE:

- a. See the folder labeled PSC-017a on the CD attached to Data Request PSC-001b.
- b. Using the same exceedance methodology, the capacity contributions are:

<u>Company Owned Resource</u>	
Thompson Falls	41%
Mystic	77%
Madison	93%
Holter	61%
Hauser	77%
Black Eagle	46%
Cochrane	32%
Morony	43%
Rainbow	44%
Ryan	60%
<hr/>	
Total Hydro	51%
Colstrip Unit 4	62%
DGGS	11%
Spion Kop	0.8%

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- c. Mr. Bushnell selected 10% of On-Peak hours because it captures an adequate number of peak hours (about 208 per year) while not dipping too far into off peak hours. The minimum hourly values captured using 10% of On-Peak hours are approximately 85% of the highest peak hour (or about 185 MW less than the highest peak hour).
- d. See the tables shown below.

Hydroelectric		Exceedance Level		
		80%	85%	90%
Percentage of On-Peak hours	5%	38.43%	37.28%	35.81%
	10%	38.48%	36.86%	34.96%
	15%	39.62%	36.89%	34.02%
	20%	39.76%	37.56%	34.46%

All-Wind		Exceedance Level		
		80%	85%	90%
Percentage of On-Peak hours	5%	4.04%	3.03%	2.38%
	10%	4.66%	3.40%	2.54%
	15%	5.09%	3.58%	2.42%
	20%	5.55%	3.81%	2.62%

Solar		Exceedance Level		
		80%	85%	90%
Percentage of On-Peak hours	5%	19.82%	12.95%	8.41%
	10%	14.47%	9.56%	6.64%
	15%	9.94%	7.03%	0.16%
	20%	7.25%	1.34%	0.00%

Also see folder PSC-017d on the CD attached to Data Request PSC-001b.

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PSC-018

Regarding: Exceedance Model
Witness: Bushnell

- a. Using your proposed exceedance method, please provide aggregate capacity contribution (MW and percent of nameplate capacity) of all owned and contracted wind facilities in NorthWestern's portfolio.
- b. Regarding your testimony on 13:18-21, if not included in the response to prior Data Requests, please provide the work papers supporting the calculation of the capacity contributions of wind, solar and hydroelectric resources.
- c. Please provide NorthWestern's load duration curves, with and without DSM, for 2020, 2025, and 2030 based on the 2015 Plan retail load forecasts.
- d. Please clarify whether the highest 10% of on-peak load hours equates to the highest 2.3% of all load hours. If not, please explain why.

RESPONSE:

- a. The aggregate capacity contribution is 3.4%. See the folder labeled PSC-017d on the CD attached to Data Request PSC-001b.
- b. See the folder labeled PSC-017d on the CD attached to Data Request PSC-001b.
- c. See the folder labeled PSC-018c on the CD attached to Data Request PSC-001b.
- d. They are essentially the same measurement. However, the highest 2.3% of all load hours includes a few hours (5 hours over 10 years) that are not included in the highest 10% of On-Peak hours.

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PSC-019

Regarding: Wind integration tariff
Witness: Bushnell

- a. Please explain why NorthWestern is not proposing to update its Wind Integration tariff (WI-1 tariff) in this filing.
- b. NorthWestern's 2015 Plan modeled the hydro facilities as if they would provide up to 50% of the regulation requirement for NorthWestern's current portfolio, which reduced the cost of regulation for NorthWestern by about 50% (*See* NorthWestern 2015 Plan, Volume 1, p. 11-13). Would it be appropriate to update the WI-1 tariff by reducing the integration charge by 50%? If not, please explain why not.
- c. Please provide an updated WI-1 tariff using current cost information and explain how the integration charge is calculated in the proposed WI-1 tariff.
- d. How does NorthWestern intend to manage the integration costs necessary to integrate other intermittent resources, such as solar generators?

RESPONSE:

- a. On March 7, 2016, NorthWestern switched from the CPS2 performance to BAL-001-2 – Real Power Balancing Control Performance Standard (“RBC”). NorthWestern will need to complete a study under the new performance standard before proposing any changes in the WI-1 tariff, or proposing a solar integration tariff.
- b. The 2015 Plan modeled the hydro facilities providing up to 50% of NorthWestern's regulation requirement at significant cost savings. However, that study was performed under the old CPS2 performance standard. The current WI-1 rate is out-of-date, but it would not be appropriate to simply reduce the WI-1 rate by 50%.
- c. See the folder labeled PSC-019c on the CD attached to Data Request PSC-001b.
- d. NorthWestern will need to complete a study under the new performance standard prior to proposing a solar integration rate.

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PSC-020

Regarding: Contingency reserve tariff
Witness: Bushnell

- a. Please explain why NorthWestern is not proposing to update its contingency reserve tariff (CR-1 tariff) in this filing.
- b. Provide an updated CR-1 tariff using current cost information and contingency reserve requirements and explain how the contingency reserve charge is calculated in the proposed CR-1 tariff.

RESPONSE:

- a. NorthWestern did not propose to update its Electric Tariff, Schedule No. CR-1 in this filing because the CR-1 Tariff no longer has any effect on QF rates.

At the time the CR-1 Tariff was established, there was a 7% requirement for thermal plants and a 5% requirement for wind and hydro plants. NorthWestern's use of a thermal plant to calculate avoided cost which effectively resulted in a \$0.20/MWh rate adjustment (increase) to QF facilities (if powered by wind or hydro).

The current NERC requirement for contingency reserves is 3% for load and 3% for all generation. This means that there is no longer "differential" in reserve requirements, and no longer an adjustment to QF rates.

- b. The rate based on current cost information would increase from \$10 per MWh to \$12 per MWh.