



Agreement is based on the Wolverine Creek project (“proxy resource”), a wind resource selected by the Company through an open-bid process.

In the Agreement PacifiCorp and Spanish Fork Wind defer the issue of line loss adjustments associated with the Agreement to a future Commission decision.<sup>1</sup> The Commission addresses the issue of transmission line losses applicable to QF’s in Docket 03-035-14, “In the Matter of the Application of PacifiCorp for Approval of an IRP-based Avoided Cost Methodology for QF Projects Larger than One Megawatt.” In its May 26, 2006, Clarification Order in Docket 03-035-14 the Commission states it will consider the reasonableness of payments to QFs for avoided transmission losses on a case-by-case basis when QF contracts including such payments are presented for approval. Herein we address only the issue of line loss adjustments applicable to the Agreement.

### **PROCEDURAL HISTORY**

On June 26, 2006, the Commission issued a Scheduling Order setting the procedural schedule addressing transmission line loss adjustments associated with the Spanish Fork Wind Agreement. Due in part to difficulties encountered in obtaining technical support for the analysis necessary for testimony, Wasatch Wind filed a Petition for Delay and Request for a Technical Conference and Re-scheduling of Proceedings on August 17, 2006. On August 17, 2006, the Company responded to Wasatch Wind’s petition by filing PacifiCorp’s Response to Petition for Delay and Request for a Technical Conference and Re-Scheduling of Proceedings

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<sup>1</sup> Power Purchase Agreement, Section 5.1.7 Line Loss Adjustment. The Parties agree that this Agreement will be amended to incorporate the Commission’s decision regarding line loss adjustment applicable to this Agreement.

and on August 21, 2006, Wasatch Wind filed its Comments on PacifiCorp's Response to Wasatch Wind's Request for Delay. In response to the petition and comments, on August 24, 2007, the Commission issued a Revised Scheduling Order setting a technical conference for September 11, 2006, and a status/scheduling conference for November 8, 2006. Pursuant to the November 8, 2006, scheduling conference, on November 14, 2006, the Commission issued a Scheduling Order setting a further procedural schedule, including deadlines associated with parties' objections to, or motions to compel, discovery requests.

Pursuant to the November 14, 2006, Scheduling Order, the Utah Division of Public Utilities ("Division") filed testimony on January 12, 2007. Additional testimony was filed on January 16, 2007, by Wasatch Wind, Elcon Associates Inc. on behalf of Wasatch Wind, and the Company. On January 31, 2007, Wasatch Wind filed rebuttal testimony and the Company filed both testimony and rebuttal testimony. Surrebuttal testimony was filed by the Division on February 15, 2007, and by the Company and Wasatch Wind on February 16, 2007.

On February 22, 2007, pursuant to notice, a hearing was held during which oral testimony was presented by Wasatch Wind, the Company and the Division ("the Parties"), and the Commission questioned witnesses on various aspects of the proposed methods. The hearing, however, exceeded the allotted time and a date for continuance of the hearing was later proposed by the Parties. A Notice of Continuance of Hearing was issued by the Commission on February 23, 2007, and the hearing was continued on March 1, 2007. At the continuation of the hearing, oral testimony was presented by Wasatch Wind and Elcon Associates, Inc., and the Commissioners continued questioning witnesses on various aspects of the proposed methods.

### **POSITIONS OF THE PARTIES**

Parties provide testimony regarding whether an adjustment should be included in the Agreement as compensation for avoided transmission line losses and if so, the amount of the adjustment. The parties disagree on whether a line loss adjustment should be included in the Agreement. The parties describe various methods and provide testimony supporting their recommendations. We here review each party's position.

Wasatch Wind presents two methods for determining changes in line losses associated with its QF. It provides analysis and testimony using the first of these methods, concludes this QF provides lower line losses than the proxy resource used to determine avoided energy and capacity payments, and recommends an adjustment be made to the Agreement for compensation. The first method calculates the change in losses on the Company's transmission system between the QF and its proxy resource based on studies performed using a power flow model and employing several Western Electric Coordinating Council ("WECC") base cases and their attendant assumptions. The second method grants all QFs located within a load bubble, like the Wasatch Front, a credit for line losses at the rate specified in PacifiCorp's Federal Energy Regulatory Commission, Open Access Transmission Tariff ("FERC OATT").

Employing the first method, Wasatch Wind compares the transmission line losses of its QF with the proxy resource upon which its power payments are based, under various studies. The studies compare base case transmission line losses with the line losses that occur when a change is made to the location of power delivery, i.e., the QF location relative to the proxy resource location, each case providing line losses at a single point in time. One study

compares losses in a base case in which 19 megawatts of power are injected at the proxy resource location, with a change case which reduces the 19 megawatts of power at the proxy resource location and injects this power at the QF location. The other studies compare the base case losses with change cases that inject 19 megawatts of power at either the proxy resource or QF locations and reduce 19 megawatts at market hubs shown through production dispatch modeling to be the location of market resources that are backed down when the QF or proxy resource is added to the Company's generation portfolio. The change in losses in the QF cases are then compared with the change in losses in the proxy resource cases.

In total, Wasatch Wind presents eleven cases using power flow analysis comparing transmission line losses associated with the location of the QF versus the proxy resource, on the eastern part of PacifiCorp's high-voltage transmission system, for five points in time selected to provide seasonal and time differentiated results.<sup>2</sup> The results of these cases show fewer megawatts of transmission line loss in ten of the eleven cases when power is delivered at the QF location rather than the proxy resource location. Wasatch Wind represents that the average reduction in megawatts for these eleven cases results in a 3.3 percent line loss adjustment when spread over its approximately 19 megawatts of QF capability. Wasatch Wind requests the Agreement be amended to increase the price of the Agreement by about 3.3 percent as compensation for the reduction in losses the QF provides to the utility system. Alternatively,

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<sup>2</sup> The Company testifies that WECC base cases primarily model the high-voltage transmission system which is generally greater than 230 kilovolts (kV) but sometimes includes 138 kV.

Wasatch Wind presents its second method, requesting its delivered output be increased by the FERC OATT line loss factor because the QF is located inside the Wasatch Front.

Wasatch Wind argues its first method is the only method presented to the Commission that takes into account all of the factors affecting line losses. For example, the power flow studies address transmission line voltage and distance, transformer voltages and frequency of transformation, and system line loss impacts caused by the change in the flow of electricity with and without a given resource. Wasatch Wind argues the Company and Division methods fail to account for changes in the flow of electricity or the impacts on the system as a whole and once these impacts are considered through power flow studies, the results reveal that locating generation at the Spanish Fork substation results in lower losses in the eastern part of the PacifiCorp system than does the proxy resource.

Wasatch Wind argues the power flow studies performed by the Company are flawed because the Company's choice to back down the Jim Bridger generating plant is arbitrary and power production cost analysis based on economic dispatch does not support this choice. Further, to counter Company criticism that Wasatch Wind's studies exclude sub-transmission facilities, Wasatch Wind provides some analysis of sub-transmission line loss.<sup>3</sup> It provides analysis of line losses from the Spanish Fork substation to Santaquin, Utah, and concludes the increases in these lower-voltage line losses associated with the QF are, at most, small and may be offset by a reduction in losses that could occur if the QF output were to cause a resource further away to be backed-down.

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<sup>3</sup> The Company defines sub-transmission facilities to be between 12.5 kV and 161 kV.

The Company describes and employs a method for determining line losses that considers the distance from the contract delivery point to the load on the Company's system that can absorb the output of the proxy resource in comparison to the QF project. The Company proposes load be measured at the substation level rather than tracing generation to the point of consumption, e.g., a distribution circuit, because a substation is a measurable and meaningful level at which evaluations of loads and resources can be made.

The proxy resource is the 64.5 megawatt Wolverine Creek project in southeast Idaho. Its contract delivery point is located within the Goshen substation and loads served by the Goshen substation total approximately 300 megawatts. Since the entire output of the Wolverine Creek project can be absorbed by the loads served from the Goshen substation, the effective distance between the delivery point and the load served by this proxy resource is zero.

The Company testifies the QF is expected to interconnect to a PacifiCorp-owned 46 kV radial line 2.2 miles from the Spanish Fork substation, which is connected to 200 megawatts of load through transmission circuits. In comparison to the proxy resource, the Company testifies the expected delivery point of the QF is located further away than the proxy resource from a point at which its output can be absorbed and therefore line losses will be higher for the QF, albeit not materially, and concludes no adjustment should be made to the Agreement.

The Company argues Wasatch Wind's power flow studies are flawed because they include only high-voltage transmission lines and transformers and exclude the sub-transmission system. The Company testifies that with no sub-transmission facilities modeled, more than half of all of the system line losses in the case are ignored. The Company testifies transmission losses

are significantly higher on the lower voltage transmission lines and transformers in the sub-transmission system. Therefore, Wasatch Wind's studies do not address the part of the transmission system where higher losses occur.

The Company presents results from power flow studies it performed on localized portions of the Company's transmission system. These studies also use WECC base cases but the Company modifies the studies to include sub-transmission facilities. The studies compare losses in a heavy load hour in 2006, with and without the proxy resource, and with and without the QF. The studies that add the output of the proxy resource or QF, also reduce an equivalent amount of energy at the Jim Bridger generating plant, in order to match loads and resources. The Company testifies the study results indicate two significant conclusions: 1) the losses in both projects are very small and approach the accuracy of the model, and 2) the QF avoided fewer losses than the proxy resource.

The Company argues Wasatch Wind's studies cannot be relied upon because power flow studies yield results for but a point in time and are based on many assumptions made by the user. It would take an infinite series of studies to calculate line losses over a project's life and this effort requires numerous assumptions including estimates of future load growth, resource additions, and system upgrades over the term of the QF contract.

The Company also notes in the order dated April 19, 2006, in Docket 03-034-14, the Commission took administrative note of the fact that when comparing the 1991 transmission study and a 2001 transmission study, the difference between the transmission energy loss factor determined by those two studies was only .0006 percent, even though the Cholla, Craig, Hayden,

Hermiston and Gadsby resources were added in between those two studies. This, the Company argues, calls into question Wasatch Wind's studies which produced changes of a magnitude in one case of 21 percent after the addition of a single 18.9 megawatt resource.

The Division describes and employs a method for determining avoided line losses that considers the distance from the contract delivery point to the closest distribution circuits that can absorb the output of the proxy resource in comparison to the QF. The Division testifies this distance is shorter for the proxy resource than the QF and concludes no payment should be included in the Agreement to compensate for avoided line losses. Additionally, the Division reviewed the number of times power is stepped up or down in a transformer for the QF versus the proxy resource. The Division testifies the QF power must undergo fewer transformations than the proxy but at lower voltages, where losses are higher, and concludes, again, no adjustment should be made to the Agreement.

The Division argues the average percentage change in transmission line losses in the eleven studies undertaken by Wasatch Wind is 0.21 from the base cases. Only by spreading this average megawatt change over the 19 megawatts of the power provided by the QF can one arrive at a 3.3 percent positive adjustment to the power price.

### **DISCUSSION, FINDINGS AND CONCLUSIONS**

In our order in Docket No. 03-035-14, we adopted a case-by-case approach for determining a line-loss adjustment for prospective QF contracts. To determine avoided wind resource energy and capacity cost in Docket No. 03-035-14, we adopted a method that assumes a wind QF will allow PacifiCorp to avoid procuring a planned wind resource and we identified the

last competitively selected wind resource as the proxy for avoided energy and capacity cost associated with this “avoidable” planned resource. Adjustments to this price may be made to account for differences in the QF transmission line losses when compared to the proxy wind resource. In order to maintain consistency with the power pricing in the Agreement and maintain ratepayer neutrality, avoidable transmission losses in this case must be determined by a direct comparison of the Spanish Fork Wind Park 2 QF to the Wolverine Creek wind project selected in the Company’s competitive solicitation for renewable resources.

Essentially two methods are presented by parties to compare the losses associated with the Spanish Fork Park 2 QF versus the Wolverine Creek wind project. The methods provide results for selected portions of the Company’s transmission system. We acknowledge both of these methods provide some evidence of a comparison of losses based on differences between this QF and its proxy resource.

First we address line losses associated with delivery to the Company’s system (i.e., losses due to **distance to load** on the Company’s system as opposed to **location on the** Company’s system). The pricing of the Wolverine Creek wind project is based on power delivered to the Goshen substation where there is adequate load to absorb the entire output of the Wolverine Creek project. Hence, there are no line losses between the contract delivery point and load for this, the proxy resource, and no line losses related to distance from a QF to the Company’s system which can be avoided. The Division’s method which measures the distance from contract delivery point to a distribution circuit provides similar results in that the proxy resource is closer than the QF to the nearest distribution circuit that can absorb the load.

We reject Wasatch Wind's simple solution to grant QFs within a load bubble a credit for line losses at the FERC OATT rate because "load bubble" is inadequately described in the record and therefore we have inadequate comparison of the QF and proxy resource using this method.

With respect to line losses associated with delivery to different points on the Company's system (i.e., losses due to **location on** the Company's system as opposed to **distance to load** on the Company's system) the results of power flow studies are provided by some parties. The power flow studies provided in this case produce various results depending on the scope of the analysis, the facilities included, and other assumptions made by the analyst.

Wasatch Wind presents results from power flow studies indicating its QF avoids more line losses than the proxy resource. However, the studies provide the change in high-voltage losses for the eastern part of the PacifiCorp system only. Although sub-transmission line losses are also likely to occur, and at a much higher rate than high-voltage line losses, no such facilities are included in a systematic way in Wasatch Wind's power flow studies and therefore we are uncertain of the full impact on line losses such a complete study would produce.

Further, Wasatch Wind's results are reported for the eastern part of the PacifiCorp transmission system only. We do not know from the evidence presented how transmission line losses change in the western part of the PacifiCorp system. Such changes could off-set the results presented in the eastern part of the system. We do know the scope of the study matters as both the WECC-wide cases and PacifiCorp eastern system cases performed by Wasatch Wind,

and the smaller scope of the Company's study all show very different results, both in magnitude and direction.

Finally, only five points in time representing seasonal or time-of-day differences are studied in Wasatch Wind's eleven cases, and we are left to speculate whether the other conditions during the contract term will also result in a reduction in losses. Testimony at hearing confirmed there is no statistical significance that can be assigned to the probability that the five points in time studied by Wasatch Wind are representative of all or even a meaningful portion of hours in the 20-year period.

We conclude, based on the foregoing, we have no reliable or consistent evidence that this QF results in fewer transmission line losses on the Company's transmission system than the proxy resource over the 20-year contract period and find no clear evidence additional payment is warranted in the Agreement.

ORDER

NOW, THEREFORE, IT IS HEREBY ORDERED, that Spanish Fork Wind Park 2's request for either a 3.3 percent or FERC OATT loss factor price adjustment to the Agreement is denied.

Pursuant to Utah Code 63-46b-12 and 54-7-15, agency review or rehearing of this order may be obtained by filing a request for review or rehearing with the Commission within 30 days after the issuance of the order. Responses to a request for agency review or rehearing must be filed within 15 days of the filing of the request for review or rehearing. If the Commission fails to grant a request for review or rehearing within 20 days after the filing of a request for

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review or rehearing, it is deemed denied. Judicial review of the Commission's final agency action may be obtained by filing a Petition for Review with the Utah Supreme Court within 30 days after final agency action. Any Petition for Review must comply with the requirements of Utah Code 63-46b-14, 63-46b-16 and the Utah Rules of Appellate Procedure.

DATED at Salt Lake City, Utah, this 21<sup>st</sup> day of May, 2007.

/s/ Ted Boyer, Chairman

/s/ Ric Campbell, Commissioner

/s/ Ron Allen, Commissioner

Attest:

/s/ Julie Orchard  
Commission Secretary

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