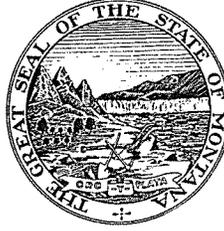


PUBLIC SERVICE COMMISSION  
STATE OF MONTANA

Brad Johnson, Chairman  
Travis Kavulla, Vice Chairman  
Kirk Bushman, Commissioner  
Roger Koopman, Commissioner  
Bob Lake, Commissioner



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November 25, 2015

Mr. Joe Schwartzenberger  
Regulatory Affairs Department  
NorthWestern Energy  
40 East Broadway  
Butte, MT 59701

RE: Data requests in Docket No. D2015.8.64

Dear Mr. Schwartzenberger,

Enclosed please find data requests of the Montana Public Service Commission to NorthWestern Energy numbered PSC-012 through PSC-029 in the referenced Docket. Please begin the response to each new numbered data request on a new page. Please provide responses by December 9, 2015. If you have any questions, please contact me at (406) 444-6191.

Sincerely,



Neil Templeton  
Regulatory Division  
Montana Public Service Commission

Service Date: November 25, 2015

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 Terms ) DOCKET NO. D2015.8.64  
and Conditions for Qualifying Small Power )  
Production Facility Pursuant to M.C.A. )  
§ 69-3-603 )

**DATA REQUESTS PSC-012 THROUGH PSC-029 OF THE**  
**MONTANA PUBLIC SERVICE COMMISSION**  
**TO**  
**NORTHWESTERN ENERGY**

PSC-012

Regarding: Exhibits and Models  
Witnesses: LaFave, Hansen

- a. Please provide Excel-readable files of all exhibits and supporting files.
- b. Please provide Excel-readable files of all inputs to the PowerSimm modeling.
- c. Please confirm that two completely separate, independent model runs were performed using PowerSimm to calculate an avoided cost rate for Greycliff.
- d. Please provide in electronic format all supporting work papers and output of the PowerSimm modeling runs which NWE used to calculate avoided energy and capacity costs attributable to Greycliff's expected energy production. If any work papers are Excel-readable, please provide those work papers with the formulas intact.
- e. To the extent not provided in part (c), please provide the PowerSimm Supply Cost Reports for the base case (current) portfolio and the alternative (current + Greycliff) portfolio in Excel-readable files.

PSC-013

Regarding: Mid-C Prices  
Witness: LaFave & Hansen

- a. With reference to Exhibit\_\_(BJL-1), for the full year 2014 and the YTD 2015, please provide the published Intercontinental Exchange (ICE) Mid-C index price for Heavy

- Load Hours and Light Load Hours on as granular a time-step (e.g., hourly) as possible.
- b. With reference to Exhibit\_\_ (BJL-1), for the full year 2014 and the YTD 2015, please provide the published Powerdex Hourly Mid-C price for Heavy Load Hours and Light Load Hours on as granular a time-step (e.g. hourly) as possible.
  - c. With reference to Table 1, LPH-7, please provide both the primary source documents that support the averages presented as well as the electronic files used to present the numerical inputs and calculate the averages presented.

## PSC-014

Regarding: Valuing Intermittency  
Witness: LaFave

At 8:17-9:4 you describe the valuation of intermittency as the difference between day-ahead firm and real-time prices.

- a. Please provide a theoretical justification of this model, including its mathematical derivation, if available.
- b. Please provide references to support this model, if available.
- c. Please identify the market(s) you are referring to at 8:17-21. If it is not an organized market such as an RTO, please explain how it differs.
- d. Please identify the counterparties who “value” the non-dispatchable resource as you describe at 8:17-21, and explain whether they all necessarily participate in the market(s) identified in response to subpart (b).

## PSC-015

Regarding: Valuing Intermittency  
Witness: LaFave

- a. Does your intermittency valuation model assume that differences between day-ahead market expectations of load and real-time observed load are a factor in determining the differential in day-ahead firm and real-time market prices? Please explain.
- b. If the model assumes that differences in day-ahead and realized load help determine the difference in day-ahead firm and real-time market prices, is NorthWestern claiming that all of the price variation that is explained by load variation should be attributed to dispatchable resources? Please explain.

- c. For the period analyzed by this model, please provide Excel-readable files including hourly observations on day-ahead firm market prices, real-time market prices, day-ahead expected NorthWestern load, real-time NorthWestern load, day-ahead wind schedules, hour-ahead wind schedules, and real-time wind production.

## PSC-016

Regarding: Integration Capacity Requirements Study  
Witness: LaFave

- a. Please provide the relevant parts of the “current Transmission System tariff” referenced at 9:15.
- b. Please submit the results of the comparative study referenced at 9:20-22.

## PSC-017

Regarding: Regulation Rate Basis  
Witness: LaFave

At 10:5-9 you state that DGGS should be the marginal resource for regulating reserves.  
At 16:3-4 you state that a zonal regulation method was used in the QF-1 dockets.

- a. Please explain what you mean by “zonal regulation method.”
- b. Why does a “zonal regulation method” preclude the use of DGGS incremental variable costs to estimate regulation costs?
- c. Regarding the “Regulation Percentage” of 18% used in Exhibit\_(BJL-1), p. 1, is it your testimony that the comparative study referenced at 9:20-22 (of your testimony) validates an 18% of nameplate capacity regulation capacity requirement regardless of where in NWE’s balancing area the wind resource locates?
- d. What would Greycliff’s regulation costs be under the “zonal regulation method?”

## PSC-018

Regarding: Transmission Upgrade Costs  
Witness: LaFave

At 10:18-20 you state that a PPA should reflect that any transmission upgrade costs associated with the project will be paid by Greycliff.

- a. If Greycliff interconnects to NorthWestern’s system, please describe the FERC orders or other authorities that will govern the interconnection agreement between NorthWestern and Greycliff, and provide a copy of a standard agreement, if available.

- b. If Greycliff interconnects to NorthWestern's system, will the procurement of network service be the responsibility of NorthWestern Energy Supply, or Greycliff?
- c. Please describe in detail any credits associated with reimbursement of transmission upgrade costs, and how the credits will be distributed between parties.
- d. If NorthWestern customers will ultimately be responsible for upgrade costs, please describe the tariffs and rates through which NorthWestern will recover the costs.

## PSC-019

Regarding: Cost-Effectiveness and Avoided Costs

Witness: LaFave

At 12:9-18 you compare cost-effectiveness and avoided costs.

- a. Regarding your testimony at 12:12, is the reference to "this context" the Greycliff CREP docket and/or applicable CREP statutes? If not, please explain.
- b. If NorthWestern compensates a QF at its avoided cost, is such compensation also cost-effective? Explain why or why not.
- c. If NorthWestern compensates a QF at a price that leaves NorthWestern's customers indifferent compared to the costs NorthWestern would incur but for purchasing from the QF, is QF purchase price cost-effective? Explain why or why not.
- d. Regarding your testimony at 12:17-18, if QF avoided cost determinations were reviewed for cost-effectiveness, what would be the appropriate measure of cost-effectiveness, if not NorthWestern's avoided cost? Please explain your answer.
- e. Please list all of the products, services and attributes involved in avoided cost and cost-effectiveness determinations (i.e., energy, capacity, capacity value, carbon, RECs, wind integration, contingency reserves, etc.), and identify those that are: (1) Only involved in the cost-effectiveness determination; (2) those that are only involved in the avoided cost determination; and (3) those that are involved in both.

## PSC-020

Regarding: Facility Size Impact on Avoided Cost

Witness: LaFave

- a. Please explain specifically how and quantify the extent to which the difference between a 26-MW and a 20-MW Greycliff "affects the avoided cost calculation." 14:4.

- b. What would you propose as the avoided cost of the Greycliff facility if it were still the 20-MW configuration that had been proposed when it was a CREP?

## PSC-021

Regarding: Avoidable Resources and PPAs

Witness: LaFave

At 15:9-10 you state: "Because it has a signed PPA, Greenfield must be included in the base model as part of the NorthWestern portfolio ahead of Greenfield."

- a. Please provide a report on the current status of the Greenfield project with respect to the specific milestones contained in the PPA.
- b. Given its current status, assess the likelihood that the Greenfield project will become commercially operational under the current PPA.
- c. You state that the Greenfield PPA creates a "lower avoided cost rate for Greycliff." Please quantify the impact on Greycliff's avoided cost if Greenfield is included or excluded from the existing portfolio. 15:9-12.

## PSC-022

Regarding: Greycliff Output Difference

Witness: LaFave

At an oral argument regarding Greycliff's motion for summary judgment, counsel for NWE indicated that there was a "material" difference as to avoided cost as a result of the output of the previous and new configuration of Greycliff.

If not already provided, please provide hourly expected output schedules for the previous and new configurations of Greycliff.

## PSC-023

Regarding: Avoidable Resources During Resource Surplus

Witness: Hansen

At 4:16-20 you argue that when the portfolio is long, and the market price is higher than the running cost of CU4, the QF power should be priced at the running cost of CU4.

- a. In practice, under such conditions, would NorthWestern sell CU4 power into the market to generate revenue credits for customers, rather than curtail CU4? If not, please explain.

- b. In practice, under such conditions, would NorthWestern sell the QF power into the market to generate revenue credits for customers? If not, please explain.
- c. Please explain why the difference between CU4 running cost and market should be credited to customers rather than to the QF.
- d. In Docket D2014.4.43, NorthWestern used the running cost of CU4 as the avoided cost under all conditions of resource surplus. Please explain why, in this proceeding, NorthWestern is using the market cost of power as the avoided cost under the joint conditions of resource surplus and CU4 costs in excess of market.
- e. At 13:3-13 of his rebuttal testimony in Docket D2014.4.43, Dr. Dorris cited FERC Order 69, 45 Fed. Reg. 12, 219 (Feb 25, 1980), as support for his testimony that NorthWestern's avoided cost under conditions of resource surplus was the running cost of CU4. Is NorthWestern relying on this FERC order to support its avoided cost estimates under surplus conditions in this proceeding? If not, please explain.

## PSC-024

Regarding: NPV Sensitivity and Avoided Cost Calculation

Witness: Hansen

- a. Please replace the values used for the price of energy, including the carbon price adder, in the valuation of the Hydros conducted as Exhibits\_\_(JMS-1) and (JMS-2) in Docket No. D2013.12.85, with the updated forecast of energy and carbon prices that you are using to calculate an avoided cost in this proceeding. What is the difference in NPV of the Hydros given the two different forecasts?
- b. Please replace the values used for the price of energy, including the carbon price adder, in the calculation of the avoided cost of Greycliff's output conducted in this docket, with the forecast of energy and carbon prices that Mr. Stimatz used to value the Hydros in D2013.12.85. What is the difference in avoided cost of Greycliff's output given the two different forecasts?

## PSC-025

Regarding: Colstrip Avoidance Methodology

Witness: Hansen

- a. Please explain whether there were any hours, and quantify the number of such hours, when NWE's owned and contracted resources were sufficient to meet NWE customer demand before the Hydros were acquired.
- b. If the answer to subpart (a) is that there were such hours, please explain why NWE's valuation of the Hydros did not incorporate the avoided fuel-cost methodology for Colstrip Unit IV that NWE proposes to use in this docket.

- c. Please identify the number of hours when NWE's resource portfolio would have been short without the Hydros but will be long with the Hydros, and identify for those hours the lowest and highest quartile and mean price of energy during those oversupplied hours, as well as the lowest and highest quartiles and mean oversupply in MWhs.

## PSC-026

Regarding: Carbon Cost Forecast  
Witness: Hansen

At 7:6-7 you state that the market forecast of carbon dioxide costs was updated from the 2013 Plan to model NorthWestern's avoided cost in this proceeding. Please describe the rationale for adjusting this forecast and supply all referenced authorities and forecasts.

## PSC-027

Regarding: Exhibit\_\_(LPH-1)  
Witness: Hansen

- a. For the "Average Sales Avoided Cost" column, do these figures represent the weighted average of market prices (when NorthWestern is long and CU4 running cost exceeds market), and CU4 running costs (when long and CU4 less than market)?
- b. For the "Average Offset Purchase Price" do these figures represent the weighted average of market prices when NorthWestern is short?

## PSC-028

Regarding: Market Price Forecast Change  
Witness: Hansen

In your opinion, what market fundamentals have changed to cause the approximately 20% decline in the market price forecast that you present in Table 1 of your testimony?

## PSC-029

Regarding: Contract Terms  
Witness: LaFave

You state that "[a]lthough this contract is similar to the CREP contract... there have been several changes made to the document..." Other than what you specifically identify in your additional response testimony filed on November 19, 2015, please list, describe and justify all changes in detail. BLJ 19:2-4.