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**BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH**

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| In the Matter of the Application of Rocky Mountain Power for Approval of changes to Renewable Avoided Costs Methodology for Qualifying Facilities Projects Larger than Three Megawatts | **DOCKET NO. 12-035-100**<br><br>**Utah Clean Energy Exhibit 6.0(S)** |

# SUR-REBUTTAL TESTIMONY OF SARAH WRIGHT
ON BEHALF OF
UTAH CLEAN ENERGY

[METHODOLOGY PROCEEDING]

May 30, 2013

RESPECTFULLY SUBMITTED,
Utah Clean Energy

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**INTRODUCTION**

**Q: Are you the same Sarah Wright who prepared direct and rebuttal testimony on behalf of Utah Clean Energy in this phase of Docket No. 12-035-100?**

A: Yes.

**Q: What is the purpose of your surrebuttal testimony?**

A: I provide limited testimony in response to the rebuttal testimony of Division of Public Utilities ("DPU" or "Division") witness Abdinasir Abdulle, Office of Consumer Services ("OCS" or "Office") witnesses Bela Vastag and Randall J. Falkenberg, and Rocky Mountain Power ("RMP" or "Company") witnesses Gregory N. Duvall. My testimony addresses the following issues:

1. Market Proxy method
2. Proxy/PDDRR—Capacity value calculation method
3. Proxy/PDDRR—Capacity payment
4. Proxy/PDDRR—Energy payment
5. Integration costs
6. Avoided costs components
7. Other issues

**MARKET PROXY METHOD**

**Q. What is your surrebuttal recommendation regarding use of the Market Proxy method when there are renewable resource targets in the Company's IRP?**

**A.** My surrebuttal position remains unchanged from my direct and rebuttal testimony. If the Commission finds that the IRP includes cost-effective renewable energy resources after a thorough review of costs and risks, then avoided cost rates for renewable energy QFs should be based on the "proxy" costs of corresponding renewable energy sources. It is not necessary to base the avoided costs rate specifically on the most recent RFP for that renewable energy source, but the rate must be based on the costs of the same type of resource.

**Q. What was the Office's rebuttal recommendation regarding the method to use when cost-effective renewable resources are selected in the IRP?**

A. Mr. Falkenberg proposes that the Proxy/PDDRR method be used with IRP cost assumptionsthat correspond to the type of renewable resource called for.Mr. Falkenbergstated that, "To the extent that renewable resources do become part of the least cost plan at some point, then avoided cost determinations for renewable resources should be based on the avoided costs specific to those resources."Falkenberg Rebuttal, lines 79-81.

**Q. What is your response to this recommendation?**

A. First, Mr. Falkenberg referred to renewables as being part of a "least cost plan." I would modify this statement to include risk; when renewables are part of a least cost portfolio when taking account of risk and the public interest, then the cost of renewable energy resources should be compared to other renewable energy resources.Utah Clean Energy supports using IRP cost data, but I recommend use of the Market Proxy method (though not necessarily using an RFP-based proxy) when renewable resources are part of a least cost, least risk IRP plan.

Regarding Mr. Falkenberg's recommendation to use the Proxy/PDDRR method rather than the Market Proxy method, there was not a sufficient description in Mr. Falkenberg's testimony for me to understand how he proposes applying IRP data to the Proxy/PDDRR method for me to have a position on this recommendation.

**Q. Is there consensus among the parties about how renewable resources should be compared to renewable resources when renewable energy is selected as part of a least cost, least risk plan?**

A. The way to do that most accurately is open for debate. While the Office proposed using IRP resource cost assumptions, the DPU argued that because IRP costs are *forecasted* costs, they may over- or under-estimate *current* costs used for avoided cost purposes. The Division also discouraged utilizing the costs of Company-owned resources or publicly available power purchase agreement cost information. The Division does not make clear why the cost assumptions of renewables through publically available RFPs are not comparable to the PacifiCorp system, however.

**Q. Mr. Duvall summarizes your recommended changes to the Proxy/PDDRR method on lines 67-78 of his rebuttal testimony and concludes that, taken together, they would be functionally equivalent to the Market Proxy method. Do you agree?**

A. No, the Market Proxy method compares the cost of a specific renewable resource to that resource. My recommendations for the Proxy/PDDRR method are focused on developing an avoided cost methodology that compensates the QF for the actual costs it avoids.

**Q. On lines 79-92 of Mr. Duvall's rebuttal testimony he discusses two of your recommendations regarding the Market Proxy and the timing of capacity payments. Would you like to respond to his testimony?**

A. Yes.First I'd like to clarify Utah Clean Energy's position regarding renewables in the IRP and the use of a Market Proxy method (or another method that compares the cost of renewables to the cost of renewables). It is Utah Clean Energy's position that a

Market Proxy method should be used when cost-effective renewables are included in the IRP when taking into account costs and risks; we are not advocating for a market proxy method when renewable energy sources are not part of a least cost, least risk portfolio.

Secondly, regarding my recommendation that the Proxy/PDDRR method be modified to compensate for capacity value from the first year of the contract, this is based on paying a QF for the capacity value that it brings to the system, not on the timing of renewables in the IRP.In the Capacity Payment section of this testimony, I discuss the fact that given the company's heavy reliance on front office transactions for the entire planning horizon, the Company and their ratepayers are not, in fact, capacity sufficient.

**Q. Why should cost-effective renewables receive a Market Proxy price even before they are called for in the IRP?**

A. It is my opinion that acquiring renewable QFs sooner is in the public interest. As I outlined in my direct testimony: there are good reasons to acquire renewable resources earlier, including taking advantage of federal incentives (the PTC and ITC), securing optimal resource sites, and hedging against reliance on market purchases and fuel price risk.

**Q. Please review the Commission ruling regarding use of the Market Proxy method.**

A. Below is an excerpt from comments Utah Clean Energy filed in response to an Action Request from the Commission in Docket 12-999-01, which describe my understanding of the Commission's ruling on the Market Proxy method:

> ***Wind QF Avoided Costs.*** In determining the appropriate methods for calculating avoided costs from wind QFs, the Commission made a distinction between wind QF resources acquired up to an "IRP target" level of megawatts, and wind QF resources acquired after the IRP target has been reached. With regard to the avoided cost method for wind QFs up to the IRP target, the Commission said,

> "We are persuaded for the reasons stated by parties . . . that the proxy method best reflects the avoided cost of a wind QF up to the IRP target level of wind resources."
>
> The proxy method for wind QFs is distinct, however, from the proxy method for non-wind QFs in that the deferrable "proxy" resource for a wind QF is a "market price proxy" for the costs of another wind resource (up to the IRP target), rather than the cost of the next deferrable resource in the IRP. Specifically, the Commission concluded that "the most recently executed RFP contract, prior to the QF's request for indicative pricing, will serve as the proxy against which project specific adjustments will be made to produce an indicative price for wind QFs in Utah."
>
> Given that the IRP selects a certain amount of wind in its preferred portfolio, that amount of cost-effective wind becomes the deferrable resource for a wind QF, until the IRP-selected amount of wind (the IRP target) is acquired. The Commission noted that Wasatch Wind testified that "the appropriate deferrable plant for a wind QF is the Company's IRP planned wind resources." Therefore, although the proxy method for *non-wind* QFs utilizes the next deferrable resource from the IRP (e.g. a CCCT with duct firing), the proxy method for wind QFs up to the IRP target amount utilizes a market price proxy wind project as the next deferrable plant instead.

Docket No. 12-999-01, Comments of Utah Clean Energy, pages 5-6 (September 21, 2012) (internal citations omitted). As I mentioned previously in this docket, the Commission's Order in Docket No. 12-2557-01 reaffirmedthe use of the cumulative IRP target.

**Q. How does this relate to your position regarding the timing of renewable QFs when renewable resources are included as part of a least cost,least risk portfolio in the IRP and the application of the Market Proxy method?**

A. I concur with the Commission's 2005 Order in Docket 03-035-14:even if the next deferrable resource in the IRP is a fossil resource, if renewables are part of the IRP, then the market proxy method applies. And as I have stated, IRP renewable targets should be based on a least cost, least risk portfolio.

**Q. The Commission's 2005 Order specifically referenced wind projects. Do you interpret this ruling to apply to other renewables, such as wind or geothermal?**

A. While I cannot speak for the Commission, I think it is reasonable to extend the Commission's reasoning, and the Market Proxy method, to other renewable resources if renewable energy sources are included as part of a least cost, least risk portfolio in the IRP. Until a specific renewable energy resource target is met, a market proxy method, based upon the type of renewable at issue, should be the method for determining avoided costs, even if the next deferrable resource in the IRP is a fossil resource.

**Q. The Company claims that the 2013 IRP does not include any cost effective renewable resources and therefore the Market Proxy would not apply. So why should we retain a Market Proxy method?**

A. Given that the 2013 IRP has not been reviewed and acknowledged by the Commission, and given that IRPs are re-created every two years, we need to have a Market Proxy method in place in the event that renewables are found to be part of a cost effective portfolio when evaluating risk and other factors.

**Q. Do you have a recommendation regarding interim Market Proxy values for renewable resources?**

A. I recommend that the Commission approve interim Market Proxy values for specific renewable resources and hold technical conferences to determine appropriate Market Proxy valuation methods for renewable QFs. I make the following recommendations for interim Market Proxy prices by resource type.

Solar:I recommend using the IRP costs or theaverage installed cost from the most recent GTM Research report. GTM Research is a well-respected research firm that tracks the costs of installed solar. The average cost figure for installed utility-scale solar is $2.27/Watt.Greentech Media, Inc. and Solar Energy Industries Association,*U.S. Solar Market Insight Report—2012 Year in Review, Executive Summary*, page 11 (2013); UCE Exhibit 6.1, attached.The GTM Research cost is lower than the costs in the IRP, so this interim avoided cost will be a better deal for ratepayers than the IRP costs.This cost will need to be translated to a cost per MWh. Given that the average GTM cost is lower than the costs for fixed axis system in the IRP, I recommend using a fixed axis system to calculate the avoided cost per MWh.

<u>Wind:</u> I support using IRP numbers for wind resources.

<u>Geothermal:</u> PacifiCorp has done extensive analysis of geothermal pricing as part of the IRP process, so the IRP prices should provide an appropriate interim value for the market proxy.

Again, it is my recommendation that these Market Proxy costs only be applied if renewables are found to be part of a cost-effective portfolio in the IRP. When the Commission determines that there are no cost effective renewables in the IRP (considering risk, etc.), I recommend use of the Proxy/PDDRR method, with my recommended changes.

**PROXY/PDDRR METHOD—CAPACITY VALUE CALCULATION**

**Q. What is your surrebuttal recommendation regarding the capacity contribution of renewable QFs?**

A. To the extent that it is not overly burdensome, I recommend use of the effective load carrying capability (ELCC) reliability-based method. I further recommend use of the capacity factor approximation method (CFAM) as a reasonable approximation method. I support the Division's recommendation to utilize a reliability-based method where sufficient data are available and to utilize the CFAM where computations are overly burdensome. (DPU Exhibit 2.0R, Abdulle, lines 174-80.)

I recommend that the Commission require the Company to perform the ELCC method and/or the CFAM utilizing LOLP (for top 10% load hours, consistent with the description in the NREL paper attached to my direct testimony) and present its analysis and results in a technical conference. I request that the Commission then provide an opportunity for parties to review and comment upon the Company's analysis and results before approving specific capacity values for use in avoided costs calculations.

**Q. What is your recommendation for an interim capacity value for renewable QFs?**

A. Both the Division and the Office have presented reasonable recommendations for interim capacity values to use until this analysis is complete. For geothermal you could use the capacity value of a base-load fossil fuel plant, and the capacity value for a biomass plant would be tied to its production profile.

**Q. What is the Division's recommendation regarding the capacity valuation method?**

A. As mentioned above, the Division recommends utilizing a reliability-based method, such as the ELCC method, where sufficient data are available, and to utilize the CFAM where computations are overly burdensome. (DPU Exhibit 2.0R, Abdulle, lines 174-80.) The Division recommends that the Commission make a determination on capacity value for avoided costs after a few technical conferences and an opportunity to comment. In the meantime, the Division proposes interim capacity values for wind between 9% and 12% (roughly) and for solar between 68% and 84%.

**Q. What did the Office recommend regarding the capacity value calculation?**

A. Ultimately, the Office concludes that a capacity valuation study should be performed using one of the models from the NREL paper, but recommends that the Commission use simple approximations in the meantime. The Office calculated simple capacity value approximations for wind of 21%, and for solar between 50% and 59%.

**Q. What is your response to these recommendations?**

A. As I stated above, I support the Division's endorsement of the reliability-based methods and the CFAM. I think there is sufficient evidence on the record to support approval of the ELCC method and/or CFAM using LOLP for the top 10% load hours in this docket. However, since capacity valuation implicates more matters than avoided costs (for example, capacity values are assumptions used in the IRP), I support the Commission holding at least one technical conference and providing parties with an opportunity to provide comments before approving specific capacity values for renewable resources.

Regarding interim capacity values, I do not oppose use of either the Division's or the Office's recommended capacity values on an interim basis, and I make suggestions for geothermal and biomass capacity value determination above.

**PROXY/PDDRR METHOD—CAPACITY PAYMENT**

**Q. What is your surrebuttal position regarding the capacity payment?**

A. I continue to recommend that renewable QFs be compensated for their capacity contribution for each year of their power purchase agreements. The Company is heavily reliant on the market for its resource needs over the planning horizon, during its periods of resource "sufficiency" and "deficiency." In effect, the Company is in a constant period of resource deficiency. Furthermore, renewable QFs' capacity value contributes to meeting the Company's planning reserve margin in each year of the QF contract—reducing the costs and resources otherwise needed to meet the planning reserve margin, from the first year of operation. For these reasons, I recommend that renewable avoided cost pricing for renewable QFs include a capacity contribution payment beginning in the first year.

**Q. Did other parties provide testimony on the capacity payment issue?**

A. Yes, the Company argued that the Company's current method provides a capacity value through the deferral of Front Office Transactions in each year prior to the addition of the next deferrable resource (the "sufficiency period"). Duvall Rebuttal, lines 210-20. And according to the Office, the GRID model reflects the "capacity costs associated with Front Office Transactions." OCS 1R Falkenberg, lines 63-72.

Q. **Do you agree that the Proxy/PDDRR method compensates QFs for capacity during the resource sufficiency period?**

A. Not necessarily. Rather than explicitly encompassing capacity compensation, market prices for front office transactions may merely reflect normal market forces of supply and demand. Committee of Consumer Services witness Phil Hayet, in Docket No. 03-035-14, explained that paying a QF for capacity in addition to GRID energy prices (based on two GRID runs with and without the QF) did not "double pay" for capacity:

> [J]ust because market energy prices appear to be above the cost to actually generate the energy, I would not consider the premium to be a capacity charge in the context of calculating avoided energy costs. In this case, I view the premium as simply caused by the normal market forces of supply and demand. Because the

> QF allows the utility to avoid the higher energy costs during the summer, it should be entitled to higher energy cost payments during the summer."

Docket 03-035-14, Prefiled Testimony of Philip Hayet for the Committee of Consumer Services, pages 9-10 (April 12, 2004). Higher energy prices in summer months are tied to increased demand, and paying a capacity payment in addition to the energy payment derived from the differential of two GRID runs does not constitute double payment of capacity.

**Q. The Company's position is that they are resource sufficient until 2024 (Duvall Rebuttal, lines 210-20). What is your response?**

A. I remain unconvinced that the Company is resource "sufficient," for avoided costs capacity payment purposes, until 2024. The addition of a CCCT in 2024 does not change the level of Company's reliance on FOTs, so the distinction between periods of sufficiency and deficiency seems to be something of a fiction. Therefore, while the Company is so heavily reliant on market purchases for capacity, there should be an explicit capacity payment provided to QFs for the duration of the power purchase agreements.

**Q. What does the Company's IRP say about the company's need for energy and capacity?**

A. While the Company's selected 'preferred portfolio' in the 2013 IRP does not add a new natural gas plant until 2024, the IRP acknowledges that the Company will be reliant on Front Office Transactions for their capacity needs. PacifiCorp 2013 Integrated Resource Plan, Volume 1, page 160. As discussed in my rebuttal testimony, the Company and ratepayers are relying heavily on Front Office Transactions for over 1,000 MW of capacity in the third quarter throughout all but a couple of years in the 20-year IRP planning horizon. *Id.* at 201. Renewable QFs arephysical resources that provide capacity value to RMP's system and contribute to the Company's planning reserve margin, thereby avoiding costs. Therefore, I maintain that renewable QFs should be paid for this capacity contribution from the first year of the contract.

**Q. Has FERC provided relevant guidance on this issue?**

A. In FERC's Order 69—the Order in which it promulgated regulations implementing Section 210 of PURPA—FERC explained:

> If a qualifying facility offers energy of sufficient reliability and with sufficient legally enforceable guarantees of deliverability to permit the purchasing electric utility to avoid the need to construct a generating unit, to build a smaller, less expensive plant, or *to reduce firm power purchases* from another utility, then the rates for such purchases will be based on the avoided *capacity and energy* costs.

*Small Power Production and Cogeneration Facilities: Regulations Implementing Section 210 of the Public Utility Regulatory Policies Act of 1978*, Order No. 69, ¶30,128,at 30,855(February 19, 1980), Docket No. RM79-55, 18 CFR Part 292, 45 F.R. 12214, 45 F.R. 24126, *aff'd in part and vacated in part*, *American Electric Power Services Corp. v. FERC, 675 F.2d 1226 (D.C. Cir 1982),rev'd in part*, *American Paper Institute, Inc. v. American Electric Power Serv. Corp.,* 461 U.S. 402 (1983) (emphasis added).

**Q. What conclusion do you draw from this guidance?**

A. I conclude that it is proper for the avoided cost method to include an explicit capacity payment to QFs for the duration of the power purchase agreement while the Company maintains its reliance on FOTs for capacity needs.

**PROXY/PDDRR METHOD—ENERGY PAYMENT STREAM**

**Q. In your rebuttal testimony you responded to Mr. Millsap's direct testimony and made a recommendation that QF energy price streams be determined by the two GRID runs and not be capped further by the dispatch cost of the next deferrable resource. Did any other parties make recommendations about the energy payment stream?**

A. Yes, Sun Edison submitted written comments to this Commission and recommended that because a solar QF will still be displacing market purchases, avoided cost energy payments should be based on avoided market purchases even after the deferrable resource comes on line. Comments of SunEdison, page 12 (May 15, 2013).

**Q. Does SunEdison's recommendation align with your recommendation?**

A. Yes, my recommendation and SunEdison's recommendation are similar. SunEdison recommended that if renewable QFs are displacing market purchases, they should be compensated for avoided energy costs, based on the market purchases they avoid. This also comports with my recommendation to compensate renewable QFs for actual costs they avoid.

**INTEGRATION COSTS**

**Q. Do you have any comments in response to rebuttal testimony regarding integration costs?**

A. Yes. Mr. Duvall utilizes a graph from the California ISO to support his argument that solar resources incur integration charges (such that a wind integration charge is an appropriate proxy for a solar integration charge). Mr. Duvall states that "high penetrations of solar resources have the potential to impose new load following requirements." Duvall Rebuttal, lines 315-18. It is significant that he predicates additional ramping costs upon high penetrations of solar resources. On the next page of his testimony, Mr. Duvall argues that because "the addition of solar resources on the Company's system is still in early growth stages," there is insufficient data to conduct a solar integration study. Duvall Rebuttal, lines 325-29.

Although the Company does not have enough solar on its system to provide evidence that solar imposes any integration costs, the Company proposes to charge solar QFs integration costs as if there were "high penetrations" of solar on its system. This is unreasonable. If there is insufficient solar to impose integration costs, solar should not be charged integration costs. If at some point the Company acquires sufficient solar to conduct a solar integration study, they should come back to the Commission to demonstrate the costs associated with solar integration before imputing a cost to solar QFs.

**AVOIDED COSTS COMPONENTS**

**Q. A number of parties discuss FERC precedent and PURPA avoided cost requirements. What is Utah Clean Energy's position regarding the consistency of your recommendations with FERC precedent and PURPA?**

A. It is Utah Clean Energy's position that our recommendations in this docket are consistent with PURPA, FERC regulations implementing PURPA, and FERC precedent.

**Q. What did Mr. Vastag conclude in his rebuttal testimony on behalf of the Office about UCE's proposal to include "additional factors" (beyond energy and capacity costs) in avoided costs?**

A. Mr. Vastag concluded that I am proposing to include cost adders or externality costs that are outside the scope of the Federal Energy Regulatory Commission ("FERC") rules implementing PURPA. OCS-2R Vastag, page 2, lines 22-35.

**Q. Are you asking the Commission to include externalities in its calculation of avoided costs beyond what is allowed by FERC?**

A. No, I am merely asking the Commission to account for real, avoidable costs in its avoided costs rates for renewable QFs. Utah Clean Energy has based its policy position—that avoided costs should be a reflection of actually avoidable costs, including costs the Company would otherwise incur in the absence of QF generation, based on the risk profile of its resource procurement decisions—on recent FERC precedent. In a recent order granting clarification and dismissing rehearing in a case involving the California Public Utilities Commission (CPUC) and three California utilities, FERC explained:

> The Commission has previously found that an avoided cost rate may not include a "bonus" or "adder" above the calculated full avoided cost of the purchasing utility, to provide additional compensation for, for example, environmental externalities above avoided costs. But if the environmental costs "are real costs that would be incurred by utilities," then they "may be accounted for in a determination of avoided cost rates." Accordingly, if the CPUC bases the avoided cost "adder" or "bonus" on an actual determination of the expected costs of upgrades to the distribution or transmission system that the QFs will permit the purchasing utility to avoid, such an "adder" or "bonus" would constitute an actual avoided cost determination and would be consistent with PURPA and our regulations.

California Pub. Utilities Comm'n S. California Edison Co. Pac. Gas & Elec. Co. San Diego Gas & Elec. Co., 133 FERC ¶ 61059, 61267-68 (Oct. 21, 2010).

Furthermore, in this case, FERC found that the concept of a "multi-tiered" avoided cost rate structure—that is, a rate structure in which multiple avoided cost calculations (based on long- and short-term costs), not just a single lowest possible avoided cost—was consistent with the requirements of PURPA and FERC regulations.*Id.* at ¶ 61,266. "Both section 210 of PURPA and our regulations define avoided costs in terms of costs that the electric utility avoids by virtue of purchasing from the QF. The question, then, is *what costs the electric utility is avoiding*." *Id.*(emphasis added).

Utah Clean Energy has attempted in this docket to answer this question and consider the costs that purchases from renewable QFs allow Rocky Mountain Power and ratepayers to avoid. To this end, and consistent with our interpretation of FERC precedent, I have discussed the importance of approving avoided cost calculations that account for the costs that renewable resources allow Rocky Mountain Power and ratepayersto avoid, including fuel price risk mitigation costs, environmental regulation costs, potential carbon prices, and the increasing costs of adapting to climate change.

**Q. Your direct testimony was criticized for not quantifying these risk mitigation costs avoided by renewable QFs. What is your response?**

A. The Company stated that "fuel cost risk is neither an energy nor capacity cost incurred by the Company, and is therefore not a known and measurable cost that can be avoided by the Company." Duvall Rebuttal, lines 339-41. As I discussed above, I do not agree that avoided costs need only be comprised of energy and capacity components, but rather should reflect actual costs avoided by virtue of contracting with a QF. Second, I disagree that just because a cost is not currently "known and measurable" it does not exist or impact the Company and ratepayers.

The Office argued that risk mitigation costs are not known and measurable, are not supported by FERC guidance, and are therefore outside the scope of this proceeding.OCS 2R Vastag, lines 126-127.As I discussed above, including risk-associated costs in avoided costs calculations is not unsupported by FERC guidance as long as the costs are real. Mr. Vastag's testimony on this point did not provide a thorough review of FERC precedent—an omission I have tried to rectify above. And just because a cost is not "known and measurable" does not make it irrelevant. These costs, which we cannot measure with exact precision, will nevertheless result in real costs to ratepayers.

Utah Clean Energy has pointed to a number of real costs associated with Rocky Mountain Power's resource procurement decisions that renewable QFs avoid. In my testimony, I have provided evidence regarding the parameters of different fuel price risk costs and different potential carbon price costs that the Commission can utilize in its consideration of the costs avoided by renewable QFs. Below, I provide additional discussion of risk and guidance on using these parameters to inform avoided cost pricing.

**Q. In Mr. Duvall's rebuttal testimony he stated that fuel cost risks are symmetricaland just as likely to result in a higher cost to customers as they are to result in a lower cost. Mr. Duvall argues, "Because the risk is symmetrical, customers receive no incremental benefit by entering into a fixed price contract." Duvall Rebuttal, lines 353-357.Do you agree with Mr. Duvall's symmetrical risk argument?**

A. No. The risks that renewable energy mitigates are not symmetrical. Mr. Duvall claims that the risk that natural gas prices will be higher than the forward price curve is just as likely as prices being lower. This is simply not the case. Currently, natural gas prices are near an all-time low, and the amount that they fall is known and bounded, whereas prices above the forward price curve are unbounded.

Please refer to *Figure 2* (Page 14, beginning at line 237) in my Direct Testimony that shows the history of 95% confidence intervals around the natural gas futures strip, based on EIA data. It clearly illustrates the asymmetrical nature of natural gas price risk. This graph shows that the lower 95% confidence interval shows a range of $0-2 downside risk (the risk that the price of natural gas will be lower than the forward price curve), but the upper 95% confidence interval shows a very high risk of a higher cost from 2009 to 2012 period—up to $15 higher than the forward price curve—and up to $4 higherfor the 2013 to 2014 time horizon (twice the spread for lower 95% confidence interval). Clearly, fuel price risk is asymmetrical with a significantly greater chance of costs being higher than the forward price curve than the chance of the costs being lower than the forward price curve, especially given today's historically low natural gas prices.

**Q. What about the other costs that renewable QFs avoid—are they symmetrical?**

A. No. The perfect example of an asymmetrical risk is carbon price risk. The cost is zero right now, so the only way to go is up. Renewables have no carbon emissions and therefore, avoid costs associated with carbon costs. Another example of an asymmetrical risk is the risk that drought and low water years (exacerbated by climate change) will impact, with increasing costs, our energy supply system, including hydro and water-cooled plants.

**Q. It is the Division's position that the IRP preferred portfolio already compensates for the risk mitigation benefits of various resources. DPU Exhibit 2.0R Abdulle, lines 215-40. Do you agree with this position?**

A. No. IRP analysis of costs and risks does not translate to compensation of renewable QF resources for the risk-related costs that they avoid for ratepayers. QFs lock in fuel prices, avoid fuel volatility cost, avoid carbon costs, and help mitigate the impacts of climate change regardless of risk analysis in the IRP.

**Q. Dr. Abdulle noted in his testimony that he is not arguing that the IRP has correctly modeled the risk mitigating benefits of renewable energy. DPU Exhibit 2.0R Abdulle, lines 249-250. Are you concerned with the IRP's ability to correctly model risk and select a portfolio that results in the least regrets over a number of possible futures?**

A. Yes, and Utah Clean Energy filedextensive comments on this issue on the 2011 IRP. The current Proxy/PDDRR method is tied to an IRP that is riddled with assumptions and decision logic that may or may not be accurate. Utah Clean Energy finds this problematic since the Company and utility regulators are using the IRP to guide billion-dollar utility decisions.

**Q. If renewable QFs are offered an avoided cost methodology that is consistent with your recommendations, do you believe that it would harm ratepayers?**

A. On the contrary; given that I am not asking for a subsidy for renewables, but rather am asking that they get paid fairly for their full capacity value, energy value, and avoided costs associated with fuel volatility and carbon costs, ratepayers will be protected, not harmed. I can understand why a regulator might think that it is in the best interest of ratepayers to approve an avoided cost methodology that may not value actual costs avoided by a QF to "protect" ratepayers. But by approving a methodology that does not value these costs, we harm ratepayers and society because the method discourages and likely prevents renewable QF development, which in turn prevents efficient use of our energy resources and the associated societal, environmental, and public health benefits.

**Q. How can the Commission approve an avoided cost rate that accounts for risk mitigation value if you have not quantified it?**

A. I recognize that quantifying avoided costs associated with avoided fuel volatility risk, carbon costs, and other avoided climate-related impacts to our electricity portfolio (low water for hydro and cooling, higher summer temperatures that reduce the output of air cooled units, etc.) are hard to quantify. But just because these costs are not easily quantified does not mean that they are not real avoidable costs for ratepayers or that they should not be included in avoided cost rates. I recommended using IRP carbon costs, and backward looking hedging costs as reasonable estimates.

I recognize that it may be too difficult to put a specific value on these avoidable costs based on the record in this Docket. However, my testimony has shown that there are real costs that are avoided by renewable QFs. Therefore, in recognition of these avoidable costs, it is critical to, at a minimum, modify the Proxy/PDDRR method as Utah Clean Energy has proposed to grant renewable QFs the full value of their capacity and energy contributions for the QF contract period. While this does not pay the QFs for all their avoidable costs, it is a fairer method than the current Proxy/PDDRR method, and it is possible that QFs may be able to compete, bringing significant benefits to Utah and Utah ratepayers.

**Q. The Division argued,**

> **[N]o costs accrue simply because a risk exists. Costs associated with a risk accrue only if the event occurs or insurance is purchased against the likelihood that the event will occur. For example, there is a risk of flooding for homeowners. However, the risk of flooding does not necessarily impose a cost on the homeowner. The costs accrue only if the home is actually flooded or the homeowner purchases insurance in case flooding occurs. Similarly, unless fuel costs rise, environmental compliance costs are imposed, carbon regulation is imposed, or the changes in the climate impose costs, no costs accrue. Ms. Wright may have these accrual costs in mind when she recommends that the QF receive additional compensation.**

**DPU Exhibit 2.0R Abdulle, lines221-29. How does your proposal touse your modified Proxy/PDDRR method comport with the Division's analogy?**

A. The Divisions analogy is interesting. Flood risk level will depend on the location of your home: if your home is built in an area prone to flooding, it is likely that you will incur those costs and, if you are wise, you will purchase flood insurance. Given the consensus among climate scientists and the costly impacts of climate change that I discussed at length in my direct testimony, coupled with the fact that natural gas price risk is asymmetrical, the risk that real and measurable costs associated with climate change and carbon regulation, and costs associated with asymmetrical fuel risk, will impact ratepayers is very likely.

We are, in other words, in an "area prone to flooding." Modifying the Proxy/PDDRR method to pay the full capacity and energy value of a renewable QF is analogous to purchasing flood insurance if you live in a flood plain. While the QF is not compensated for all the avoidable costs, it will, at least, be compensated for the full energy and capacity value it brings to the system. And if this adjustment enables it to compete, then ratepayers will receive the benefits of their "insurance" against carbon regulation, climate change, and fuel volatility.

**Q. Would you be opposed to the Commission putting a cap on the amount of renewables developed under a methodology that is based on your recommendations?**

A. No, I would not be opposed. This seems reasonable as it is new. The Commission could approve a methodology for, say, four 80 MW projects or a cumulative 320 MW of renewable QFs under this methodology and subject the continuation of the methodology to a review of the method and results.

**OTHER ISSUES**

**Q. In your rebuttal testimony you noted a concern with the way that the GRID model includes all the QFs that are in the queue (regardless of whether they will be built) in the runs that it uses to calculate the energy payment stream. You provided one recommendation for how this might be easily rectified, do you have another recommendation?**

A. Yes, I think a simple fix would be to have the Company run the Grid analysis twice, once with the QF first in line and once with the QF at its current position in the queue. This would give the QF developer a clear range of prices. Then when they are ready to negotiate the contract, the GRID model is refreshed based on their actual location in relationship to other signed QF contracts.

**CONCLUSION**

**Q. Do you have any concluding remarks?**

A. Utah Clean Energy is not requesting a subsidy, only fair payment for the avoidable costs for ratepayers. Just because the Proxy PDDRR has been calculated a certain way for years, does not mean that it is still in the best interest of ratepayers to continue to offer only the stripped down, bare bones avoided cost that is derived from the current Proxy/PDDRR method. Right now, if renewables are fairly compensated for capacity value and energy value according to Utah Clean Energy's recommendations, there is a good chance that they could compete and be built here in Utah for the benefit of ratepayers for years to come. That concludes my testimony.