

May 11, 2016

Mr. Will Rosquist  
Administrator, Regulatory Division  
Montana Public Service Commission  
1701 Prospect Ave.  
P. O. Box 202601  
Helena MT 59620-2601

RE: Docket D2015.8.64 – Greycliff Petition  
NorthWestern Energy's Data Requests to Greycliff Wind Prime, LLC  
(NWE-014 through NWE-036)

Dear Mr. Rosquist:

Enclosed for filing is one copy of NorthWestern Energy's second set of data requests to Greycliff Wind Prime, LLC (NWE-014-NWE-036).

These data requests will be hand delivered this day to the PSC and MCC, e-filed with the PSC, emailed to counsel of record and mailed to the service list.

If you have any questions, please call Joe Schwartzberger at (406) 497-3362.

Sincerely,

Pam LeProwse  
Administrative Assistant  
Regulatory Affairs

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of NorthWestern Energy's second set of data requests to Greycliff Wind Prime, LLC (NWE-014 to NWE-036) in Docket No. D2015.8.64 has been hand delivered to the Montana Public Service Commission and to the Montana Consumer Counsel this date. It has also been e-filed on the PSC website, emailed to counsel of record and mailed via first class to remainder of the service list as follows:

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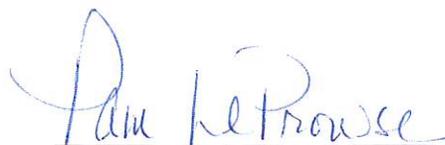
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Date: May 11, 2016



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Pam LeProwse  
Administrative Assistant  
Regulatory Affairs

DEPARTMENT OF PUBLIC SERVICE REGULATION  
BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MONTANA

IN THE MATTER OF the Petition of ) REGULATORY DIVISION  
Greycliff Wind Prime, LLC to Set Contract )  
Terms and Conditions for a Qualifying ) DOCKET NO. D2015.8.64  
Small Power Production Facility )

**NORTHWESTERN ENERGY’S SECOND SET OF  
DATA REQUESTS TO GREYCLIFF WIND PRIME, LLC**

NWE-014     Regarding: Experience  
                  Witness: Roger Schiffman

- a.     Please provide a list of matters where you worked on PURPA-related avoided cost calculations.
  
- b.     For each matter identified in subpart a, please provide the following information:
  - Who the calculation was performed for;
  - When the calculation was performed; and
  - The name of the regulatory body and docket number, if such calculation was part of a regulatory proceeding; and any documents pertaining to such calculations whether created by you or some other person, party, or regulatory body, including calculation workpapers, final orders, testimony.

NWE-015     Regarding: Communication re: avoided cost rate  
                  Witness: Roger Schiffman

Please produce all correspondence, whether internal or external including but not limited to email communications, concerning the avoided cost rate proposed by Greycliff in your rebuttal testimony at pages 41-43.

NWE-016     Regarding: Communication re: NorthWestern’s proposed avoided cost rates  
                  Witness: Roger Schiffman

Please produce all correspondence, whether internal or external including but not limited to email communications, concerning NorthWestern’s calculation of its avoided cost rate in this matter.

NWE-017      Regarding: FERC Guidance, pages 5-6  
Witness: Roger Schiffman

Please provide documentary support for assertions 1 through 6 found on pages 5 and 6 of your rebuttal testimony concerning the Federal Energy Regulatory Commission's ("FERC") "guidelines to states" for developing avoided cost rates.

NWE-018      Regarding: Other states' methodologies  
Witness: Roger Schiffman

On page 7 of your rebuttal testimony, you testify: "States have adopted a wide variety of approaches in implementing FERC's directives and in establishing avoided cost methodologies." You then list five conceptual issues that states have addressed. Your testimony goes on to describe ten approaches that state Commissions have adopted in establishing avoided cost methodologies.

- a.      Please provide a list of the states that you were referring to in this section of your rebuttal testimony.
- b.      Please provide documentary support, by state, for each of the five conceptual issues identified on page 7 of your rebuttal testimony.
- c.      Please provide documentary support, by state, for each of the ten approaches that state regulatory commissions have adopted in establishing avoided cost methodologies.

NWE-019      Regarding: Retained; Purpose  
Witness: Roger Schiffman

- a.      When were you retained by Greycliff and/or National Renewable Energy Solutions, LLC?
- b.      Please provide a copy of your contract for services with Greycliff or National Renewable Energy Solutions, LLC pertaining to this matter.
- c.      When did Greycliff or National Renewable Energy Solutions, LLC ask you to "create an independent avoided cost forecast" for the Greycliff project?

NWE-020      Regarding: Interconnection Upgrade Cost  
Witness: Roger Schiffman

- a.      Do you agree that if a Qualifying Facility is required to pay for all interconnection network transmission upgrade costs associated with its project, but is then reimbursed for these costs, then customers of the utility will be required to pay for such costs thereby not remaining indifferent to the purchase of power from a Qualifying Facility?

- b. If you do not agree with subpart a, please provide a reasoned response for such disagreement.

NWE-021      Regarding: Establishment of a legally enforceable obligation  
                    Witness: Roger Schiffman

- a. Please provide your understanding of what is required to establish an LEO in Montana.
- b. Please provide all support for the assertion on page 38 of your rebuttal testimony that “Greycliff has previously established an LEO.”
- c. When Greycliff approached NorthWestern in July of 2015 regarding a possible contract for the sale of power to NorthWestern, what commercial operation date did Greycliff propose for this project?

NWE-022      Regarding: Avoided Cost Calculations  
                    Witness: Roger Schiffman

- a. Please provide a detailed explanation for how you calculated the proposed avoided cost calculations found on pages 41 through 43 of your rebuttal testimony.
- b. Please provide all assumptions used to derive the proposed Energy Average Avoided Cost (\$/MWh) figures found on pages 42 and 43 of your rebuttal testimony.
- c. Please produce, including electronic versions, all supporting workpapers showing the calculation of the avoided costs presented on pages 41 through 43 of your rebuttal testimony, including all supporting data, formulas, supporting worksheets with links intact.

NWE-023      Regarding: AEO 2015 Forecast  
                    Witness: Roger Schiffman

Please provide support for your assertion that the Northwest Power and Conservation Council’s medium level electricity price forecast is appropriate for a Qualifying Facility providing power to an electric utility in Montana.

NWE-024      Regarding: QF-1 rates  
                    Witness: Roger Schiffman

- a. Please confirm that NorthWestern’s QF-1, WI-1 and CR-1 tariff schedules are not applicable to the Greycliff project.
- b. If you are unable to confirm subpart a, please explain why not and provide evidence to support your reasoning.

NWE-025      Regarding: Variable rate option  
Witness: Roger Schiffman

- a.      Please confirm that NorthWestern and Greycliff discussed a variable or escalating PPA price during the pendency of this matter.
- b.      If you are unable to confirm subpart a, please explain why not.

NWE-026      Regarding: PowerSimm modeling  
Witness: Roger Schiffman

Please confirm that NorthWestern offered Greycliff an opportunity to view the PowerSimm modeling performed in this docket but Greycliff did not accept the offer.

NWE-027      Regarding: Differential Revenue Requirements Methodology  
Witness: Roger Schiffman

On pages 17 and 18 of your rebuttal testimony, you respond to a question regarding how NorthWestern's avoided cost methodology differs from the Differential Revenue Requirements ("DRR") methodology.

- a.      In the first sentence of the response, you state that the PowerSimm model did not measure change in "production costs" with and without Greycliff. What "production costs" are you referring to in this answer?
- b.      Please provide evidence to support your assertion that "NWE also used the PowerSimm model to develop long-term market price projections at Mid-C."
- c.      Please confirm that NorthWestern used the Intercontinental Exchange escalated by the Energy Information Administration's 2015 AEO to develop long-term market price forecast for the Greycliff proposed avoided cost.
- d.      In light of Mr. Hansen's prefiled response testimony, see pages 3 to 5, please provide evidence to support your assertion that "NWE did not use PowerSimm to evaluate avoided cost for Greycliff or the net short/sales position on its system on an hourly basis."
- e.      Please provide evidence to support your assertion that "NWE is almost always in a net purchase position."

NWE-028      Regarding: Sale of excess QF power  
Witness: Roger Schiffman

- a.      Please confirm that federal regulations, specifically Order 69, “impose no requirement on the purchasing utility to deliver unusable energy or capacity to another utility for subsequent sale.”
- b.      If you are unable to confirm subpart a, please explain why not and provide evidence to support your reasoning.

NWE-029      Regarding: Mid-C Historical Price Series  
Witness: Roger Schiffman

- a.      Please provide evidence to support your assertion on page 21 that NorthWestern used the Mid-C Historical Price Series or Powerdex to derive an electricity price forecast for the Greycliff project.
- b.      Please confirm that NorthWestern only used Powerdex prices to forecast real time prices in order to account for the fact that Greycliff is an intermittent resource and should not receive a firm energy price.
- c.      If you are unable to confirm subpart b, please explain why not and provide evidence to support your reasoning.

NWE-030      Regarding: AECO pricing  
Witness: Roger Schiffman

On page 28 of your rebuttal testimony you state, “NWE’s use of AECO results in a significant understatement of natural gas prices and also electricity prices at Mid-C, which results in an understatement of NWE’s actual avoided costs.”

Below are annual forward price strips for Mid-C, AECO, and Stanfield from the January 15, 2016 market close. All of these curves were developed using the same methodology that has been presented in the proceeding. The forward curve is used through July 2020 and escalated thereafter at the annual escalation rate from the Energy Information Administration 2015 Annual Energy Outlook (“AEO”). This escalation maintains the fundamental relationship between electric and natural gas prices as calculated through the market implied heat rates (electric price divided by gas price) for both Mid-C/AECO and Mid-C/Stanfield as shown in the two columns on the right.

	Mid-C Forward Curve	AECO Forward Curve	Stanfield Forward Curve	Mid-C/ AECO Implied Heat Rate	Mid-C/ Stanfield Implied Heat Rate
2018	\$ 25.27	\$ 2.19	\$ 2.77	11.5	9.1
2019	\$ 27.28	\$ 2.38	\$ 2.90	11.4	9.4
2020	\$ 28.84	\$ 2.52	\$ 3.03	11.4	9.5
2021	\$ 30.04	\$ 2.63	\$ 3.16	11.4	9.5
2022	\$ 31.29	\$ 2.73	\$ 3.29	11.4	9.5
2023	\$ 32.59	\$ 2.85	\$ 3.42	11.4	9.5
2024	\$ 33.94	\$ 2.97	\$ 3.57	11.4	9.5
2025	\$ 35.35	\$ 3.09	\$ 3.72	11.4	9.5
2026	\$ 36.82	\$ 3.22	\$ 3.87	11.4	9.5
2027	\$ 38.34	\$ 3.35	\$ 4.03	11.4	9.5
2028	\$ 39.94	\$ 3.49	\$ 4.20	11.4	9.5
2029	\$ 41.60	\$ 3.64	\$ 4.37	11.4	9.5
2030	\$ 43.32	\$ 3.79	\$ 4.55	11.4	9.5
2031	\$ 45.12	\$ 3.94	\$ 4.74	11.4	9.5
2032	\$ 46.99	\$ 4.11	\$ 4.94	11.4	9.5
2033	\$ 48.95	\$ 4.28	\$ 5.14	11.4	9.5
2034	\$ 50.98	\$ 4.46	\$ 5.36	11.4	9.5
2035	\$ 53.09	\$ 4.64	\$ 5.58	11.4	9.5
2036	\$ 55.30	\$ 4.83	\$ 5.81	11.4	9.5
2037	\$ 57.60	\$ 5.03	\$ 6.05	11.4	9.5
2038	\$ 59.99	\$ 5.24	\$ 6.30	11.4	9.5
2039	\$ 62.48	\$ 5.46	\$ 6.57	11.4	9.5
2040	\$ 65.07	\$ 5.69	\$ 6.84	11.4	9.5
2041	\$ 67.77	\$ 5.92	\$ 7.12	11.4	9.5
2042	\$ 70.59	\$ 6.17	\$ 7.42	11.4	9.5

The table below uses the same AECO and Stanfield prices from the table above. The Mid-C forward curve in the table on the left is computed by multiplying the AECO forward curve and the Mid-C/AECO implied heat rate. After 2020, the AECO forward curve is multiplied by the Mid-C/AECO implied heat rate from 2020. The Mid-C forward curve on the right is developed by multiplying the Stanfield forward curve and the Mid-C/Stanfield implied heat rate. After 2020, the Stanfield forward curve is multiplied by the Mid-C/Stanfield implied heat rate from 2020. The column in the far right details the variance in the Mid-C forward curve that was calculated using the AECO forward curve and the Mid-C forward curve that was calculated using Stanfield forward curve.

	AECO Forward Curve	Mid-C/ AECO Implied Heat Rate	Mid-C Forward Curve from AECO Implied Heat Rate		Stanfield Forward Curve	Mid-C/ Stanfield Implied Heat Rate	Mid-C Forward Curve from Stanfield Implied Heat Rate	Variance in Mid-C Forecast from AECO Forecast to Stanfield Forecasts
2018	\$ 2.19	11.5	\$ 25.27		\$ 2.77	9.1	\$ 25.27	\$ -
2019	\$ 2.38	11.4	\$ 27.28		\$ 2.90	9.4	\$ 27.28	\$ -
2020	\$ 2.52	11.4	\$ 28.84		\$ 3.03	9.5	\$ 28.84	\$ -
2021	\$ 2.63		\$ 30.04		\$ 3.16		\$ 30.04	\$ -
2022	\$ 2.73		\$ 31.29		\$ 3.29		\$ 31.29	\$ -
2023	\$ 2.85		\$ 32.59		\$ 3.42		\$ 32.59	\$ -
2024	\$ 2.97		\$ 33.94		\$ 3.57		\$ 33.94	\$ -
2025	\$ 3.09		\$ 35.35		\$ 3.72		\$ 35.35	\$ -
2026	\$ 3.22		\$ 36.82		\$ 3.87		\$ 36.82	\$ -
2027	\$ 3.35		\$ 38.34		\$ 4.03		\$ 38.34	\$ -
2028	\$ 3.49		\$ 39.94		\$ 4.20		\$ 39.94	\$ -
2029	\$ 3.64		\$ 41.60		\$ 4.37		\$ 41.60	\$ -
2030	\$ 3.79		\$ 43.32		\$ 4.55		\$ 43.32	\$ -
2031	\$ 3.94		\$ 45.12		\$ 4.74		\$ 45.12	\$ -
2032	\$ 4.11		\$ 46.99		\$ 4.94		\$ 46.99	\$ -
2033	\$ 4.28		\$ 48.95		\$ 5.14		\$ 48.95	\$ -
2034	\$ 4.46		\$ 50.98		\$ 5.36		\$ 50.98	\$ -
2035	\$ 4.64		\$ 53.09		\$ 5.58		\$ 53.09	\$ -
2036	\$ 4.83		\$ 55.30		\$ 5.81		\$ 55.30	\$ -
2037	\$ 5.03		\$ 57.60		\$ 6.05		\$ 57.60	\$ -
2038	\$ 5.24		\$ 59.99		\$ 6.30		\$ 59.99	\$ -
2039	\$ 5.46		\$ 62.48		\$ 6.57		\$ 62.48	\$ -
2040	\$ 5.69		\$ 65.07		\$ 6.84		\$ 65.07	\$ -
2041	\$ 5.92		\$ 67.77		\$ 7.12		\$ 67.77	\$ -
2042	\$ 6.17		\$ 70.59		\$ 7.42		\$ 70.59	\$ -

- a. Please confirm that even though the forward curve for Stanfield is higher than the forward curve for AECO, there is no difference between the Mid-C heavy load forecast derived using the AECO forward curves with the Mid-C/AECO implied heat rate and the Mid-C heavy load forecast derived from the Stanfield forward curves with the Mid-C/Stanfield implied heat rate.

- b. If you do not or cannot confirm subpart a, please explain why not and provide evidence for your reasoning.

NWE-031      Regarding: NWPCC Forecast  
                  Witness: Roger Schiffman

- a. Why do you believe your forecast conglomerate is better than the EIA forecast used by NorthWestern?
- b. Please provide evidence to support your position.

NWE-032      Regarding: Figure 7 on page 34  
                  Witness: Roger Schiffman

Please provide all backup data in electronic format with all supporting data, formulas, supporting worksheets with links intact, for Figure 7 – Comparison of Forecast Electricity Prices.

NWE-033      Regarding: Transmission Upgrade Costs  
                  Witness: Roger Schiffman

On page 36 of your rebuttal testimony, you assert that NorthWestern proposes to adjust avoided cost “to reflect the cost of Transmission Network Upgrades.”

- a. Please confirm that NorthWestern has not proposed at this time to deduct any costs associated with “Transmission Network Upgrades.”
- b. If you are unable to confirm subpart a, please explain why not and provide evidence to support your reasoning.

NWE-034      Regarding: GWP-012  
                  Witness: Roger Schiffman

Please confirm that NorthWestern’s response to Data Request GWP-012 provided, as requested, a revised calculation of avoided costs for Greycliff based on the changes requested by Greycliff in the data request.

NWE-035      Regarding: NWPCC Medium Natural Gas Price Forecast  
                  Witness: Roger Schiffman

On page 40 of your rebuttal testimony, you discuss possible differences between the Northwest Power and Conservation Council’s (“NWPCC”) Medium Natural Gas price forecast that you proposed should be used to calculate avoided costs and the NWPCC Medium Natural Gas price forecast that NorthWestern received directly from NWPCC and provided in this docket as part of

the updated response to Data Request PSC-012a. You assert that the difference between these two price forecasts is that Greycliff applied a 2% annual inflation rate to the forecast.

- a. Please confirm that the NWPCC forecast figures provided by NorthWestern in the updated response to Data Request PSC-012a on March 30, 2016 were escalated for inflation but that the title of the chart is mislabeled.
- b. If you are unable to confirm subpart a, please explain why not and provide evidence to support your reasoning.

NWE-036      Regarding: Proposed Energy Average Avoided Cost, Table 7, page 42  
                  Witness: Roger Schiffman

Please provide evidence of where or from what market Greycliff will receive \$35.66 per megawatt-hour for its energy in 2018.