

**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 Cost Methodology for  
Qualifying Facilities Projects Larger than  
Three Megawatts

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Docket No. 12-035-100  
DPU EXHIBIT 2.0SR

Sur-rebuttal Testimony of  
Abdinasir M. Abdulle, Ph.D.  
Division of Public Utilities

May 30, 2013

1 **Q. Are you the same Abdinasir M. Abdulle that filed direct and rebuttal testimonies in**  
2 **this proceeding?**

3 A. Yes. I filed both direct and rebuttal testimonies in this proceeding on behalf of the  
4 Division of Public Utilities (“Division”).

5 **Q. What is the purpose of your surrebuttal testimony?**

6 A. The purpose of my surrebuttal testimony is to provide responses to the rebuttal  
7 testimonies of Utah Clean Energy witness Ms. Sarah Wright and RMP witness Gregory  
8 N. Duvall.

9 **SARAH WRIGHT**

10 **Q. Ms. Wright indicated that though the Division raised similar concerns about the**  
11 **Market Proxy method in its direct testimony as it did in Docket No. 03-035-14, all**  
12 **parties and the Commission concluded in that docket that the proxy method best**  
13 **reflects the avoided cost of a wind QF up to the IRP target level of wind resource.**  
14 **Would you comment on this?**

15 A. Yes. As is indicated in the 03-035-14 docket, the Division indicated and other parties  
16 agreed that

17 “...the Proxy method provides reasonable results when: 1) the operating  
18 characteristics of the proxy plant closely match those of the QF being  
19 evaluated; 2) the QF exactly replaces the entire capacity and energy of the  
20 proxy plant; and 3) the QF does not significantly affect other plant  
21 additions or system operations. While parties did not agree this held true

22 for other types of QFs, they testify the unique characteristics of wind  
23 resources warrant such an approach.”<sup>1</sup>

24 As was indicated in my direct testimony, the Division does not believe that these  
25 conditions are being or can be met. The Division would like to indicate that once a wind  
26 resource is on line it will not be replaced and there is no wind resource in the 2013 IRP  
27 preferred portfolio. Hence, any additional QF that comes on line would displace the most  
28 expensive non-wind resource. It is very unlikely that a non-wind resource would have  
29 the same operating characteristics as a wind resource. Furthermore, when an additional  
30 QF resource is brought on line, it not only replaces another resource, it will also alter how  
31 other resources on line are dispatched (system operations) making it difficult for the two  
32 resources to have the same operating characteristics. Therefore, based upon the fact that  
33 these conditions cannot be met and other facts discussed in my direct testimony, the  
34 Division concludes that the proxy method would not yield an avoided cost that is in the  
35 public interest.

36 **Q. In her rebuttal testimony, lines 84 to 86, Ms. Wright indicated that you raised**  
37 **concerns with the Market Proxy method but do not provide a solution for fairly**  
38 **calculating avoided costs for renewable QFs when there are renewable targets in the**  
39 **IRP. How would you respond to this?**

40 A. Ms. Wright correctly indicated that I raised a number of concerns regarding the  
41 reasonableness of the Market Proxy method. However, she does not seem to have

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<sup>1</sup> In the Matter of the Application of PacifiCorp for Approval of an IRP-Based Avoided Cost Methodology For QF Projects Larger Than One Megawatt, Docket No. 03-035-14, Order dated October 31, 2005, p. 19.

42 understood the Division's recommendation in relation to the methodology for calculating  
43 avoided cost. As was indicated in my direct testimony, the Division's position is that the  
44 Proxy/PDDRR method be used to calculate the avoided cost regardless of whether the  
45 IRP preferred portfolio includes wind or not. The Division believes this method will  
46 provide a fair calculation of avoided costs for renewable QFs and is in the public interest.

47 **Q. On lines 109-112, Ms. Wright states that "it is unfair to compare IRP-selected**  
48 **renewable energy to fossil-fueled plants, as the IRP and risk models associated with**  
49 **it are supposed to consider the additional risk mitigating benefits of renewable**  
50 **energy. Would you comment on this point?**

51 A. Yes. The IRP process selects the least cost/risk resource mix. Hence, the risk mitigating  
52 benefits of renewable resources are considered in the IRP. As I indicated in my rebuttal  
53 testimony, the Division is not arguing that the risk mitigating benefits of renewable  
54 resources are appropriately included in the IRP modeling process. However, the Division  
55 believes that this issue of risk mitigation is better addressed in the IRP process and not in  
56 this proceeding which is intended to address the avoided cost methodology.

57 **Q. Ms. Wright raised concerns about the indication in your direct testimony that the**  
58 **most expensive resource in the resource stack will be replaced. How do you respond**  
59 **to this concern?**

60 A. Ms. Wright indicated that the Company's calculation of indicative price is based on the  
61 assumption that all the QFs further up in the queue are actually built. She argues that this  
62 raises concern in that the QFs further up in the stack than the one under consideration

63 may not be built resulting in the QF under consideration getting an artificially lower  
64 price. She also provides a possible remedy for this problem by suggesting that QF  
65 pricing could be updated at the contract signing.

66 Ms. Wright suggests that the QF be moved to the top of the queue to alleviate this  
67 problem. However, the Division understands that this is how the Company actually does  
68 its pricing for QFs: when a QF asks for indicative pricing under Schedule 38, the  
69 Company places that QF (at some point) at the front of the line before other uncompleted  
70 QFs.

71 My remarks in direct testimony on the sequential nature of QFs replacing or displacing  
72 known resources were for completed QFs or QFs with signed contracts. Again, two QFs  
73 cannot displace the same resource. The earlier QF displaces relatively higher priced  
74 resources. The Market proxy method assumes that the two QFs displace the same  
75 resources and have the same effects on the dispatch of all other resources. Since these  
76 conditions cannot be met, the Division believes the Market proxy will not yield  
77 appropriate avoided costs.

78 **Q. Regarding capacity value, Ms. Wright proposes that Capacity Factor Allocation**  
79 **Methodology be used if the ELCC method is too burdensome. Do you agree with**  
80 **this proposal?**

81 A. Yes. This is the same proposal I made in my rebuttal testimony. However, I also  
82 indicated in my rebuttal testimony that the Company did not perform ELCC calculation.  
83 Therefore, the Division proposed an interim solution.

84 **Q. How would you respond to Ms. Wright’s recommendation of un-capped energy**  
85 **payment stream based on her claim that the Company adjusts the energy payment**  
86 **stream for the renewable QF twice?**

87 A. In her rebuttal testimony, lines 267-279, Ms. Wright correctly indicates that the Company  
88 calculates the avoided energy cost based upon the difference between two GRID runs,  
89 with and without QF costs. However, she claims that this energy cost is used only until  
90 the next deferrable resource is added. However, she claims that as the “next deferrable  
91 resource” is added, the energy costs are set, or **capped**, at the estimated costs of that  
92 future resource instead of letting GRID compute the economic dispatch and potentially  
93 reduce the dispatch of plants that are more expensive than the assumed costs of the “next  
94 deferrable resource.” Based on this claim, on lines 311-312, she recommends that  
95 “Renewable QFs should receive an **“un-capped”** energy payment stream based on the  
96 GRID model’s evaluation of the cost of displaced energy over the contract period.

97 The Division disagrees with Ms. Wright’s claim. There is neither any capping of the  
98 avoided energy cost nor any energy adjusting outside of the GRID model. As the next  
99 deferrable resource comes on line, the GRID model will compute the economic dispatch  
100 and will reduce the dispatch of plants that are more expensive than the assumed costs of  
101 the “next deferrable resource.” The drop in the avoided energy cost is not a result of  
102 capping the energy cost at the dispatch cost of the resource that came on line, but due to  
103 the fact that the newly added resource offsets more expensive front office transactions  
104 (FOT) compared with the fuel/energy costs of the new resource. Furthermore, capital  
105 costs of the new plant are added to the fuel costs, which brings the total cost of the new

106 plant in-line with the previous FOT costs. In other words, contrary to Ms. Wright's  
107 suggestion, the GRID model continues to economically dispatch the Company's system  
108 (i.e. uncapped) when the new resource is added to the Company's generation portfolio.

109 What is calculated outside of the GRID model is the capacity payment not energy  
110 payment. Additionally, the Division notes that a footnote in the Company's quarterly  
111 Schedule 38 filing indicates that in the period before the new resource is added, the  
112 displaced FOTs include a capacity value even though the column is labeled "Energy  
113 Only."

114 **GREGORY DUVALL**

115 **Q. Do you have any comments regarding Mr. Duvall's justification of keeping the solar**  
116 **integration costs the same as the wind integration costs?**

117 A. Yes.

118 **Q. Please provide your comments.**

119 A. Mr. Duvall's rationale for fixing solar integration costs at the wind integration cost level  
120 is unpersuasive. The Division agrees with Mr. Duvall, for many of the reasons he states,  
121 that there should be some integration cost for solar. However, as explained in my direct  
122 testimony, given the nature of solar generation, i.e. a highly predictable pattern of solar  
123 incidence at a given location along with the relative predictability of cloud cover, the  
124 Company should be relatively more efficient at dealing with the daily fluctuations in  
125 solar generation than it is with wind. Therefore, the assertion that wind and solar  
126 integration costs should be the same is unreasonable on its face. Indeed, the CalISO

127 graphic that Mr. Duvall includes on page 16 of his rebuttal testimony clearly supports the  
128 Division's position: the solar generation curve is relatively smooth and predictable  
129 compared to the wind generation indicated. This predictability of solar should facilitate  
130 an efficient response by the system operator.

131 On the other hand, that there should be no integration charge for solar, as advocated by  
132 Ms. Wright of Utah Clean Energy is likewise unreasonable. The variability in solar  
133 generation due to cloud cover and the daily need to ramp up and ramp down other  
134 resources in response to solar generation, as discussed by Mr. Duvall in his rebuttal  
135 testimony, demonstrates that there is some integration cost for solar.

136 **Q. Please summarize the Division's position regarding solar integration costs.**

137 **A.** The Division's position is summarized as follows.

- 138 1. Without a definitive study demonstrating that the solar and wind integration costs  
139 are equal, for reasons previously stated, the Division believes that it is  
140 unreasonable to assume that solar integration costs are as great as wind integration  
141 costs.
- 142 2. It is also unreasonable to assert that there should be no solar integration costs.
- 143 3. Based on the Division's belief that solar integration costs are likely less than wind  
144 integration costs, in my direct testimony I provided estimates of the level of solar  
145 integration costs as a percentage of wind integration costs; i.e. 50 percent for  
146 peak-oriented solar resources and 65 percent for energy-oriented solar resources .



147 4. These proposed solar integration cost percentages are recommended as interim  
148 cost adjustments only until such time as the Company provides a relatively  
149 definitive study; or until the Company, or other party, provides better estimates.

150 **Q. How would you respond to Mr. Duvall's criticism of Ms. Wright's proposed use of a**  
151 **reliability-based method, the ELCC or ECP?**

152 A. Mr. Duvall indicated that the capacity value concept that Ms. Wright discussed in her  
153 direct testimony is an energy measure because it uses all of the hours in a year and  
154 therefore is inappropriate in measuring the capacity contribution. The Division agrees  
155 with Mr. Duval that the NREL report cited by Ms. Wright and the Division uses all hours  
156 in the year. However, the Division disagrees with the assertion that this capacity value  
157 concept is an energy measure.

158 First, simply because more hourly data is included in the calculation of the capacity value  
159 does not necessarily make it an energy measure. Mr. Duval's approach would suggest  
160 that an arbitrary threshold invalidates a particular study. For example, if one uses, say  
161 100 hours, the study measures the capacity value but 101 hours yields an energy measure.  
162 Second, Mr. Duval's criticism ignores the fundamentals of the ELCC calculation. The  
163 ELCC yields a probability weighted outcome. That is, each hour's contribution is the  
164 probability that in that hour loads exceed the available resources. One would expect that  
165 the peak hours would receive a greater weight. Finally, Mr. Duval's criticism is  
166 incongruous with the Company's IRP studies. While the IRP may use system peaks to  
167 determine the timing of additional resources all hours of the year are used in various  
168 studies to determine the type of resources. Thus, the value a resource adds to the

169 Company's choice of a least cost/least risk preferred portfolio is based on the resource's  
170 contribution in all hours of the year.

171 The Division believes that the issue is not the number hours used in the study or the fact  
172 that the study covers all of the WECC area. Rather it is to understand the concept of  
173 capacity value and to determine a reasonable approximation to that value.

174 **Q. Does that conclude your sur-rebuttal testimony?**

175 **A. Yes.**