



January 11, 2017

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**  
**MCC Set 2 Data Requests (004-009)**

Dear Mr. Rosquist:

Enclosed for filing is a copy of NorthWestern Energy's responses to the MCC Set 2 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, emailed to counsel of record, and sent via UPS overnight delivery to the remainder of the service list.

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

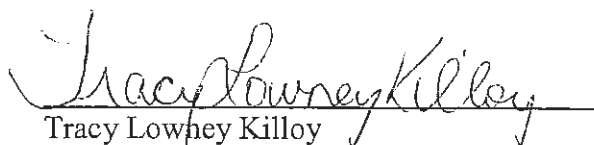
Sincerely,

Tracy Lowney Killoy  
Administrative Assistant

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of NorthWestern Energy's responses to the MCC Set 2 Data Requests (004-009) in Docket No. D2016.5.39, the QF-1 Avoided Cost Rate Filing, 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 Commission website, emailed to counsel of record, and sent via UPS overnight delivery to the attached service list.

Date: January 11, 2017

A handwritten signature in cursive script that reads "Tracy Lowney Killoy". The signature is written in black ink and is positioned above a horizontal line.

Tracy Lowney Killoy  
Administrative Assistant  
Regulatory Affairs

**Docket Service List**  
**Docket No. D2016.5.39**

**Will Rosquist**  
**Public Service Commission**  
**1701 Prospect Ave**  
**Helena MT 59620-2601**

**Jason Brown**  
**Montana Consumer Counsel**  
**PO Box 201703**  
**Helena MT 59620-1703**

**John Alke**  
**NorthWestern Energy**  
**208 N Montana Ave Suite 205**  
**Helena MT 59601**

**Tracy Lowney Killoy**  
**NorthWestern Energy**  
**11 E Park Street**  
**Butte MT 59701**

**Joe Schwartzenberger**  
**NorthWestern Energy**  
**11 E Park Street**  
**Butte MT 59701**

**Jenny K Harbine**  
**Aurora R. Janke**  
**Earthjustice**  
**313 East Main St.**  
**Bozeman MT 59715**

**DarAnne Dnning**  
**Luxan & Murfitt, PLLP**  
**P O Box 1144**  
**Helena MT 59624**

**Al Brogan**  
**NorthWestern Energy**  
**208 N Montana Ave Suite 205**  
**Helena MT 59601**

**Eric Christensen**  
**Cairncross Hempelmann**  
**524 Second Ave, Suite 500**  
**Seattle WA 98104**

**Mike J Uda**  
**Uda Law Firm, P.C.**  
**7 West Sixth Avenue**  
**Power Block West, Suite 4H**  
**Helena MT 59601**

**Ryan N. Meyer**  
**ElGuindy, Meyer & Koegel, PLLP**  
**2990 Lava Ridge Court, Suite 205**  
**Roseville CA 95661**

**Ryan R. Shaffer**  
**Meyer, Shaffer & Stepan, PLLP**  
**305 S. Fourth St. Suite 101**  
**Missoula MT 59801**

**NorthWestern Energy**  
**Docket No. D2016.5.39**  
**Application for Approval of Avoided Cost Tariff Schedule QF-1**

**Montana Consumer Counsel**  
**Set 2 (004-009)**

Data Requests received December 21, 2016

**MCC-004**    Regarding:    Exhibit JBB-2  
                  Witness:    John B. Bushnell

Please provide page 4 of Exhibit JBB-2 (showing capacity costs based on an ICE unit) with any errors corrected.

RESPONSE:

See the folder labeled "MCC-004" on the attached CD.

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**MCC-005**    Regarding:    Environmental Attributes  
                  Witness:    John B. Bushnell

To quantify NorthWestern's proposed \$/kWh rates for environmental attributes, please calculate the difference between columns on pages 3 and 4 of Exhibit JBB-4 (i.e., for both "Avoided Cost of Energy" and "Levelized Energy Rate by Contract Length" columns), for each resource type (i.e., for "hydroelectric and other," "intermittent wind," and "intermittent solar") and each year.

RESPONSE:

See the "MCC-005" folder on the CD attached to Data Request MCC-004.

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**MCC-006**    Regarding:    Capacity Credit for Solar  
                  Witness:    John B. Bushnell

Please explain why NorthWestern calculated a ten-year capacity credit for solar using a nameplate capacity of 2.612MW instead of 3MW. *See* JBB-12, Ex. JBB-6.

RESPONSE:

The indicative design study performed by DNV-GL for NorthWestern used a design capacity of 3 MWdc – which is equivalent to 2.612 MWac.

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**MCC-007**    Regarding:    Line Losses  
                  Witness:    Michael R. Cashell

On page 7 of your Rebuttal Testimony you state “Adding intermittent generating resources at the distribution level on NorthWestern’s system does not decrease transmission costs.”

- a.     Do you consider line losses to be “transmission costs” at either the transmission or distribution levels?
- b.     Could adding small solar projects to certain parts of the transmission and /or distribution systems decrease total line losses over a given period of time?
- c.     Please describe NorthWestern’s situational awareness of actual line losses on its system and specifically indicate whether NorthWestern knows what its actual line losses are at any given point in time or over a given amount of time. To the extent NorthWestern can calculate or estimate its current line losses, please provide those calculations or estimates for a recent period.

**RESPONSE:**

- a.     At the time of producing the Rebuttal Testimony, I was not thinking about line losses – transmission or distribution, when noting that transmission costs would not decrease. In fact, any differences in losses, up or down, on the distribution system would be extremely small at the transmission level and would not result in predictable unused transmission capacity. In fact, adding a 3-MW solar facility to a distribution circuit will most likely increase the losses on that distribution circuit when the facility is producing.
- b.     This is theoretically possible. Adding any distributed energy resource to the end of a feeder may reduce the load in certain segments of our system and under certain conditions, thus reducing line losses correspondingly, but only if it is designed, sized, located, and operated intelligently. Most, if not all, of the 3-MW solar farms have been placed opportunistically from the developer’s standpoint and not ideally for maximum system operational benefit.
- c.     Line losses are a moving target depending on system configuration, flows, and demand. We assume from past study work that 5% losses on the distribution system and 4% losses on the transmission system are reasonable averages. We do not have real-time situational awareness of losses on the distribution system nor on most of the transmission system. We do have real-time situational awareness of losses on the Colstrip 500 kV Transmission System.

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**MCC-008**    Regarding:    Levelized Energy Rates  
                  Witness:    Luke P. Hansen

Please explain why the levelized energy rates for hydro are lower than the levelized energy rates for wind and solar on page 9 of your Rebuttal Testimony.

RESPONSE:

The levelized rates for hydro are lower than for wind and solar due to the generation profile of hydro compared to the generation profiles for wind and solar. The hydro generation is greatest in the months of April, May, and June. These are months with lower prices compared to December, January, and August. The generation profile for solar is mostly during the heavy load hours when prices are higher. The wind generation is greater in December and January when the prices are higher than in April, May, and June.



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**MCC-009**    Regarding:    Carbon Price  
                 Witness:     Luke P. Hansen

Please explain why only 60% of the carbon price should be removed to calculate “an energy rate without carbon” instead of 100%. *See* LPH-10.

RESPONSE:

NorthWestern includes a carbon adjustment to the electricity price to account for estimated future costs associated with the regulation of carbon dioxide emissions. Sixty percent of the carbon price is added to the electricity price in the simulations.