

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

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IN THE MATTER OF the Application of) REGULATORY DIVISION
NorthWestern Energy For Hydro Assets)
Purchase) DOCKET NO. D2013.12.85

FACT SHEET

TO: Commissioners, Justin, Jason, and Laura
FROM: Eric, Will, Bob, Neil, Scott, Leroy, Dagan, Joel, Elizabeth, and Kate
DATE: June 17, 2014

Prior to a public hearing on a docketed matter before the Public Service Commission, Regulatory Division staff on the work team prepare a Fact Sheet that summarizes the application and the prefiled testimony. In this docket, there are 19 witnesses who have each filed at least one round of testimony (not counting The Essex Partnership and Evergreen Economics, the Commission's own consultants). The PSC submitted 363 data requests, most with multiple subparts, to NorthWestern Energy, Montana Consumer Counsel (MCC) and District XI Human Resource Council/Natural Resources Defense Council (HRC/NRDC). MCC submitted 231 data requests, many with subparts, to NorthWestern and HRC/NRDC. NorthWestern has submitted 12 data requests, with subparts, to MCC and to The Essex Partnership.

This Fact Sheet is organized into three topic-area sections: I) Overview & Revenue Requirement; II) Economic Analysis; and, III) Due Diligence/Capital Expenditures Forecast.

The hearing in this matter is scheduled to begin July 8, 2014.

TABLE OF CONTENTS

I. OVERVIEW & REVENUE REQUIREMENT	1
Application	1
NorthWestern Energy Direct Testimony	3
Robert C. Rowe	3
Brian B. Bird	5
Ahmad Masud (Credit Suisse)	7
Allen Otto (Blackstone)	8
Kendall G. Klierwer	9
Patrick J. DiFronzo	10
Montana Consumer Counsel Direct Testimony	10
Dr. John W. Wilson	10
Albert E. Clark	11
NorthWestern Energy Rebuttal Testimony	12
Robert C. Rowe	12
Brian B. Bird	13
Adrien M. McKenzie (FINCAP, Inc.)	14
Ahmad Masud (Credit Suisse)	16
Kendall G. Klierwer	17
Patrick J. DiFronzo	17
II. ECONOMIC ANALYSIS	18
NorthWestern Energy Direct Testimony	18
John D. Hines	18
Travis E. Meyer	19
Joseph M. Stimatz	21
Montana Consumer Counsel Direct Testimony	24
Dr. John W. Wilson	24
Human Resource Council District XI/Natural Resources Defense Council – Direct Testimony	27
Dr. Thomas M. Power	27
NorthWestern Energy – Additional Issues Testimony	30
Travis Meyer	30
Joseph Stimatz	30
Montana Consumer Counsel - Additional Issues Response Testimony	31
Dr. John Wilson	31
NorthWestern Energy Rebuttal Testimony	32

John Hines	32
Joseph Stimatz	33
Dr. Gary W. Dorris (Ascend Analytics)	34
HRC/NRDC Cross-Intervenor Response Testimony	36
Dr. Thomas M. Power	36
III. DUE DILIGENCE/CAPITAL EXPENDITURES FORECAST	39
NorthWestern Energy Direct Testimony	39
William T. Rhoads	39
Shaw/CB&I independent consultant’s due diligence reports	42
Montana Consumer Counsel Direct Testimony	44
Dr. John W. Wilson	44
The Essex Partnership - Assessment of NorthWestern’s due diligence efforts	44
NorthWestern Energy Additional Issues Testimony	45
William T. Rhoads	45
John C. VanDaveer	46
Mary Gail Sullivan	47
Gary T. Wiseman (Shaw/CB&I)	48
Rick Miller (HDR)	49
NorthWestern Energy Rebuttal Testimony	50
William T. Rhoads	50
John C. VanDaveer	51
Mary Gail Sullivan	52
Gary T. Wiseman (Shaw/CB&I)	53
Rick Miller (HDR)	54

I. OVERVIEW & REVENUE REQUIREMENT

Application

On September 26, 2013, NorthWestern Energy (NorthWestern) and PPL Montana, LLC (PPLM) entered into a Purchase and Sale Agreement (PSA) for the acquisition by NorthWestern of PPLM's 11 hydroelectric generating facilities (the hydros) and related assets.¹ The purchase price is \$900 million, plus or minus closing adjustments. The proposed 2014 test period revenue requirement was \$128,402,190 in the application, but was reduced to \$120,963,690 in NorthWestern's rebuttal case. Pursuant to § 69-8-421, MCA, and Admin.R.Mont. 38.5.8201-38.5.8229, NorthWestern submitted its application for Public Service Commission (PSC or Commission) preapproval of the acquisition as an electricity supply resource on December 20, 2013. According to NorthWestern, the acquisition is in the public interest and is consistent with the requirements of § 69-3-201, MCA, the objectives in § 69-8-419, MCA, and PSC administrative rules. NorthWestern's application includes a review of the relevant laws and rules and provides NorthWestern's view of how the application complies with them.

NorthWestern is also requesting approval to issue, if necessary, unsecured debt securities not to exceed in the aggregate \$900 million with respect to any interim financing that may be necessary as well as approval to issue the following securities related to the long-term financing of the transactions: equity securities not to exceed \$450 million, secured debt securities not to exceed \$500 million, and unsecured debt securities not to exceed \$900 million.

The hydro facilities NorthWestern proposes to acquire and some basic information about them are listed below. (This chart is excerpted from Exhibit__(WTR-2.1), pp. 5-6.)

¹ Exhibit_(APP-1) and Exhibit_(APP-2), filed on CD, are the PSA and the PSA schedules.

FERC Num	Project Name	Structure Name	Reservoir Type	Capacity (MW)	Number Units	Service Year	River	Location
1869	Thompson Falls							
		Thompson Falls Dam	Run-of-River	94	7	1915/1995	Clark Fork	Thompson Falls
2301	Mystic Lake							
		Mystic Lake Dam	Reservoir	12	2	1925	West Rosebud Creek	75 miles southwest of Billings
5	Kerr							
		Kerr	Reservoir	194	3	1938/1954	Flathead	5 miles southwest of Polson
2188	Missouri-Madison Project							
		Hebgen Lake	Reservoir	NA	NA	1914	Madison	25 north of West Yellowstone
		Madison	Run-of-River	8	4	1906	Madison	10 miles north of Ennis
		Hauser Dam	Run-of-River	19	6	1911/1914	Missouri	14 miles northeast of Helena
		Holter	Run-of-River	48	4	1918	Missouri	43 miles northeast of Helena
		Black Eagle	Run-of-River	21	3	1927	Missouri	2 miles northeast of Great Falls
		Rainbow	Run-of-River	60	8	1910/1918	Missouri	6 miles northeast of Great Falls
		Cochrane	Run-of-River	69	2	1958	Missouri	8 miles northeast of Great Falls
		Ryan	Run-of-River	60	6	1915/1916	Missouri	10 miles northeast of Great Falls
		Morony	Run-of-River	48	2	1930	Missouri	15 miles northeast of Great Falls

NorthWestern requests a Commission order that:

- 1) Finds that approval of the application is in the public interest;
- 2) Finds that the hydro acquisition is consistent with the requirements of § 69-3-201, MCA, the objectives in § 69-8-419, MCA and the Commission's rules;

- 3) Authorizes NorthWestern to make a compliance filing following the final order in this docket to adjust the purchase price to reflect the actual cost of debt;
- 4) Authorizes NorthWestern to recover the estimated total revenue requirement of \$120,963,690, as adjusted in the compliance filing in electric supply rates;
- 5) Authorizes NorthWestern to make a final compliance filing in approximately December 2015 to reflect post-closing adjustments, the conveyance of the Kerr Project to the Confederated Salish and Kootenai Tribes (CSKT), and the actual property tax expense for the hydros;
- 6) Authorizes NorthWestern to track revenue credits on a portfolio basis through the electricity supply cost tracker;
- 7) Approves the request and authorizing financing transactions proposed in the application; and,
- 8) Authorizes NorthWestern to utilize the proceeds from the financing transactions as proposed in the application.

NorthWestern Energy Direct Testimony

Robert C. Rowe

Bob Rowe, NorthWestern's president and chief executive officer, provided NorthWestern's overall view of the hydro acquisition. He said NorthWestern began thinking about the purchase of PPLM's hydro assets in 2009. It was clear to the company that NorthWestern was the optimal owner of the assets, as its delivery systems, and particularly its transmission system, were originally built as part of a fully integrated electric utility system.

Rowe asserted that NorthWestern's purchase of the hydros is a once-in-a-lifetime opportunity for NorthWestern's customers, shareholders, and employees. The timing of the proposed purchase is good, inasmuch as NorthWestern's market-based contracts with PPL are about to expire.

According to Rowe, the multiple attributes and benefits of the hydro purchase for NorthWestern and its electric utility include:

- Improved sustainability of NorthWestern's electric supply portfolio with long-term reliable power and stable costs;
- Customer prices that are less affected by the market because purchasing the assets now, during a relatively low market price curve, is preferable to a purchase made when the market price curve is high;
- Site diversity and generation dispersion, as the facilities include multiple units and span river basins on both sides of the Continental Divide;
- Supply diversity;
- Allowing NorthWestern to minimize a range of risks associated with energy supply;
- Giving NorthWestern an environmentally responsible resource that does not emit carbon;
- Providing customers with reliable baseload power;
- Managing fuel price risk;
- Allowing NorthWestern to operate a locally controlled integrated system;
- Supporting NorthWestern's goal of providing customers with a long-term portfolio; and

- Allowing NorthWestern to execute its strategy of providing reasonably and stably priced energy supply to customers while earning a reasonable return on investment.

NorthWestern's purchase of the hydros fits NorthWestern's business strategy, one of the primary goals of which is to secure baseload resources.

Rowe stated the hydro purchase fulfills the public policy defined by § 69-8-101, MCA, which may be cited as the "Electric Utility Industry Generation Reintegration Act" and is the product of House Bill 25 of the Montana legislative session of 2007. The Legislature wanted NorthWestern to reintegrate generation as part of a fully integrated utility service, and the public policy of the State of Montana sets out owned generation as a preference.

Competitive solicitation for resource acquisitions is the preferred method under an existing administrative rule of the PSC (Admin.R.Mont. 38.5.8212), but the rule allows exception, and a decision to not use competitive solicitations must be thoroughly documented. If the possibility of exception did not exist in Montana law, NorthWestern would not have been able to make the hydro purchase because PPL, as owner of the hydro facilities, was selling the hydros through a market-based transaction and would not have participated in a NorthWestern-initiated competitive solicitation process.

It also would have been difficult to purchase the hydros without use of the preapproval process. NorthWestern cannot assume the risk of such a large transaction while continuing to meet other obligations to customers.

According to Rowe, with the involvement of NorthWestern employees and external advisors, and following due diligence review and site inspections, NorthWestern confirmed that the hydros were a valuable asset. NorthWestern's biggest challenge in the process was to balance the need to acquire the hydros at a price acceptable to PPL while at the same time focusing on the billing impact a purchase would have on NorthWestern's customers.

NorthWestern's process resulted in a \$900 million purchase price for the hydros. NorthWestern focused on the figure of 10% as an acceptable level of first-year billing impact on customers. When NorthWestern announced its decision to purchase the hydros, the billing impact was forecasted at a 5% (\$4/month) increase on a total typical residential bill. Since that time, Rowe said, refined analyses based on latest available information has lowered the forecast to 4.22% (\$3.53/month).

The alternatives to the hydro purchase for acquiring baseload power included combinations of market purchases and building a natural gas generation plant at some point in the future.

Rowe stated the consequences to NorthWestern of not having aggressively pursued acquisition of the hydros could have included a determination by the PSC of utility imprudence, as well as customer and public criticism.

The Commission's primary standard of review for approval of an electricity supply resource are the findings that approval is in the public interest and that procurement of the resource is consistent with the requirement of § 69-3-201, MCA, the objectives of § 69-8-419, MCA, and commission rules. The hydro purchase is in the public interest because the benefits of acquiring the resource outweighs the risk to customers. Rowe provided two tables on page 31 of

his testimony which he said were an attempt to collectively quantify the various activities that inherently went into considering the risks and benefits of the hydros.

In accordance with FERC's Uniform System of Accounts, NorthWestern will account for the hydro purchase as follows:

Account 102 – Electric Plant Purchased or Sold	\$553 million
Account 114 – Electric Plant Acquisition Adjustments	<u>\$347 million</u>
Total	\$900 million

Brian B. Bird

Brian Bird, NorthWestern's chief financial officer, testified that NorthWestern contacted PPL about a potential sale in 2009 and at various other times until PPL officially put the hydros up for sale. In September 2012, NorthWestern learned that PPL's process (termed "Mustang") would include a sale of all its generation assets in Montana to one buyer through a competitive process. NorthWestern bid \$400 million for all of PPLM's generation assets in a conforming bid and \$740 million for the hydros in a non-conforming bid.² NorthWestern used information from preliminary value indications provided by several investment banks from 2009 to the time PPLM put the assets up for sale to determine a range of value for the hydros. The banks' valuations were primarily based on comparable transactions and discounted cash flow (DCF) analyses.

Bird explained that NorthWestern bid more for just the hydros than for the all of the PPLM assets because NorthWestern assessed a negative value to the coal assets due to environmental concerns, particularly regarding the older units, and a restrictive sale leaseback structure used to finance PPLM's acquisition of the Montana Power Co. (MPC) generating facilities in 1999. NorthWestern was concerned at the possibilities of having to shut down the coal assets and perhaps even being responsible for subsequent remediation of the sites. Bird said NorthWestern included remediation costs in its model for the conforming bid.

PPL told NorthWestern that it was not considering any non-conforming bids, but if it was, NorthWestern's hydro-only bid was way too low. PPL indicated a deal was possible on the all-asset conforming bid if NorthWestern increased the offer price and the parties could negotiate an agreeable PSA. According to Bird, the parties were unable to reach agreement on either the price or the terms and, in February 2013, the process ended.

In May 2013, PPL initiated a second, two-step process comprised of marketing the coal-fired assets first, and depending on that sale's progress, a subsequent process for selling the hydros. Bird said that, subsequent to NorthWestern's notification to PPL that it was not interested in the coal assets, PPL's financial advisor, UBS, contacted NorthWestern to see if it would enter into bilateral negotiations to acquire all of PPLM's assets. NorthWestern agreed to the bilateral negotiations because it was concerned that, in a competitive bidding process for the hydros only, other market participants would outbid it. Bird said that NorthWestern tried to come to terms with PPL on all of the Montana assets, but after a month or so of negotiations, decided the best course was to rebid on just the hydros. NorthWestern's July 2013 hydro-only bid was \$900 million, an amount that Bird said NorthWestern hoped would keep PPL from restarting the hydro-only competitive bid process while also considering the ratepayer impact.³

² The bid letter is Exhibit__(BBB-1).

³ The second bid letter is Exhibit__(BBB-2).

In September 2013, PPL and NorthWestern entered into a hydros-only PSA with a \$900 million purchase price.⁴

Bird testified that NorthWestern, assisted by its financial advisor Credit Suisse, developed three models to determine a value for the hydros: a DCF analysis model to assess what a competing bidder might offer for the assets; a long-term 30-year revenue requirements model to calculate total cost; and a first-year rate impact model. Exhibit__ (BBB-3) depicts the range of values developed by NorthWestern's DCF model, which had a low end of \$790 million using the most conservative discount rates and EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) multiples and a high end of \$935 million using the most aggressive figures. NorthWestern's initial DCF valuation was \$826 million, based on a DCF value for the hydros of \$896 million, less the \$70 million net present value (NPV) of allocated general and administrative plant costs, and using 7.14%, NorthWestern's planned rate of return (ROR) as the discount rate and, to compute the terminal value, an EBITDA multiple of 7.5X, which was at the bottom of the range provided by Credit Suisse. Credit Suisse viewed NorthWestern's DCF model as too conservative because it did not discount cash flows using the more acceptable mid-year convention and it assumed a year-end 2013 closing instead of the more likely September 2014 closing. When those changes were made to the model, the DCF valuation range was \$848 million to \$994 million.

Bird stated that Credit Suisse also provided NorthWestern with DCF analyses for a regulated and unregulated buyer, a comparable asset purchase analysis, and a comparison of the hydro purchase with new-build projects. The various analyses performed by Credit Suisse showed that a \$900 million purchase price fell within each of its valuation ranges. In addition, NorthWestern sought and received a fairness opinion on the purchase price from Blackstone Advisory Partners (Blackstone). Blackstone's similar analyses found in general that \$900 million was a fair price.

According to Bird, the \$900 million purchase price is subject to certain post-closing adjustments related to: actual vs. budgeted capital expenditures (CapEx); proration of taxes and other payments; the actual conveyance price for Kerr Dam; and existing contracts for power purchases. NorthWestern proposed that the adjustments would be included in a final compliance filing in 2015.

Bird asserted the Commission has the authority to approve rate-basing the full \$900 million market value of the hydros, given that they were available only as a market-based transaction. He said the primary determination for the Commission to make is whether purchasing the hydros for \$900 million is in the public interest under the provisions of both § 69-3-109, MCA (Ascertaining Property Values), and § 69-8-421, MCA (Approval of Electricity Supply Resources). Bird stated that NorthWestern would not acquire the hydros if the Commission decides not to allow full recovery of the \$900 million purchase price and the decision has a significant negative effect on NorthWestern's financial condition.

NorthWestern recommended a capital structure of 52% debt and 48% equity, which Bird asserted is consistent with recent Commission determinations. NorthWestern intends to finance the hydros acquisition through a combination of long-term first mortgage bond financing, available discretionary cash flows, and proceeds from an equity offering. Financial modeling assumptions include a pro forma 52% debt and 48% equity capital structure.

Bird said the expected all-in cost of debt if NorthWestern issued a 50/50 combination of 10-year and 30-year first mortgage bonds between now and September 2014 would be in the

⁴ See Exhibit__ (APP-1) (provided with the Application on CD).

range of 4.38% and 5.05%. NorthWestern recommends a cost of debt of 4.5% for this filing and used this rate in modeling and in the calculation of the revenue requirement. If the actual cost of debt turns out to be higher or lower than 4.5% when the final order is issued, NorthWestern proposes to include the updated cost of debt, whether higher or lower, in its compliance filing.

NorthWestern proposed a 10% return on equity (ROE), which Bird said was determined by reviewing recently approved ROEs for both its electric and natural gas operations in Montana and national data from Regulatory Research Associates (RRA). The most recent RRA report showed that average annual authorized electric ROEs have not fallen below 10.09% for the period 2010-2013, and the average for that period was 10.22%.⁵ Bird acknowledged that NorthWestern's gas utility's currently authorized ROE is 9.8%, but he noted that the RRA report showed that recent electric ROEs exceed natural gas ROEs by 36 to 58 basis points. He testified that NorthWestern believes its electric utility merits a higher ROE than its natural gas utility and that 10% is conservative and reasonable. Bird said there is no reason to believe that the equity risk associated with the hydros acquisition would be any different from that of the electric T&D assets in Montana, which all have ROEs of at least 10%.

Bird asserted that rising Treasury interest rates put upward pressure on ROEs, which he cited as additional support for NorthWestern's 10% ROE in this case. In addition, NorthWestern hired Bill Avera of the financial consulting firm FINCAP, Inc., to complete an analysis of what NorthWestern's ROE range would be for the hydro transaction. His current ROE range for NorthWestern is 9.64% to 11.14% with a midpoint ROE of 10.39%.⁶

According to Bird, the overall ROR for the hydros is 7.14%.

Bird cited numerous financial benefits of the hydro acquisition for NorthWestern, such as supporting its ability to invest in the utility on favorable terms, improving earnings and credit quality, moving the company into the mid-cap category, and increasing cash flow. He asserted these financial benefits for NorthWestern also benefit customers. He also stated that the state of Montana will benefit from this transaction because stable electricity prices will help attract businesses, benefiting Montana's economy and because NorthWestern is a good corporate citizen and the state's largest taxpayer.

Bird said the credit rating agencies and equity investors view the hydro transaction positively.

According to Bird, the negative consequences if the Commission does not approve the hydro transaction include: loss of the benefits of the acquisition; another entity acquiring the hydros that is uninterested in NorthWestern customers' rates and is not required to sell power to NorthWestern's Montana's customers; the possibility that the hydro owner would require credit from NorthWestern, which could adversely affect its financial position; increased exposure to market price uncertainty; and sending a message that the Commission does not support continued investment in NorthWestern-owned energy supply assets.

Ahmad Masud (Credit Suisse)

Ahmad Masud is a managing director at Credit Suisse and co-head of its U.S. Power and Utilities Group. Attached to Masud's testimony is AM Exhibit 1, which is Credit Suisse's *Presentation to the [NorthWestern Corp.] Board of Directors – Valuation*, dated September 23, 2013.

⁵ See Exhibit__(BBB-4).

⁶ A summary of Avera's DCF, CAPM, and risk premium analyses is provided in Exhibit__(BBB-5).

As NorthWestern's financial advisor for the transaction, Masud said Credit Suisse conducted the following valuation methodologies: 1) DCF analyses; 2) Selected Transaction Multiples Analyses, in which Credit Suisse calculated various financial ratios related to comparable transactions and then estimated value ranges for the hydros on both regulated and unregulated bases by applying ranges of selected multiples; 3) a Comparable Companies Trading Multiples Analysis, in which Credit Suisse calculated financial multiples and ratios for companies that are comparable to NorthWestern⁷ and then estimated a value range for the hydros as regulated assets by applying selected multiple ranges to the relevant data for the hydros. Credit Suisse also provided to NorthWestern the information it obtained by reviewing public information regarding the estimated costs of building various types of generation assets and the actual cost of building various generation assets in the Northwest region in recent years.

Masud testified that Credit Suisse's DCF analyses included both unregulated and regulated DCF analyses.

According to Masud, the Selected Transaction Multiples Analyses were based on Credit Suisse's review of eight hydro acquisition transactions in North America since December 2008, with generation capacity being the primary relevant characteristic.⁸ He stated the transactions ranged in value from \$70 million to \$760 million, included single assets as well as asset portfolios, and their generation capacities ranged from 28 MW to over 350 MW. Because NorthWestern proposes to rate base the hydros, Masud stated that Credit Suisse also considered it relevant to review 18 precedent and comparable transactions since 2005 where regulated utilities acquired rate-based assets.

Masud said Credit Suisse did not use a replacement value methodology because it would have entailed a complex study that would require hydroelectric engineering expertise that is outside of Credit Suisse's realm and because the unique characteristics of the hydros make it difficult to estimate a replacement cost. Masud asserted it would certainly exceed the purchase price.

Credit Suisse's valuation analyses resulted in the firm's estimations of the hydros value as unregulated generation assets in the range of \$750 million to \$1 billion, and as regulated generation assets in the range of \$800 million to \$1.25 billion.⁹ NorthWestern's purchase price for the hydros falls within the range estimated by Credit Suisse.

Allen Otto (Blackstone)

Allen Otto, vice-president of Blackstone, testified about the fairness opinion Blackstone delivered to NorthWestern Energy in September 2013 regarding the fairness of the purchase price for the hydros.¹⁰ Otto stated that the main valuation methodologies employed by Blackstone in its evaluation of the hydro acquisition were a DCF analysis,¹¹ a selected comparable companies analysis, and a selected precedent transactions analysis. Blackstone also reviewed public information about NorthWestern, internal NorthWestern financial and operations information, held discussions with NorthWestern's senior management, and reviewed the PSA.

⁷ See attachment to DR PSC-121b, p. 3, and AM Exhibit 1, p. 17, for lists of comparable companies.

⁸ The eight transactions are listed in AM Exhibit 1, p. 18.

⁹ See summaries of Credit Suisse's regulated and unregulated valuations at AM Exhibit 1, pp. 12-13.

¹⁰ The Blackstone fairness opinion letter, dated September 23, 2013, is Exhibit__(AO-1).

¹¹ See the attachment to DR MCC-094 for a detailed output of the results of Blackstone's DCF analysis.

Otto testified that, as is customary with fairness opinions, Blackstone did not undertake an independent appraisal of the hydros, did not independently verify any information or projections, and did not conduct a physical inspection of the hydros.

Otto said that, as of the date of the fairness opinion, Blackstone concluded the \$900 million purchase price was fair to NorthWestern from a financial point of view. Blackstone summarized its assumptions, analyses and conclusion in a presentation to the NorthWestern board of directors, dated September 23, 2013. The written presentation is attached to his testimony as Exhibit__(AO-2).

Kendall G. Kliewer

Kendall G. Kliewer, NorthWestern's vice president and controller, testified about NorthWestern's obligations regarding transferred employees, the original cost calculation, depreciation expense, the calculation of working capital associated with the gross cash requirement, and NorthWestern's determination of the production tax credit (PTC), deferred income taxes, accelerated tax depreciation, current income taxes, and property tax expense.

NorthWestern expects approximately 80 current employees of PPL to become NorthWestern employees upon closing. They will receive pay and benefits in the aggregate that are consistent with what they received from PPL for at least a year following the closing. For transferred employees represented by IBEW Local 44, NorthWestern will assume and honor all obligations under the current collective bargaining agreement.

Kliewer stated that NorthWestern must account for the purchase of the hydros in accordance with FERC requirements. FERC requires Electric Plant purchases to be charged to Electric Plant Purchased or Sold at the original cost of the plant, with any remaining amount greater than the original cost charged to Electric Plant Acquisition Adjustments. Based on documentation from the 1999 sale by MPC of its generation assets to PPL, to which was added plant activity by PPL for 2000-2013, assignments for PPL common and interest costs, intangible plant cost, and costs for the transmission facilities, NorthWestern calculated the total original cost for the hydro plant and associated transmission facilities to be \$642,402,247. The difference between this calculated original cost and the purchase price of \$900 million resulted in a preliminary Acquisition Adjustment of \$257,598,753. When adjusted to account for the transfer of Kerr to CSKT, the Acquisition Adjustment is \$346,921,775.¹²

Regarding depreciation expense, Kliewer said NorthWestern applied an accrual factor of 2.50% to the depreciable value of the hydro accounts and applied NorthWestern's 2012 Montana depreciation study accrual rates for the transmission facilities. NorthWestern proposes to use a 40-year life for the hydros, which equates to an annual accrual rate of 2.50%, and will amortize the Acquisition Adjustment over a 40-year period, which results in an annual amortization expense of \$8,673,044.

Regarding the PTC, Kliewer explained that some electricity generated at Kerr, Cochrane, Ryan and Mystic Lake qualifies for the PTC.¹³ In accordance with Commission practice, the federal income tax benefits of tax credits that are not subject to mandatory normalization under federal tax code flow through to customers in the form of a revenue requirement reduction of \$750,000, grossed up for income taxes.

¹² See Exhibit__(K GK-3).

¹³ DR PSC-056b provides an explanation and documentation of the PTC as it relates to these facilities.

Kliwer also explained the required working capital calculation and the calculations of the deferred income tax, current income tax, property tax and other tax calculations that are included in Exhibit__(PJD-1).

Patrick J. DiFronzo

Patrick DiFronzo, NorthWestern's manager of regulatory affairs, presented the test period revenue requirement for the hydro purchase and the customer bill impact. His Exhibit__(PJD-1) provides a line-by-line summary of the elements that comprise the 2014 revenue requirement.

DiFronzo listed each line of his exhibit and included a reference to the witness whose testimony explained each of the revenue requirement elements. He stated that NorthWestern calculated the test period revenue requirement amount to be \$128,402,190.

NorthWestern proposed that electric supply rates be adjusted to implement the approved hydros revenue requirement in conjunction with the most practical monthly electricity supply tracker filing made subsequent to the Commission's order in this docket. DiFronzo stated that NorthWestern proposes to use forecasted loads included in the monthly electricity supply tracker filing in which the approved revenue requirement is first implemented into rates. These same forecasted loads would be used to compute rates until such time as there is an updated revenue requirement approved by the Commission.

According to DiFronzo, the bill impact in 2014 to the typical residential customer if the Application is approved as filed will be an increase of approximately 4.22% when compared to a November 2013 bill.¹⁴

DiFronzo stated that there will be future costs for the hydros that will include the normal course of business activities, including expenses and capital costs related to maintenance, future plant additions, inflationary cost adjustments, increased property taxes, and other increased costs.

Montana Consumer Counsel Direct Testimony

Dr. John W. Wilson

John Wilson, economist and consultant for Montana Consumer Counsel (MCC), recommended modifying and improving the hydro proposal rather than rejecting it.

Regarding NorthWestern's proposed ROE of 10%, Wilson stated that his evaluation indicates that figure is excessive. Wilson added that the ROE that is authorized in this case should recognize that preapproval shifts virtually all normal business risks to ratepayers. Wilson's ROE estimate is in the 8 to 9% range, with 9% being the maximum. Wilson criticized Bird's DCF analyses as distorted by NorthWestern's arbitrary exclusion of the 36 lowest comparable company values. When those values are included, and even when Wilson excluded 2 high-end and 11 low-end outliers, the calculated DCF results imply an ROE in the 8 to 9-percent range.

Wilson contended that NorthWestern's CAPM analysis mistakenly used long-term bond rates as a measure of risk-free return, which overstated the ROE estimate by 300 basis points. According to Wilson, the very short-term Treasury rate should have been used because the interest rate on long-term bonds includes substantial premium for the interest rate risk of locked-in return levels and for the currency fluctuation risk of long-term dollar denominated repayment.

¹⁴ See Exhibit__(PJD—3). In response to DR PSC-034, NorthWestern added that Exhibit__(PJD-3) was based on an updated first-year revenue requirement amount of \$128.4 million.

Wilson argued that long-term Treasury bonds are not risk free because of the risks of default, changes in currency exchange rates and interest rate changes. Wilson arrived at a CAPM cost of equity estimate of less than 8% by using a risk premium of 3-6% over the current cost of risk-free debt.

Wilson stated that NorthWestern's expected earnings results failed to adjust for the difference between return on market value and return on book value of an alternative investment. Wilson asserted the market-to-book (M/B) ratio is relevant to determining a fair ROE because if a stock's market price is maintained at a level in excess of book value, then it is likely that investors' earnings expectations as a percentage of book value exceed the cost of capital and that investors have capitalized these expected excess earnings by bidding up the stock price to a level greater than the stock's book value. Wilson's Exhibit__ (JW-6) shows the average of Value Line's projected book returns for Bird's comparable utilities is 9.4% and its average projected M/B ratio for those utilities is 1.28, which implies an ROE average cost of capital of 7.4% would be sufficient to sustain a stock price equal to book value.

Wilson recommended a capital structure of 45% equity and 55% debt. He said it is lower than NorthWestern's proposed 48/52 equity ratio, but it will reduce rates a bit, will more in line with specific risk conditions, and will better reflect the quasi-debt nature of NorthWestern's power purchase agreements (PPAs).

Wilson stated that acceptance of his three major recommendations in this case would justify a 10% ROE allowance and the use of a 52/48 capital structure for ratemaking.¹⁵

Albert E. Clark

Al Clark, a regulatory consultant, testified that NorthWestern's proposed test year revenue requirement of \$128,402,190 is excessive and recommended adjustments to it that would reduce the annual revenue requirement to \$114,597,373.

Clark disagreed with NorthWestern's assertion that the hydro purchase will result in a 4.22% increase in the typical residential bill, a figure he said was based on rates in effect at the time the case was filed. According to Clark, when the bill impact calculation is based on rates that would be in effect when the hydro facilities are purchased in late 2014, the result is an increase of 8.9% in the total bill of a typical residential customer, and an increase of 15.9% in just the supply component of the bill.

In his Exhibit__ (AEC-1), Clark made the following adjustments to NorthWestern's proposed annual revenue requirement, which were based on his analysis and on Wilson's cost of capital recommendations:

- Used Wilson's 9% ROE, capital structure of 45% equity/55% debt, and overall cost of capital of 6.53%, which resulted in a \$9.4 million reduction in the annual revenue requirement.
- Increased NorthWestern's proposed 40-year life for the assets and for the amortization adjustment period to 50 years. Clark justified this adjustment by citing NorthWestern's response to MCC-053 in which NorthWestern's witness said he expects the hydro assets to operate for at least another 50 years.
- Reduced NorthWestern's proposed 2.5% depreciation rate to 2%. Clark stated the 2% rate is close to the 1.94% rate that was proposed in MPC's 1995 depreciation study.

¹⁵ Wilson's three recommendations are found at pp. 61-62 of his direct testimony.

Clark recommended that upon the transfer of Kerr to CSKT, \$89,323,022 less the amount amortized at the time of the sale should be removed from the acquisition adjustment that is included in rate base. Clark stated that his proposed adjustment would continue to allow the company the return of capital but would protect ratepayers from paying a return on the loss of the Kerr sale.

Clark asserted that NorthWestern is proposing that appreciating assets be depreciated for revenue requirement purposes, a situation he said creates intergenerational inequity among ratepayers with current ratepayers paying too much and future ratepayers paying too little.

Clark suggested that the Commission could ease or eliminate intergenerational ratepayer inequity by reducing current rate base by the net present value amount and then reducing that rate base deduction pro rata over the same time period as the as the hydro facilities are depreciated. Clark testified that, assuming a discount rate equal to the Wilson's overall rate of return of 6.53%, the required rate base deduction would be \$104,042,315 in the test year. This reduction to NorthWestern's rate base would decrease Clark's adjusted rate base amount of \$114,597,373 to \$105,171,964.

NorthWestern Energy Rebuttal Testimony

Robert C. Rowe

Rowe asserted that MCC's direct testimony made clear that MCC, without directly saying so, is opposed to NorthWestern's acquisition of the hydros.

Rowe said MCC's proposed Kerr Dam Acquisition Adjustment (\$89 million) and Intergenerational Ratepayer Inequity Adjustment (\$104 million) would reduce the purchase price from \$900 million to \$677 million. If the PSC accepts MCC's purchase-price recommendations, NorthWestern would not be able to acquire the hydros because the PSA between PPLM and NorthWestern is not renegotiable.

According to Rowe, Clark's proposed Kerr Dam adjustment does not properly reflect the treatment of Kerr as part of this transaction. Kerr Dam is simply a timing issue as it relates to the purchase of the hydros, and NorthWestern is the transfer agent. Not knowing the ultimate conveyance price of Kerr Dam that would result from the arbitration between PPLM and CSKT, NorthWestern established a \$30 million placeholder value. Now that the conveyance price of Kerr is known to be \$18.2 million, Rowe said the PSC should authorize NorthWestern to make the hydro purchase as follows:

Account 102 - Electric Plant Purchased or Sold	\$523.1 million
Account 114 – Electric Plant Acquisition Adjustments	<u>\$346.9 million</u>
Total	\$870.0 million

NorthWestern is modifying its filing to exclude a return on the \$30 million for Kerr Dam during the approximately one-year period preceding conveyance.

Rowe argued that the Commission should reject the attempt by MCC to reduce rates using the Intergenerational Ratepayer Inequity Adjustment as it is inappropriate and beyond the scope of this proceeding. He said NorthWestern presented the rate base component of the hydro purchase similar to its preapproval filings for NorthWestern's Colstrip Unit 4, Dave Gates Generating Station, and Spion Kop Wind Project.

The PSC should reject the proposed future event adjustments, including a cap on future CapEx. The PSC already has the means to address these subjects as part of future general rate case prudence reviews.

According to Rowe, NorthWestern has reduced its original revenue requirement request as follows:

Original revenue requirement	\$128,402,190
Adjustments	
Book depreciation (from 40 to 50 years)	(\$4,401,890)
Kerr Dam (eliminate return on)	<u>(\$3,036,610)</u>
Revised rebuttal revenue requirement	\$120,963,690

According to Rowe, public policy, as expressed through House Bill 25 that was enacted by the 2007 legislature, directs NorthWestern to own more of its generation assets. Rowe added that the hydro purchase would comport with MCC's previously expressed support, made in its comments addressing NorthWestern's 2007 electric supply procurement plan, for NorthWestern's acquisition of owned resources. In the Commission's approximately 20 listening sessions, customers do not appear concerned that all benefits from the hydros purchase are not realized right away.

Rowe contended that MCC focuses on the short term. The Commission should focus on the long term, as directed by the electricity supply resource planning and procurement statute, § 69-8-419, MCA, and PSC's rule, Admin.R.Mont. 38.5.8204(1)(c).

Rowe proposed that, if the hydro acquisition is approved, NorthWestern and the Commission implement a periodic reporting schedule on the hydro projects and establish a work group that would be kept informed of developments on a regular basis.

Brian B. Bird

Bird contended MCC witness Wilson incorrectly implied that the \$61.8 million he calculated as NorthWestern's return on rate base on the hydros transaction is profit to NorthWestern. Bird stated that profit is the net income available for investors while return on rate base is based on the combination of ROE, cost of debt, and NorthWestern's capital structure. The cost of debt is the interest that must be paid to the debt holders of the transaction. This return, return on debt, is not available for NorthWestern's shareholders.

Bird further disagreed with Wilson that the rate of return and the profit on this transaction are excessive. He stated that NorthWestern calculated the revenue requirement for this investment the same way it would for any other investment, that any alternative buyer would have the same chance of making the same or more profit.

Bird objected to Wilson's assertion that the hydro transaction is risk free due to preapproval. He said preapproval allows NorthWestern to manage risk to an acceptable level for investment by investors. According to Bird, this benefits NorthWestern's customers by lowering the cost of capital of the transaction; conversely, if preapproval was not utilized, investors would take more risk and thus raise the financing costs that NorthWestern would recover from customers.

Bird took issue with Wilson's characterization of Colstrip 4 as a high-cost supply resource. He countered that NorthWestern applied a negative value to Colstrip Units 1 and 2, but a positive value to Unit 3, which, like Unit 4, is a newer plant.

Regarding Wilson's testimony related to capital structure, Bird disagreed with Wilson's statement that NorthWestern is requesting an equity/debt ratio of 45% equity/55% debt. The long-term rate base proposed by NorthWestern will be \$870 million (\$900 million initial purchase price less the \$30 million 'buy out' of Kerr Dam in 2015). NorthWestern expects to finance the \$870 million related to this transaction (excluding the Kerr buyout) with about \$400 million in equity and about \$450 million in debt, with the remainder in cash flows produced from September 2013 to June 2014. Those figures produce approximately a 48% / 52% equity/debt ratio.

Bird also does not agree with Wilson's statement that NorthWestern's proposed equity/debt ratio should be changed to a 45% / 55% equity/debt ratio because, according to Wilson, rating agencies view PPAs as quasi-debt. Bird asserted that the hydro transaction will significantly reduce NorthWestern's reliance on PPAs, which will reduce the debt imputation by rating agencies. He added that Standard & Poor's 2012 minimal \$23.6 million imputation on NorthWestern's total debt to account for PPAs will become even less when the PPAs are displaced due to the hydro acquisition.

Bird contended that it is difficult to determine the MCC's position in this case because neither Wilson nor Clark reconciled their respective positions to produce a revenue requirement number. Although Clark recommended conventional adjustments to NorthWestern's proposed revenue requirement, he did not take any of Wilson's suggestions except for capital structure and ROE, and then went on to suggest the Kerr and "intergenerational inequity" adjustments, which are both unacceptable to NorthWestern. According to Bird, Wilson appears to assume Commission acceptance of all of Clark's suggested adjustments and then he recommends acceptance of his proposals as well. Bird complained that Wilson failed to quantify the resulting risk transfer and its effect on NorthWestern's financial situation, which Bird said would be unacceptable and would doom the transaction. Bird opined that MCC's strategy is to "throw everything against the wall and see what sticks" with the hope that the Commission will grab some of it and that any reduction in revenue requirement is a successful outcome.

Bird characterized Wilson's suggestion that NorthWestern renegotiate the transaction with PPLM as ridiculous because, if NorthWestern cannot close the deal, then PPLM will sell the facilities to another buyer.

Bird explained reductions NorthWestern made to its proposed revenue requirement in its rebuttal case: extension of the depreciable life of the hydros and amortization period for the acquisition adjustment to 50 years and agreement to forego any return on its investment in Kerr during the short period before the transfer to CSKT. These changes reduce NorthWestern's annual revenue requirement by approximately \$7.4 million for the first year.

Adrien M. McKenzie (FINCAP, Inc.)

Adrien M. McKenzie, vice president of the consulting firm FINCAP, Inc., responded to MCC witness Wilson's ROE and capital structure recommendations.

McKenzie criticized Wilson's 9% ROE recommendation as unsupported, contrary to economic reality, too low to meet regulatory standards, and extreme.

According to McKenzie, Wilson ignored long-established regulatory standards regarding ROEs, including that a utility must have the opportunity to earn an ROE comparable to returns available to investors from alternative investments of comparable risks if the utility is going to maintain its ability to attract capital. McKenzie stated Wilson did not compare his recommended

ROE to any relevant benchmark. McKenzie contended that a 9-percent ROE would be one of the lowest in the nation and well below the average ROE for other utilities.

Regulatory Research Associates recently reported average ROEs for electric utilities from 2010 through March 2014, McKenzie stated, and found that they ranged from 10.02% to 10.34%. Current authorized ROEs for the electric utilities in the proxy group reported by AUS Utility Reports average 10.34%, as shown on McKenzie's Exhibit (AMM-2). McKenzie contended that investors will become unwilling to supply capital to a utility that cannot offer a return similar to the returns available from other opportunities of comparable risk and could also result in an investor view that the Commission's regulatory outlook is unsupportive, which could, in turn, result in an increase in the cost of capital to electric utilities in Montana.

McKenzie stated that another useful benchmark to evaluate Wilson's ROE recommendation is the expected earnings approach. McKenzie's Exhibit (AMM-3) presents the results of this approach when applied to the proxy group. The annual average ROE using this approach was 10.1%.

McKenzie asserted that Wilson was wrong to contend that NorthWestern's DCF analysis was flawed because it eliminated the 36 lowest values. According to McKenzie, DCF results that are not sufficiently higher than the yield available on less risky utility bonds must be eliminated from the analysis. He stated that FERC has affirmed the practice of eliminating low-end outliers that fail economic tests of logic. He added that NorthWestern, as a utility with a BBB credit rating, referenced average yields on triple-B utilities bonds in its DCF analysis as one benchmark in assessing low-end DCF results. Triple-B bonds' monthly yields averaged 5.17% in October 2013. McKenzie testified that reputable forecasting services expect the cost of long-term capital over the 2014-2018 period to be significantly higher than it is now, with the implied Triple-B utility yield at 6.74%. McKenzie argued that the low-end DCF estimates ranging from 2 to 7.4% should be excluded because they provide no meaningful guidance in light of the risk-return tradeoff principle, the FERC test of economic logic, and the upward trend expected for utility bond yields. McKenzie noted that a 25.5% value at the top of the DCF range was also appropriately eliminated. McKenzie also contended that Wilson ignored the expected upward trend in capital costs.

According to McKenzie, in a past case (Docket D2009.9.129) Wilson testified that he does not disagree with the elimination of outliers from statistical analyses and proposed to exclude DCF results that were either 300 basis points above or below NorthWestern's authorized ROE. McKenzie argued that if Wilson testimony in this case were to be consistent with that in the 2009 case, he would support excluding all DCF estimates of 7.25% or below.

McKenzie faulted Wilson's criticisms of Bird's application of the CAPM approach. He disagreed with Wilson's opinion that it is wrong to apply the CAPM using long-term government bond yields as the risk-free rate. McKenzie cited three sources of support for his position and concluded that CAPM analyses based on short-term Treasury bills should be ignored. McKenzie also contended that Wilson provided no support for his opinion that the range for a reasonable risk premium is 3 to 6% over the current cost of risk-free debt. According to McKenzie, Wilson's testimony implied a CAPM analysis result of an ROE of 3.55%, which McKenzie argued makes no economic sense. McKenzie stated Wilson did not address at all NorthWestern's ECAPM analysis or the size adjustment NorthWestern incorporated into its CAPM and ECAPM analyses.

McKenzie contended that Wilson is asking the Commission to authorize an ROE that would likely result in a capital loss on shareholders' investment in NorthWestern, an action that

McKenzie said would violate the standards for a fair ROE. He disagreed with Wilson's testimony that reviewing market-to-book ratios is necessary when applying the expected earnings approach and said that is not the case either traditionally or in recognized texts on the approach. He objected to Wilson's suggestion that regulators should set an ROE to produce a M/B of 1.0 because it would adversely affect a utility's ability to attract capital. McKenzie said that he is not aware of any recent case where a state regulator has approved an M/B adjustment in establishing an ROE and that FERC has rejected the approach. He asserted that the 7.4% ROE that resulted from Wilson's M/B adjustment is too low to be credible.

Regarding Wilson's recommended capitalization of a 45-percent common equity ratio, McKenzie criticized it because a higher debt ratio increases investors' financial risk, requires higher interest rates, and is inconsistent with the current 49.5-percent average equity ratio for proxy utilities and with Value Line's forecast of an average equity ratio of 48.9% as shown in Exhibit__ (AMM-5). According to McKenzie, a 45-percent equity ratio implies greater investment risks than those associated with the proxy group and investors would require greater compensation in the form of higher returns on debt and equity capital.

McKenzie's Exhibit__ (AMM-6) compared NorthWestern's requested overall rate of return of 7.14% to those of the electric utility proxy group. McKenzie noted that NorthWestern's requested ROR is 31 basis points lower than what is implied for the proxy group, which he said argues for its reasonableness.

Ahmad Masud (Credit Suisse)

Masud disagreed with Wilson's testimony that NorthWestern's assumption for terminal value is unreasonable. According to Masud, Credit Suisse also estimated a terminal value in its analysis of the transaction because the hydros are expected to be operational at the end of the 20-year forecast period and will have substantial economic value in the future if properly maintained.

Masud explained that NorthWestern's DCF analysis assumed a terminal value based on a 7.5x EV/EBITDA multiple, which was within the 7.5x to 8.5x range recommended by Credit Suisse. Masud said the Credit Suisse range was based on long-term historical valuation multiples of publicly traded independent power producers (IPPs) as well as dollars per kW multiples realized in recent precedent hydro transactions.

Masud took issue with Wilson's testimony that NorthWestern's multiple equates to a terminal value of \$1.1 billion at year end 2033, which Wilson said was implausible. Masud countered that, if Wilson had accounted for inflation at the 2.5% annual rate used by NorthWestern in its DCF analysis, a \$1.1 billion terminal value in 2033 equates to about \$660 million, or \$1,500 per kW, in today's dollars, which Masud said is reasonable. Masud referred to Exhibit__(AM-1) in his prefiled direct testimony which shows the EV/EBITDA trading multiples of publicly traded IPPs, including Brookfield Renewable Energy Partners, which Masud believes is the best comparable for this transaction. He also referred to the precedent transaction multiples in the exhibit, which show a number of recent hydro asset transactions with purchase prices that on average have been higher than \$2,000 per kW. The median dollar per kW multiple of the selected transactions was \$1,989. He stated that, excluding lowest price of \$1,184 per kW, all the other transactions were above \$1,500 per kW.

Masud added that in February 2014, LS Power, a financial investor, announced an agreement with Brookfield to sell its 33.3% ownership in the 417-MW Safe Harbor facility for \$303 million. Masud noted this equates to about \$2,182 per kW.

Kendall G. Kliewer

Kliewer testified that NorthWestern now proposes to reduce its depreciation and amortization rates for the hydros and the acquisition adjustment from the 2.5% in its initial filing to 2.0%. and to increase the life of the assets to 50 years. Kliewer noted that using lower depreciation rates now may put additional pressure on depreciation rates at the time NorthWestern conducts its next depreciation study.

Regarding the Kerr acquisition adjustment proposed by MCC witness Clark, Kliewer argued that Clark incorrectly characterized \$83.9 million of the acquisition adjustment as a loss on the Kerr facility. Kliewer asserted that NorthWestern will not have a loss on the sale of Kerr; rather, it is offering PPLM \$870 million for the hydros without Kerr, which leaves a total acquisition adjustment of \$346.9 million after the \$523.1 million original cost of the remaining hydros is subtracted from the purchase price.

Kliewer stated that NorthWestern is willing to forego any return on or return of its investment in Kerr. Removing Kerr from rate base will reduce the first year revenue requirement by \$3,036,610. Until Kerr is sold to the CSKT, any power generated from Kerr that is used to serve NorthWestern customers will be provided at the cost of operating the dam with no return to shareholders.

Patrick J. DiFronzo

DiFronzo's presented rebuttal adjustments made to the original filing. Exhibit_(PJD-5) sets forth the updated test year revenue requirement. The rebuttal adjustments are: the change in the hydros' book depreciation life from 40 to 50 years, which is a reduction of \$4,401,890, and the Kerr plant adjustment to eliminate \$30 million from rate base relating to Kerr, which is a reduction of \$3,036,610. Accounting for these adjustments, NorthWestern requested a revenue requirement decrease of \$7,438,499 from the original amount of \$128,402,190. The updated revenue requirement is \$120,963,690.

Exhibit_(PJD-6) is an updated summary of estimated total electricity supply rates that include the hydros. Exhibit_(PJD-7) is an updated bill impact analysis based on the updated revenue requirement. According to DiFronzo, if the hydro transaction is approved, a typical residential customer's total bill in October 2014 will increase by \$3.82 per month, or 4.86%, when compared to the May 2014 bill.

II. ECONOMIC ANALYSIS

NorthWestern Energy Direct Testimony

John D. Hines

John Hines is NorthWestern's vice president – Energy Supply. He testified that acquiring the hydro assets alone, without the coal-fired facilities, would reduce short market exposure without unduly increasing exposure to long markets and greater environmental regulation. He stated that following the expected conveyance of Kerr Dam, the portfolio would be slightly long in light load hours and short in heavy load hours. He said that the hydros will reduce NorthWestern's reliance on market purchases from 48% to about 10% of the portfolio, which will therefore reduce exposure to market risk. In response to DR PSC-069, Hines stated that NorthWestern could not be specific at this time with respect to the details of the methods it would use to dispose of excess power in long positions or obtain energy in short positions.

Hines described opportunistic resources as "...existing generation resources that become available for acquisition by NorthWestern outside of the normal planning and procurement process which is typically directed at new resource alternatives."¹⁶ He stated that the 2011 Plan described some of the benefits of pursuing opportunistic resources, including the lack of development risk and need for additional infrastructure, and a market-based rather than a new-build purchase price.

Hines testified that the 2011 Plan provided the framework to acquire new generation assets and identified market purchases, opportunity resources, and a combined cycle combustion turbine (CCCT) as the likely alternatives to replace the PPL contract scheduled to terminate in June 2014. According to Hines, the 2011 Plan also identified key risks including market price volatility, greenhouse gas regulation, and fuel price risk. Hines asserted that the hydros acquisition is consistent with the 2011 Plan. Hines also discussed resource adequacy and reliability concerns.

Hines described the role of Energy Supply in evaluating the hydro assets. According to Hines, Energy Supply conducted due diligence of the assets, estimated their market value using a DCF analysis, and evaluated economic metrics of the purchase. The due diligence included data review and site visits. The Stimatz direct testimony provides details of the DCF analysis.

NorthWestern evaluated economic metrics of the purchase including: 1) a total cost comparison of the current portfolio, a prospective CCCT portfolio, and the hydros portfolio; and, 2) a stand-alone cost comparison of market purchases, a CCCT, and the hydros. Hines testified that NorthWestern performed only deterministic comparisons of the portfolio and stand-alone costs in preparing a bid for purchase of the hydro assets. After submitting its June 2013 bid to PPL, NorthWestern contracted with Ascend Analytics to perform stochastic analysis on these comparisons using the PowerSimm model.¹⁷

Hines asserted the acquisition of the hydro assets is consistent with the resource planning objectives found in § 69-8-419, MCA. According to Hines, the five objectives are:

¹⁶ Hines prefiled direct testimony, p. 10.

¹⁷ Stochastic analysis is used to project outcomes under conditions of uncertainty where expected future values of the unknown variables can be estimated using historical values or other reasonable expectations. The expected values are estimated using defined probability distributions rather than determined values.

- 1) To provide adequate and reliable electricity supply service at the lowest long-term total cost;
- 2) To conduct an efficient electricity supply resource planning and procurement process that evaluates the full range of cost-effective electricity supply and demand-side management options;
- 3) To manage and mitigate risks;
- 4) To use open, fair, and competitive procurement processes whenever possible; and
- 5) To provide adequate electricity supply service at just and reasonable rates.

Hines asserted that NorthWestern met objectives 1-3 and 5, and that objective 4 is not relevant. To support the first and second objectives. Hines stated that the hydro assets provide the lowest long-term, risk adjusted total cost portfolio compared to alternative resources identified in the 2011 and 2013 Plans, and that these plans include cost-effective demand-side resources and other supply resources that could reasonably address NorthWestern's current and forecast supply needs.

Regarding the third objective, Hines argued that the hydro assets could be used to manage and mitigate risk through alleviating market and environmental uncertainty, and providing more portfolio diversity. In addition, the hydro assets are located at multiple facilities and are not exposed to fuel price risk.

Hines asserted that the fourth objective is not relevant because there was no time to run a competitive solicitation, there is no way to build new hydro generation of this capacity in Montana, and because a solicitation for theoretical generation results in bids with very limited validity. Furthermore, NorthWestern was not in charge of the sales process. Hines addressed the fifth objective by stating that the hydro assets are proven to provide adequate service and have been shown to be the lowest risk-adjusted cost alternative of the resources analyzed to meet the future supply needs of NorthWestern.

Hines testified that at a high level, NorthWestern made the following Plan changes from 2011 to 2013: 1) NorthWestern contracted with Ascend Analytics to model portfolio selection using the PowerSimm software; 2) NorthWestern confirmed the hydro assets as an opportunity resource and the preferred resource in the Plan; and 3) described the change in supply risk in moving from a prospective CCCT/market purchase portfolio to a hydro asset portfolio.

Hines Supplemental Testimony

Hines explained that, as requested by the Commission, NorthWestern had supplemented its original filing with additional stochastic modeling. He asserted that the three additional portfolios that NorthWestern modeled did not change his original conclusion that the hydro purchase is the least-cost, lowest-risk alternative when comparing long-term, risk-adjusted portfolio costs. On page 6 of his Additional Issues testimony, he provided an update to his Table 2 (found on p. 37 of his direct testimony) to reflect the additional modeling results.

Travis E. Meyer

Travis Meyer, NorthWestern's director of investor relations and corporate planning, presented the Long-term Revenue Requirements (LTRR) spreadsheet model. It estimates the annual cost over a 30-year period of owning and operating the hydros compared to purchasing an equal amount of energy at June 7, 2013 expected market prices. Meyer explained two versions of the LTRR model: the first, provided in Exhibit_(TEM-1), is the version prepared at the time NorthWestern submitted its offer to PPL in July 2013. The second, provided in Exhibit_(TEM-

2), is an updated version of Exhibit_(TEM-1) that reflects the signed PSA and refined cost estimates.

Most of the expense and capital inputs to the LTRR model mirror inputs to the DCF model. Meyer explained the eight primary LTRR model inputs listed below:

- Rate of Return (ROR) of 7.14% over the 30-year period.
- Average rate base - The \$900 million purchase price is the beginning rate base for the first year. Each year, estimates of capital expenditures increase the rate base while depreciation and accumulated deferred taxed reduce the rate base.
- Operating expenses - Largely the same operating expense estimates, including property taxes, as the DCF model. Several of these expense estimates are based on PPL's June 2013 Confidential Information Memorandum (CIM).¹⁸ Meyer provides a table on page 8 of his testimony showing the source of each item underlying the total operating expense. Meyer explains that PPL's CIM included \$4.9 million in annual Western Power Marketing Group expenses for the hydro and thermal assets. The LTRR model includes \$2.4 million for such expenses for just the hydro assets, based on the hydros' pro rata share of total generating capacity. The LTRR model offsets the \$2.4 million expense with \$1.9 million of "synergies" because NorthWestern determined that its Energy Supply group already performs many of the same activities as the Western Power Marketing Group.
- Effective income tax rate - Reflects an effective state and federal tax rate of 38.67% over the 30-year period after accounting for the flow-through of accelerated tax depreciation for state tax purposes.
- Capital expenditures – The same CapEx estimates as in the DCF model for the period 2014-2033. An annual 2.5% escalation rate is applied for the 2034-2043 period.
- Depreciable life of assets - For book purposes, assumes 40-year straight-line depreciation.¹⁹ For tax purposes, depreciates the purchase price and incremental CapEx using the 20-year Modified Accelerated Cost Recovery System (MACRS). Meyer states that the accumulated difference between book and tax depreciation expense, multiplied by the federal tax rate, creates deferred income tax liability that reduces rate base for the first 21 years of the evaluation period.
- Hydro production forecast - Assumes the same amount of energy generation as the DCF model for the 2014-2033 period. Thereafter, assumes energy generation remains constant at the 2033 amount, or about 2.5 million MWh per year.
- Revenue credits - Calculates revenue credits based on an assumption that any portfolio energy supplies that exceed retail customer demand are sold at the forward market prices.²⁰

Meyer's direct testimony provided on page 12 an illustration of how each of the above primary inputs to the LTRR model combine to produce the estimated annual cost (revenue requirement) associated with owning and operating the hydros based on the \$900 million purchase price. Exhibit_(TEM-1), the version of the LTRR NorthWestern prepared in advance of its purchase offer, estimated a \$1.715 billion 30-year NPV of revenue requirement for the

¹⁸ The CIM was provided by NorthWestern in response to DR PSC-001.

¹⁹ See the summary of Kendal G. Kliewer's testimony for a discussion of the 40 year asset life.

²⁰ The revenue credit calculation is illustrated on p. 10 of Meyer's prefled direct testimony.

hydros, which implies a \$59.58 per MWh levelized price of energy. Meyer explained that if NorthWestern could have entered a 30-year contract for the same amount of energy priced at the June 7, 2013 forward market prices, the NPV revenue requirement would be about \$1.579 billion, which implies a \$54.85 levelized price of energy. Meyer noted that the revenue requirements the LTRR model estimates are not risk-adjusted.

Meyer also provided an updated LTRR model in Exhibit_(TEM-2). The updates to the model include: 1) increased revenue credits associated with the hydro purchase attributable to a 25 MW on-peak contract with PPL Energy Plus that was assumed to be terminated in the Exhibit_(TEM-1) version of the model, but which was not terminated in the PSA; 2) reduced expenses attributable to refined analyses of spinning reserve requirements and property tax expenses; 3) reduced first-year average rate base from accounting for a net operating loss deferred tax liability and gross cash requirements; 4) reduced revenue requirements attributable to including PTC impacts; 5) an increased Kerr conveyance price from \$25 million to \$30 million, pursuant to the PSA; and 6) a refinement of the comparison to forward market prices by weighting monthly on- and off-peak prices by forecast hydro production. The net impact of these updates is a \$12.8 million reduction in the first-year revenue requirement. The table below (found on page 19 of Meyer’s testimony) compares the results of the two versions of the LTRR model.

LTRR model: Exhibit__(TEM-1) version

	Owned Hydro Facilities	6/7/13 Forward market prices	Implied benefit of forward market (non risk-adjusted)
30-year NPV revenue requirement (\$Millions)	\$1,715	\$1,579	-7.9%
30-year levelized price (\$ per MWh)	\$59.58	\$54.85	-7.9%

LTRR model: Exhibit__(TEM-2) version

	Owned Hydro Facilities	6/7/13 Forward market prices	Implied benefit of forward market (non risk-adjusted)
30-year NPV revenue requirement (\$Millions)	\$1,658	\$1,627	-1.9%
30-year levelized price (\$ per MWh)	\$58.04	\$56.96	-1.9%

Joseph M. Stimatz

Joseph Stimatz, NorthWestern’s manager of asset optimization in the Energy Supply Market Operations group, presented the DCF analysis that NorthWestern used to evaluate the hydro purchase from a merchant point of view. Exhibit_(JMS-1) provides a mid-range value of \$826 million and a summary of its derivation.

Stimatz discounted net cash flows over a 20-year period using a discount rate equal to 7.14%, NorthWestern’s proposed weighted average cost of capital in this proceeding. Stimatz

modeled net cash flows over a 20-year span in accordance with the information provided in the PPLM data room.²¹ In this model, revenues represent the market value of the energy produced by the hydros. Market value equals market price multiplied by the quantity of energy produced.

PPLM's CIM included historical data and projections of electricity output from the hydros. PPLM indicated that its projections were based on a 5-year average. Stimatz developed independent forecasts using 5- and 20-year historical averages. He determined that the CIM projections were consistent with his own and used the CIM projections in his DCF analysis.

Exhibit_(JMS-2) provides the streams of expected Mid-C and NorthWestern system prices that were used to estimate revenues. The price forecast began with forward market quotes at Mid-C. Market quotes were available through 2020, and were extended through the full 20-year period at an escalation rate of 2.10%. Stimatz adjusted this stream of prices for projected carbon taxes, beginning in 2021 at \$21.11 per metric ton, and escalated at 5% per year.

Stimatz used a market heat rate method to determine the effect of carbon taxes on market prices. The market heat rate is the ratio of the Mid-C market price over the AECO natural gas price. It is used as a proxy for the actual heat rate of the price setting generating resource at the margin. The actual heat rate of a thermal resource equals its output in MWh divided by the energy content of the fuel consumed, usually measured in BTUs. Stimatz used the market heat rate proxy, and the estimated heat rate and carbon production of a combined cycle plant to estimate the impact of a projected carbon tax on the price of electricity at Mid-C beginning in 2021.

Stimatz applied basis adjustments to the carbon-adjusted stream of prices in order to compensate for the cost of transmission and losses to Mid-C, and convert the Mid-C prices to NorthWestern system prices. Stimatz testified that the approach used to estimate forward prices in his model is similar to methods used to estimate carbon prices and electricity prices in the 2011 Plan and in the Spion Kop preapproval proceeding.

Expenses included fixed O&M expense, property taxes, Kerr Dam rent expense (through 2015), generation taxes, G&A expense, depreciation expense, and income tax expense. The PPLM CIM provided estimates of O&M and G&A expenses, and CapEx. Stimatz testified that NorthWestern verified recent historical capital investment expenditures by PPLM at the facilities and developed future CapEx estimates through due diligence.

The terminal value represented the estimated value of the assets in 2033. NorthWestern imputed the value as 7.5 times the expected value of EBITDA. The estimated value is \$1.1 billion in 2033, discounted to \$290 million in 2013. Regarding the appreciated value of the assets in 2033, Stimatz testified that NorthWestern expects the hydro facilities to last much longer than 20 years with appropriate maintenance and CapEx and that the ownership rights to generate electricity are very valuable, especially with increasing environmental regulation.

In NorthWestern's 2013 Plan, page 6-5, the estimated net present terminal value of a CCCT is \$9 million. Stimatz did not estimate this value using a market multiple of EBITDA. Instead, he escalated the expected initial cost of the gas plant in 2018 at 2.1% to the terminal period 2043, applied a scalar of 10%, and discounted the result to the present at 7.14%.²²

Stimatz included a \$30 million positive cash flow in 2015 for the expected transfer of Kerr Dam to CSKT. This corresponds to an agreement that PPLM will deliver payment of \$30 million to NorthWestern upon transfer of the property to CSKT irrespective of the actual conveyance price.

²¹ DR PSC-074a

²² See also DR PSC-071c.

Stimatz estimated a mid-range value for the hydro assets of \$826 million, flanked by a low value of \$790 million and a high value of \$935 million. He obtained the \$790 million value using a discount rate of 7.50% and a market multiple of 7.5 to estimate terminal value. He derived the \$935 million value using a discount rate of 6.50% and a market multiple of 8.5.

Regarding the price forecast used by NorthWestern to value the hydros, Stimatz stated it was developed in a manner that was consistent with NorthWestern's 2011 and 2013 procurement plans. The components to the price forecast are: intermediate-term Mid-C market quotes, including an escalation rate; a basis adjustment from Mid-C to Montana; and a carbon price adjustment beginning in year 2021.

Stimatz asserted it is important for NorthWestern to acquire generating assets in Montana because dependence on the wholesale market exposes customers to a risk of high market prices, a risk that there may not be electricity available in the market to meet load requirements, and a risk that a large contracted supplier will default on its obligation to deliver power to NorthWestern's system.

Stimatz stated that a number of factors reduce the viability of a market purchase strategy: 1) the widespread development of variable wind and solar resources that have claimed significant portions of flexible resources such as Columbia River hydro; 2) the uncertain future of regional coal-fired resources such as the Boardman plant in Oregon; and 3) the Montana Alberta Tie Line that provides a 300 MW transmission path to Alberta. Because of these factors, NorthWestern doubts the viability of relying on excess capacity in the region.

Stimatz testified that the hydros would be good fit for NorthWestern's electricity supply portfolio. The hydros would be a reliable source of carbon-free baseload power that is not exposed to development risk, and that would not require development of additional transmission resources. Stimatz stated that the hydros would provide diversity and balance to the portfolio, and would satisfy approximately 38% of NorthWestern's total energy needs. He said that the size of the hydros is right because the post-Kerr capacity would reduce short and long market risk.

Stimatz stated that the hydros present the most attractive long-term supply resource available to NorthWestern. He testified that a CCCT has been the preferred resource in previous supply procurement plans, and that in current analysis the hydro acquisition is lower cost than a CCCT on both a standalone and a combined portfolio basis. On a standalone basis he asserted that the hydros have a 30-year levelized price of \$56.27/MWh compared to \$87.76/MWh for the modeled CCCT. Combined with the existing portfolio and market transactions to meet load, the price is \$64.92/MWh for the hydros compared to \$71.66/MWh for the CCCT, or \$64.17/MWh assuming all load not met by the existing portfolio is met using market purchases.

Stimatz described the stochastic analysis performed by Ascend Analytics, using its proprietary power modeling package called PowerSimm. The software generated thousands of simulations, drawing values of key variables from defined probability distributions, in order to evaluate resource options.²³

Ascend used historical information to estimate probability distributions for some variables, including weather, load, fuel prices, and stream flows. To estimate variability of a carbon cost variable with no prior information, Ascend assigned a triangular probability distribution for these costs based upon the assumptions NorthWestern used to project carbon

²³ A simulation is one run of a model that predicts a variable of interest such as the price of electricity. The model may require values that are predicted through simulations of other models. For instance, a model to predict electricity price may require a value for electricity demand that is predicted in a simulation run of a demand model.

taxes in the DCF model. The simulated values of carbon taxes were converted to carbon costs per MWh using a constant scalar 0.6.²⁴ Expected CapEx for hydro upgrades and expected O&M costs were not modeled as stochastic variables.²⁵

Stimatz testified that Ascend initially modeled three cases in PowerSimm: 1) existing supply resources plus market purchases to meet load; 2) existing resources plus a 239 MW CCCT in 2018 plus market purchases; and 3) existing resources plus the hydros plus market purchases. The first case was considered the current or default portfolio. The second case was chosen because NorthWestern has found CCCT resource choices to be attractive in recent supply plans. The third case represented an opportunity purchase of the hydros.

Ascend evaluated these three resource options using net present values over the period 2015-2043. The NPV of each resource included the present value of the expected terminal or residual value of the resource at the end of the study horizon. The NPV of the expected terminal value of the CCCT resource was \$9 million.²⁶ The NPV of the expected terminal value of the hydros resource was \$212 million, assuming that hydro generation rights and land ownership do not depreciate in the future.²⁷ The hydros portfolio had lower NPV than the other two portfolios, before and after accounting for risk. On a risk-adjusted basis, Stimatz asserted that the NPV of the hydros portfolio was \$376 million less than the current portfolio and \$386 million less than the CCCT portfolio.

Stimatz Supplemental Testimony

Stimatz described the results of modeling three additional resources in PowerSimm. These included: 4) existing resources plus a 100 MW combustion turbine (CT) added in 2018, plus market purchases; 5) existing resources plus a 100 MW CT in 2025, plus 100 MW of wind in 2025, plus market; and 6) existing resources plus a 239 MW CCCT in 2025, plus 100 MW of wind in 2025, plus market purchases.

Stimatz testified that the hydros portfolio outperformed all of the additional portfolios. The NPV of the hydros portfolio was \$443 million less than the value of the 2018 CT portfolio (4), \$384 million less than the value of the CT plus wind portfolio (5), and \$332 million less than the CCCT plus wind portfolio (6).

Montana Consumer Counsel Direct Testimony

Dr. John W. Wilson

Wilson recommended modifying and improving the hydro proposal rather than rejecting it. He said if NorthWestern's speculative assumptions regarding carbon taxes and future CapEx do not occur, the resulting cost increase for Montana ratepayers will be above alternative expected competitive market power costs.

Wilson stated that NorthWestern requested a 2014 test year revenue requirement of \$128,402,190 consisting of \$66,570,901 in costs and \$61,831,289 in return on rate base. Wilson stated that NorthWestern's own analysis (Exhibit __ (TEM-2) shows that the cost of the same amount of power purchased in the competitive market would be \$62 million, or less than half of NorthWestern's proposed test year cost for the hydros. According to Wilson, ratepayers will pay

²⁴ DR PSC-075a.

²⁵ DR PSC-158d.

²⁶ 2013 Plan, p. 6-5.

²⁷ *Id.*

over \$400 million more for electricity over the next eight years if the hydro acquisition is approved than they would pay for competitive market purchases in the same time period. He asserted that NorthWestern's claim of a 4.2% rate increase is mistaken because it fails to account for the effect of substituting the hydros' costs for less expensive market purchases.

Wilson said NorthWestern's favorable stochastic modeling results using PowerSimm are flawed because: 1) NorthWestern included a \$1.679 billion cost offset for the hydros for assumed appreciation of the hydros over the next 30 years; and 2) the model adds a \$451 million cost increment to market alternatives to reflect market risk assumptions, especially carbon tax penalties and fuel cost uncertainties. Wilson said NorthWestern's stochastic modeling results were biased in favor of the hydro purchase as its hydro assumptions did not incorporate risks or uncertainties, such as realistic long-term O&M and CapEx costs for the aging hydro plants, while its assumptions for the market purchases alternative included substantial risk and uncertainty assumptions.

According to Wilson, NorthWestern has not shown that other buyers would be willing to pay as much or more than NorthWestern's \$900 million bid for the hydro assets. He said NorthWestern's DCF analysis concluded that alternative buyers would be willing to pay something in the neighborhood of \$826 million. However, Wilson criticized NorthWestern's DCF analysis that arrived at this conclusion because he disagreed with its assumptions that: 1) included \$247.4 million of carbon tax costs, which he stated are hypothetical and are costs that an unregulated alternative buyer would not be able to pass through in market prices until the assumed carbon taxes were actually implemented; 2) future CapEx would be only \$8.5 million annually when PPLM's actual and budgeted 2008-2017 CapEx averaged \$35.6 million; and, 3) include a terminal value of \$1.073 billion for the facilities rather than assuming any depreciation.

Wilson stated that without the carbon tax adder to projected purchased power costs, NorthWestern's projected cost of power from the hydros would be more expensive than projected competitive market purchase costs. Wilson said that the carbon tax assumption creates a cost advantage for the hydros in future years and drives the long-term cost comparison. He pointed out that the federal government has not decided the amount or timing of possible carbon tax penalties and there is considerable political disagreement surrounding the topic. Even so, he said, NorthWestern proposes rates that permanently embed a carbon tax adder beginning in 2014. Wilson acknowledged that NorthWestern has consistently included CO2 cost assumptions in its resource planning, but he stated it does not do so when considering the avoided costs of supply alternatives, as in Docket D2012.1.3, the most recent QF case. According to Wilson, NorthWestern argued in that case against including presumed but speculative carbon costs in avoided cost calculations, a policy that Wilson said would be prudent to adopt in this case.

Wilson asserted that NorthWestern's pricing proposal will increase ratepayer costs substantially, at least until carbon taxes are imposed at levels assumed by NorthWestern, while providing a great profit opportunity for the company. Wilson also contended that NorthWestern's proposal would cause an "intergenerational equity" problem, with current ratepayers unfairly burdened with huge additional costs for at least the next eight years.

Wilson criticized the CapEx projections that NorthWestern used in its comparative cost analysis as too low. He commented that PPLM's historical CapEx on the hydro plants have increased substantially as the plants have aged, but NorthWestern unreasonably assumed that when the currently ongoing CapEx projects are completed in 2017, there will not be any further large expenditure requirements needed for these aging assets. He also suggested that, since NorthWestern assumed zero decommissioning costs, the Commission should require as a

condition of approval that NorthWestern forego any attempt to recover future additional decommissioning costs as well as any negative net salvage claims for the plants in future depreciation costs analyses.

Wilson prepared two exhibits to his testimony in which he modified the carbon tax and CapEx assumptions made by NorthWestern in its cost models.²⁸ Wilson stated the results of these exercises show that if these timing and rate changes to carbon costs occur or future CapEx turns out to be significantly more than NorthWestern estimated, then the comparative cost of acquiring the hydros versus the alternative cost of market purchases will be even higher and more costly to ratepayers.

In order to moderate ratepayer impact, Wilson recommended the following three modifications to NorthWestern's proposal:

- Require a guarantee that ratepayers will be held harmless for any decommissioning costs in the future and that no negative net salvage will be proposed or requested for these plants in future depreciation cost studies. The test year revenue requirement in this and future cases should be adjusted to reflect the terminal value of the hydro plants.
- Require NorthWestern to forego any recovery of or return on any future hydro plant CapEx (above the proposed \$900 million purchase cost) exceeding an annual average of \$10 million (escalated at 2.5%). In the event that the annual average exceeds \$10 million (escalated), any excess could be "banked" for future recovery if and when the annual average drops below \$10 million (escalated).
- Require that no hypothetical carbon tax amounts will be reflected in rates until such time as CO2 taxes are actually implemented. To achieve this result, the present value of carbon taxes reflected in TEM-2 should be deducted from the authorized rate base amount for the dams and the recovery of CO2 tax amounts from ratepayers should be deferred until carbon taxes are actually enacted. The resulting revenue reduction can then be treated as a deferral and it can be added back to rate base (along with the original deduction and carrying costs) if and when carbon taxes equal to the amount assumed in TEM-2 are actually implemented. In the event that carbon taxes of a lesser amount than is assumed in Exhibit TEM-2 are eventually implemented, and/or to the extent that actual carbon tax enactment occurs at a later date, the deferred add-back (and original deduction) would be adjusted accordingly so that the present value of carbon tax recovery does not exceed the present value of carbon taxes actually implemented.

Wilson contended that if NorthWestern does not agree to these modifications, it is reasonable to conclude that NorthWestern's comparative cost analysis understates actual expected hydros costs and/or unreasonably overstates alternative competitive market costs. Wilson said the third modification is the most important as without it there is the possibility of adding \$1.375 billion of non-existent CO2 tax costs to Montana consumers.

²⁸ See Exhibit__(JW-3) and Exhibit__(JW-4).

Human Resource Council District XI/Natural Resources Defense Council – Direct Testimony

Dr. Thomas M. Power

Tom Power, a consulting economist, testified that NorthWestern’s economic evaluation of the hydro acquisition was sound. He focused on the economic implications of carbon emissions regulations and the risks of owning and operating coal-fired electric generators.

Power testified that NorthWestern’s economic evaluation of acquiring the hydros explicitly incorporates an estimate of future costs associated with carbon emissions regulation based on the GHG15 scenario in the U.S. DOE EIA’s 2013 Annual Energy Outlook. Power found this aspect of NorthWestern’s economic evaluation consistent with prior resource plans, which have incorporated carbon cost estimates since 2005, and the Commission’s responses to those plans. He specifically cited the Commission’s comments on NorthWestern’s 2011 Plan in which the Commission stated NorthWestern was correct to analyze the planning impacts of carbon regulation. Power pointed out that the Commission’s electric utility resource procurement rules require NorthWestern to “develop methods for weighting resource attributes...includ[ing] underlying fuel source and associated price volatility and risk, including risks related to future regulatory constraints on environmental impacts such as emissions of carbon dioxide....” Admin. R. Mont. 38.5.8213.

Power stated that other U.S. utilities and companies in other industries regularly incorporate estimates of the costs of future carbon regulation in their investment plans. He concluded that the carbon price estimates NorthWestern incorporated into its economic evaluation of the hydros are toward the lower end of the range of price estimates used by other Western electric utilities, and in the middle to lower end of the range of price estimates for a set of U.S. utilities analyzed by Synapse Energy Economics. Power’s charts on pages 10-11 of his testimony graphically illustrated how NorthWestern’s price estimates compare to other utilities’ estimates.²⁹ He explained that NorthWestern averaged the various carbon price scenarios in other utilities’ resource plans to calculate a comparative carbon price, excluding zero-cost scenarios. He further explains that the Synapse analysis relied on utilities’ “reference” or “expected” carbon price scenarios.

Power testified that carbon regulation in some form seems certain and business managers must consider the uncertain financial impacts of such regulation just as they must consider many other uncertainties within the business environment. He reiterated that the Commission has endorsed NorthWestern’s practice of including carbon cost estimates when evaluating resource alternatives and pointed out that the Washington Utilities and Transportation Commission (WUTC) has also stated that it considers a zero CO₂ cost assumption unrealistic and unreasonable in the context of Puget Sound Energy’s (PSE’s) 20-year planning horizon. He added that the WUTC’s comments on PSE’s 2013 integrated resource plan stated that there is growing evidence that society and PSE customers are bearing the cost of CO₂ emissions and that those costs are not zero. Power concluded that accounting for the uncertainties related to the future operation of electricity generators, including fuel costs, market prices, maintenance costs, and regulations, is standard practice. He finds that the regulatory risks associated with carbon-

²⁹ The graph on p. 10 shows the same information NorthWestern provided in its 2013 Plan, pp. 6-27, except that prices are in real 2012 dollars per short ton, instead of nominal dollars per metric ton.

intensive generation are not zero and it would be imprudent to ignore potentially significant future costs when making resource decisions.

Power explained that carbon price assumptions impact several important economic parameters NorthWestern used to evaluate alternative resource portfolios. Resources that burn carbon-based fuels become relatively more expensive than hydro resources as carbon prices rise. Since resources that burn carbon-based fuels typically set market electricity prices, those market prices also increase with rising carbon prices. NorthWestern modeled these, and other, economic parameters to evaluate the performance of its supply portfolio with the hydros compared to other resource portfolios using DCF analysis – a deterministic analysis that assumes economic parameters like natural gas prices, electricity prices, and carbon prices are known. Power notes that a deterministic analysis can include sensitivity analyses, which change individual economic parameters in order to test how sensitive the results are to various assumptions.

Power found reasonable NorthWestern's deterministic analysis of the hydro purchase portfolio compared to an alternative that acquires a natural gas-fired CCCT. He noted that NorthWestern's resource plans have consistently showed that adding natural gas-fueled electric generation is preferred to relying on market purchases when costs and risks are accounted for. He also found NorthWestern's conclusions in this regard consistent with those of other U.S. utilities that are acquiring resources.

According to Power, NorthWestern's deterministic analysis shows that the hydro purchase compares favorably to acquiring a CCCT. Assuming zero carbon costs, the analysis indicates that the levelized portfolio cost with the hydros is slightly less than with a CCCT (\$57.12 per MWh vs. 57.62 per MWh). Each \$1.00 increase in the assumed initial carbon price increases the levelized cost advantage of the hydro-based portfolio by about 50 cents per MWh. At NorthWestern's assumed initial carbon price, the levelized, hydro-based portfolio is \$7.68 per MWh less than the CCCT-based alternative. Power graphically illustrated these comparisons on pages 18-19.

Power testified that a balanced resource portfolio would not expose 50% of NorthWestern's resource requirements to market prices. For that reason, he did not believe the cost of market purchases is a reasonable alternative against which to compare the hydro purchase. He noted that NorthWestern nevertheless made such a comparison in its application and it shows that on a levelized, total portfolio cost basis, the two alternatives are similar, about \$63 per MWh. He added that assuming a zero carbon price makes the market purchase alternative cheaper by about \$10 per MWh, but emphasized that a portfolio based only on market purchases combined with a zero carbon price assumption involves serious future risk, the cost of which is erroneously omitted from the analysis.

Power noted that NorthWestern used stochastic analysis, not deterministic analysis, to evaluate the hydro purchase alternative in its 2013 Plan. He described stochastic analysis as more sophisticated than deterministic analysis because, rather than relying on an analyst's "best guesses" of future economic parameters, stochastic analysis tries to incorporate a whole set of possible future values for those parameters and their relative likelihood. The relative likelihood of economic parameters is informed by historical observations and near-term expectations. If historical observations are not available, as with carbon prices, a frequency distribution must be developed. Power explained that the result of a stochastic analysis is a projection of the future frequency distribution for important parameters, such as the cost of electricity. He stated that the results can be summarized in terms of the expected or mean value, which is a probability weighted average, and in terms of the risk associated with the expected value, which is based on

the variance within the projected frequency distribution. Power explained that the PowerSimm model NorthWestern used in the 2013 Plan measures risk in terms of the probability that costs will be greater than the mean value. PowerSimm combines the risk measure and the mean into a risk-adjusted value, for example a risk-adjusted total portfolio cost. Power found the PowerSimm risk measure, which focuses on potential negative outcomes, appropriate for a regulated utility with an obligation to protect customers.

Power reported that the PowerSimm stochastic analysis shows that the hydro purchase portfolio is \$332 to \$443 million less expensive than other portfolios, when risk premiums are included. He noted that, in addition to carbon prices, the risk premiums reflect uncertainty related to customer load, weather, hydroelectric and wind generation, natural gas prices and market electricity prices. When risk premiums are removed, the hydro purchase portfolio is \$168 to \$252 million less expensive than alternative portfolios, but Power found that comparison indefensible because the point of stochastic analysis is to quantify how risk varies among alternative portfolios.

Power explained that the terminal value NorthWestern assigns to the hydro facilities at the end of the 30-year analysis period has a larger effect on the total portfolio cost than the terminal values NorthWestern assigns to the gas-fired and wind resources in alternative portfolios. He said that is because hydroelectric generators have longer lives. He stated that it would be inappropriate to assume the terminal values are zero or ignore differences among resource types. However, if the effect of NorthWestern's resource terminal value assumptions were removed from the portfolio costs, Power found that the hydro purchase portfolio is still less expensive than the alternatives by \$137 to \$234 million.

Power stated that even if two empirically false adjustments are made to the results of the PowerSimm stochastic analysis – assuming that the cost of risk is zero and that the terminal values of the modeled resources are zero – the cost of the hydro purchase portfolio is roughly the same as the cost of the alternative portfolios. With both of those adjustments, he estimated that the hydro portfolio cost would be \$49 million less expensive than the highest-cost alternative and \$44 million more expensive than the least-cost alternative. He found NorthWestern's stochastic analysis showing that the hydro purchase portfolio is superior to alternatives to be robust, even when using unrealistic and unsupported assumptions.

Power advocated a decision-making approach for the hydro purchase that considers both the quantifiable resource costs considered in the modeling analyses and resource attributes that cannot be expressed in dollar terms. In this case, he found the following non-dollar considerations important: 1) a long-term perspective to minimizing costs and risks for customers; 2) the value of rate/bill stability, especially for low- and fixed-income customers (in this regard he provides a graph on page 34 showing the volatility in natural gas prices from 2000-2014); 3) promoting a balanced, environmentally responsible resource portfolio to minimize regulatory risks; and, 4) repatriating basic infrastructure that has served Montana residents and business for a century and rededicating that infrastructure to public service.

Regarding the risks of owning and operating coal-fired electricity generators, Power explained that PPLM offered to sell all of its generating facilities in Montana and that NorthWestern offered a lower price for all the facilities than for just the hydro facilities. He found that NorthWestern was justifiably concerned about the prospect of acquiring the coal-fired facilities in addition to the hydro facilities. The two primary concerns NorthWestern identified were related to environmental regulations that would require substantial additional investment to continue operating the facilities and remediate the site at the end of their lives, and the risk of

having excess capacity, including exposure to market price fluctuations and increased FERC regulation.

Power sees an industry that is truly concerned that federal regulations will force the closure of older existing coal-fired facilities, citing PPLM's decision to shut down the Corette plant as proof. He noted that EIA projects that 60,000 MW of existing coal-fired capacity will be retired between 2010 and 2040, most of that before 2016 due to EPA regulations. He noted that EPA is working on additional regulations that will impact coal plants and that EIA expects virtually no new coal plants will be built over the next 30 years. However, he noted that this does not imply a total abandonment of coal-fired generation; EIA projects coal-fired generation will still supply one third of the electricity consumed in the U.S. in 2040. He also noted NorthWestern's conclusion that older, smaller plants like Colstrip Units 1 and 2 and Corette could have negative economic value while Colstrip Units 3 and 4 have positive economic value.

Power testified that the ultimate impact of carbon and other emissions regulation on Montana's economy is unknown. He stated that although such regulation will favor less carbon intensive energy sources, like hydro, wind, and natural gas plants, EIA projections indicate that Montana's low-sulfur Powder River Basin coal will continue to play an important role in the nation's energy supply for decades.

Finally, Power testified that the cost and risk to NorthWestern's customers would not likely have been lower had the company purchased both PPLM's hydroelectric and coal-fired facilities. Instead, NorthWestern would have substantial excess supply to sell at fluctuating market prices. Customers, shareholders, or both would bear the associated risk. He added that NorthWestern also would have acquired all the environmental problems associated with coal-fired generation (related to federal emissions standards, combustion waste, and site remediation as well as carbon regulation), would face the need to make significant investments in Colstrip Units 1 and 2 and Corette or abandon those just-purchased plants, and could have trouble marketing the energy from the coal plants to the coastal states in the West trying to reduce their use of carbon-intensive resources. He found that it would be imprudent for a regulated utility to intentionally take on these additional costs and risks.

NorthWestern Energy – Additional Issues Testimony

Travis Meyer

Meyer described the effect of increased CapEx on the LTRR model results. He submitted two revised versions of his Exhibit_(TEM-2) LTRR model: Exhibit_(TEM-3) assumes the annual CapEx is 30% higher CapEx than Exhibit_(TEM-2), and Exhibit_(TEM-4) assumes annual CapEx is 15% lower CapEx than Exhibit_(TEM-2). The Exhibit_(TEM-3) version of the LTRR produces a 30-year NPV revenue requirement of \$1.695 billion (\$59.36 per MWh), and the Exhibit_(TEM-4) version produces a 30-year NPV revenue requirement of \$1.639 billion (\$57.38 per MWh). Meyer reported that these results are used by Stimatz in his additional issues testimony to compare the hydro purchase portfolio to alternative portfolios on a NPV basis.

Joseph Stimatz

Stimatz addressed the impact of modeling alternate streams of CapEx on the risk-adjusted NPVs of the hydros. He used analysis provided by NorthWestern witness Meyer to calculate the NPV of revenue requirements resulting from two alternate CapEx streams: 30% higher and 15%

lower than the original hydros CapEx stream. The hydro portfolio had lower NPV than all other portfolios under both scenarios. The table below from Stimatz’ additional issues testimony compares the benefit of the hydros portfolio relative to the other modeled portfolios under the alternate assumptions.

**Benefit of Hydros Under Varying Hydros CapEx
Measured in Net Present Value (\$millions)**

	Current Portfolio	CCCT 2018	Hydros	CT 2018	CT 2025 Wind 2025	CCCT 2025 Wind 2025
Original CapEx	\$ 376	\$ 386	\$ -	\$ 443	\$ 384	\$ 332
30% Higher CapEx	343	353	-	410	351	299
15% Lower CapEx	399	409	-	466	407	355

Montana Consumer Counsel - Additional Issues Response Testimony

Dr. John Wilson

To provide a reasonable ratemaking basis for approving the hydro purchase, Wilson proposed: 1) a symmetrical incentive range for future CapEx, and 2) either deferred recognition of carbon-justified profits or potential refund obligations for carbon-justified revenues if carbon costs are not implemented.

Regarding protection against unforeseen future CapEx requirements, Wilson had previously suggested implementation of a symmetrical system whereby NorthWestern would retain CapEx cost savings below \$7 million while CapEx amounts over \$10 million would be disallowed.³⁰ In this testimony, Wilson proposed an alternative incentive range that would use NorthWestern’s “extreme” scenarios from its CapEx sensitivity analysis in which the utility increased future CapEx by 30% over the original filing level and decreased future CapEx by 15%.

Regarding the uncertainty of carbon costs, Wilson had previously suggested treating the carbon-justified revenues for ratemaking purposes in the same way that the utility’s deferred income taxes are treated: immediately include the full hydro purchase price in rate base, but treat them as customer-contributed capital until actual carbon costs are enacted, at which time the appropriate portion of the accumulated deferral would reverse and accumulated revenues would be counted as utility profit.³¹ In this testimony, Wilson proposed an alternative under which the full purchase price would be rate-based and NorthWestern would collect the associated full revenue requirement. Carbon-justified revenues would be reflected in a refundable account without rate base deduction; if no carbon costs are implemented by a Commission-established date, NorthWestern would refund to ratepayers the collected carbon-justified revenues in the account and no further carbon costs would be reflected in future revenue requirements.

Wilson disagreed with NorthWestern witness Stimatz’ conclusion in his Additional Issues Testimony that adding the hydros to the current portfolio will cost, on a risk-adjusted net-present-value basis, about \$332 million less than the next best alternative. Wilson contended that the hydros’ cost advantage in Stimatz’ table on page JMS-3 is the result of adjustments NorthWestern made related to the assumed resale market value of the plants in 30 years and a

³⁰ See DR PSC-223a.

³¹ See DR PSC-202.

high market purchase risk premium that is added to the non-hydro alternatives. Without those adjustments, the costs of the other options would be lower than or close to the hydros. Wilson argued that Stimatz' cost comparisons are biased because he included the large risk premium for market purchases, but none for unforeseen future CapEx. He added that market costs for electricity have declined and become more stable since 2009 due to the substantial natural gas supply change that has occurred in Montana and the region.

NorthWestern Energy Rebuttal Testimony

John Hines

Hines testified that, if the Commission follows MCC's recommendations, the hydro assets will likely go to another entity not regulated by the Commission. He stated that for NorthWestern to rely on market purchases for 50% of load would be contrary to existing public energy policy. He asserted that a combined cycle natural gas plant plus wind option is the most realistic physical asset alternative to the hydro assets, at a cost of \$332 million more than the hydros. Hines also stated that during the period between the end of the PPL buyback contract in 2002 and the rate-basing of Colstrip 4 in 2008, NorthWestern's electricity supply costs increased 94.7%.

Hines argued that MCC is disconnected from the desires of Montanans for long-term stability in electricity prices. He testified that at the Commission sponsored listening sessions, support for the acquisition has been nearly unanimous, including many citizens willing to initially pay more in electricity rates.

Hines asserted that carbon risk is not hypothetical and that NorthWestern is required by statute and administrative rule to consider carbon risk in its analyses. He stated that electricity cost increases from carbon regulation may come in a variety of ways: through plant shutdowns, increased operating costs, cap and trade, or direct taxation.

Hines stated that Montana's preapproval statute, § 69-8-421, MCA, requires the utility to implement cost-effective carbon offsets in order to invest in natural gas and coal fired generation plants constructed after 2007. He cited Admin.R.Mont. 38.5.8204 and 38.5.8213 to show that NorthWestern is obliged to consider environmental risk and impact in developing its energy portfolio. Finally, Hines asserted that the Commission's comments on the 2011 Plan demonstrate approval of carbon impact analysis.

Hines testified that stricter and more broadly applicable carbon regulations are likely. He noted that the EPA has proposed carbon standards for new fossil fired plants and is proposing standards for existing plants. He also provided examples of several coal plants in the Pacific Northwest that are slated for decommissioning, and referenced an executive order signed by Washington Governor Inslee that creates a carbon task force and calls on Washington utilities to reduce and eliminate the use of coal-fired electricity.

Hines compared NorthWestern's carbon tax forecast with an average of forecasts from several other Pacific Northwest utilities. He found NorthWestern's forecast to be significantly lower than the average forecast in the years 2021, 2023, 2025, and 2030.

Hines compared Mid-C electricity prices in December 2012 with prices in December 2013 to illustrate the risk of market volatility. He asserted that colder temperatures in December 2013 caused electricity prices in that month to vary considerably more than prices in 2012. He reiterated that exposing customers to this type of volatility should be avoided.

Joseph Stimatz

Stimatz claimed that Clark's alternate bill increase comparisons that use late 2014 supply rates as base rates are not more appropriate than NorthWestern's bill increase comparisons that use total bill base rates in effect at the time of filing. Stimatz stated that Clark assumed that, absent the hydro acquisition, NorthWestern would have relied on the spot market for baseload needs rather than acquiring intermediate and long-term power purchase agreements. He stated that Clark also assumed that July 2014 spot market rates would be the same as June 2013 rates. In response to DR PSC-319c, Stimatz stated that \$19/MWh was the average cost of spot market purchases for NorthWestern in the period July 2012 through June 2013, and \$37/MWh from July 2013 through March 2014.

Stimatz testified that if the hydros acquisition opportunity had not arisen, NorthWestern would likely have sought three- to five-year contracts to meet baseload needs. He asserted that the prices of these contracts would have been higher than the short-term prices used by Clark. Stimatz also stated the hydro purchase is a long-term action and its benefits must be judged over the long term. Stimatz' response to DR PSC-323 was: "... as has been the case for the last decade, NorthWestern's portfolio has a substantial need for on-system, baseload supply. Thus, the central component of the portfolio would likely have been on-system, multi-year, fixed price purchases, similar to the on-system purchases NorthWestern has entered in the past."

Stimatz asserted that MCC witness Wilson overstated the importance of NorthWestern's DCF model in bid formation for the hydro assets. He stated that NorthWestern also considered its own 30-year revenue requirement model and the Credit Suisse analyses of DCF, comparable sales, and new build opportunities.

Stimatz compared NorthWestern's estimated future market prices at Mid-C with forecast prices of the Northwest Power and Conservation Council and PPL. Stimatz asserted that NorthWestern's power price forecast is conservative relative to its peers and is consistent with its planning forecasts for many years. Stimatz reasoned that if NorthWestern's carbon price and electricity price forecasts were inflated, then Credit Suisse would have found comparable asset sale prices to be much lower than \$900 million, contrary to fact. He claimed that the likelihood of increasing carbon regulation makes the hydro assets more valuable to NorthWestern, its customers, and other bidders.

Stimatz defended the hydro asset terminal value used in the DCF model. He stated that the EBITDA market multiple used to estimate the terminal value was at the low end of the range provided by Credit Suisse. Stimatz noted that Wilson did not offer an alternative estimate or empirical information that contradicts NorthWestern's method.

Stimatz rejected Wilson's proposal that NorthWestern should forego future recovery of decommissioning or net salvage costs for the dams. He testified that if NorthWestern were to decommission one or more dams, a future Commission would determine the prudence of that decision and related expenditures.

Stimatz asserted that CapEx for the hydro assets is projected to be lower in future years in part because PPLM has invested heavily in these assets over the last decade. He claimed that even if CapEx is 30% higher than projected, the increased cost to customers will be \$1.32 per MWh levelized over 30 years, an increase of 2.3%. On a risk-adjusted basis, if CapEx were 30% above projected, Stimatz stated that the total portfolio cost of the hydros would be nearly \$300 million less than the next best alternative.

Dr. Gary W. Dorris (Ascend Analytics)

Gary Dorris is the founder and CEO of Ascend Analytics (Ascend), the developer of the PowerSimm model.

Dorris described the analysis Ascend performed on behalf of NorthWestern for the 2013 Plan, using the PowerSimm model to evaluate the costs and risks associated with six different resource supply portfolios.³² He explained that PowerSimm uses historical observations of key system variables to simulate possible future conditions over the planning horizon, in conjunction with an hourly dispatch optimization model, to analyze the costs and risks of supply portfolios. He stated that PowerSimm captures the “risk premium” associated with each portfolio by calculating the value of costs exceeding the mean each year. He asserted that adding the risk premium to the expected cost of each portfolio allows for an apples-to-apples comparison among portfolios. He stated that all data is vigorously validated to ensure a sound analysis and PowerSimm’s simulations maintain the historically observed relationship between key system variables, such as weather and load, load and price, renewable generation and weather/load/price, etc.³³

Based on PowerSimm modeling results, Dorris concluded that the hydro acquisition would reduce the NPV of portfolio costs and reduce the risks of market price shocks. He found that the risk-adjusted NPV of the hydro acquisition is approximately \$5,851 million, compared to \$6,183 million for the next-best portfolio.³⁴ He contended that acquiring the hydros would provide a low-cost resource that would reduce currently excessive market risk attributable to NorthWestern’s short position for over 50% of its planning period load obligations. He emphasized that the hydro purchase represents the best resource for meeting NorthWestern’s supply needs because it consists of physical plants with very low marginal costs and zero CO₂ emissions, which hedges against market, fuel price and carbon cost uncertainty. He added that the plants also generate relatively steady baseload power, which increases reliability.

Using recent historical events, Dorris illustrated how market exposure can negatively impact customer costs. In Table 1 on page 15, he compared the NPV cost of two alternatives for supplying a fixed amount of energy for the period 2016-2030: acquiring the hydros, or relying solely on market purchases. The cost for the market purchases scenario is based on actual historic market prices from 1999-2013, adjusted for inflation. He noted that these historical market prices include significant spikes associated with: 1) the period of market infirmity in 1999-2000, 2) Hurricane Katrina in 2005, and 3) a price run-up in 2008. Table 1 shows NPVs of \$1.185 billion and 1.578 billion for the hydro acquisition and market purchases, respectively. According to Dorris, this analysis indicates that the hydros would avoid exposure to market price shocks that history proves can be large enough to increase customer costs for months and even years.

Dorris found Wilson’s economic conclusions to be flawed. According to Dorris, a prudent supply manager would reject Wilson’s approach because it leaves NorthWestern in a substantially short position and exposed to significant market risks. Dorris contended that a sound planning strategy would not rely on spot market purchases to meet long-term supply

³² Ascend modeled NorthWestern’s existing owned and contracted resources with each of the following additional resources : 1) market purchases; 2) a new CCCT, online in 2018; 3) the proposed hydro acquisition; 4) a new LMS 100 simply-cycle gas turbine, online in 2018; 5) a new LMS 100 and 100 MW of wind above the RPS requirement, online in 2025; and 6) a new CCCT and 100 MW of wind above the RPS requirement, online in 2025.

³³ See Volume 2, Chapter 4 of the 2013 Plan.

³⁴ See Dorris rebuttal testimony, Figure 2, p. 10.

obligations. He stated that the real alternatives to the hydro acquisition are other physical resources. He found NorthWestern's use of the DCF model was appropriate for estimating the hydros' market value and developing a bidding strategy, but stated that the comparative cost analysis in the 2013 Plan is the appropriate comparative cost analysis of the hydros as a means of providing the least-cost, least-risk energy supply portfolio over the long term.

According to Dorris, Wilson's use of undiscounted cash flows and undiscounted future values to describe various aspects of the hydro purchase is misleading when the rest of the analysis has been performed in terms of NPV. He stated that undiscounted values do not account for the time value of money for either NorthWestern or its customers. As examples, Dorris pointed to: 1) Wilson's reference to a \$400M total hydro purchase cost premium from 2014-2021, 2) Wilson's \$1.375 billion estimate of the cost attributable to modeled CO₂ price impacts, and 3) Wilson's \$1.68 billion characterization of the asset's residual value. Dorris stated each of these values appear inflated in Wilson's testimony because he uses an undiscounted future value instead of a NPV. Dorris asserted that, contrary to Wilson's testimony, NorthWestern does not actually assume any real growth in the residual value of the hydros, and NorthWestern only assumes a residual value of \$212 million when expressed in NPV terms. He added that even if the residual value of the hydros were assumed to be zero in 2043, the hydro acquisition portfolio still remains the least-cost and least-risk portfolio when compared to the other modeled supply options.

Dorris asserted that Wilson's concerns about the risks of capital improvement or maintenance costs in excess of projected values are not relevant to NorthWestern's comparative cost analysis. After reviewing various Northwest regional utilities' integrated resource plans, he found that it is not standard practice to explicitly incorporate risk associated with capital maintenance costs when comparing the costs of different resources.³⁵ He added that unanticipated capital maintenance costs are not included for any of the resources NorthWestern considered – the hydros are not unique in this regard. He stated that even if Wilson's potential cost increases for a large capital improvement project (year 2024-2026) and his proposed doubling of fixed maintenance costs beginning in 2018 were to occur, the NPV of the hydros' revenue requirement would increase by \$350 million, which is less than the \$373 million NPV cost advantage of the hydro purchase over the current portfolio plus market purchases.

Dorris stated that NorthWestern's stochastic approach to modeling carbon costs is consistent with current industry best practices. He asserted that it is important for NorthWestern to consider the potential impact of carbon regulation on Montana customers. He disputed Wilson's notion that NorthWestern's analysis is speculative, asserting that NorthWestern modeled a range of plausible CO₂ prices that are on the lower end of the range used in other regional utilities' planning studies. Dorris rebutted Wilson's assertion that a competitive buyer of the hydros would not be able to collect CO₂ emissions costs until prices actually take effect. He pointed to actions in California, Washington, and Oregon which increase the value of low-emissions resources compared with high-emissions resources without explicit CO₂ prices. He said he believes potential buyers of the hydros would account for these actions when valuing the hydros and could be compensated for that value through sales in those markets.

³⁵ See Exhibit __ (GD-1)

HRC/NRDC Cross-Intervenor Response Testimony

Dr. Thomas M. Power

Power submitted response testimony addressing his disagreement with the following assertions made by MCC witness Wilson:

- Market purchases should be the reference point for evaluating the benefits of the hydros,
- Purchasing the hydros would force customers to pre-pay hundreds of millions of dollars in speculative carbon taxes,
- The DCF model was the sole analytical tool NorthWestern applied to determine its \$900 million offer,
- NorthWestern's offer price was necessarily inflated in order to benefit shareholders over customers.

Power also found confusing Wilson's discussion of depreciation, salvage value, and residual plant value.

According to Power, Wilson's analysis assumes that if projected revenue requirements attributable to the hydros purchase exceed projected market purchase costs, acquiring the hydros would impose unnecessary costs on customers. Power responded that future market purchase costs are unknown and will fluctuate with weather, hydroelectric production, wind generation, consumer demand, and natural gas prices. These factors may combine to produce either high or low price periods that last for months or years. He charted historical daily Mid-C power and Sumas natural gas prices for the period 2000 – 2010 on page 4 of his response testimony.

Power stated that regional utilities invest in generating plants, in part, to avoid upward excursions in market prices. He observed that the Northwest Power and Conservation Council's (Council) Sixth Power Plan found that disequilibrium between supply and demand is common in electricity markets due to, among other things: Imperfect foresight about supply and demand, inactivity following surpluses, and overreaction during shortages. It further found that disequilibrium price excursions can be significant. In terms of a preferred regional resource portfolio, Power found several of the Council's conclusions noteworthy. The Council found that low-risk portfolios contain more resources and rely less on the wholesale power market. Low-risk portfolios have slightly higher average costs but provide protection against the most costly future events, including reduced exposure during high-price disequilibrium excursions.

Power asserted that by focusing on the deterministic DCF model, which assumes future market electricity prices are known and do not include carbon costs, Wilson failed to account for future uncertainty and volatility, contrary to one of the purposes of utility integrated resource planning (IRP). Power stated that Wilson's analysis over-simplifies the resource decision NorthWestern faces by assuming future prices are known and ignores the company's obligation to evaluate and minimize risk as well as cost.

Power contended that standard electric utility IRP practices devote considerable attention to analyzing uncertainty and that Wilson's focus on a deterministic price projection does not align well with those practices. He compared Wilson's simple price curve to the stochastic price draws in Puget Sound Energy's (PSE's) 2013 IRP to illustrate his point (see pages 6 and 8). The simulated market price trajectories Puget evaluated reveal a broad band of uncertainty. Power stated that utilities must manage market risk and, although doing so may lead to costs that at times exceed market prices, those costs are neither irrational nor imprudent. Power added that,

while a market purchase portfolio was one of several alternative portfolio structures NorthWestern used to evaluate the hydro purchase, only Wilson makes market purchases the “benchmark.”

Regarding Wilson’s issue of prepaying hypothetical carbon taxes, Power found Wilson’s repeated use of the phrase “carbon tax” to be a rhetorical device. He said carbon costs can take many forms besides a tax, such as regulations, or the prospect of regulations, on existing or new generating plants that affect the economic ranking of alternative generating technologies. Such regulations implicitly price carbon emissions and affect electricity prices. Power noted that treating potential carbon costs as taxes or adders simplifies the modeling process. He also emphasized that future and uncertain carbon regulations impose costs on electric utilities and their consumers today as utilities retire older coal plants and replace them with natural gas plants.

Power stated that it would be imprudent to assume carbon costs are zero just because there is uncertainty about future regulations. He noted that Commission rules require NorthWestern to systematically incorporate such risks in resource planning and procurement decisions and predicted that the Commission would question the wisdom of a NorthWestern proposal to construct a new coal plant because of carbon regulation-related risk, regardless of what the Commission thinks of the merits of such regulation. Similarly, an analysis of an alternative resource that would not expose customers to potential carbon costs must incorporate that economic advantage.

Power explained that uncertainty regarding carbon regulation is no different than uncertainty regarding a host of other assumptions NorthWestern must make in the resource planning and procurement process. He stressed that every resource supply decision a utility makes involves making assumptions or projections of future prices, costs, technological changes, regulations, engineering reliability, etc. Utilities incur fixed costs based on those assumptions. He provided several examples on pages 15-17. He added that utility capital investment unavoidably requires customers to “prepay” and carry the investment cost “embedded” in rates. He stated that such commitments can be avoided by relying on short-term market purchases, but reiterated that such strategy involves another set of costs and risks.

According to Power, Wilson premises his analysis on an assumption that NorthWestern primarily relied on the DCF model to determine the price it offered PPLM. Then, using alternative inputs, Wilson calculates that NorthWestern is asking customers to pay an inflated price. Power countered that the DCF analysis was not NorthWestern’s only, or even primary, consideration in developing its \$900 million offer, noting that NorthWestern witness Bird identified at least half a dozen other considerations. Power asserted that the Commission should not evaluate the hydro purchase based only or primarily on the DCF analysis results. He asserted that the Commission must decide whether the hydro purchase will benefit customers more than alternative ways of supplementing NorthWestern’s supply portfolio and, in that regard, stated that Ascend Analytics’ PowerSimm analysis provides a more sophisticated modeling approach that explicitly accounts for the uncertainty and risk surrounding many of the variables that the DCF model assumes are known and fixed.

Power rebutted Wilson’s testimony suggesting that the residual (or terminal) value NorthWestern attributes to the hydros at the end of its analysis period conflicts with an assumed decrease in value associated with depreciation over time. Power found no inconsistency in NorthWestern’s approach and stated that Wilson ignores the function of depreciation and the function of an estimated residual value in an analysis of a capital investment over a fixed time period.

Power explained that investors desire both a return *of* their original investment as well as a return *on* that investment. Depreciation provides the return *of* the original investment. A business that plans to operate indefinitely will maintain its capital equipment through preventive maintenance, repairs, rebuilds, and replacement (CapEx). A successful maintenance and capital replacement program will maintain the productivity of the capital equipment so that after any fixed period of time it will have value based on the net cash flow it is estimated to produce in the future. If that value is expressed in nominal dollars (as opposed to in dollars of current purchasing power), it will have appreciated, even as the depreciation balance on the company's books has fallen over time with the return *of* the original investment.

Power addressed Wilson's concern that the \$900 million purchase price NorthWestern agreed to pay PPLM may have been influenced by desires to enhance shareholder profit in a risk-free way. Power postulated that Wilson's concerns stem from two assumptions: First, because Wilson uses market purchases as the benchmark for evaluating the hydros, he assumes that NorthWestern had an incentive to choose the hydro purchase because it offered a return to shareholders and market purchases didn't, and second, he assumes the Commission fails to set NorthWestern's return on equity at a competitive market rate for investments of similar risk.

In response, Power reiterated that the fact that utilities do not profit from market purchases does not mean customers would be better off if utilities relied on the market rather than investing in generation – Power found that there is a cost of risk associated with relying on market purchases and that one reason utilities invest in generating plants is to avoid that risk. Such investments can be in the customers' interest.

Power further stated that the Commission sets NorthWestern's ROE using well-established regulatory principles that require the return to approximate what investors in a market setting earn, after accounting for risk differences. Power found no reason to believe that investors see NorthWestern as a source of above-market returns and, therefore, investors should be indifferent to investing in NorthWestern or elsewhere.

Power acknowledged a theoretical economic analysis which found that, in certain circumstances, regulated investor-owned utilities have an incentive to over-invest in the utility to increase returns, contrary to customers' interest. That theory is known as the A-J or AJW effect (for the work by Harvey Averch, Leland Johnson, and Stanislaw Wellisz in the 1960s). Power reported that economists have been unable to find empirical evidence conclusively proving that theory. Power also contended that NorthWestern faces some incentive to consider the costs imposed on customers because a Commission decision denying the hydro purchase would be an embarrassing outcome for the Company's leadership and because the Company know that if it regularly makes questionable supply decisions it may face stricter regulation and cost disallowances.

Power concluded by observing that some of the tension between the Commission and NorthWestern is a natural consequence of a regulatory system put in place to protect the public from monopoly utilities. However, he asserted that the incentive system NorthWestern faces with cost of service regulation, energy supply cost trackers, and no opportunity to profit from market purchases is not optimal from the Commission's or NorthWestern's perspective, and that contributes to a tense regulatory atmosphere and highlights the importance of aligning utility incentives with Commission objectives and transparent decision-making.

III. DUE DILIGENCE/CAPITAL EXPENDITURES FORECAST

NorthWestern Energy Direct Testimony

William T. Rhoads

William T. Rhoads, NorthWestern's general manager – Generation, testified regarding the condition and reliability of the hydro assets, including an overview of the due diligence undertaken by NorthWestern and its due diligence consultant, Chicago Bridge & Iron Co. (CB&I).³⁶ Rhoads sponsored the following exhibits:

- WTR-1 – Summaries of the relevant experience and qualifications of the NorthWestern and CB&I individuals who conducted NorthWestern's due diligence effort
- WTR-2 – consists of three due diligence reports from Shaw/CB&I:
 - WTR-2.1 – Shaw Independent Engineer's Final Report 01/03/13
 - WTR-2.2 – Addendum to Independent Engineer's Final Report (dated 6/25/2013)
 - WTR-2.3 – CB&I Due Diligence Report Supplementing the 01/03/13 Report (dated 09/06/2013)
- WTR-3 – Map of the hydro developments
- WTR-4 – Summary description of the hydro assets
- WTR-5 – FERC Part 12 safety inspection reports (Comprehensive Part 12 dam safety inspections by FERC-approved independent consultants are conducted every 5 years. These reports are protected as Critical Energy Infrastructure Information (CEII).)
 - WTR-5.1 – Black Eagle 9th report – 2009
 - WTR-5.2 – Cochrane 10th report – 2013
 - WTR-5.3 – Hauser 9th report – 2010
 - WTR-5.4 – Hebgen 9th report – 2010
 - WTR-5.5 – Holter 9th report – 2010
 - WTR-5.6 – Kerr 10th report – 2011
 - WTR-5.7 – Madison 9th report – 2010
 - WTR-5.8 – Morony 9th report – 2009
 - WTR-5.9 – Mystic 10th report – 2013
 - WTR-5.10 – Rainbow 10th report – 2013
 - WTR-5.11 – Ryan 9th report – 2009
 - WTR-5.12 – Thompson Falls 10th report – 2011
- WTR-6 (WTR-6.1 through WTR-6.12) – most recent FERC annual dam safety inspections for each facility (These reports are protected as CEII.)
- WTR-7 – PPL Owner's Dam Safety Program (required by FERC)
- WTR-8 (WTR-8.1 through WTR-8.12) – FERC-required Emergency Action Plans for each facility (These reports are protected as CEII.)
- WTR-9 – Hydro unit upgrade summary (status of major equipment upgrades)

According to Rhoads, NorthWestern's due diligence effort included a review of PPLM and publicly available information concerning the facilities, site visits, interviews with key

³⁶ NorthWestern's due diligence consultant was Stone & Webster, Inc., which was part of The Shaw Group until Shaw was acquired by CB&I in 2013.

PPLM personnel, a review of PPLM's historical and projected capital expenditures (CapEx) and operation and maintenance (O&M) costs, and water data. NorthWestern concluded from its due diligence evaluation that the hydro assets are in satisfactory condition and that PPLM has operated and maintained them appropriately and also has made significant improvements to them. Among the improvements noted by Rhoads are the redevelopment of the Rainbow Project, upgrades and replacements of aging equipment, and structure improvements. PPLM has complied with the resource management requirements of its FERC licenses.

Rhoads explained that four FERC-issued licenses cover the 12 hydro assets: the nine Missouri-Madison hydro facilities (Project No. 2188); the Thompson Falls facility (Project No. 1869); the Mystic facility (Project No. 2301); and the Kerr facility (Project No. 5). He testified that all 12 facilities are in compliance with their respective FERC license obligations and with FERC dam safety requirements. The hydro system produces consistent generation with limited variability and consistent regulated river flows, according to Rhoads.

Rhoads listed the following as CB&I's conclusions contained in its due diligence supplemental report of 09/06/2013 (Exhibit_WTR-2.3). He said NorthWestern concurred with CB&I's conclusions.

- The ongoing upgrade and rehabilitation program for the hydro assets is effective to maintain system reliability and safety.
- Equipment, structures, and systems appear to be maintained in satisfactory condition.
- The hydro system is significantly automated for monitoring and some operations.
- Staffing levels are adequate for reliable operation and maintenance.
- PPLM is effectively managing its license obligations and has management plans and memorandums of understanding (MOUs) in place to implement license requirements.
- PPLM is adequately addressing environmental aspects of the plants, but some items could receive more focused administration.

Rhoads discussed the FERC Part 12 inspection process, including Potential Failure Mode (PFM) Analysis undertaken by the Part 12 independent consultant that evaluates PFMs for project structures under various loading conditions.³⁷ As part of the Part 12 inspection, PFMs are categorized for needed action or follow-up monitoring based on actual conditions and the likelihood of occurrence of the PFMs. The dam owner addresses PFMs by conducting the risk reduction measures recommended by the Part 12 report. Documentation of risk reduction measures conducted by the dam owner is found in the annual Dam Safety Surveillance and Monitoring Reports that the dam owner provides to FERC.

According to Rhoads' direct testimony, the only Category I PFM on the PPLM hydro system is at Hebgen Dam concerning the intake structure under seismic loading.³⁸ There is currently a PPLM intake rehabilitation construction project under way to address this issue. Rhoads took note of several dam safety issues that remain open between PPLM and FERC, but said none of these is an immediate concern or a source of large, future, unplanned costs. (See Rhoads direct testimony, p. 22.)

³⁷ There are four categories of PFMs: Category I, highlighted PFMs, are the most significant and credible; Category II, considered but not highlighted, are of less significance and likelihood; Category III, more information or analyses are needed in order to classify; and Category IV, PFM ruled out. See NorthWestern's response to DR MCC-061(b).

³⁸ According to the October 2013 Part 12 inspection report for Cochrane Dam, three PFMs that had previously been categorized as Category II or IV are recommended by the independent consultant to be changed to Category I. See Exhibit_WTR-5.2, p. 14 (protected).

Rhoads stated that NorthWestern plans to offer employment to all PPLM employees who currently work full-time doing O&M at the hydro facilities. NorthWestern will integrate the hydro operation into its existing Generation department.

Rhoads asserted that operational risks associated with variability in water flows are reduced because the assets' average annual water availability and production are relatively constant and because the facilities are geographically diverse with production spread among 40 generating units at 11 plants. Risks associated with failure of production equipment are mitigated, he said, by routine monitoring and the use of controls and instrumentation and alarms.

According to Rhoads, PPLM has made significant investments in its major hydro equipment through its ongoing capital upgrade program. See Exhibit_(WTR-9) for a summary of major equipment upgrades. He added that PPLM's ongoing O&M program has been effective in maintaining the equipment and extending the service life of the units. Rhoads testified that significant maintenance items that were identified in NorthWestern's due diligence review are of limited extent and will be addressed in the normal course of the O&M program. Rhoads listed on page 34 of his direct testimony some recent or planned O&M activities that he said demonstrate the adequacy of the program.

Regarding environmental resource management, Rhoads explained that the hydro assets' FERC licenses include protection, mitigation and enhancement (PM&E) requirements for fish and wildlife, water quality, threatened/endangered species, cultural resources, recreation, land use and vegetation. Each license requires the dam owner to develop and implement a resource plan and working with various resource agencies is essential. Rhoads said that most of PPLM's current resource management work involves monitoring to confirm that operation of the hydro facilities do not adversely impact the resource. Rhoads provided more specific information on the MOUs and other agreements between PPLM and the resource agencies in his direct testimony at pages 38-40.

Rhoads testified that NorthWestern's due diligence review identified five potential future environmental issues:

- The possibility that the U.S. Environmental Protection Agency (EPA) will include the Black Eagle Dam in the boundary of the Anaconda Copper Mining Smelter and Refinery Superfund site. Contaminated river sediments from the now-defunct smelter have been found near Black Eagle.
- The possibility, which NorthWestern says is unlikely, that the EPA will seek additional remediation action downstream of the Milltown Reservoir/Clark Fork River Superfund site, which could include the Thompson Falls reservoir where contaminated river sediments have been found.
- The possibility of the Arctic grayling in the Upper Missouri River Basin being listed as a threatened or endangered species, which could require the owner of the Madison and Hebgen facilities to conduct studies and to identify and implement mitigation measures.
- The possibility that unanticipated environmental conditions may be discovered when the old Rainbow powerhouse is demolished, which could increase costs for abatement or remediation related to the demolition.
- There is ongoing litigation concerning alleged shoreline erosion at Flathead Lake due to Kerr operations and at Lake Helena due to Hauser operations.

NorthWestern included in its capital budget forecast \$1 million in CapEx in 2015 for the Rainbow powerhouse demolition, but did not include any costs related to the other four

environmental issues because those liabilities are less certain to occur. See DR PSC-080(a). NorthWestern's models included allowances for the contaminated sediments at Black Eagle and Thompson Falls and for the Rainbow demolition. NorthWestern said the models did not include an allowance for the Kerr shoreline erosion case because PPLM will be responsible under the sale agreement for all pre-closing damages, which NorthWestern believes will cover the potential costs. NorthWestern did not include any allowance for the Hauser shoreline erosion case because the company believes the claims have limited merit and the alleged damages are less than \$50,000. See DR PSC-031.

Regarding the hydro generation capability of the PPLM system, Rhoads testified that the combination of the well-maintained condition of the assets and the consistent average water supply results in consistent generation production. He said that other hydro projects on the same river systems – Canyon Ferry on the Missouri-Madison system and the Hungry Horse project on the Columbia River system as are Kerr and Thompson Falls -- add to the PPLM system's operational stability and water regulation. Rhoads stated that NorthWestern's due diligence effort included verification that the water rights claims identified by PPLM to be transferred to NorthWestern included all the hydro asset water rights held by PPLM and included all those acquired by PPLM from MPC in 1998.

Shaw/CB&I independent consultant's due diligence reports

Exhibit (WTR-2.1) – Shaw Independent Engineer's Final Report 01/03/13

This is the longest and most comprehensive of the due diligence reports provided by Shaw/CB&I to NorthWestern. It provides a facility overview, evaluation of plant operations and technical design, operating performance information, environmental assessment, historical budget versus actual performance information, contracts evaluation, pro forma assessment; and a summary of findings and conclusions for the 12 hydro facilities. Section 3 of the report discusses each facility's Part 12 and annual safety inspections; it is heavily redacted because it contains CEII.

Following are Shaw's critical findings and conclusions, excerpted in their entirety from the Executive Summary section:

- The hydro system has aging equipment and structures. The ongoing program of upgrades and rehabilitation appears effective to maintain operational reliability and safety and is consistent with industry practices for similar facilities.
- The hydro plants are eleven developments that are primarily comprised of concrete structures and one embankment dam. Each is routinely monitored and the condition of structures is generally satisfactory.
- Under terms of FERC licenses, the plants have various protection, mitigation, and enhancement (PM&E) plans for monitoring and reporting for fisheries, wildlife, habitat, and water quality. Recreation, cultural resource, and erosion control management plans are also implemented. This program is appropriately managed and budgeted. The available record indicates that the plants are in compliance with applicable requirements.
- At Kerr there is ongoing litigation concerning reservoir north shore erosion and flood damage due to operations of the reservoir (Flathead Lake). NorthWestern is assessing the potential impacts of this issue.

- Since 2003, there has been ongoing litigation concerning the State of Montana claim to ownership of the riverbeds at the reservoirs of the hydro facilities. NorthWestern is assessing the potential impacts of this issue.
- The capital program to implement upgrades and rehabilitation is important to maintain system operations. Estimated projected capital costs are \$15 million and \$12 million, respectively, for the next two years. As the upgrade program matures and improvements are accomplished, this reduces to about \$8.5 million per year, with appropriate escalation, going forward after 2017.
- Overall operations and maintenance projected budget is approximately \$42 million dollars per year through 2014. After the sale of Kerr (2015), O&M annual budget is about \$22, million with appropriate escalation, going forward from 2017.
- Based on available documentation and limited site visit, it appears equipment is maintained in satisfactory condition to support ongoing operations.
- PPLM reports that the new unit at Rainbow is scheduled to go on line in January 2013, increasing plant capacity from 36 MW to 60 MW. The existing powerhouse will be retired.
- Kerr is planned to be sold to the Confederated Salish and Kootenai Tribes in September 2015. Accordingly, projected generation does not include Kerr generation after this date.
- Based on the above considerations, system output is projected to be 3,571 GWh per year. This will reduce to 2,486 GWh after the sale of Kerr.

Exhibit (WTR-2.2) – Addendum to Independent Engineer’s Final Report (6/25/2013)

In this four-page Addendum to the initial due diligence report, Shaw/CB&I provided: 1) a review and update of previous findings, particularly related to environmental regulations and their impact to cost assumptions and, 2) a review of a legal opinion NorthWestern received that was related to environmental issues, with emphasis on air quality items and pond management.

Exhibit (WTR-2.3) – CB&I Due Diligence Report Supplementing the 01/03/13 Report (09/06/2013)

This supplemental report is a follow-on and update to the first two reports. It contains material regarding: PPLM’s organization and functional external relationships; condition of the hydro assets, including information learned from site visits; operation and maintenance; regulatory dam safety reports; license resource management, focusing on various MOUs and management plans; license compliance; and environmental items listed by facility. The report’s conclusions have not changed from those found in the initial Shaw report (Exhibit_(WTR-2.1), and these findings were added: Rainbow Unit 9 and the new control center are now operational; the hydro system has become significantly automated for monitoring and some operations; staffing levels appear to be adequate for reliable operation and maintenance; proper attention should be focused on effectively staffing the important role of resource coordinator; and environmental aspects for the plants are adequately addressed, although there is room for more focused administration for some items.

Montana Consumer Counsel Direct Testimony

Dr. John W. Wilson

Wilson testified that NorthWestern's projected CapEx of \$8.5 million per year is too low at only 25% of historical levels. He disagreed with NorthWestern's assumption that it does not need to include in its projected CapEx any allowance for large expenditures for major repair and renovation projects after the currently planned-for major CapEx projects are completed in 2017. Instead, NorthWestern assumes that CapEx will decline from an annual average for the period 2008-2017 of \$35.6 million to \$8.5 million in 2018, a level that will continue for 30 years, escalated by 2.5% annually for inflation. According to Wilson, NorthWestern would be very lucky if its CapEx forecast proved to be sufficient, given the age and history of the hydro assets. He asserted that the risk of incurring additional costs will rest with ratepayers, not NorthWestern.

Wilson stated that, while NorthWestern's stochastic cost model included substantial adjustments for uncertainties regarding market alternatives, the company did not account for hydro plant cost uncertainties, such as greater CapEx requirements, that could potentially make the hydro alternative much more costly than market purchases.

Wilson pointed to several responses to data requests by NorthWestern's independent engineer (Gary Wiseman of CB&I) in which the engineer acknowledged the estimated future costs of any unanticipated major capital projects are unknown. Wilson agreed that the potential cost exposure is unknown, but said that it was unreasonable of NorthWestern to assume there will be no costly repairs of these aging hydro facilities over the next 30 years.

Among Wilson's recommendations is that the Commission, if it approves the application, should require that NorthWestern forego any recovery of or return on any future CapEx exceeding an annual average of \$10 million, escalated at 2.5%. If the annual average CapEx in any year exceeds \$10 million, the excess amount could be "banked" for future recovery if and when the annual average drops below \$10 million.³⁹

The Essex Partnership - Assessment of NorthWestern's due diligence efforts

The Essex Partnership, the Commission's engineering consultant in this case, submitted a due diligence review "checklist" that provided Essex's assessment of the available docket information (prior to additional issues and rebuttal testimony) regarding the condition and status of the hydro facilities in the categories of civil engineering/FERC Part 12 inspections, electrical, mechanical, and regulatory compliance and environmental issues. Essex also submitted a memo in which the firm summarized these major findings that are detailed by facility in the checklist:

- Civil/Part 12
 - Eight of the hydro projects have spillway flashboard/stanchion systems to control headpond water levels. These systems are outdated, slow, and unreliable. Industry practice is to replace them with remotely operated gates or inflatable rubber dams.
 - Several of the facilities have post-tensioned rock anchors installed years ago that do not meet current industry standards for double-corrosion protection. Rock

³⁹ Wilson modified this recommendation in his Additional Issues Response Testimony, pp. 3-4. See also DR PSC-223.

anchors may corrode and relax over time, which could result in a facility not meeting FERC stability criteria.

- Rock slides have occurred at some projects and caused damage. A long-term solution would involve reinforcing the rock slopes.
- Environmental liabilities – Even though several sites have environmental contamination issues that could cause significant remediation costs, NorthWestern has not quantified the magnitude of the cost exposure for these potential liabilities.
- Equipment – NorthWestern has not provided sufficient information on the condition, performance, or reliability of the turbine/generators, governors, interconnected transmission system, and other equipment.
- Regulatory compliance
 - There are Endangered Species Act issues at three projects, which could result in incurring significant costs that are not addressed in NorthWestern’s projected CapEx.
 - There is insufficient information to determine if the projected budget for the Thompson Falls project relicensing is adequate.
- Projected CapEx – NorthWestern’s future CapEx budget for the hydro assets produces significant reductions in the “base” CapEx that will be available for the assets in the years that major projects are planned.

As a result of the issues identified by Essex, the Commission issued on April 4, 2014, a Notice of Additional Issues in which it sought testimony from the parties that: 1) addressed the structural integrity, physical condition, environmental liabilities, and the sufficiency of NorthWestern’s due diligence effort for each of the individual facilities; and, 2) provided a fuller understanding of what the range of potential future CapEx and O&M costs might be and the effect of those potential costs on NorthWestern’s net present value cost estimates.

NorthWestern Energy Additional Issues Testimony

William T. Rhoads

Rhoads stated that Essex’s memo and checklist raised unfounded concerns about the hydro assets. Rhoads disagreed with Essex’s conclusion that some information regarding the condition of the facilities is unknown. Rhoads pointed out that NorthWestern has provided voluminous information in its testimony and data responses and that the Commission and Essex have had ample opportunity to obtain any additional specific information they required. Rhoads also disagreed with Essex’s assertions that it is industry practice to replace certain dam equipment. He said maintaining currently functioning equipment is an equally valid choice.

Rhoads’ Exhibit_(WTR-10) contains NorthWestern’s responses to the individual line items in the Essex checklist. NorthWestern added the following five columns to Essex’s checklist spreadsheet into which NorthWestern entered additional information: 1) *CapEx or O&M*, which indicates whether the repair or replacement would be categorized as Cap Ex or O&M; 2) *Included in CapEx or O&M*, which indicates whether the item is included in the 20-year budget forecast as CapEx or O&M; 3) *Likelihood of occurrence*, which includes an engineer’s opinion of whether the item will need maintenance or replacement within the 20-year budget forecast period; 4) *Planning timing*, which indicates items in the CapEx or O&M budget that are planned for repair or replacement; and 5) *Comments*.

Rhoads took issue with Essex's finding that the case record provides insufficient information on the condition of the turbine generators, governors and other equipment. According to Rhoads, NorthWestern's due diligence team reviewed these items and did not find any material concerns. He asserted that the information provided in this case by NorthWestern constitutes a complete record on due diligence. The information NorthWestern provided in Exhibit_(WTR-10) and in its Additional Issues testimony responds to the Commission's request for more information on each plant, he said, and it further demonstrates that the equipment is maintained on a routine basis, its condition is known to be satisfactory, and its upgrade and replacement costs are timed to levelize budget expenditures to the extent those expenditures can be planned.

Rhoads addressed specific types of equipment that Essex found to be of concern. First, he said the turbines, generators and associated equipment are subject to a planned maintenance and inspection regime that extends equipment life. Rhoads described PPLM's maintenance strategy for the hydro equipment, which includes, for example, turbine generator inspections on planned maintenance intervals. Second, he said that although Essex pointed out that some of the system's generator step-up transformers received a low rating on Dissolved Gas Analysis tests, the cause of the bad test results was elevated carbon monoxide and carbon dioxide levels, which Rhoads said is acceptable in the case of the hydro plants based on his discussions with PPLM personnel. He said additional monitoring and investigation might be needed if the gas analysis test result showed the presence of a hydrocarbon such as acetylene (which it does not). Finally, Rhoads said Essex's concern about the capability of the interconnection transmission system is unwarranted because each facility has a valid hydro interconnection agreement in place, the lead lines from the plants to the point of interconnection are in good condition, and the CapEx budget includes the costs to reconductor two Mystic Dam pole lines.

Rhoads concluded that Essex review was not the result of a comprehensive due diligence efforts as was NorthWestern's and, as a result, Essex's findings are incomplete and/or inaccurate.

John C. VanDaveer

John VanDaveer is an engineer and the manager of NorthWestern's hydro acquisition project. From 1985 through 1999, he worked for MPC, generation department, eventually supervising the hydroelectric engineering department and then managing MPC's engineering & operations functions. When PPL acquired MPC's generation facilities, VanDaveer became PPLM's manager of hydroelectric operations through 2005. He was responsible for the hydro facilities' operation, engineering and license management.

According to VanDaveer, the concerns identified by Essex in its memo and checklist concerning the sufficiency of NorthWestern's CapEx forecast were the result of a due diligence process that was limited to review of documents filed in the docket and were based on technical generalizations that are not necessarily specific to the PPLM system. He testified that NorthWestern's CapEx forecast is the best basis for analyzing future CapEx because of the due diligence team's capability and long years of direct involvement with this hydro system, the thorough process it followed, and the confirmation the forecast received from two external independent evaluations.

He said the team projected CapEx expenses by integrating the PPLM 5-year 2013-2017 forecast into a 20-year plan. The 20-year plan included the remaining major investment upgrades needed on the system that had not been addressed in the PPLM CapEx investments prior to 2013 and specifically planned for 2013-2017. The due diligence team determined that

the balance of the unspecified capital budget for the 20-year plan was sufficient to sustain minor generation and non-operational capital projects. The PPLM actual capital investments for 2008-2012 demonstrated that major CapEx equipment and structural projects for strategic system reliability had been completed or were near completion.

VanDaveer stated that Essex inaccurately concluded in its memo that the future CapEx estimates should be greater. He speculated that Essex chose the year 2021 in its example of insufficient “base” or sustenance CapEx because 2021 happens to be the year that NorthWestern specifically identified four major capital projects to be undertaken. He contended that, although the Essex arithmetic suggested that the NorthWestern forecast is short, Essex did not take into account the fact that NorthWestern will manage the whole fleet over time with a strategic plan through the years or that PPLM’s major investments in the hydro system reduce the amount of future CapEx needed to sustain the system. VanDaveer added that an additional independent evaluation of the team’s conclusions was performed by HDR Engineering, Inc. that confirmed and validated the NorthWestern team’s work, including its CapEx plan and forecast.

In response to DR MCC-211, VanDaveer said that the results of the CapEx sensitivity analyses conducted by NorthWestern in accordance with the Commission’s Notice of Additional Issues show that neither a 30% increase in CapEx nor a 15% decrease applied in each year of the analyses affected the hydro acquisition case benefit evaluated against the other resource cases.⁴⁰

Mary Gail Sullivan

Mary Gail Sullivan, manager of environmental permitting and compliance, addressed Essex’s questions concerning NorthWestern’s forecasted costs for regulatory compliance and environmental issues.

The forecast expense for this category is \$4.5 million in 2013, the baseline year, of which \$4.1 million is attributed to compliance with environmental-related license conditions, and the remainder primarily supporting Part 12 compliance and the Emergency Action Plans.⁴¹ NorthWestern escalated PPLM’s 2013 baseline numbers by 2.5% annually to develop its forecast expenses through 2036. Sullivan said the 2.5% escalator is sufficient to cover the extended terms of the licenses because the management framework, which consists of MOUs and programmatic agreements to comply with environmental license conditions, have been in place since 2000 and have built-in safeguards to control costs. For example, in the Missouri-Madison MOU with various resource agencies, the annual PPLM funding amounts for studies and projects to support license compliance are determined collaboratively with the federal and state resource agencies to implement the FERC-approved resource plan provisions. A second Missouri-Madison MOU, the Recreation MOU, runs through 2040 and also includes safeguards to limit the dam owner’s cost exposure for recreation projects.

Regarding the potential costs that NorthWestern could incur if the Arctic grayling is listed under the Endangered Species Act (ESA), Sullivan testified that the timeline and costs for Arctic grayling studies and mitigation recovery measures that might or might not be required are unknown. Listing a species under the ESA and implementing a recovery plan is a lengthy and complex process. For example, the process to list the Columbia River bull trout took 12 years. PPLM spent \$8 million over 3 years on the Thompson Falls fish ladder.

⁴⁰ NorthWestern did not perform a sensitivity analysis on its O&M cost forecast because the majority of O&M expense is labor and recurring regulatory costs. (Additional Issues Testimony of John C. VanDaveer, p. 9.)

⁴¹ Projected costs for regulatory compliance and environmental issues are provided in NorthWestern’s O&M forecast under the “Hydro License & Compliance” category. See DR MCC-028a, Attachment, p. 2.

NorthWestern's due diligence team made no allowance in the financial models for a possible ESA listing for the Arctic grayling because of: the uncertainty of an ESA listing; the fact that expenditures, if necessary, would be spread over several years; and the team's conclusion that a Madison dam fish ladder, if required, would be much cheaper to install than the Thompson Falls one.⁴²

Regarding cost to relicense the Thompson Falls project, Sullivan stated the cost of relicensing is not expected to materially change the O&M forecast. In response to DR PSC-181a, NorthWestern said it expected the licensing scope to be limited and the costs to be covered by the projected 2020-2025 O&M license administration costs.⁴³

NorthWestern included a one-time O&M allowance of \$375,000 in 2025 for costs associated with potential Superfund issues at Black Eagle. For Thompson Falls, an O&M allowance of \$187,500/year from 2021-2030 was included for monitoring reservoir sediments. NorthWestern included a one-time sum of \$1 million in the CapEx forecast to address environmental issues associated with demolition of the old Rainbow Powerhouse. In addition, there would be monies realized from the scrap value of the old equipment and, further, PPLM retained under the sale agreement 50% of the liability for any above surface demolition costs between \$2 million and \$4 million and 100% of the Rainbow demolition costs in excess of \$4 million.

Gary T. Wiseman (Shaw/CB&I)

Gary T. Wiseman, CB&I's generation services project manager and the primary due diligence engineering consultant for the hydro acquisition, addressed the three civil/Part 12 issues identified by Essex that as potential drivers of future significant costs: 1) flashboard-stanchion systems on spillway crests; 2) status of post-tensioned rock anchors in structures; and, 3) potential rock fall impact on conveyances.

Wiseman contended that flashboard-stanchion systems should not be reviewed in isolation, but rather in the context of each plant's physical layout and the overall equipment and means available to control water flow releases. He stated that Essex's suggestion that viable flashboards should be replaced with gates or rubber dams would result, if implemented, in incurring unjustifiable and significant costs. The actual use/tripping of flashboards is infrequent, occurring only in an extreme event, according to Wiseman, and the acceptable operation of the stanchion release mechanism has been demonstrated in dry testing using the standard operating procedure. Wiseman noted that reservoir lowering is not necessarily needed to reinstall tripped or damaged flashboard system components because a bulkhead is available that allows maintenance or repairs without lowering the reservoir level. He added that debris inflow is not a significant issue at the hydro plants, except for Thompson Falls, which has radial gates to pass debris.

Regarding Essex's concern that existing rock anchors might have to be replaced with updated double-corrosion protected anchors, Wiseman said there is a very little chance that either corrosion or anchor relaxation will occur to such an extent that they impact structural stability. He said there is no reason to incur the significant cost to replace the rock anchors. According to Wiseman, Essex's concern applies in the context of extreme events and extreme loading conditions. Wiseman emphasized that no rock anchors on the PPLM system are installed for stability for normal loading conditions. He agreed with Essex that current industry standard is to

⁴² See also DR PSC-190a and DR PSC-191.

⁴³ See also DR PSC-279e.

install anchors with double corrosion protection; however, he said anchors with single-corrosion protection are viable and effective and that, if an isolated anchor deteriorated, there would not be a catastrophic failure of multiple anchors endangering a structure. Regular monitoring and assessment of a structure and its anchors is required by FERC and this process avoids deterioration to the point that it affects structural stability.

Wiseman responded to Essex's concern about rock falls damaging flowlines at Mystic and Madison. He asserted that rock falls occur infrequently and have minimum impact on public safety.

In the case of each of the three major Essex concerns in the civil/Part 12 category, Wiseman testified that there is very little possibility of incurring significant costs to address these items and, for that reason, NorthWestern did not include any costs for them in its 20-year projections. If costs for these items are incurred, they will be covered in NorthWestern's projected O&M budget. In Wiseman's opinion, NorthWestern's CapEx and O&M budget projections are valid and appropriate.

Rick Miller (HDR)

Rick Miller, an engineer and senior vice president for hydropower services at HDR Engineering, Inc. (HDR), was retained by NorthWestern in February 2014 to review the due diligence undertaken by NorthWestern. Miller provided as an exhibit to his testimony his independent assessment regarding the sufficiency of NorthWestern's due diligence effort, including: (1) an Opinion Letter, which contains his assessment of the structural integrity, physical condition, and environmental liabilities of the individual facilities; and (2) a comparison of his independently-developed 20-year CapEx forecast with NorthWestern's forecast. (See Exhibit__(RM-1).)

After reviewing the Shaw/CB&I due diligence reports, dam safety and license compliance documents, and interviewing NorthWestern staff with years of experience with and knowledge of the hydro assets, HDR concluded that the Shaw/CB&I due diligence reports provide sufficient detail for the material issues related to each of the individual hydro assets. Miller stated that PPLM's historical and planned capital investments through 2017 are consistent with HDR's experience as to the level of necessary CapEx to keep similar hydro assets in reliable operating condition.

HDR's independent capital investment forecast recommends an average budget of \$7.1 million (in 2014 dollars). The HDR annual projected CapEx figure of \$7.1 million is similar to NorthWestern's projected \$8.5 million per year of CapEx and, in Miller's opinion, confirms the adequacy and sufficiency of NorthWestern's due diligence.

The HDR 20-year forecast includes both specific CapEx projects and an unspecified allocation of CapEx investments for each facility for each year. HDR confirmed that the majority of recommended capital investment for a hydro fleet of this vintage was undertaken prior to 2014 with the completion of the balance of plant systems at each of the facilities and the critical units' turbines and generators. HDR agrees with NorthWestern assertion that the historical high levels of CapEx during PPLM's ownership are not required after 2017.

HDR did not find any required Part 12 recommendations that were not included in the forecasted CapEx. HDR determined that known compliance requirements are included in NorthWestern's CapEx and O&M cost estimates. HDR did not find that the specific Part 12 issues raised by Essex were material or supported by evidence in this case. Regarding post-tensioned rock anchors, there are no current Part 12 recommendations related to them, which in

HDR's experience means there is no need to include costs for additional rock anchors as a contingency in future expense forecasts. Regarding flashboard-stanchion systems, HDR found there are no Part 12 recommendations for replacing or modifying the remaining flashboard-stanchion systems or any of the other flashboard operating systems at the PPLM facilities that would affect the CapEx projections beyond 2017. Miller noted that these systems function safely, similar systems are in place at many U.S. dams, and the number of annual operation cycles is low at the PPLM hydro facilities.

Regarding the hydros' mechanical and electrical systems, Miller said HDR's experience does not support Essex's suggestion that, due to age, metal fatigue can cause cracking in the rotor components leading to catastrophic failure prompting the preventative measure of replacing the rotor components. It is not HDR's experience that rotor component replacements are necessary on these types of units after 80-100 years of service, although electrical elements need periodic refurbishment, which is the point of generator rewinds.

HDR found the extensive record of license compliance was documented in the Shaw/CB&I due diligence reports and in the legal memo provided to NorthWestern for the four FERC licenses involved.⁴⁴ It is HDR's opinion that NorthWestern has sufficiently accounted for the known environmental and regulatory requirements of the hydro assets and that the historical record of O&M costs, once the capital investment is complete, is a good predictor of future O&M expenditures.

NorthWestern Energy Rebuttal Testimony

William T. Rhoads

Rhoads disagreed with Wilson's assertions that NorthWestern's modeling did not incorporate realistic future CapEx and O&M assumptions and that NorthWestern unreasonably assumed no costly repairs would be necessary in the future. According to Rhoads, NorthWestern appropriately assumed, as validated by two independent technical experts, lower future costs for the hydro facilities over the next 20 years than PPLM had incurred from 2008 to 2012, which was a period of high levels of costs for major rebuilding and repairs. Rhoads stated that NorthWestern's 20-year budget forecast adequately covers the necessary costs to operate, maintain, upgrade, and relicense the hydro projects. He argued throughout his testimony that Wilson's reliance on PPLM's historical average cost as a basis for future cost is a limited analysis that lacks the supporting documentation and expertise that went into NorthWestern's thorough due diligence review.

Rhoads disagreed with Wilson's suggestion that another buyer would have valued the hydro facilities at a much lower price than NorthWestern calculated if the buyer had assumed, as NorthWestern did, that future CapEx would be half of PPLM's 2008-2017 CapEx average of \$35.6 million. Rhoads said a 20-year forecast considers not just the historical operating performance of the properties, but also the investment completed over the time period. In this case, PPLM's actual and budgeted investments through 2017 include major replacements and upgrades of the larger hydro facilities. NorthWestern's projected costs to refurbish the smaller plants are included in NorthWestern's DCF model and revenue requirements forecast. Rhoads noted that NorthWestern's sensitivity analysis to gauge the effect of 30% higher CapEx on the

⁴⁴ The legal memo, dated August 26, 2013, is an attachment to DR PSC-304a.

model found that the hydro acquisition alternative would still be preferred over the other portfolio alternatives.

According to Rhoads, the major upgrade costs recently incurred by PPLM, such as those for the Rainbow Redevelopment, are costs for special projects that should be excluded from the financial model. He said NorthWestern does not plan any rehabilitations of that size because there is not sufficient remaining excess hydraulic capacity available on the system to justify projects like the Rainbow project.

Rhoads took issue with Wilson's suggestion that NorthWestern plans only \$8.5 million per year in CapEx, escalated at 2.5% for inflation. According to Rhoads, NorthWestern's CapEx forecast averages \$11.7 million in nominal dollars annually over 30 years.

Regarding Wilson's opinion that the environmental benefits of the hydro facilities will be the same regardless of their owner, Rhoads disagreed and contended that the use of fossil fuels in Montana would increase if NorthWestern does not purchase the hydros because the utility's generation alternative is to build a natural gas-fired power plant.

Rhoads said the specific examples Wilson cited from the Shaw/CB&I due diligence report to demonstrate the future unknown costs and the insufficiency of NorthWestern's CapEx forecast – the Mystic concrete condition, the Mystic rock fall potential, the Black Eagle leakage, and various environmental issues -- were interpreted incorrectly by Wilson. According to Rhoads, the Mystic concrete is a surface, not structural, condition; the risk of a major rock fall is low at Mystic; the Black Eagle leakage is monitored and managed as an O&M expense; and there is limited potential risk from the environmental issues. Rhoads stated that the extensive due diligence conducted by NorthWestern and reviewed by professionals provided the sound foundation for the cost estimates in this filing. He opined that Wilson's criticisms are insufficiently supported to show problems with NorthWestern's review and analysis.

John C. VanDaveer

VanDaveer responded to MCC witness Wilson's comments regarding NorthWestern's CapEx forecast. He argued that Wilson's CapEx-related testimony was based on generalized assumptions without any evidence of his direct experience in the subject matter. In contrast, NorthWestern conducted a comprehensive due diligence process to develop its CapEx projections, which were confirmed by two qualified engineering firms, Shaw/CB&I and HDR.

VanDaveer disagreed with Wilson's suggestion that hydro system will require significant future CapEx because of its age. He pointed out that most of the system's generation capacity is less than 20 years old and contended that this major strategic group of generating units should operate reliably beyond the 20-year forecast period. The remaining plants (Black Eagle, Hauser, Madison, and Holter) are specifically included in the CapEx forecast. The limited scope of the balance of plant remaining to be upgraded (governor, excitation, relays and controls) is specifically addressed in the 5-year capital plan and the remainder in the 20-year forecast.

VanDaveer disagreed with Wilson's assumption that projects of the magnitude and cost of PPLM's new Rainbow Unit #9 will be necessary in the future. VanDaveer said PPLM built the new Rainbow generation plant because by doing so it eliminated the need to rehabilitate the existing plant while gaining the added capacity from utilization of the full hydraulic capacity of the annual available flow. In addition, PPLM realized an economic benefit to the downstream Cochrane project because the elevation of the new Rainbow powerhouse allows Cochrane to operate at its licensed full reservoir elevation. Similarly, Thompson Falls Unit #7 was built in 1995 to utilize the available hydraulic capacity. According to VanDaveer, because the remaining

hydro projects do not have material unused hydraulic capacity, Wilson's assumption that expensive projects like the Rainbow redevelopment should be planned for is unrealistic.

VanDaveer contended that, contrary to Wilson's suggestion that the PFMs identified during the Part 12 inspections could result in significant cost exposure to the dams' owner, the opposite is actually the case because FERC's dam safety regulations and its knowledge of this system gained over the past 50 years support NorthWestern's CapEx conclusions. He explained that FERC regulations establish structural evaluation engineering criteria for various load cases that hydro projects are required to meet, including load case factors of safety under worst-case scenarios that have little chance of occurring. MPC installed post-tensioned anchors in the 70s and 80s because the regulatory focus then was to improve the stability of dam structures for extreme theoretical loading conditions, and rock anchors were the predominant technology for that purpose. Information was compiled by MPC at the time of the installations regarding concrete strengths and foundation rock conditions which has been used to substantiate the current project stability. VanDaveer asserted the exterior concrete surfaces show some minor deterioration, but the bodies of the structures are sound.

As an example of the stringency of the FERC requirements, VanDaveer said the Great Falls hydro projects are structurally adequate for a worst-case flood event that is 5.3 times greater than the highest flow on record. According to VanDaveer, most of the PFMs in the Part 12 reports are related to the probable maximum flood load condition, which, as in the Great Falls projects' example, is very unlikely to occur. VanDaveer asserted that Wilson's opinion that NorthWestern was foolish not to include in its CapEx forecast costs for repairs related to these types of PFMs is unfounded and unreasonable.

VanDaveer stated that FERC's recent relicensing of the Madison-Missouri projects for a second 40-year term is evidence of FERC's confidence in their condition and operation.

Mary Gail Sullivan

Sullivan disagreed with Wilson's assertion that NorthWestern's CapEx forecast did not include sufficient costs for remediation that NorthWestern might be required to incur if the Black Eagle facility is included in the final boundary definition of the Anaconda Copper Mining (ACM) and Refinery Superfund site. NorthWestern included a one-time O&M allowance of \$375,000 in 2025 for costs at Black Eagle that might be associated with the site. As to the sufficiency of the amount, \$375,000 is NorthWestern's best estimate, which it made using the cost for remediation of the Milltown Dam Superfund site as a reference point. If NorthWestern is named a potentially responsible party as owner of Black Eagle, the majority of costs to address the contaminated sediments would be the obligation of the party or parties that caused the contamination and NorthWestern would have a strong case to shift the costs to them. Insurance may be available for any remaining costs for which NorthWestern is responsible. Finally, there is no evidence establishing that Black Eagle operations aggravate the contamination.

Regarding potential groundwater contamination at Black Eagle that was referenced by Wilson, NorthWestern did not include costs in the CapEx or O&M forecasts for this item because in a February 2012 letter from the Montana Department of Environmental Quality (DEQ) to PPLM, DEQ stated that the petroleum contamination appeared to be stable and that the source was likely the former ACM plant site and it would be determined by the ACM Superfund remedial investigation.

Sullivan disagreed with Wilson's opinion that costs to address contaminated sediments at Thompson Falls should have been included in the CapEx forecast. According to Sullivan, the

sediments flowed into Thompson Falls reservoir when Milltown Dam was breached for removal in 2008, which resulted in an increase in heavy metal concentrations in the Thompson Falls reservoir. Monitoring since then has shown no increase in sediment contaminant levels and PPLM believes it is no longer a concern. NorthWestern included its best-estimate O&M allowance of \$187,500/year from 2021-2030 for continued monitoring.

Sullivan disagreed with Wilson's assertion that NorthWestern should have included costs for shoreline erosion litigation in the CapEx forecast. She responded that the Kerr shoreline erosion litigation was addressed in the terms of the sale agreement, which provides that PPLM is responsible for all pre-closing damages, which are expected to constitute the majority of any possible damages. If NorthWestern were to be liable for any possible damages, they would be covered in O&M. The only other potential shoreline erosion litigation is the alleged erosion on Lake Helena. NorthWestern sees limited merit in the allegations and the alleged damages were less than \$50,000.

Regarding Wilson's contention that NorthWestern should have included costs related to a potential ESA listing of the Arctic grayling, Sullivan's additional issues testimony covered NorthWestern's reasons for not doing so.

Gary T. Wiseman (Shaw/CB&I)

Wiseman responded to Wilson's criticisms of NorthWestern's CapEx projections. According to Wiseman, NorthWestern's due diligence process identified potential CapEx items, but then considered what the probability was of each item actually occurring or requiring significant CapEx that should be included in the forecast. He said Wilson failed to consider the likelihood of occurrence of the items, but instead incorrectly assumed they were all material issues that will require significant future CapEx. Wiseman said he found NorthWestern's CapEx forecast to be valid, based on the known condition of the structures and equipment, on license compliance efforts, and in consideration of PPLM's extensive capital program, which resulted in improved condition of the system and less need for future CapEx. CapEx related to this capital program continues through 2017 and the post-2017 CapEx includes the projects identified by NorthWestern to be completed during the forecast period.

Wiseman stated that NorthWestern's CapEx forecast averages \$11.7 million per year for 30 years starting in 2018, not \$8.5 million as cited by Wilson. Further, he said, the \$35.6 million average CapEx for the 2008-2017 period relates to the past and ongoing capital program of significant rehabilitation and upgrade projects to the facilities; these significant expenditures will not be necessary going forward after 2017. Wiseman disagreed with Wilson's suggestion that NorthWestern's CapEx forecast assumes there will be no future need for major repairs or renovation. According to Wiseman, repairs are budgeted for the facilities and CapEx in any year could be higher or lower than the forecast amount; CB&I considers the CapEx forecast to be ample to cover the year-to-year variation.

Wiseman reiterated Rhoads' testimony concerning specific items raised by Wilson concerning Mystic and Black Eagle and repeated that NorthWestern's O&M budget will cover any remediation or repairs in those cases if necessary. Wiseman also explained that, contrary to Wilson's implication, PFMs identified in the Part 12 inspections are not a list of items that must be fixed, but are risk-based considerations to factor into the monitoring, operation and, if necessary, rehabilitation of the project. They are all hypothetical and the probability of their occurrence is low.

Rick Miller (HDR)

Miller recommended that Wilson's assessment of NorthWestern's CapEx forecast should be disregarded. He contended that Wilson's CapEx approach was based upon a selected period of historical and planned near-term CapEx that he incorrectly interpreted to be representative of future CapEx. Wilson's methodology did not differentiate the unique capital costs associated with the Rainbow redevelopment and relicensing compliance from future CapEx and major maintenance requirements. In contrast, HDR excluded one-time costs. HDR's CapEx forecast accounted for the hydros' age and historical CapEx and O&M costs and used the standard of care ordinarily used by professional hydropower engineers. He restated much of his additional issues testimony regarding HDR's methodology and its CapEx forecast that recommended an average annual CapEx budget of \$7.1 million in 2014 dollars. He reiterated that HDR's analysis confirmed that NorthWestern's CapEx forecast is sufficient to account for known material liabilities. Miller emphasized that HDR's methodology is based upon its years of hydropower due diligence experience, which he said is more accurate than Wilson's approach.

Miller stated that Wilson failed to provide evidence to support his opinion that hydropower assets decline in value or that the comparative acquisition data provided by NorthWestern does not support the transaction. He asserted that NorthWestern's data for recent industry transactions supports NorthWestern's assumptions on the hydro assets' market value on a dollars-per-installed-kW basis.

According to Miller, Wilson's testimony that PPLM's significant historical CapEx was driven by the age of the facilities ignored the fact that PPLM's made significant one-time investments. In HDR's experience, continued investment in the facilities and hydro equipment enhances project operations and often returns components to service in better than original condition. PPLM's modernization plan that was also documented in the Shaw/CB&I due diligence reports demonstrated that the fleet-wide investment is anticipated to be substantially complete by 2017. Future investments in the remaining units that were not modernized by PPLM are accounted for in NorthWestern's 20-year CapEx forecast. Miller disagreed with Wilson's implication that age alone should be the criterion for determining the historical and forecasted CapEx.

In response to Wilson's assertion that future capital investments in the aging plants is highly uncertain and could potentially be far greater, Miller asserted that the station-specific costs are generally well understood and that appropriate contingencies can be established to account for the unique issues of a specific unit. The FERC license compliance record is reflected in the historical costs, and NorthWestern's CapEx forecast includes known and knowable compliance requirements. It is HDR's practice to not include the costs of unknown major projects that cannot be foreseen with any great certainty in the future CapEx and O&M forecasts.