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November 4, 2014

Via Electronic Filing and U.S. Mail

Oregon Public Utility Commission
Attention: Filing Center
3930 Fairview Industrial Drive SE
PO Box 1088
Salem, OR 97308-1088

Re: UM 1610 Phase II – Investigation Into Qualifying Facility Contracting and Pricing

Attention Filing Center:

Enclosed for filing in docket UM 1610 Phase II are an original and five copies of Portland General Electric Company's ("PGE") OPENING TESTIMONY OF ROBERT MACFARLANE REGARDING SOLAR CAPACITY CONTRIBUTION.

This document is being electronically filed with the Filing Center. An electronic copy is also being served on the service list for docket UM 1610.

Thank you in advance for your assistance.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Richard George", with a stylized flourish at the end.

J. Richard George
Assistant General Counsel

JRG:bop

Enclosure

cc: UM 1610 Service List

**BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON**

**UM 1610 Phase II
Investigation into Qualifying Facility
Contracting and Pricing**

PORTLAND GENERAL ELECTRIC COMPANY

Opening Testimony Regarding Solar Capacity Contribution

Robert Macfarlane



Portland General Electric

November 4, 2014

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I. Opening Testimony

1 **Q. Please state your names and positions with Portland General Electric (“PGE”).**

2 A. My name is Robert Macfarlane. I am a senior analyst in Pricing and Tariffs at PGE. My
3 qualifications appear in Section II of this testimony.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to address the adjustment to renewable avoided cost prices
6 that accounts for the capacity contribution of solar qualifying facilities (QFs) to meeting
7 PGE’s peak load. My testimony specifically addresses the methodology used to calculate
8 this adjustment. The capacity adjustment is only applicable during the renewable resource
9 deficiency period.

10 **Q. Please describe current requirements for calculating avoided costs for a renewable
11 resource.**

12 A. In Order No. 11-505, Oregon Public Utility Commission (“Commission”) adopted the
13 “Renewable Method” to calculate renewable avoided cost prices. The Commission requires
14 electric utilities to set prices based on the cost of a renewable proxy resource during periods
15 of resource deficiency and on monthly market prices during periods of resource sufficiency.
16 The proxy for renewable avoided cost prices is the next avoidable renewable resource
17 identified in PGE's Integrated Resource Plan (“IRP”). The next avoidable renewable
18 resource in PGE's 2013 IRP is a wind resource. The total fixed costs of the avoided proxy
19 wind resource are allocated to on- and off-peak prices.

20 In Order No. 14-058, the Commission also adopted Commission Staff’s (“Staff”)
21 proposed method for calculating capacity contribution adjustments, as set forth in Staff/102-

1 103. The value of the capacity contribution of the renewable resource is based on the
2 avoided capacity costs of the proxy thermal resource from the utility's IRP.

3 **Q. In Docket UM 1610, what was Staff's proposal for calculating the capacity**
4 **contribution adjustment for a solar QF?**

5 A. In Exhibit Staff/100, Staff witness, Adam Bless, stated:

6 For the Renewable Method, Staff proposes adjusting the capacity component implicit in
7 the renewable on-peak price by the incremental capacity contribution of the specific QF
8 resource type relative to the avoided renewable [proxy] resource.

9
10 The "incremental capacity contribution" (a percentage) is multiplied by the "Capital Cost
11 Allocated to Capacity" (expressed in \$/MWh) to arrive at the "QF Capacity Adder." The
12 adder is expressed in \$/MWh. This adder is added to the on-peak price that the solar QF
13 receives to account for the value of the solar QF's capacity contribution.

14 Staff's testimony provided sample calculations in Exhibit Staff/103, Bless/2. The per
15 MWh avoided capacity contribution adjustment for each peak hour (the "QF Capacity
16 Adder") was calculated by dividing the annual avoided cost of capacity by the number of
17 hours the proxy thermal resource (a combined cycle combustion turbine) operates in the on-
18 peak period.¹ The number of on-peak hours of operation was calculated as the product of
19 total annual hours, the capacity factor of the combined cycle combustion turbine, and the
20 percentage of on-peak hours. The result was then multiplied by the capacity contribution
21 percentage of the solar QF.

22 **Q. Has PGE assessed the capacity contribution of solar PV to PGE's system?**

¹ Staff's sample calculation was based on PacifiCorp Advice Filing No. 12-005, p. 6, filed March 2, 2012.

1 A. Yes. PGE has estimated the contribution of a representative solar QF to reliability in high
2 load peak demand hours. The assessment compared the hourly generation from the plant
3 with the corresponding hourly peak period loads.

4 **Q. What was the result of the assessment?**

5 A. The assessment resulted in an estimated capacity contribution of 5% for a solar PV resource,
6 approximately equal to the capacity contribution of wind.

7 **Q. How does this result affect the calculation of a capacity contribution adjustment for a
8 solar QF?**

9 A. Since the estimated capacity contribution for a solar QF is 5%, equivalent to that of the wind
10 proxy resource, the “incremental capacity contribution” percentage is zero. As such, there is
11 no adjustment made to the on-peak renewable avoided cost prices for a solar QF.

12 **Q. Does PGE support Staff’s proposal for calculating the capacity contribution
13 adjustment for a solar QF that was adopted in Commission Order No. 14-058?**

14 A. Yes.

15 **Q. Why does PGE support the Commission-adopted methodology to calculate the
16 capacity contribution adjustment?**

17 A. Avoided costs are necessarily based on a simplified methodology. It is not practical to
18 conduct a detailed power cost simulation for every resource. The current proxy resource
19 methodology distinguishes between on- and off-peak hours for capacity, but does not
20 differentiate between on-peak hours. Given this simplification, the capacity value of a
21 kilowatt-hour delivered in a given on-peak hour should be equivalent to the capacity value
22 of a kilowatt-hour delivered in any other on-peak hour. The prices paid to QF’s should
23 reflect this.

1 **Q. Is the Commission-adopted methodology consistent with this view?**

2 A. Yes. As stated above, the per MWh avoided capacity contribution adjustment for each on-
3 peak hour is calculated by dividing the annual cost of avoided capacity by the number of
4 hours the proxy thermal resource operates in the peak period and then adjusting for the solar
5 QF's capacity contribution. QF output receives the same compensation for capacity in any
6 on-peak hour.

7 **Q. Does this make sense for solar QFs?**

8 A. Yes. As indicated previously, the capacity value of output to the PGE system in any peak
9 hour is a function of "Capital Cost Allocated to Capacity" which is based on the avoided
10 capacity cost of the proxy thermal resource. The avoided cost calculation should take this
11 cost as the base number in all peak hours and adjust the base number for the percent
12 contribution of the solar QF.

13 **Q. Do you agree with One Energy and CREA's proposal that the proxy capacity costs
14 should be spread using the capacity factor of the QF²?**

15 A. No. This would provide the wrong price signal. The payment for capacity should reflect the
16 avoided capacity cost on PGE's system which is represented by the capacity portion of the
17 proxy thermal resource's costs. Using the capacity factor of the actual QF and not the
18 avoided proxy resource would lead to an overstatement of capacity value. The Public Utility
19 Regulatory Policies Act (PURPA) requires that electric utilities "purchase power from QFs
20 at rates that are just and reasonable to the utility's customers, in the public interest, and that
21 do not discriminate against QFs, but that are not more than avoided costs."³ An

² Motion for Clarification filed by One Energy and CREA on April 24, 2014 in Docket UM 1610.

³ See Commission Order 05-584 at 6, citing 16 U.S.C. § 824a-3(d).

1 overstatement of capacity value tilts this balance and would result in overpayments by PGE
2 customers.

3 **Q. Do you agree with Obsidian Renewables that the capacity adder should be paid as a**
4 **fixed dollar amount and not paid on a per MWh basis⁴?**

5 A. Definitely not. Paying a fixed dollar amount is tantamount to prepayment. Prepayment for
6 capacity may be appropriate as a “capacity reservation” fee for dispatchable capacity.

7 However, non-dispatchable resources, like solar, do not provide “stand ready” capability
8 and only provide value when energy is delivered.

9 **Q. Does this conclude your testimony?**

10 A. Yes.

⁴ Motion for Clarification filed by One Energy and CREA on April 24, 2014 in Docket UM 1610.

II. Qualifications

1 **Q. Mr. Macfarlane, please state your educational background and qualifications.**

2 A. I received a Bachelor of Arts business degree from Portland State University with a focus in
3 finance.

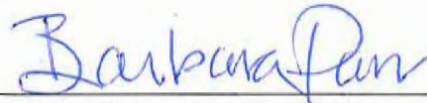
4 Since joining PGE in 2008, I have worked as an analyst in the Rates and Regulatory
5 Affairs Department. My duties at PGE have focused on pricing and regulatory issues.

6 From 2004 to 2008, I was a consultant with Bates Private Capital in Lake Oswego, OR
7 where I developed, prepared, and reviewed financial analyses used in securities litigation.

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused **PORTLAND GENERAL ELECTRIC COMPANY'S OPENING TESTIMONY OF ROBERT MACFARLANE REGARDING SOLAR CAPACITY CONTRIBUTION** to be served by electronic mail to those parties whose email addresses appear on the attached service list for Docket No. UM 1610 Phase II.

Dated at Portland, Oregon, this 4th day of November, 2014.



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