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IDAHO PUBLIC UTILITIES COMMISSION

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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

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| IN THE MATTER OF IDAHO POWER COMPANY'S PETITION TO MODIFY TERMS AND CONDITIONS OF PURPA PURCHASE AGREEMENTS | ) | CASE NO. IPC-E-15-01 |
| IN THE MATTER OF AVISTA CORPORATION'S PETITION TO MODIFY TERMS AND CONDITIONS OF PURPA PURCHASE AGREEMENTS | ) | CASE NO. AVU-E-15-01 |
| IN THE MATTER OF ROCKY MOUNTAIN POWER COMPANY'S PETITION TO MODIFY TERMS AND CONDITIONS OF PURPA PURCHASE AGREEMENTS | ) | CASE NO. PAC-E-15-03 |

**Idaho Conservation League and the Sierra Club**

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**Rebuttal Testimony of R. Thomas Beach**

**May 14, 2015**

**Q: Are you the same R. Thomas Beach who filed Direct Testimony on behalf of the Idaho Conservation League and the Sierra Club on April 23 2015?**

A: Yes.

**Q: Please summarize your rebuttal testimony.**

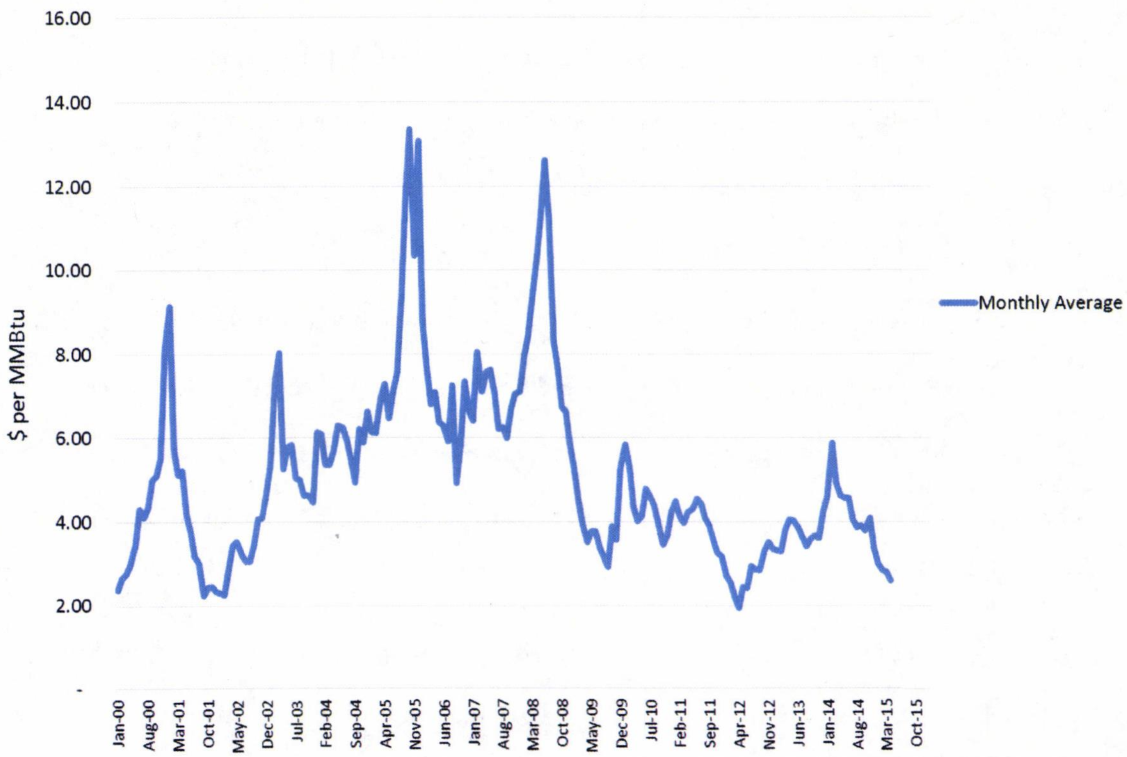
A: I provide my opinion on three topics. First, I rebut Staff Witness Mr. Sterling's testimony on pages 13 - 15 regarding the relative risk of long-term contracts. Second, I rebut Mr. Sterling's position that long-term commitments to utility-owned resources are different than long-term qualifying facility (QF) contracts, because of the scrutiny afforded to utility projects in the IRP process. Third, I describe an example of an adjustable rate contract that complies with PURPA.

**Q: Do you agree with Mr. Sterling that "a fixed price contract is more risky than one in which prices are adjusted frequently"?** [1]

A: No. The standard definition of "risk" is "the chance of loss."[2] A contract whose price adjusts frequently may produce the result that the ratepayer receives a price close to the prevailing market price. In this respect, such a contract may reduce the risk that the ratepayer will pay a price different than the market price. However, based on my experience in the utility industry, this is not what the ratepayer desires, particularly if there is substantial volatility in the market price, for example, as there is in the natural gas market, illustrated in **Figure 1** reproduced from my direct testimony. Consumers value rate stability and reasonably predictable rate changes and monthly bills.

[1] Sterling Direct, at pg. 13, ln 9 – 10.
[2] *Webster's New Twentieth Century Dictionary* (2nd edition, 1983).

**Figure 1:** Henry Hub Market Prices
Monthly Average Market Prices




What the ratepayer seeks is a low price, not just a price that equals the market price. And if they cannot always obtain a low price; they prefer a stable price that is predictable. Ratepayers can be substantially harmed if their costs for energy at times are very high as a result of the volatility in energy market prices. As a result, consumers generally are willing to pay a premium to expected market prices in order to eliminate the future volatility in market prices. In essence, this premium represents insurance that consumers are willing to buy against the high costs of periodic spikes in market prices.

**Q: Does the economic literature commonly ascribe a risk reduction benefit to fixed price contracts?**

A: Yes. There are numerous examples and studies that demonstrate that consumers are willing to pay a premium to fix or to limit the price of a commodity, including energy commodities.

- Perhaps the most familiar is the **fixed-rate home mortgage**, which typically carries a higher interest rate than an adjustable rate mortgage as the premium required to eliminate the risk of future periods of high interest rates.
- The natural gas forward market provides consumers with a means to buy future supplies of natural gas at a price known today. Comparisons between forward gas market prices and contemporaneous fundamentals-based forecasts of gas prices reveal a consistent premium in the forward prices, perhaps associated with the "risk premium" that sellers in the forward markets require, and that buyers are willing to pay, in order to fix future prices.[3]
- Long-term contracts for natural gas, at publicly-known prices, are not common today. However, such contracts typically show a premium to current price forecasts. For example, in 2011 Public Service of Colorado (PSCo) signed a ten-year gas supply contract with Anadarko Petroleum to support the replacement of a portion of PSCo's coal-fired generation with gas generation, at a fixed price that was $1.38 per MMBtu higher than the Energy Information Administration's contemporaneous forecast of prices in PSCo's market.[4]
- Many utilities, including those in Idaho, conduct risk management programs that include hedging that uses a variety of forward market instruments and that is designed primarily to reduce the near-term volatility of their fuel and purchased power expenses. Generally,

[3] Mark Bolinger and Ryan Wiser, *Comparison of AEO 2010 Natural Gas Price Forecast to NYMEX Futures Prices* (Lawrence Berkeley National Lab, January 2010), esp. Figure 8, available at http://emp.lbl.gov/sites/all/files/UPDATE%20MEMO%20lbnl%20-%2053587.pdf.

[4] Lisa Huber, *Utility-scale Wind and Natural Gas Volatility: Unlocking the Hedge Value of Wind for Utilities and Their Customers* (Rocky Mountain Institute [RMI], July 2012), at pg. 13-14. The executive summary is attached as Exhibit 304. The full report is available at http://www.rmi.org/Knowledge-Center/Library/2012-07_WindNaturalGasVolatility.

these programs focus on reducing volatility only in the next 1-3 years, as the forward markets are most liquid in the near-term and there are substantial transaction costs associated with long-term hedges in financial markets. Significantly, PacifiCorp's discussion of its hedging program in its most recent IRP emphasizes how its long position in the power market functions as a hedge against its short position in natural gas, and concludes that "[t]his has the effect of reducing the amount of natural gas hedging that the Company would otherwise pursue."[5] This is exactly the hedge represented by the fixed-price solar contracts at issue in this case. In addition, other observers have noted that long-term, fixed-price contracts for renewable generation provide utilities with a means not available in the financial markets to hedge their long-term exposure to gas and power markets, and could thus replace a portion of their current budgets for risk management.[6]

**Q: Can you provide examples of "investments made by private investors in which the rates are fixed and the entire revenue is guaranteed for 20 year periods"?[7]**

A: Yes, a home mortgage with a fixed interest rate is an obvious example. Banks and other financial institutions invest in the housing market by lending money to homeowners at fixed rates of return for the interest and principal, for terms of 15 or 30 years. The revenue stream from this investment is guaranteed by a lien on the underlying home property.

**Q: Is QF revenue guaranteed in Idaho for 20 years?**

A: No. QFs must actually deliver energy within the performance bounds contained in the

[5] PacifiCorp 2015 IRP, at pg. 246-247.

[6] Supra note 4, L. Huber, *Utility-scale Wind and Natural Gas Volatility: Unlocking the Hedge Value of Wind for Utilities and Their Customers.* (The Executive Summary is attached as Exhibit 304).

[7] Sterling Direct, at pg. 15, ln 9 – 12.

contracts to receive any payments. They are not paid if the QF project is never built or fails to operate correctly. They are not paid for over-delivery and they are penalized for under-delivery. The only element of the contractual payment which is guaranteed is the rate. I note that this is substantially riskier for the QF project than an investment in generation assets is for the utility. Once a utility generation asset is approved for rate recovery through the utility's rate base, the utility will recover its costs, including necessary fuel, and earn a return, even if the plant is out of service or does not perform with the efficiency originally advertised. The only circumstance in which this assured return will be reduced is the infrequent event that the Commission finds, typically after a lengthy regulatory process, that the utility's operation of the plant was imprudent or unreasonable.[8] No such finding is required to deny payment to a QF project: if the QF fails to deliver per the contract, it is not paid. Ratepayers benefit from the QF's assumption of this appreciably greater level of operating risk, compared to utility-owned generation.

**Q: Do you agree with Mr. Sterling that it would be "fair" for utilities to receive long-term commitments to build utility-owned resources, while QFs are limited to contracts no longer than five years, because of the "intense scrutiny" of the Integrated Resource Plan (IRP) and other approval processes for utility-owned resources?[9]**

A: Based on my understanding, PURPA projects in Idaho undergo an equivalently "intense" level of scrutiny. First, the Commission approves an avoided cost methodology developed through a fully litigated Commission docket with multiple parties. Second, the utility's comprehensive IRP process establishes a future resource plan, including the timing of the utility's future need for generation, and models the utility's avoided energy and capacity costs associated with that plan. This extensive process, combining both the IRP and the Commission's approved

[8] *See* Order No. 33140 at p 5, AVU-E-14-06 (September 30, 2014) (allowing recovery of replacement power costs, and declining to review recovery of fixed costs, due to unforced outage of Colstrip Unit 4).
[9] Sterling Direct, at pg. 21, ln 22 through pg. 22, ln 7.

avoided cost methodology, establishes the level and timing of both the capacity and energy payments unique to each proposed QF, and has regular annual updates to ensure accurate information as time moves forward. Importantly, the assumptions and computer model used to develop these avoided cost prices are the same ones used to assess utility-proposed new generation or transmission resources.

Finally, once a QF and utility negotiate a contract, the Commission must approve the contract to ensure adherence to Idaho rules and practices. These contracts include performance guarantees by the QF that are more stringent than those which apply to a utility-owned plant. Idaho's method for calculating avoided costs also relies on the utilities' IRPs and thus provides the same assumptions, uses the same tools, and is subject to the same robust scrutiny as utility proposals to build owned resources.

**Q: In your experience can a state establish long-term PURPA contracts with an adjustable component to rates?**

A: Yes. For example, in the 1980s, California adopted a standard QF contract for renewable generators ("small power producers" under PURPA) that included ten years of fixed energy and capacity prices, followed by an additional 5 to 20 years of fixed capacity prices but variable energy prices indexed to natural gas prices and the incremental heat rates of the California utilities.[10] The CPUC found that this contract structure was necessary to allow renewable QF generation to be financed in the state. The result of this contract was the successful development of many of the first large-scale wind, solar, biomass, and geothermal projects in the U.S. Many of the renewable projects brought on-line in this initial tranche of QF development in California continue to operate today under successor contracts in the state's Renewable Portfolio Standard

[10] See CPUC Decision No. 83-09-054 (12 CPUC 2d 604), at 8-9.

(RPS) program, and, as I noted in my direct testimony, these projects supply the lowest-cost renewable generation now available to the RPS.

**Q: Could such a structure be adapted to how QF generation is priced in Idaho?**

A: Yes. Idaho currently calculates the rates for capacity and energy separately. Capacity payments are based on the capital costs of a combined cycle combustion turbine and begin in the first year the utility has an identified resource deficiency. Capacity payments continue through the life of the contract and for subsequent contracts based on the premise that, once a QF has resolved a capacity deficit, it continues to avoid other capacity needs for the life of the project. I do not recommend any adjustments to this portion of the avoided costs rates or to power purchase agreements.

The Commission could adopt a variable component to the energy rate. For the energy component, the first ten years of prices in the contract would be fixed at the level indicated by the current application of the IRP method. Beginning in Year 11, the portion of the Year 11 indicative energy price that represents the forecast of Mid-Columbia (Mid-C) prices in Year 11 would not be fixed, but would be variable based on actual Mid-C prices beginning in Year 11. The remainder of the indicative energy price for Years 11-20 would continue to be fixed. This would allow, in essence, for the energy portion of the contract to be re-priced after the first ten years. For example, assume that the contract price in Year 11 under the IRP Method at the time of contract formation was $75 per MWh, and that at that time the forecast of Mid-C prices in Year 11 was $45 per MWh. Under this option, in Year 11, the contract would include a fixed component of $30 per MWh ($75 - $45 = $30), and the remainder of the contract price would be based on actual Mid-C prices in Year 11, which could be higher or lower than the originally forecasted $45 per MWh.[11]

**Q: Does this conclude your rebuttal testimony as of May 14, 2015?**

A: Yes.

[11] This simplified example uses annual prices. It is my understanding that the IRP method uses much more granular prices disaggregated by month and High Load/Low Load hours, so the calculation proposed here would be performed on that more granular basis.

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Rebuttal Testimony of R. Thomas Beach

# Exhibit 304

Lisa Huber, *Utility-scale Wind and Natural Gas Volatility: Unlocking the Hedge Value of Wind for Utilities and Their Customers* (Rocky Mountain Institute, July 2012) (Executive Summary)

# Utility-Scale Wind and Natural Gas Volatility

## Uncovering the Hedge Value of Wind For Utilities and Their Customers

Lisa Huber | July 2012

**ROCKY MOUNTAIN INSTITUTE | RMI.ORG**

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## EXECUTIVE SUMMARY

Prudent investors do not solely invest in junk bonds over treasury bonds; they do not purely chase yield without regard to risk. A portfolio approach applies not only to personal finances, but also to energy investments. While natural gas spot prices are low today, they remain volatile and present a number of risks[1]:

- Unreliable natural gas and electricity market forecasts
- Uncertain power generation costs for IPPs, utilities and regulators
- Unpredictable costs for large customers, especially publicly traded companies that must report to shareholders and industrial consumers who buy directly from the market
- Unexpected Fuel Cost Adjustments (FCA) for residential customers

This paper explores methods of quantifying natural gas volatility by examining theoretical models as well as case studies of utility hedging strategies. Including these volatility risk premiums in the price of natural gas establishes a basis for even comparison with utility-scale wind contracts, which enables smarter decision analysis by regulatory agencies, utilities, and ratepayers. This analysis shows that even without the Federal Production Tax Credit (PTC) and Renewable Portfolio Standards (RPS) power pricing support, wind becomes competitive with natural gas years sooner than is commonly believed, and in many cases is the economic choice for new build generation[2]. Wind competitiveness can be realized without increasing utility hedging budgets by redirecting current hedging cash flows from short-term option strategies into long-term wind Power Purchase Agreements (PPA). Using this methodology, hedging benefits can also be realized at the customer level by large organizations signing direct PPAs and residential customers participating in effective green power programs (GPP). This paper will demonstrate the hedging benefits of utility-scale wind and present practical solutions for utilities and ratepayers alike to decrease risk and encourage further domestic wind development.

[1] Roesser, Randy. "Natural Gas Price Volatility." Electricity Supply and Analysis Division, California Energy Commision, 2009.

[2] This paper underscores the importance of hedging against gas price volatility risk; however, short-term variability in wind must be acknowledged as an additional risk. PPA pricing models used in this analysis include an average $6/MWh cost to utilities for intermittency integration. A future analysis incorporating more specific costs and wind hedging instruments would be beneficial, as risks associated with wind variability and intermittency range widely by region.

## CERTIFICATE OF SERVICE

I hereby certify that on this 14th day of May 2015, I delivered true and correct copies of the REBUTTAL TESTIMONY OF ADAM WENNER, REBUTTAL TESTIMONY OF R. THOMAS BEACH, and EXHIBITS 304 on behalf of the Idaho Conservation League and the Sierra Club the following persons via the method of service noted:



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