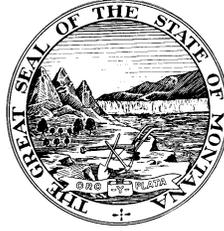


PUBLIC SERVICE COMMISSION
STATE OF MONTANA



Bill Gallagher, Chairman
Bob Lake, Vice Chairman
Kirk Bushman, Commissioner
Travis Kavulla, Commissioner
Roger Koopman, Commissioner

1701 Prospect Avenue
PO Box 202601
Helena, MT 59620-2601
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Fax #: 406.444.7618
<http://psc.mt.gov>
E-Mail: psc_webmaster@mt.gov

February 21, 2014

Mr. Patrick R. Corcoran, Vice President
Government and Regulatory Affairs
NorthWestern Energy
40 East Broadway
Butte, MT 59701

RE: Data requests in Docket D2013.12.85

Dear Mr. Corcoran,

Enclosed please find data requests of the Montana Public Service Commission to NorthWestern Energy (NWE) numbered PSC-131 through PSC-195 in the above-referenced Docket. Please begin the response to each new numbered data request on a new page. Please provide responses by March 7, 2014. If you have questions on PSC-131 through PSC-178, please contact Neil Templeton at (406) 444-6191 or Will Rosquist at (406) 444-6359. For questions on PSC-179 through PSC-195, please contact Bob Decker at (406) 444-7627.

Sincerely,

Neil Templeton
Regulatory Division
Montana Public Service Commission

Service Date: February 21, 2014

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

* * * * *

IN THE MATTER OF NorthWestern Energy's) REGULATORY DIVISION
Application for Approval to Purchase and)
Operate PPL Montana's Hydroelectric Facilities,) DOCKET NO. D2013.12.85
for Approval of Inclusion of Generation Asset)
Cost of Service in Electricity Supply Rates, for
Approval of Issuance of Securities to Complete
the Purchase, and for Related Relief

**DATA REQUESTS PSC-131 THROUGH PSC-195 OF THE
MONTANA PUBLIC SERVICE COMMISSION
TO
NORTHWESTERN ENERGY**

PSC-131

Regarding: Ascend Analytics and PowerSimm
Witness: Stimatz, Fine, Other

- a. Please provide a copy of NorthWestern's service agreement with Ascend Analytics.
- b. Please provide a list of NorthWestern's total compensation thus far to Ascend Analytics, separated into relevant categories; e.g. fixed retainer, charges for the Mustang analysis, charges for other analysis, etc.
- c. Please provide a list of total expected compensation going forward to Ascend Analytics, separated into relevant categories.

PSC-132

Regarding: Carbon Cost Distribution
Witness: Stimatz, Fine, Other

- a. Please explain why you chose to model carbon costs using a triangular probability distribution rather than a uniform or other continuous distribution. Be specific with respect to expected costs and benefits, and available prior information.

- b. Please explain why you chose to model carbon costs with a continuous distribution rather than a discrete distribution with positive probability at selected price points. For example, positive probability at zero, \$10, \$20, \$30, etc. Please be specific with respect to expected costs and benefits, and available prior information.
- c. Please describe in detail how a simulation draws from the triangular distribution to generate a sequence of carbon cost outcomes. For example, please provide the date and time of the first draw, the time intervals between subsequent draws (if any), independence of draws within a simulation, independence of draws between simulations, assumed escalation factors, and any other information used to generate a sequence of carbon costs for a given simulation.

PSC-133

Regarding: Triangular Distribution Method

Witness: Dorris or Fine

- a. What probability is assigned to a \$0 carbon price in the triangular distribution that PowerSimm uses to model carbon pricing?
- b. In response to PSC-072b, Mr. Fine states that “The stochastic simulation of the carbon price variable included low and high price trajectories that effectively capture the effects of earlier or later onset dates in the PowerSimm models.” Please explain whether PowerSimm incorporates any carbon price prior to the year 2021, and whether the model excludes a carbon price for years after 2021.
- c. Is the carbon price effect isolable as to its effect on the NPV of the portfolios resulting from the PowerSimm modeling? If not, please explain why. If it is, please provide the quantification of the carbon price’s effect on each of the six PowerSimm portfolio runs.

PSC-134

Regarding: PowerSimm Modeling

Witness: Stimatz, Fine, Other

- a. Does NorthWestern believe that modeling the six portfolio alternatives (see Table 1 in February 14, 2014 Supplement to the 2013 Electricity Supply Resource Procurement Plan) in PowerSimm with alternative assumptions concerning the mode and upper limit of the carbon cost distribution would be prohibitively expensive? If so, please explain why in detail.
- b. If the answer to part (a) is “yes,” should the Commission discount the value of the model for an inability to cost effectively produce information the Commission or intervenors need to evaluate whether granting preapproval is in the public interest?

- c. Should the Commission discount the value of the model for the purpose of evaluating whether preapproval of the Hydros acquisition is in the public interest, given that the Commission and intervening parties do not have access to the model for the purpose of checking the sensitivity of outcomes to alternative parameter and probability distribution specifications?

PSC-135

Regarding: Hedging Acquisition Costs

Witness: Stimatz

- a. If NorthWestern acquires the Hydros at the proposed price, and future market prices do not attain NorthWestern's projected levels, would NorthWestern's customers face out-of-market exposure?
- b. All else equal, is the value of the Hydros directly correlated with carbon costs? If not, please explain.
- c. All else equal, are the values of thermal assets such as Colstrip 3 inversely correlated with carbon costs? If not, please explain.
- d. Did NorthWestern examine the potential value of a combined hydro/coal acquisition to reduce customers' potential out-of-market exposure to lower than expected market prices due to lower than expected carbon costs?

PSC-136

Regarding: Thermal Asset Confidential Information Memorandum

Witness: Stimatz, Meyer, Other

- a. Did PPL provide a Confidential Information Memorandum (CIM) to NorthWestern regarding the attributes of its thermal assets and other thermal asset offer conditions of Project Mustang?
- b. If so, did NorthWestern use the CIM to inform thermal asset model specifications in its revenue requirement or DCF models?
- c. Did PPL provide an updated CIM at any further point prior to July 1, 2013?
- d. If so, did NorthWestern use the update CIM to inform or update thermal asset model specifications in its revenue requirement or DCF models?
- e. Please provide all Confidential Information Memoranda that were provided to NorthWestern for the purpose of evaluating the PPL thermal assets. If a complete, updated version is available that represents conditions and attributes following May 6, 2013, that version alone will suffice.

PSC-137

Regarding: AEO Carbon Forecast

Witness: Stimatz or Other

- a. Is the AEO carbon price forecast specifically predicated on GHG regulation through state plans pursuant to Section 111(d) of the Clean Air Act?
- b. Please describe, to the best of your knowledge, how AEO decided to use \$15/ton as a benchmark for carbon price in the GHG15 scenario that NWE adopted for use in its electricity price forecast.
- c. Why did NWE choose to adopt the GHG15 AEO scenario, rather than another AEO carbon-price scenario?

PSC-138

Regarding: NWE's Carbon Regulation Assumptions

Witness: Stimatz or Other

- a. By adopting a carbon price in its electricity price forecast, is NWE assuming that carbon will be regulated in some manner in the future?
- b. If the answer to subpart (a) is affirmative, does NWE believe that the vehicle for carbon regulation is likely to be the regulation of carbon emissions through Section 111(d) of the Clean Air Act?

PSC-139

Regarding: NWE's Use of Other Utilities' Carbon Scenarios

Witness: Stimatz or Other

- a. How many of the resource plans and IRPs that NWE consulted used multiple scenarios for CO₂ price analysis?
- b. How did NWE select which scenario of particular utilities to use in creating the table that it provided in response to PSC-073a?
- c. The Commission has reviewed the Puget Sound Energy 2013 IRP, which spells out 4 carbon price scenarios: Base, Low, High, and Very High. Which of these did NWE use for the purposes of creating Figure 6-11 and the spreadsheet provided in response to PSC-073a?
- d. Do any of the utilities use a triangular distribution of carbon price in their modeling, like NWE is using through PowerSim?

PSC-140

Regarding: NWE's Modification of Utilities' Carbon Price Forecast
Witness: Stimatz or Fine

- a. Please describe, for each column showing the nominal dollar price in the response of PSC-073a, how the dollars/ton was calculated (i.e., were these values taken directly from utilities' plans, or has NWE modified the information out of those utilities' plans in some way?)
- b. NWE uses the term "tonne" in Figure 6-11. Does it mean metric ton, and, if so, has NWE adjusted the carbon price estimates listed in the columns on the spreadsheet in response to PSC-073a appropriately?
- c. Please identify the carbon forecasts you considered but did not include in your representation on Figure 6-11, which you mention in response to PSC-073c.

PSC-141

Regarding: Carbon Price Effect on NPV
Witness: Stimatz

- a. The total net present value of the assets evaluated in Ex. JMS-1 is approximately \$825 million. Please identify the amount of net present value that results from the inclusion of a carbon price in 2021 in your analysis.
- b. The total net present value of the assets evaluated in the spreadsheet provided in response to PSC-066 is approximately \$735 million. Please identify the amount of net present value that results from the inclusion of a carbon price in your DCF analysis.
- c. In your response to PSC-093b, you appear to state that the carbon cost forecast included in the spreadsheet in response to PSC-066 is not the carbon cost forecast included in the analysis you present in Exs. JMS-1 and -2. Please confirm that is the case.
- d. Relative to your answer in sub-part c, what is the cost in dollars/ton that is assumed for carbon price in the spreadsheet produced in response to PSC-066.

PSC-142

Regarding: Electricity Price Forecast
Witness: Stimatz

- a. Does the forward electricity price curve from Mid-C that you use in your analysis include costs associated with CO₂ besides the price adder NWE includes in 2021?

- b. If the answer to (a) is “no,” how can NWE be sure that the forward-looking Mid-C electric price strip does not already include a carbon adder that market participants are themselves already forecasting?

PSC-143

Regarding: DCF Analysis

Witness: Stimatz

The DCF analysis included with your testimony shows a valuation of less than the \$900 million which NWE is proposing to establish as the rate base value. Please explain why the Commission should adopt a value for its rate base that is higher than the value reflected in your DCF model

PSC-144

Regarding: Market Heat Rates

Witness: Stimatz, Dorris, or Other

NWE states in response to PSC-075a that “the methodology using the projected market heat rate results in an average factor for the period of 2021 through 2033 of 0.65, which is slightly higher than the 0.6 used in the Plan.” Please identify the difference in NPV between your two analyses (i.e., PowerSimm and DCF) resulting from the use of these two different variables.

PSC-145

Regarding: REC Prices

Witness: Unknown

In Order 7199d at ¶42, the Commission held that “RECs represent ‘all of the environmental attributes associated with a megawatt-hour unit of electricity production’ See Mont. Code Ann. 69-3-2003(14)...The Commission finds that a resource’s CO₂ emissions or lack thereof are an environmental attribute.”

- a. Do REC prices on Table 5.4 of the 2013 plan include the cost/value of avoided carbon?
- b. If the answer to (a) is no, please explain why the REC prices do not include the cost/value of avoided carbon, and how you can be sure that they do not include market participants’ perception of the value of avoided carbon.

PSC-146

Regarding: Appropriate Comparisons in Pre-Approval Dockets
Witness: Unknown

The Commission, in its Order pre-approving the Spion Kop resource, compared the resource to alternatives with no carbon cost. Elsewhere, the Commission noted that “the lowest-cost fully weighted alternative to which the Commission compared Spion Kop in order 71591 was a blended market-CCCT avoided cost without CO₂ costs.” Order 7199d, ¶43.

Does NWE agree with Orders 71591 and 7199d that it is appropriate to compare a resource proposed for pre-approval against an alternative with no assumed carbon cost?

PSC-147

Regarding: Forward Price Curves
Witness: Unknown

- a. Please provide color copies of the graphs and charts on pages MCC_006_00000058 and MCC_006_00000059.
- b. Please provide in electronic form the data used to populate the graphs referred to in subpart a.
- c. With respect to the Base Carbon Penalty Adder¹ on page MCC_006_00000021, are these numbers the same as the carbon price forecast used in Exhibits JMS-1 and -2? If not, please explain how the numbers on this page were derived, and why NWE decided to depart from using them.

PSC-148

Regarding: Claims of Privilege
Witness: Hines, Corcoran, Other

- a. Explain what is meant by the phrase “Attorney Work Product” in the redacted portions of MCC_006_00000168 through MCC_006_00000170. Do you mean that the material is covered by attorney-client privilege, or by the work product doctrine, or both? If the material was prepared in anticipation of litigation, please refer to the litigation to which you refer.
- b. Please describe why “Pat Corcoran’s MPSC memo” referred to on page MCC_006_00000111 has not been provided. If it is withheld under a claim of privilege, please describe the privilege, including (if a work product doctrine claim) the litigation to which it refers.

- c. Numerous documents written by Gary Wiseman and presented to the NWE Board of Directors have not been provided, and are marked as privileged in the privilege log. Please provide the basis of the claim of privilege (i.e., attorney-client or work product or both?) and describe for each document, if it is a claim related to anticipated litigation, the litigation to which the claim refers.

PSC-149

Regarding: Bill Impacts

Witness: Unknown

On page MCC_006_000000117, a variety of expected bill impacts are listed as they relate to a bid for Project Mustang.

- a. Please confirm that the “Project Mustang” referred to here is the bid on the Hydros.
- b. Please explain how NWE calculated the “Est. Customer Bill Impact (vs Current)” for 2014-2016 and the “Est. Customer Bill Impact (vs Projected)” for 2014-2016.
- c. Were the increases reflected here intended to represent cumulative bill impacts (i.e., an increase of 13.2% over the projected bill if a \$876 million rate base value was accepted, followed by another 6.0% increase the following year)?
- d. Are there newer estimates than this of forward bill impacts for the years of both 2015 and 2016? If so, please provide them.

PSC-150

Regarding: Follow-up to response MCC-006

Witness: Unknown

In NorthWestern’s response to data request MCC-006, p. 109 of 422, there is a statement that reads, “The Mustang 2.0 acquisition will require approval of the MPSC. The type of regulatory approval is being evaluated.”

- a. Assuming a “require[d] approval of the MPSC” is being sought in this proceeding, please explain what requires NorthWestern to seek such approval.
- b. Please identify what other “type[s] of regulatory approval [were] being evaluated.”
- c. Please provide the Pat Corcoran MPSC memo referred to on p. 111 of 422 of the response to data request MCC-006.

PSC-151

Regarding: CCCT Modeling Assumptions in RPP

Witness: Unknown

- a. For the purposes of its 2013 RPP, did NWE consider modeling a CCCT that was jointly owned by NWE and other utilities, in order to achieve greater economies of scale?
- b. If the answer to (a) is no, please explain why it did not engage in this analysis.

PSC-152

Regarding: Transmission Service

Witness: Unknown

- a. Will the transmission rights that PPLM now uses to bring the electricity generated at the Hydros to its wholesale customers transfer to NWE if it acquires the Hydros?
- b. If the answer to (a) is no, please explain how NWE plans to obtain sufficient transmission service to deliver the Hydros' electricity to its customers.
- c. Do NWE's valuation and revenue requirement models include transmission expenses? If so, please identify where those expenses are included.

PSC-153

Regarding: Public Perception of Resources

Witness: Unknown

- a. What if any feedback has NWE acquired in recent years, via polls, surveys or other information gathering techniques, from its customers, or the Montana public at large that could be construed in favor of, or adverse to, the hydro acquisition as a "green", "clean" "renewable", "sustainable" "carbon free" or "environmentally friendly" addition to the generation portfolio?
- b. What if any feedback has NWE acquired in recent years, via polls, surveys or other information gathering techniques, from its customers, or the Montana public at large that could be construed in favor of, or adverse to the suggested comparable alternatives to the hydro acquisition?

PSC-154

Regarding: 2013 Electricity Supply Resource Procurement Plan
Witness: Stimatz

- a. On p. 4-11, in Volume 1, NorthWestern states that when it purchased the transmission and distribution utility from Montana Power Company it had to rely entirely on market purchases to provide energy and capacity. NorthWestern further states that it has since taken steps to provide resource adequacy, but still relies heavily on market purchases to meet peak load obligations. Do these statements mean that market purchases can provide energy and capacity but cannot provide resource adequacy? If not, please explain.
- b. Does NorthWestern believe that only utility-owned resources within its balancing authority area are capable of providing resource adequacy? If so, please explain why.
- c. On p. 4-12, in Volume 1, NorthWestern refers to a 2012 forecast in which the Pacific Northwest Adequacy Forum identified a 350 MW capacity deficit by 2017. Provide any subsequent forecasts from the adequacy forum, or provide a web address where such forecasts are available.
- d. On p. 4-12, in Volume 1, NorthWestern states that as the region's surplus diminishes, relying on market purchases to meet peak demand will be more expensive and physical reliability risks will increase. Does this statement refer to the region's surplus of energy, capacity or both?
- e. Explain to what extent physical reliability for NorthWestern's customers is determined by the relationship between load and generation in its balancing authority area?

PSC-155

Regarding: 2013 Electricity Supply Resource Procurement Plan
Witness: Stimatz

- a. Provide the numerical natural gas prices for the 2013 NPCC Medium Case and the 2013 EIA AEO shown in Figure 5-1 on p. 5-3, in Volume 1, in MS Excel format if available.
- b. Explain the factors contributing to the apparent change in the rate of increase in natural gas prices beginning in about 2021 in NorthWestern's 2013 RPP PowerSimm Mean forecast, shown in Figure 5-1 on p. 5-3, in Volume 1.

- c. Provide the numerical electricity prices for the 2013 NPCC Delayed Federal CO₂ Case shown in Figure 5-2 on p. 5-4, in Volume 1, in MS Excel format if available.
- d. Identify the source of the NPCC natural gas and electricity prices shown in Figures 5-1 and 5-2 and, if available, provide a web address where the prices are located.
- e. Volume 2, Chapter 4, p. 4-15, of the 2013 Plan describes the payoff diagrams that appear on the following pages. The description states that lines below the X-axis show the net costs (i.e. negative revenues) of the hydro and CC assets in their respective portfolios. Please expand the explanation of the payoff diagrams and, in particular, what the plots below the X-axis are intended to show.

PSC-156

Regarding: 2013 Plan, updated forward price information

Witness: Stimatz

- a. Provide the same forward price information provided in response to data request PSC-011b, Attachment 2, updated to reflect market expectations on or about February 7, 2014. Provide additional updates on or about the same day in each subsequent month until the hearing in this proceeding.
- b. Confirm that the forward natural gas price curves referred to on p. 5-2 in Volume 1 are the same as those used in Exhibit_(JMS-2) to estimate Mid-C market prices? If different forward natural gas prices are used in the resource procurement plan, please provide supporting documentation for those forward prices, including the date on which the forward prices were assembled and the source(s) of the forward prices.
- c. Provide a MS Excel version of the AECO Forecast Changes table on p. 193 of 408, in Volume 2, Chapter 1, of the 2013 Plan. If NorthWestern has data for time periods after May 28, 2013, provide that data.

PSC-157

Regarding: Avoided costs

Witness: Stimatz

- a. Provide a copy of the Excel spreadsheet model used to update QF-1 rates in Docket D2012.1.3 in July, 2013, in compliance with Order 7199d.
- b. Provide the Excel spreadsheet underlying Exhibit__(JBB-2) in the prefiled direct testimony of John Bushnell in Docket No. D2014.1.5, with all formulas intact.

- c. Provide the avoided cost(s) NorthWestern currently plans to use to evaluate the cost effectiveness of future electric energy efficiency measures and programs, including supporting work papers and thorough explanations of economic assumptions.

PSC-158

Regarding: PowerSimm modeling and results, CO₂ cost assumptions

Witness: Stimatz

- a. Confirm that, for purposes of supporting its application in this proceeding, NorthWestern did not perform, and did not ask Ascend Analytics to perform, sensitivity or scenario analyses with PowerSimm of the impact on average net present value portfolio costs of different CO₂ emissions cost assumptions, such as different assumptions for the expected cost or distribution of costs. Otherwise, please explain.
- b. Did NorthWestern intend in August, 2013 to model at least three different greenhouse gas cases in PowerSimm to capture a variety of carbon futures and provide insight into how resources and portfolios would perform. If so please explain, why it did not do so.
- c. Has NorthWestern made investments in any aspect of its Montana utility operations based on any CO₂ cost or risk analysis which were not pre-approved by the Commission and which put investors' capital at risk? If so, please provide the CO₂ cost or risk analysis performed in advance of the investment(s).
- d. Confirm that NorthWestern did not perform, and did not ask Ascend Analytics to perform, sensitivity or scenario analyses with PowerSimm of the impact on average net present value portfolio costs of the following fixed and variable cost assumptions: timing of CO₂ costs, magnitude of CO₂ costs, expected hydro capital upgrades and operations and maintenance costs. Otherwise, please explain.

PSC-159

Regarding: PowerSimm modeling and DCF model

Witness: Stimatz

- a. Confirm that NorthWestern did not perform, and did not ask Ascend Analytics to perform, sensitivity or scenario analyses with PowerSimm of the impact on average net present value portfolio costs of different market expectations for natural gas and electricity prices, such as a natural gas price expectation consistent with the Northwest Power and Conservation Council's 2013 Medium Case shown in Figure 5-1, p. 5-3 in Volume 1 of NorthWestern's 2013 Electricity Supply Resource Procurement Plan. Otherwise, please explain.

- b. How would the DCF value of the Hydros change if NorthWestern assumed a \$15/ton CO₂ emissions cost starting in 2021 and escalating at 5% per year?
- c. How would the DCF value of the Hydros change if NorthWestern assumed a \$10/ton CO₂ emissions cost starting in 2021 and escalating at 5% per year?
- d. How would the DCF value of the Hydros change if NorthWestern assumed no cost of CO₂?
- e. How would the DCF value of the Hydros change if NorthWestern used the natural gas forecast method approved in Order 7199d and June 7, 2013 to project forward gas and electricity prices?

PSC-160

Regarding: PowerSimm modeling and DCF model

Witness: Stimatz

- a. Is PowerSimm capable of performing sensitivity or scenario analyses of the type described in part (a) of the previous data request?
- b. If NorthWestern has not performed the analyses described in parts (b) – (e) of the previous data request, is the Excel spreadsheet “Exhibit_(JMS-1) and (JMS-2) & p. JMS-20” in the “Joseph Stimatz” folder on the CD labeled “Witnesses Electronic Supporting Data” the appropriate model with which to perform such analyses? If not, please explain.
- c. If the answer to part (b) of this data request is “yes” how should the Excel spreadsheet be modified to determine how the DCF value of the Hydros would change if NorthWestern assumed an alternative CO₂ emissions cost?
- d. If the answer to part (b) of this data request is “yes” how should the Excel spreadsheet be modified to determine how the DCF value of the Hydros would change if NorthWestern assumed an alternative natural gas price forecast?

PSC-161

Regarding: PowerSimm modeling and DCF model

Witness: Stimatz

Regarding the table labeled Net Present Value of Portfolio Costs, 2015-2043, in your supplemental testimony, please confirm that the difference in the Current + Hydro costs

compared to the corresponding table in your prefiled direct testimony (\$5,851 vs. \$5,856) is due to the updated wind production data set described on p. 3 of your supplemental testimony. Otherwise, please explain.

PSC-162

Regarding: PowerSimm model results

Witness: Stimatz

- a. For the best performing Current + Hydro portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and availability, and load. Please provide these data for each week for each year of the simulation.
- b. For the worst performing Current + Hydro portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and availability, and load. Please provide these data for each week for each year of the simulation.
- c. For an average performing Current + Hydro portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and availability, and load. Please provide these data for each week for each year of the simulation.

PSC-163

Regarding: PowerSimm model results

Witness: Stimatz

- a. For the best performing Current + CCCT + Wind 2025 portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and availability, and load. Please provide these data for each week for each year of the simulation.
- b. For the worst performing Current + CCCT + Wind 2025 portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and

availability, and load. Please provide these data for each week for each year of the simulation.

- c. For an average performing Current + CCCT + Wind 2025 portfolio simulation please provide the randomly drawn values for the following explanatory variables: natural gas market price, on-peak electricity market price, off-peak electricity market price, CO₂ cost per ton, hydro generation, wind generation, thermal plant generation and availability, and load. Please provide these data for each week for each year of the simulation.

PSC-164

Regarding: PowerSimm model results

Witness: Stimatz

- a. How many simulations were performed for each portfolio?
- b. Does NorthWestern believe the number provided in part (a) is sufficient? If so, please explain why.
- c. For each year of the analysis period provide the percentage of simulations for which the Current + Hydro portfolio has a lower cost than the Current + CCCT + Wind 2025 portfolio.
- d. For each year of the analysis period provide the percentage of simulations for which the Current + Hydro portfolio has a lower cost than the Current portfolio.

PSC-165

Regarding: PowerSimm model capability

Witness: Stimatz

- a. Is PowerSimm capable of supporting optimal capacity expansion planning, based on a dynamic programming model that considers all potential capacity “states” for a specific iteration?
- b. If the answer to part (a) is “yes,” was this capability used in the actual analysis, or was new capacity (e.g., hydros or CCCT) assigned manually in specific years of the study horizon?
- c. If the answer to part (b) is that new capacity was assigned manually in specific years, please explain how the timing of new capacity was determined and why NorthWestern believes the chosen date is optimal.

PSC-166

Regarding: Insurance coverage

Witness: Unknown

NorthWestern's September 2013 "Corporate Risk Appetite Statement" filed in the response to MCC-006 lists as item #6 under the column titled "Project Mustang II Analysis" a statement that the transaction will not be closed without proper insurance coverage. Please describe fully what constituted "proper insurance coverage" in NorthWestern's opinion that allowed the transaction to be closed.

PSC-167

Regarding: Newfoundland clean room

Witness: Rhoads

Provide the documents in the Newfoundland clean room as well as an index to the clean room.

PSC-168

Regarding: Purchase and sale agreement

Witness: Rhoads

Are there warranties and/or guarantees of any sort that remain in effect relating to the equipment and materials involved in the major upgrades undertaken by PPLM in the last five years? If so, please describe them.

PSC-169

Regarding: Impact of depreciation on revenue requirement

Witness: Unknown

- a. NorthWestern has based its Application on a 40 year depreciable life for the hydro assets. If one or more hydro units cannot be cost effectively relicensed or fails to remain operational for the full 40 year depreciable life of that hydro asset, how does NorthWestern anticipate addressing that possible situation in subsequent rate cases or compliance filings? Please describe the anticipated actions by NorthWestern if this situation occurs.
- b. If a hydro unit fails to remain operational for the full 40 year depreciable life please explain in detail if the remaining depreciation will be written off and if NorthWestern will request that the remaining depreciation be recovered from ratepayers?

- c. Has NorthWestern undertaken independent depreciation studies to verify on average the 11 hydro units have a useful remaining life of 40 years? If yes, please provide that documentation. If not, why not?

PSC-170

Regarding: Energy Supply Participation in Project Mustang

Witness: Unknown

- a. Please specify the names of NorthWestern Energy Supply function employees who were aware of or participated in Project Mustang before NorthWestern issued its Request for Proposals for firm electricity supply on May 9, 2013.
- b. Did NorthWestern's knowledge of Project Mustang inform its description of resource needs described in the May 2013 RFP? Please explain in detail.
- c. Please explain why NorthWestern did not request proposals for firm electricity supply for periods beyond December 31, 2017.
- d. Does NorthWestern believe that power purchase commitments to provide firm electricity supply for periods of five years or more are less reliable or otherwise less desirable than owned and rate-based resources? Please explain thoroughly.

PSC-171

Regarding: Historic Hydro Generation

Witness: Unknown

Please provide the PowerSimm input of historic hourly generation for the hydro facilities.

PSC-172

Regarding: Transaction Risk and Pre-Approval

Witness: Rowe

Please explain why "NorthWestern cannot assume the risk of closing a transaction of this size in advance of the Commission's approval while continuing to meet [its] other obligations to customers."

PSC-173

Regarding: Regulatory Approval, Competitive Disadvantage
Witness: Bird

On pages 13 and 14 of your testimony, you refer to required regulatory approvals and “the time required to obtain regulatory approval.” You state, “NorthWestern needed to ensure that it made a competitive bid for the hydros to overcome this concern” that it was “at a competitive disadvantage” compared to other buyers.

- a. Please explain why NorthWestern believes this proceeding involves a regulatory approval that is required.
- b. Please describe each of the “regulatory risks” to which you are referring at BBB-14:5.
- c. Please confirm that NorthWestern’s need “to overcome this concern” caused it to increase its bid for the Hydros.
- d. Please quantify how much was added to NorthWestern’s final bid “to ensure that it made a competitive bid for the hydros to overcome this concern.”

PSC-174

Regarding: Capacity and Ancillary Services
Witness: Stimatz

- a. Given that “[T]he Hydros are primarily run-of-river facilities,” what is the capacity value of each? In other words, how much of the nameplate capacity of each plant can be counted on as available firm capacity for purposes of long-term planning?
- b. Following up on your response to PSC-044, when and how does NorthWestern intend to determine “whether the Hydros are capable of providing other ancillary services”?

PSC-175

Regarding: Employees
Witness: Unknown

How many of the employees listed in Schedule 3.12(a) in Exhibit_(APP-2) (*see* p. 131-132) will not be offered positions at NorthWestern?

PSC-176

Regarding: Surplus Electricity Supply
Witness: Hines

- a. Following up on your response to PSC-069a, how would the “mix of counterparties, delivery terms, delivery points, and pricing” for selling excess power differ from NorthWestern’s current hedging strategy for purchases, if at all?
- b. Specifically, what proportion of the excess power does NorthWestern intend to sell at spot market prices, if any?
- c. Specifically, what proportion of the excess power does NorthWestern intend to sell at fixed prices over quarterly, monthly, and daily terms?

PSC-177

Regarding: Concerns about Surplus Electricity Supply
Witness: Hines, Meyer, Kevin Markovich, etc.

Graph 1 on JDH-6 shows that acquisition of the Hydros will cause NorthWestern’s electricity supply to exceed demand in certain hours.

- a. Please confirm that NorthWestern has previously had concerns about supply exceeding demand, and briefly summarize those concerns.
- b. Please explain how those concerns relate to the Hydro acquisition, if at all.
- c. Please confirm that, based on the forward market prices NorthWestern used to evaluate the Hydro, there will be losses (i.e., a net cost) associated with sales of excess supply into the market (i.e., that a less than volumetrically-proportional amount of the revenue requirement is expected to be offset by revenue from sales of excess power).
- d. Please describe the conditions, if any, under which NorthWestern will curtail production from the hydro facilities in order to avoid having to sell excess power, and how that curtailment policy differs from existing curtailment provisions that apply to other resources in NorthWestern’s current portfolio.
- e. NorthWestern recently stated, “The Commission also needs to consider the impact of § 69-8-426, MCA (2013),” which “provides that any assets acquired by NorthWestern pursuant to Title 69, Chapter 8 ‘must be used by the public utility to serve and benefit customers with the public utility’s Montana service territory.’” NWE Br. Regarding Discovery Issues pp. 9-10 (Feb. 12, 2014). NorthWestern then expressed concern about having “significantly more resources than needed to serve

customers in its service territory, [which] would have made NorthWestern a merchant generator, and would therefore violate the bankruptcy stipulation. Arguably, this section would preclude the Commission from approving any transaction that included the hydro and coal assets.” *Id.* To what extent do these concerns not apply to the Hydro acquisition?

PSC-178

Regarding: Levelized Hydro and Market Purchases
Witness: Meyer

Referring to Exhibit_(TEM-2):

- a. Please confirm that the 5, 10, 20 and 30-year levelized price of the Hydros is higher than the 5, 10, 20 and 30-year levelized price of market purchases.
- b. Please confirm that the 5-year levelized price of market purchases is \$29.43/MWh less than the 5-year levelized price of the Hydros.

PSC-179

Regarding: Project drawings
Witness: Rhoads

Please provide the following drawings on each Project:

- a. General Arrangement (GA) of the Project
- b. GAs of the powerhouse including Plan & Section views
- c. 1-Line diagrams
- d. Nameplate data, in-service-date, and relevant test data for all Generator Step-up Units.

PSC-180

Regarding: Compliance Obligations in CapEx
Witness: Rhoads

Pages 8-10 of the 9-06-2013 Due Diligence Report (Exhibit (WTR-2.3)) outline various license compliance obligations and associated MOUs.

- a. Have you accounted for the anticipated costs of these compliance obligations in your CapEx projections?
- b. If so, please provide details.

PSC-181

Regarding: Thompson Falls Relicensing Cost
Witness: Rhoads

- a. Has NWE estimated costs for the FERC relicensing process for the Thompson Falls facility in 2025?
- b. If yes, please provide details.
- c. If no, from which category of expenditure – CapEx, O&M, or other – does NWE anticipate that relicensing costs would be made, and during which years?

PSC-182

Regarding: Environmental Protection Improvement Cost
Witness: Rhoads

Page 12 of the 9-06-2013 Due Diligence Report (Exhibit (WTR-2.3)) notes that there are areas where environmental protections, particularly related to the storage and treatment of oils and other potential contaminants could be improved.

- a. Has NWE incorporated costs for making such improvements and reducing the risk of environmental spills in CapEx, O&M, or other budget projections?
- b. If so, please provide details.

PSC-183

Regarding: Kerr Sale Contingencies
Witness: Rhoads

- a. Has NWE conducted any analysis to examine the potential implications if the Kerr project is not sold and annual rent payments are continued as a project expense?
- b. If so, please provide details.

PSC-184

Regarding: Aging Equipment and Structures
Witness: Rhoads, Stimatz

- a. Has NWE considered the impact of the “aging equipment and structures,” referred to in the Independent Engineer’s Report, in its forecast of costs for the DCF model?
- b. If so, what investigations and analyses were performed to develop the cost estimates?
- c. Has NWE evaluated how the aging of certain equipment groups, such as seal clearances, wicket gate leakage, changes in runner blade profiles, and others, may affect facility performance and decrease production?
- d. Did NWE take into consideration the new power plant and generating unit at Rainbow in developing the DCF cost forecast?

PSC-185

Regarding: Hydrologic Data
Witness: Rhoads

- a. In developing average annual generation production for 10-, 25-, and 60-year historical periods cited in response to PSC-012(b), did NWE evaluate hydrologic and streamflow data to correlate annual production values to the variability in river flows?
- b. Has NWE considered the possibility that the “more conservative system production” during the 10-year period of 2002-2011 (see response to PSC-012(b)) may have occurred due to climate change or other large-scale environmental changes?
- c. Has NWE investigated the potential for future changes in regulatory requirements or environmental conditions to alter generation output of the hydro facilities, considered either individually or as a system? If so, what were the scope and results of the investigation?

PSC-186

Regarding: Capital Expenditures
Witness: Rhoads

- a. The response to PSC-018(b) states that PPLM provided a detailed account of the projects and costs for the years 2008-2012. If that account differs from the information presented on pages 175-176 of the January 2013 Shaw Report (Ex. WTR-2.1), please provide a copy of the PPLM detailed account of the projects and costs for the years 2008-2012.
- b. Referring to the January 2013 Shaw Report (Ex. WTR-2.1), the historic total capital expenditures for the period 2008 through 2011 that are presented on pages 172-174 average \$6.4 million per year (all values exclude Kerr and are rounded to the nearest \$0.1 million). Subtracting out the historic major capital expenditures presented on pages 175-176 leaves an average “base” capital expenditure of \$5.2 million per year, or \$6.4 million in 2018 dollars. The capital budget presented in Ex. JMS-1 includes overhauls and rewinds for the years 2018-2026. The cost of overhauls and rewinds in some years approaches or exceeds the “base” capital budget in some years (\$5.3 million in 2020, \$6.7 million in 2021). Is NWE’s analysis robust enough to absorb the cost of overhauls, rewinds, and the “base” capital budget without materially affecting the DCF results?

PSC-187

Regarding: Unanticipated Capital Expenditures
Witness: Rhoads

- a. The response to PSC-076, parts (a) and (b), states that significant unanticipated expenditures are generally not modeled into the cap-ex forecasts and that, to the extent possible, the existing cap-ex budget will be used to assimilate these types of unanticipated costs. Is this approach reasonable given the experience with the Hebgen intake failure?
- b. The response to PSC-064(c) states that past O&M and capital programs have proven successful for the hydro system and the programs going forward are consistent with those efforts. Further, in the “Executive Summary – Hydro Plants” of the “Shaw’s Independent Engineer’s Report,” on pages 2-3 (NWE response to MCC-006) states the following about the civil structures:

These structures do incur damage related to environmental conditions and aging. Recently, there has been a rock fall at Madison, and damage at Thompson Falls due to ice formation in the reservoir. Also, stop logs have failed at Thompson Falls and the Hebgen Intake Tower. These situations have been remediated, but it is likely that similar conditions can produce a continuing and varying level of unplanned maintenance and unexpected costs throughout the system.

Does this reliance on historic costs adequately capture the expenditures that your independent engineer said will likely be necessary to maintain the structures as the hydro system ages?

PSC-188

Regarding: Follow-up to PSC-064, Industry Practices

Witness: Wiseman

- a. In the due diligence assessments of several hydro projects that you conducted for banks (Ex. WTR-1, p. 5), did you forecast short- and long-term capital expenditures for the projects in the same manner as NWE has done in this case, which is described generally in NWE's response to PSC-018(b)?
- b. Please explain fully the analysis and review you have conducted in those past hydro-related engagements in order to develop your cap-ex forecasts for your bank clients.
- c. In your experience as a due diligence assessment project manager, have your clients required you to obtain or to develop independent opinions of forecasted capital expenditures? If so, please provide details.
- d. In your experience as a due diligence assessment project manager, would your bank clients have considered NWE's method of forecasting short- and long-term capital expenditures for the hydro facilities it proposes to purchase to be one of robust analysis?
- e. Would a cap-ex forecast arrived at by using NWE's approach and then corroborated or adjusted by obtaining an independent forecast of capital expenditures be considered more robust? Please explain why or why not.

PSC-189

Regarding: Follow-up to PSC-064, Industry Practices

Witness: Wiseman

In your experience of conducting due diligence assessments of multiple hydro projects that are proposed to be acquired in one transaction, is it your usual practice when developing a long-term cap-ex forecast to aggregate the hydro facilities and provide an aggregated cap-ex forecast, as opposed to providing a forecast for each facility separately?

PSC-190

Regarding: Arctic Grayling

Witness: Rhoads

The NWE response to MCC-009, page MCC_009_00000213, an email message from William T. Rhoads to Dan Rausch, identifies the Arctic grayling issue as a topic for further discussion between NWE and PPLM. Mr. Rhoads states: “We anticipate that at some point in the next few years the Arctic grayling will be listed, triggering a Section 7 consultation process, requiring major studies of the impacts of plant operations on Arctic grayling, and eventually leading to significant changes in plant operations and major construction projects (e.g., fish ladder).” However, in response to PSC-031, NWE states no allowance for possible Arctic grayling-related costs was made in the models because of uncertainty about the listing and the owner’s responsibility, and the time period that would elapse before costs were incurred, which would occur over several years.

- a. Please explain fully PPLM’s response to NWE’s initial concern that this issue could result in significant future costs being incurred that led to NWE not including them as potential future costs in the models.
- b. Have you completed any contingency planning or sensitivity analyses on the potential for future fish passage requirements associated with an Arctic Grayling listing?
- c. If so, please provide details.

PSC-191

Regarding: Arctic Grayling

Witness: Rhoads

- a. Does the “status review” begun in Nov. 2013 of the arctic grayling’s status under the Endangered Species Act affect the waterway(s) on which the Hydros are located?
- b. What have NWE and PPLM done to monitor this proceeding and did either submit comments by the Dec. 2013 deadline?
- c. The fish’s current designation under the ESA is “warranted but precluded.” Please describe your understanding of what this designation means.
- d. Has NWE considered the types of remedial actions that could be required of the Hydros’ owner if the arctic grayling is listed as an endangered species? Please discuss the results of that consideration.

PSC-192

Regarding: Unforeseen Capital and O&M Expenses

Witness: Rhoads or other

You note in response to PSC-076b that “significant unanticipated expenditures are generally not modeled into the cap-ex forecast,” and are therefore presumably not incorporated into the estimated levelized cost of the facilities.

If the Commission concludes in this proceeding that the forecast levelized price is reasonable based on NWE’s representations about the capital and operations budget, but subsequently the capital or operational needs turn out to be greater, would it be appropriate for the Commission to expect that the difference would be paid by shareholders as a risk associated with their investment?

PSC-193

Regarding: Rainbow Development

Witness: Rhoads

- a. In response to PSC-079b, NWE confirms that it believes that the Rainbow Upgrade was undertaken as a cost-effectiveness project. Please provide any evidence that you possess that forms the basis for this contention.
- b. In your experience, is it ordinary for investors in hydroelectric projects to spend nearly \$10 million per megawatt of installed capacity, as PPLM apparently did in its Rainbow Upgrade (\$245 million capital expenditure, for a 25-MW incremental capacity improvement, according to PPLM’s website:
<http://www.pplmontana.com/producing+power/power+plants/Rainbow+Dam.htm>)

PSC-194

Subject: Liabilities of Potential Failure Modes

Witness: Rhoads

- a. What has NWE done to identify and quantify the financial exposure associated with the Potential Failure Modes (“PFMs”) identified for the hydro facilities in WTR-5.4?
- b. Please provide estimates of potential financial liabilities in your possession, if any, relating to the risks associated with PFMs referred to in (a).
- c. Has NWE established an upper bound for the cost of remedial measures to meet FERC safety criteria for the Hydros?
- d. Please identify the entities, if any, that will insure NWE against potential liabilities associated with the identified in (a).

- e. Has NWE assigned a percentage risk of any of the risks spelled out in the PFMs actually occurring in the future? If so, please identify that percentage and describe how it was calculated.

PSC-195

Subject: Hebgen Potential Failure Mode

Witness: Rhoads

What will NWE do to manage and mitigate potential liabilities associated with the subject of Potential Failure Mode (“PFM”) No. 2, described in WTR-5.4, pp. 29-31?