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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of PacifiCorp for Approval of an IRP Based Avoided Cost Methodology for QF Projects Larger than 3 Megawatts	Docket No. 03-035-14

SURREBUTTAL TESTIMONY OF RICH COLLINS

Wasatch Wind hereby submits the Rebuttal Testimony of Rich Collins in this docket.

DATED this 19th day of September, 2005.

Richard S. Collins

/s/_____
Richard S. Collins
Representing Wasatch Wind

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was sent by United States mail, postage prepaid, or by email this 11 day of, July 2005, to the following:

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SURREBUTTAL TESTIMONY

Of

RICHARD S. COLLINS

On behalf of Wasatch Wind

In the Matter of the Application of PacifiCorp for Approval of an IRP Based Avoided Cost Methodology for QF Projects Larger than 3 Megawatts

Docket No. 03-035-14

September 19, 2005

Q. Are you the same Richard S. Collins that has submitted Direct and Rebuttal Testimony for Wasatch Wind, LLC previously in this docket?

A. Yes I am.

SUMMARY OF TESTIMONY

Q: What is the purpose of your surrebuttal testimony in this docket?

A: I will respond to the rebuttal testimony of the Division of Public Utilities, the Committee of Consumer Services and Company witnesses. I present Wasatch Wind's position for determining avoided costs for qualifying facilities that utilize wind.

Q: Could you give a summary of your conclusions and recommendations?

A: Yes. I recommend that the Commission make separate decisions on appropriate methods for determining avoided costs for wind and thermal-based resources. The operating characteristics and regulatory issues associated with these two resources are vastly different. A single method may not capture the uniqueness of either resource and may provide inferior estimates for both. For wind resources, I recommend against the adoption of the Company's variant of the DRR method using its GRID model and recommend a robust compromise of methods. I recommend the average of the market-based method (the last contract signed and financed) and what I call the Company-build option cost model. This method uses IRP costs to determine the price per kWh that is necessary for the Company to recover its costs of building a comparable wind resource. This latter method is designed to take into account all variables that would affect the costs of building a

wind facility and recover the associated rate of return of the investment over the estimated life of the facility.

If the Commission decides to use the GRID model for wind then substantial changes to the method must be made. First, a DRR method requires that a similar resource to the QF resource being evaluated must be used in the zero cost resource run. Without this condition the method lacks conceptual or theoretical validity and will produce inaccurate results. Secondly, there are corrections to the model and its input assumptions that will have to be made. For example, the Division's recommendation that additional memory be added to all computers must be implemented as well as the adjustments recommended by the Committee. I agree with most all of the data inputs corrections pointed out by UAE. In addition, if the GRID model is adopted, I recommend that the Commission required that the Company mitigate or eliminate all barriers to using this model. To this end the Commission should order the Company to provide regular training sessions to help developers, government regulatory agencies and others to achieve adequate proficiency with the model. The Company should be required to make model runs at the request of interested parties using different inputs to test the continued validity of the model and its assumptions. These model runs should be reviewed by regulatory agencies including Commission staff to verify their accuracy. These conditions on the GRID model support the view that an alternative means to measure avoided costs will provide more clarity, transparency, ease of use, verifiability and accuracy for determining avoided costs.

I recommend that the Commission rule that RECs stay with the wind developers and that the Company bear the burden of proof that its cost of capital are affected by entering into a particular PPA with a QF.

Given all these concerns about the GRID model I recommend that the Commission reject this approach for estimating avoided costs for Wind QFs and restrict the use the GRID model to a calibration tool to substantiate the other two approaches, the market benchmark and Company-build option method.

Surrebuttal of Mr. Hayet.

Q: Do you care to comment on the rebuttal testimony of Committee witness Hayet.

A: Yes I would. I want to commend Mr. Hayet on his testimony; it is well thought out and shows a willingness to accept other parties' positions when the logic of their argument dictates. I agree with his amended position regarding the calculation of avoided costs for wind QFs. He states in his summary that

> "….Based on the testimony of other parties and discussions in technical conferences, the Committee amends its position. However, this only applies to wind QFs that help bring PacifiCorp's total wind capacity up to the amount that PacifiCorp's IRP 2004 determined to be economic, which is 200 MW per year and 1,400 MW total. **For wind QFs that this applies to, the Company should be indifferent to paying them something similar to what the IRP determined to be the cost the Company would have to pay for wind energy.** When the total amount of acquired wind capacity on PacifiCorp's system exceeds the limit, then the Committee's recommendation from its direct testimony should apply."
>
> (Hayet Rebuttal Testimony page 5 line 10-21)

Q: Is Mr. Hayet advocating the use of your Company-build option model for determining the avoided cost of wind QFs given his caveat that this method be limited to 200MW limit per year and 1400MW overall cap?

A: I believe he does. However, he makes a number of changes to my calculation that reflects his understanding of some of the critical inputs used in the model.

Q: What changes does Mr. Hayet make to your model and do you agree with them?

A: Mr. Hayet makes three changes to the calculation of my model. First, he does not include the avoided transmission capacity costs, second he changes the assumed capacity factor for Utah wind projects and lastly he corrects what he believes is an improper treatment of the production tax credit.

Q: Could you elaborate on the transmission issue?

A: Yes, Mr. Hayet excludes the transmission capital costs assumed by the Company as necessary to bring wind power to the system because in his words "a transmission network study (as recommended earlier in my testimony) is required to determine the value of such payment." Mr. Hayet is confusing the costs and benefits of a QF's transmission investment with the avoided transmission costs of not building a Company-owned wind resource. As Mr. Hayet has reminded us time and time again, the capital costs of a QF are irrelevant in determining avoided costs, the relevant capital costs are the resource that the utility avoids. I do not disagree with Mr. Hayet that the QF will be responsible for its own

transmission costs but it must get credit for the transmission costs that it allows the Company to avoid by purchasing from the QF. My model uses $100/kW for associated transmission costs as outlined in the 2003 IRP Table C.19 on page 219 for a Utah wind project with an assumed capacity factor of 32%.

Q: What is your opinion about Mr. Hayet's choice of a 35% capacity factor for the avoided wind resource?

A: Mr. Hayet uses a 35% capacity factor referred to on Table C.38 of the IRP 2004 report. However as explained on page 69 of the same appendix, the assumed capacity factor is based on average IRP results. I relied on the 2003 IRP Table C.19 on page 213 which delineates the capacity factors for both Wyoming and Utah projects. Utah is listed at 32% and Wyoming is listed at 36%. A more appropriate estimate of assumed capacity factors would be to look at historical evidence. On page 142 of Appendix J of the 2004 IRP, the Company states "Based on historical performance of a confidential wind resource on the west side of PacifiCorp's system and Foote Creek on the east side of the system, an average annual capacity factor of wind was assumed to be approximately 29.8%." Thus the best estimate on the record of this case is that Utah wind resources were assumed to operate at a 32% capacity factor. This assumption should be reviewed for accuracy given that actual capacity factors of existing wind resources on the Company's system are considerably lower.

Q: What about Mr. Hayet's adjustment for the production tax credit?

A: I am neither an accountant nor an expert in utility tax issues. I queried the entire Accounting Department at Westminster College and did not get a consensus of opinion on the matter. However, on reflection, I believe Mr. Hayet may have a point that the tax credit will actually lower the cost to wind developers by more than tax credit itself. For an individual, a tax credit of $1,000 is worth more than an increase of income of $1,000 because one would have to pay taxes on the additional income. Given the uncertainty on this issue, I suggest that the Company and the Commission find further evidence to support this change.

Q: If you were to use your model to estimate avoided costs for wind and make the change in the production tax credit that Mr. Hayet suggests, what would be the results?

A: As shown in Exhibit Collins SRR 1, assuming a gross up for the production tax credit of 40%, but keeping the 32% capacity factor for Utah wind project and the $100/kW of transmission capacity costs, the avoided cost for wind is $56.46/MWH. The tax gross up factor is based on an assumed marginal tax rate of 40% for PacifiCorp; the actual tax factor for PacifiCorp should be used.

Q: What is Mr. Hayet's opinion about using a market-based approach to estimating avoided costs for wind?

A: Mr. Hayet states on page 24 line 8-18 of his rebuttal testimony

> "PacifiCorp determined that it would be economic to add approximately 200 MW of wind per year, and up to 1,400 MW total. As part of implementing its IRP action plan, PacifiCorp has signed some wind contracts and is working to add more wind resources to its system. In meeting the goals that the Company established in IRP 2004, it makes no difference whether a wind resource is acquired

through an RFP solicitation or through a QF contract. Customers should be indifferent to paying, for example, $40/MWh to a bidder that supplies wind energy or to a QF that supplies a similar wind energy product."

Mr. Hayet appears to be endorsing the use of a market based approach as well as the Company-build option method that I propose. In fact, the Committee has suggested in settlement meetings to take the lower of the two methods.

Q: Do you agree with such a suggestion?

A: No, I do not. To take the lower of either a recently signed contract or an IRP cost estimate of what it would cost the Company to build a wind resource may cause problems. I can see a scenario where the Company could have an incentive to deliberately underestimate costs in the IRP process in order to keep the price paid to QFs low. I can also see incentives for the Company to somehow obtain a contract with a wind developer that underestimates the true costs of development.

Q: As both scenarios, while maybe farfetched, are certainly possible, what do you suggest?

A: As a compromise, the Commission could establish that the average of the two methods be used to estimate avoided costs for wind. This would create a balancing effect in case a contract was under or over priced as well as the problem of costs assumptions that over or under estimate the Company's self build option.

Rebuttal of Division Witnesses

Q: Have you read the rebuttal testimony of Andrea Coon? Do you agree with her comments?

A: Yes, I have read her testimony. I agree with some of her comments and reject others.

Q: Ms. Coon still recommends the use of the GRID model to estimate the value of avoided energy costs with some caveats. Do you agree with her recommendation?

A: I do not agree with her recommendation to adopt the GRID model as sole means to determine avoided energy costs, but I do agree with her caveats and her recommended change to the GRID model.

Q: What caveats or recommended change does the Division make for the GRID model?

A: First, the Division recommends that the insufficient memory problems associated with the GRID model MUST be fixed before it is used to determine avoided costs. I certainly agree with this recommendation. Second, the Division agrees with UAE and others that an assumption of 100% capacity factor for the zero cost resource is unrealistic. The capacity factor of the zero cost resource must be the same as the resource that it is replacing.

Q: Do you agree with the Division's critique of the proposed proxy models?

A: No, I do not. Ms. Coon examined three separate proxy models presented by parties representing QF developers. She dismisses the model prepared by Mr.

Swenson because the Division's computer expert assured her that it could not perform the tasks she required. However, she does not specify which tasks she requires or why they are important, without such information it is difficult to evaluate her concerns. Ms. Coon indicates that the model developed by Wasatch Wind has some "functionality", but the functionality was limited. It appears her main criticism of the model is that it only applies to wind and that separate proxy models would have to be developed for other resources. UAE has developed a proxy model that deals explicitly with thermal resources, specifically a CCCT. However, the Division can not endorse this model because it only deals with pricing for a thermal resource under a tolling arrangement. I don't want to speak for UAE but pronouncements by UAE during technical conferences indicate that most all CCCT QFs would desire a tolling arrangement.

Q: What conclusions do you draw from the Division's analysis?

A: I can understand the Division's reluctance to accept a Proxy Model when a QF has different operating characteristics or different hours of operation than the proxy. But adjustments can be made to compensate for such differences. This is particularly true for wind resources which are intermittent by their very nature. Furthermore, I see no reason why one method could not be selected for an intermittent resource and different method selected for a cogeneration QF. If a given method provides better results for a particular resource then it should be used for that resource.

Q: What is the Division's recommendation for using the last contract signed for

a wind project as proxy for QF projects?

A: The Division is not convinced that this is the best approach for a wind resource because site specific characteristics of a given project determine its value. However, adjustments to the price received can be made to reflect differences in capacity factors and the relative on-peak off-peak production of energy. Roger Swenson has provided an illustrative example of such an adjustment mechanism in a settlement proposal. I have requested that Mr. Swenson provide this example in his surrebuttal testimony.

Q: Does the Division have a cogent reason to reject the proxy method?

A: No, it does not. My Company-build option using IRP consistent costs for wind resources is an appropriate method for determining avoided costs for wind, particularly when the Company needs to procure wind resources to meet its IRP goals. The method is simple, easily verified and transparent. The same is true for the last Company signed wind contract. The adoption of my compromise of these two methods for wind does not preclude the Commission from adopting the DRR method for thermal resources if it so chooses.

Q: The Division does not support making adjustments to GRID that reflect the fact that non-firm transmission is available for off-system sales. Do you care to comment?

A: I find it curious that the Division is willing to ignore a known fact that off-system sales are possible through non-firm transmission. The result of ignoring such a

fact is the underestimation of avoided costs. The reason given for ignoring this fact is the possibility that future non-firm transmission may not be available. This willingness to accept a fact over a possibility supports my contention that there is a bias against QF development. In the same vein, both the Division and the Committee accept a compromise proposed by UAE that would spread capacity payments over the twenty years instead of the Company's proposed "deficiency" period of 18 years. The compromise should leave ratepayers indifferent because the two revenue streams are designed to have the same net present value. However, the acceptance of this proposal would again underestimate avoided costs. The Committee, at least, has indicated that a QF providing power during the sufficiency period will allow the utility to avoid some capacity costs because there are some months in which the company is short of capacity. Would either the Division or the Committee agree to a proposal that knowingly overestimates avoided costs? I have not seen such a policy advocated by either party outside of settlement discussions.

Q: The Division in rebuttal testimony questions your understanding of Classical Economic thought. Do you care to respond?

A: Yes, although I do not think this issue has much bearing on the outcome of the case, I would like to clarify my position. The Division in rebuttal testimony refutes a purported statement I made. "Dr. Collins stated that classical economics is about simplicity and usefulness." The Division argues "Instead the basis of classical economics is rooted in the view that competitive markets automatically

provide harmonious solutions to the conflicts flowing from relative scarcity."

First, my direct testimony never mentions classical economics. I stated "While simplicity and usefulness are the basis of traditional economic thought, too often analysts lapse into attempting to address problems in ways that are often complex and more concerned with methodology than utility." Perhaps I should revise this statement to read "While simplicity and usefulness **are a basic component** of traditional economic thought…...", hopefully that will satisfy the Division's concerns about my understanding of economic theory.

Surrebuttal of PacifiCorp's witnesses.

Q: Mr. Duvall in his rebuttal testimony (lines 252-262) states that Mr. Swenson, Mr. Townsend and Dr. Collins' assessments of the time required to test the model are exaggerations and cites the Division's experience as illustrative of how to check for accuracy and examination of input assumptions. Do you care to comment?

A: Yes, I state in my direct testimony that it would take decades to test **each input**. I would admit that statement is inaccurate; it grossly underestimates the time requirements. First, it takes eight hours to make a model run. Let's assume near perfect efficiency, an analyst could make three runs per day and assuming that he/she work most weekends could work 333 days per year or make approximately 1000 runs per year. The next question is how many runs are possible to check each input? Given the interaction between different variables, an analyst would have to investigate the different combinations of inputs that are possible. The

calculation of the number of combinations of inputs possible can be done. Relying on John Freud's Mathematical Statistics text, (Prentice Hall 1971, page 21 Theorem 1.2)

> If sets A_1, A_2….A_k have respectively n_1, n_2, ….n_k elements. There are n_1*n_2*…..N_k different ways in which one can first select an element of A_1, than an element of A_2 ….. and finally an element of A_k.

Thus a restaurant that had 6 different salads, 12 different appetizers, 24 different main courses and 10 different desserts, there would be 6*12*24*10 = 17,280 different ways one could choose a meal. The Grid model has at least eight different sets of data each with dozens of variables in each. I refer you to Hutch Henrie's rebuttal testimony page 5 for a list of the sets of different variables. The input data set has 20 different variables. The contract data set has 143 different contracts, the hydro units have 37 different units, the thermal resources have 58 units, emergency resources have 18, and Links have 32 different inputs while Transmission has 19. To further complicate this calculation, each variable has at least two choices; many times there are multiple choices. Even without these complications which will greatly increase the number of combinations, the possible number of runs to be made is 20*143*37*58*18*32*19= over 67 Billion different runs. At 1000 runs per year……

Q: Mr. Duvall in his supplemental rebuttal testimony claims your criticism of the Company's DRR method is unfounded. Do you care to comment?

A: Yes, Mr. Duvall states that my criticisms of the Company's method are incorrect. He claims that the DRR model is more consistent with the IRP than my Company-

build option cost model. Yet the DRR model as it was explained in technical conferences does not have wind resources in the model that are dispatched. How is that consistent with the IRP that explicitly model wind's output? He states that the proxy method (I assume he is referring to my model) assumes that the proxy resource (the next deferrable IRP resource) will be the lowest cost resource in all hours. (Duvall supplement surrebuttal line 26-27) My model simply does not make that assumption; I assume that a non-QF intermittent resource will behave similarly to a QF intermittent resource. In fact, on line 60-63, Mr. Duvall admits that the DRR and the proxy will produce the same results under such conditions. "The results are equal only in the unlikely circumstance where the QF has the same operating characteristics as the IRP resource. As I have stated earlier, all wind resources while not identical are very similar in their operation. The main differences are in capacity factors and hours of production on-peak versus off-peak. Adjustments for these differences can be made in determining avoided costs. I have recently requested that the Company perform a DRR model run using a 50 MW wind resources with IRP cost assumptions as the zero cost resource. I am waiting for their reply.

Q: Dr. Avera rebuts your contention that wind projects will have an immaterial impact on a utility's bond rating and therefore should not be imputed as debt and higher costs to the utility. Do you care to respond?

A: Yes, Dr. Avera refers to the marginal impact of a wind project and that all marginal effects are important. As an economist, I have a hard time arguing

against the importance of marginal effects, marginal costs and marginal benefits are the cornerstone of economic decision making. However, as Dr. Avera states on lines 26-28, "The total fixed charges associated with a utility PPA obligations is significant to investors and is unambiguously reflected in bond rating assessments." It is my understanding that it is the fixed charges of a PPA, the capacity payments that cause investors concern. Wind contracts can be negotiated that avoid such fix charges.

Q: Mr. Griswold states in his rebuttal testimony that without the RECs, the Company's purchase of power would not be purchasing power from a wind resource.

A: Mr. Griswold is incorrect, the purchase of power from a QF wind project without the RECs would still be a wind resource in that it will lower the risk of future fuel volatility; it will mitigate the risk of future carbon legislation. It simply means that the Company can not claim the other environmental attributes of wind that have market value. The Company wants the RECs from a QF without paying for their market value.

Q: Does that conclude your surrebuttal testimony?

A: Yes.