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July 18, 2018

Via Electronic Filing

Public Utility Commission of Oregon
Attn: Filing Center
201 High St. SE, Suite 100
Salem OR 97301

Re: In the Matter of PORTLAND GENERAL ELECTRIC CO.
Investigation into Proposed Green Tariff
Docket No. UM 1953

Dear Filing Center:

Please find enclosed the Response Testimony and Exhibit of Bradley G. Mullins (AWEC/100 – 101) on behalf of the Alliance of Western Energy Consumers in the above-referenced docket.

Thank you for your assistance. If you have any questions, please do not hesitate to call.

Sincerely,

/s/ Jesse O. Gorsuch
Jesse O. Gorsuch

Enclosure

**BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON
UM 1953**

In the Matter of)
)
PORTLAND GENERAL ELECTRIC)
COMPANY,)
)
Investigation into Proposed Green Tariff.)
_____)

**RESPONSE TESTIMONY OF BRADLEY G. MULLINS
ON BEHALF OF THE ALLIANCE OF WESTERN ENERGY CONSUMERS**

July 18, 2018

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bradley G. Mullins. My business address is 1750 SW Harbor Way, Ste 450, Portland, Oregon 97201.

Q. PLEASE STATE YOUR OCCUPATION AND IDENTIFY THE PARTY ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am an independent consultant representing utility customers before state regulatory commissions in the Pacific Northwest. I am appearing on behalf of the Alliance of Western Energy Consumers (“AWEC”). AWEC is a non-profit trade association whose members are large energy users served by electric and gas utilities located throughout the West, including customers that receive electrical services from Portland General Electric Company (“PGE” or “Company”). AWEC was formed, as a result of the merger of the Northwest Industrial Gas Users into the Industrial Customers of Northwest Utilities on April 1, 2018.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND WORK EXPERIENCE.

A. A summary of my education and work experience can be found at Exhibit AWEC/101.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY.

A. I respond to the Direct Testimony of Brett Simms and Jay Tinker who describe PGE’s proposed green tariff rate rider in Exhibit PGE/200 of Docket UM 1690. Overall, AWEC supports PGE’s efforts to develop its green tariff. My testimony recommends a number of modifications for the Commission to consider when designing PGE’s green tariff offering.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. Developing a successful green tariff program can be challenging. On one hand, consumers want greater choice and control over their energy procurement. Consumers also want access to more cost-effective resource alternatives, relative to the utility portfolio. On the other hand,

1 one must be mindful of protecting non-participating consumers, or even those consumers that
2 are not first in the queue to participate. At the same time, the program needs to be beneficial to
3 the participating customer to encourage customer participation. Finding the right balance
4 between these various concerns is difficult, which may be a reason that some green tariff
5 offerings have garnered low participation.^{1/}

6 I recommend the Commission approve the green tariff with a number of modifications
7 and changes, which I believe will help to make the program more successful. Those
8 modifications and changes are as follows:

- 9 • *Eliminate the reference to “Revenue Requirement” in the tariff;*
- 10 • *Give large customers control over the resource procurement decisions;*
- 11 • *Credit customers based on the marginal cost of generation methodology;*
- 12 • *Eliminate the risk adjustment at least for large customers; and,*
- 13 • *Apply integration costs based on PGE’s Open Access Transmission*
14 *Tariff.*

15 I’ll discuss these recommendations following a brief overview of my understanding of
16 PGE’s proposal.

17 **II. PGE’S PROPOSAL**

18 **Q. PLEASE SUMMARIZE YOUR UNDERSTANDING OF PGE’S PROPOSAL.**

19 A. The new green tariff offering PGE has proposed is outlined in Exhibit PGE/201 filed in Docket
20 UM 1690. The new offering was designed as a rate rider, rather than as a separate rate

^{1/} Examples include Dominion Energy’s Schedule RG, or Rocky Mountain Power’s Utah Schedule 32.

1 schedule. This allows the tariff to be applicable to a broad range of customers receiving
2 services across several different rate schedules.

3 The specific model PGE has proposed for its green tariff is a subscriber model. Other
4 than the subscriber model, two other common green tariff models that have been used by other
5 utilities with varying levels of success include virtual Power Purchase Agreements (“PPA”)
6 and market-based rate programs.

7 The subscriber model functions by directly assigning the costs and the benefits of a
8 renewable resource or PPA to the group of customers who choose to subscribe to the resource.
9 Thus, in addition to its normal tariff charges, the participating customer pays a separate
10 surcharge for the additional cost of the renewable resource and receives a credit for the benefits
11 the renewable resource provides to all PGE customers. The idea of the subscription model is to
12 rely generally on principles of cost causation, providing customers with the ability to choose to
13 participate in the program, while directly assigning both the costs and benefits associated with
14 that choice.

15 The Virtual PPA, sometimes called PPA sleeving, functions by the utility acquiring a
16 renewable resource, on behalf of a customer, and treating the acquired resource as if it were
17 located onsite to offset load requirements. Market-based programs function by allowing
18 customers to acquire renewable energy directly in wholesale markets. The customer may then
19 wheel the power to its load to serve its onsite load requirement.

20 **Q. DOES AWEC SUPPORT USING A SUBSCRIPTION MODEL FOR THE GREEN**
21 **TARIFF?**

22 **A.** Yes. While the Virtual PPA and market-based programs have several positive attributes, a
23 subscriber model makes the most sense for PGE given other state policies. Oregon already has

1 a direct access program. Accordingly, a market-based green tariff would be duplicative of
2 offerings that are already available to customers through direct access. Further, the Virtual
3 PPA option generally requires the execution of a special contract between the utility and its
4 customer, which is not common practice in Oregon.

5 One of the beneficial aspects of the Virtual PPA alternative over the subscriber model,
6 however, is that customers, rather than the utility, typically have full control over resource
7 procurement. Under the subscriber model, it might be desirable to avoid a situation where
8 many small customers are identifying many different resources that might be acquired. Thus,
9 giving the utility control over resource procurement for small customers might make some
10 sense in a subscriber model.

11 For large customers, however, it may be possible to identify a single renewable
12 resource and assign the entirety of that resource to a single customer's load. In that instance, it
13 would be appropriate for the large customer to have more control over the resource
14 procurement process, since the large customer will be responsible for the entirety of the
15 renewable resource's cost. Otherwise, large customers may be disincentivized from
16 participating if required to sign up to pay for the PPA cost of an unknown new resource over
17 which the large customer has no control. As discussed below, adding language explicitly
18 specifying that large customers may exercise control over the resource procurement process
19 would make the subscriber program PGE has proposed more appealing to large customers.

20 **Q. HOW ARE THE RENEWABLE RESOURCE BENEFITS DETERMINED IN PGE'S**
21 **PROPOSED SUBSCRIBER MODEL?**

22 **A.** On the benefit side of the equation, PGE proposes to use an avoided cost method to determine
23 the energy and capacity benefit of the subscription resource. The values would be locked at the

1 time the renewable resource PPA is procured and correspond to the term of the PPA.^{2/} PGE
2 did not specify whether the rate for this payment stream for capacity would vary year-to-year
3 or be calculated on a levelized basis.

4 **Q. WOULD PGE USE ITS PUBLISHED AVOIDED COST RATE?**

5 A. It would for any capacity value from the resource, but not for the energy value.^{3/} The capacity
6 value would be determined in accordance with PGE's Schedule 201, and would only be
7 applied to the extent PGE is resource deficient. By contrast, PGE states that the energy value
8 would be representative of market prices calculated using the AURORA model with inputs
9 from PGE's Integrated Resource Plan ("IRP").

10 **Q. HOW IS THE COST OF THE PPA CONSIDERED IN PGE'S PROPOSED TARIFF?**

11 A. The calculation of the cost associated with the subscription resource is not specified in detail in
12 the tariff. PGE testifies that it "does not propose to own the renewable facility in this
13 program."^{4/} Nevertheless, the proposed tariff appears to contemplate the potential for
14 Company ownership, stating that charges to the subscriber include "PPA cost or Revenue
15 Requirement for each MWh under contract."^{5/}

16 **Q. DO YOU SUPPORT THIS LANGUAGE FROM THE PROPOSED TARIFF RIDER?**

17 A. No. For one, this language is ambiguous and confusing. Despite using the capitalized term
18 "Revenue Requirement," neither the tariff nor PGE's general definitions under Rule B define
19 this term. This raises a number of unspecified questions, such as what would be considered in
20 the "Revenue Requirement," how frequently the revenue requirement might be calculated, the

^{2/} PGE/200 at 12:22-23.

^{3/} Id. at 12:9-17.

^{4/} Id. at 21:17.

^{5/} PGE/201 at 3.

1 cost of capital that might be used, the treatment of renewable tax credits, and other revenue
2 requirement issues that are typically considered in a rate case.

3 By contrast, a green tariff is much less complicated if the counterparty is not the utility.
4 If the renewable resource is a PPA, the cost is just the PPA price. This is not to say that
5 AWEC would necessarily oppose utility ownership of a resource offered under the green tariff
6 program, but these and other issues would need to be addressed if that were to occur. For now,
7 PGE should limit the language in its tariff to PPA offerings. It is free to request to modify this
8 restriction in the future if it wishes.

9 **Q. WHAT OTHER DIRECTLY ASSIGNED COSTS DOES THE TARIFF IDENTIFY?**

10 A. The tariff then goes on to identify a number of other potential charges and credits, such as
11 integrating costs, as well as a “risk adjustment.”

12 **Q. WHAT IS THE RISK ADJUSTMENT?**

13 A. It is not clear. In testimony, PGE states that it anticipates adding a risk premium to the
14 program cost “which is intended to balance the inherent uncertainties that result from a
15 program that incorporates specific generation resources, differing contract lengths and
16 individual subscriber performance obligations.”^{6/} While PGE states that it anticipates applying
17 a risk premium, it makes no proposal about how the risk premium might be calculated, or even
18 how the risk premium would relate to the risks it identifies.

^{6/} PGE/200 at 15:20-16:1.

1 **III. RECOMMENDED CHANGES**

2 **Q. PLEASE SUMMARIZE THE CHANGES THAT YOU RECOMMEND TO PGE'S**
3 **PROPOSAL.**

4 A. While AWEC generally supports the development of a green tariff, there are a number of areas
5 in PGE's proposed rate rider that warrant additional specificity, or where different treatment is
6 appropriate. I outline these proposed changes in the subsections that follow.

7 **a. Provide Large Customers with Greater Control Over Procurement**

8 **Q. WHY DO YOU RECOMMEND PROVIDING LARGE CUSTOMERS WITH**
9 **GREATER CONTROL OVER PROCUREMENT THROUGH THE RIDER?**

10 A. As noted above, in PGE's proposal, subscribing customers have little control over the resource
11 procurement process. The rider states that "the Company shall procure bundled renewable
12 energy on the customer's behalf." While this procurement practice might be fine for a large
13 collection of small customers, it is not workable for a large customer who is the single
14 subscriber to a resource. These customers would be reluctant to sign up for the cost of an
15 unknown resource. Plus, these customers are going to have different preferences than the
16 utility when it comes to evaluating different resource alternatives. I propose adding language
17 to the tariff which gives large customers the ability to participate in the procurement process,
18 subject to appropriate oversight by PGE.

19 **Q. WHAT LANGUAGE DO YOU PROPOSE TO ADDRESS THIS CONCERN?**

20 A. I propose adding the following language under the heading General Provision:

21 VI. Customers with loads exceeding 10 aMW may solicit bundled RECs on
22 their own behalf, which are deliverable to the Company's system. The
23 Company must review and approve any such solicitation and remains
24 ultimately responsible for contracting with the seller. The Company shall
25 allow the customer to participate in the contract negotiation process with
26 the seller.

1 **b. Credit Customers Using the Marginal Cost of Generation From PGE's Most**
2 **Recent Rate Case**

3 **Q. WHAT ARE YOUR CONCERNS WITH THE RATE CREDITING METHODOLOGY**
4 **PGE HAS PROPOSED?**

5 A. I have a number of concerns with PGE's crediting methodology. Foremost, the methodology
6 PGE has proposed does not fairly reflect the way that costs get allocated to ratepayers. Use of
7 an avoided cost methodology may be appropriate when dealing with payments to qualifying
8 facilities, who have no load on PGE's system. For the green tariff program to be successful,
9 however, it should recognize that the participating customers are not just subscribing to
10 renewable generation which is being sold to PGE, but are also bundled service customers who
11 remain responsible for all of the costs of the base portfolio that are allocated to them.

12 Further, the methodology outlined in PGE's proposed tariff is vague. Use of the
13 complicated modeling techniques PGE has identified go beyond being a "formulaic method,"^{7/}
14 and are subject to a nearly indefinite number of assumptions and controversy. For there to be a
15 workable tariff, the credit rates need to be published. Customers need to know what the credit
16 values will be before they can even begin to evaluate participation in the program.

17 **Q. HOW ARE PRODUCTION COSTS ALLOCATED TO CUSTOMERS IN OREGON?**

18 A. In Oregon, production costs are assigned to rate schedules in proportion to the long-term
19 marginal cost of generation for each rate schedule. This includes amounts allocated based on
20 the marginal cost of energy and the marginal cost of capacity based on the load characteristics
21 of the rate class. The cost of service methodology has been done using marginal costs for
22 many years in Oregon in recognition of the theory that, even though much of the production

^{7/} PGE/200 at 13:6-12.

1 revenue requirement might be fixed in the short term, a major portion of fixed production costs
2 are variable if viewed over the long term.

3 **Q. WHAT DO YOU RECOMMEND FOR RATE CREDIT VALUE?**

4 A. I recommend establishing the credit based on the marginal cost of generation study, which is
5 used to allocate costs in rate classes. I propose to use the marginal cost of energy and the
6 marginal cost of capacity established in that study. This proposal would not use the allocated
7 production costs from the rate case, but rather the marginal cost values. Accordingly, to the
8 extent the costs allocated to the subscriber's rate class exceed marginal cost, the excess is still
9 allocated to the subscriber's rate class. It is just the marginal cost piece that the customer
10 avoids by subscribing to the renewable resource.

11 This methodology is preferable because, unlike the complex modeling runs PGE
12 proposes, the values are known and do not change between rate periods. Further, the credit
13 would align directly with the way that costs are allocated to the rate schedules, ensuring no
14 undue cost shifts to non-participating customers or to participating customers. This treatment
15 is central to ensuring that participating customers get value for the renewable generation that
16 they bring to the system that is commensurate with way that the system values their load for
17 purpose of establishing their cost of service.

18 **Q. WHAT MARGINAL GENERATION COST VALUES HAS PGE PROPOSED IN ITS**
19 **ONGOING RATE CASE?**

20 A. Table 1, below, details the marginal cost of generation by rate schedule PGE has proposed in
21 its ongoing rate case in Docket UE 335.

TABLE 1
Marginal Cost of Energy and Capacity by Rate Schedule
PGE Proposed, Docket UE 335 (\$000)

	<u>Sales</u>	<u>Energy</u>	<u>\$/MWh</u>	<u>Capcty.</u>	<u>\$/MWh</u>	<u>MC Total</u>	<u>\$/MWh</u>
Schedule 7	7,503,729	\$303,026	40.38	\$190,241	25.35	\$493,266	65.74
Schedule 15	15,630	568	36.32	221	14.15	789	50.47
Schedule 32	1,591,586	63,346	39.80	30,818	19.36	94,164	59.16
Schedule 38	30,597	1,261	41.20	416	13.60	1,677	54.80
Schedule 47	21,528	874	40.61	610	28.35	1,485	68.97
Schedule 49	64,969	2,638	40.61	1,817	27.97	4,456	68.58
Schedule 83	2,758,034	110,562	40.09	51,995	18.85	162,557	58.94
Schedule 85	2,765,981	109,545	39.60	47,132	17.04	156,676	56.64
Schedule 89	516,290	19,873	38.49	7,070	13.69	26,944	52.19
Schedule 90	1,763,027	67,405	38.23	24,034	13.63	91,439	51.86
Schedule 91/95	53,482	1,942	36.32	757	14.15	2,699	50.47
Schedule 92	2,496	97	38.76	33	13.12	130	51.88
Total	17,087,349	\$681,136	39.86	\$355,145	20.78	\$1,036,281	60.65

1 As can be noted in Table 1, both the marginal cost of energy and the marginal cost of
2 capacity from the marginal cost of generation study have been detailed by rate schedule.
3 Further, on the right-hand side of the table the total marginal cost of generation has been
4 summarized.

5 **Q. HOW DO YOU PROPOSE CONSIDERING CAPACITY VALUE?**

6 A. PGE proposes to use “the value of capacity, per PGE’s approved Schedule 201 QF Avoided
7 costs at the time which the PPA is executed.”^{8/} I reviewed PGE’s Schedule 201, however, and
8 capacity values are not separately reported in that document.^{9/} Presumably PGE would like to
9 use the values that it inputs into its modeling to establish the Schedule 201 avoided cost prices.
10 Notwithstanding, those values are not published in the avoided cost schedules, so it is not

^{8/} PGE/201 at 1.

^{9/} Schedule 201 identifies an “all-in” \$/MWh price paid to QFs that incorporates an unspecified price for capacity during the resource deficiency period.

1 entirely clear how the capacity value will be calculated with PGE's proposal, nor how PGE
2 will implement those capacity values.

3 Use of the marginal cost of capacity used in the rate case is a more transparent way to
4 establish the capacity value of the PPA, as the marginal cost of capacity values are known, and
5 not subject to controversy between rate cases.

6 **Q. SHOULD THERE BE RECOGNITION OF A SUFFICIENCY PERIOD?**

7 A. Yes. It is also important to recognize that as a result of the subscribing customer's choice,
8 PGE will be in a position of acquiring capacity sooner than it would have otherwise, had the
9 subscription resource not been acquired per the customer's election. This is a cost that is not
10 considered in the marginal cost of service study in a rate case, since the long-term analysis
11 presumes the system will be planned and built as resource needs arise. The customer's choice
12 will still displace future capacity additions, so appropriate consideration of that capacity value
13 should be given when PGE is showing a need for capacity. Accordingly, I believe it is
14 appropriate that the capacity value be applied based on the resource deficiency period
15 established in PGE's most recent IRP, similar to what PGE has proposed in its filing.

16 **Q. HOW MUCH CAPACITY SHOULD BE ASSOCIATED WITH THE RENEWABLE**
17 **RESOURCE?**

18 A. While this is not stated in PGE's filing, I assume PGE would use the capacity contribution
19 value from its most recent IRP. This might be problematic, however, if PGE does not report
20 the capacity contribution values in its IRP. For example, in its 2016 IRP, PGE used a resource
21 adequacy model called RECAP, which did not explicitly report the capacity contribution of
22 various intermittent technologies. In future IRP filings, it would be appropriate for PGE to
23 report the capacity contribution values based on the RECAP modeling. I would observe that

1 the 5% capacity contribution values for renewable resources reported in PGE's Schedule 201
2 do not correspond to the carrying contribution of wind that PGE established in its 2016 IRP. I
3 noted in final comments in Docket LC 66 that the Company's early action analysis using the
4 RECAP model implied a capacity contribution for Pacific Northwest Wind of approximately
5 30%, not the 5% that is included in Schedule 201.

6 **Q. SHOULD THE MARGINAL COST VALUES BE UPDATED WHEN THE PGE FILES**
7 **A RATE CASE?**

8 A. Yes. The marginal cost credit values should be updated over the term of the green tariff
9 contract to ensure that the value of the renewable resource is consistent with the value that is
10 being provided in rates. Thus, if the marginal cost of energy were to decline in a future rate
11 case—meaning the renewable resource is now less valuable to the system—the subscribing
12 customers should be subject to that reduction. Further, if the renewable resource is ultimately
13 more valuable to the system due to increasing marginal energy costs, the subscribing customers
14 would appropriately receive the additional value. Updating the value ensures that the
15 subscribing customers are appropriately bearing the risk of the renewable resource and that
16 changes to these values do not result in cost-shifting between participating and non-
17 participating customers.

18 **Q. SHOULD A SUBSCRIBING CUSTOMER CONTINUE TO RECEIVE A CAPACITY**
19 **CREDIT IF IT RENEWS ITS CONTRACT?**

20 A. Yes. If a customer entered into a contract which will recognize a capacity credit at some point
21 over the term of the green tariff contract and decides to renew the green tariff contract for an
22 additional term, the capacity credit should be applied to the entirety of the term of the renewed
23 green tariff contract. This treatment is appropriate since it would be unfair to subject a
24 subscribing customer to an additional capacity sufficiency period, when the renewable resource

1 to which the customer has subscribed is already being considered towards PGE's capacity
2 position.

3 **Q. WILL YOUR METHODOLOGY RESULT IN COST SHIFTING BETWEEN RATE**
4 **CLASSES?**

5 A. No. So long as the marginal cost of energy truly represents the true long-term marginal cost of
6 energy, there would be no cost shifting associated with using the marginal cost of service
7 values. On the contrary, use of short-term variable costs, such as market prices, in determining
8 the credit value will ensure that over the long run, subscribing customers will be subsidizing
9 non-participating customers.

10 **Q. HAVE OTHER UTILITIES RELIED ON A MARGINAL COST OF SERVICE**
11 **APPROACH TO DETERMINE THE RATE CREDIT?**

12 A. Yes. In Docket UE-160977 before the Washington Utilities and Transportation Commission,
13 Puget Sound Energy recently developed a green tariff program based on a subscriber model.
14 In the case of Puget Sound Energy's green tariff, the credit value was based on the marginal
15 cost of service for each rate class.

16 **Q. WHAT SPECIFIC LANGUAGE DO YOU PROPOSE TO IMPLEMENT YOUR**
17 **PROPOSAL?**

18 A. Implementing my proposal would require three edits to PGE's proposed tariff.

19 First, the definitions of energy value and capacity value would be modified as follows:

20 "Energy Value" means the marginal cost of energy, calculated on a
21 \$/MWh basis, based on the Company's most recent general rate
22 case.

23 "Capacity Value" means the marginal cost of capacity calculated on
24 a \$/MWh basis, based on the Company's most recent general rate
25 case.

26 Second, the third paragraph under the section "Credits" would be stricken in its
27 entirety.

1 Third, a new paragraph should be added under the section “Credits” stating the
2 following:

3 Customers that renew their Green Tariff contract for an additional
4 term shall not be subject to a capacity resource sufficiency period.

5 **c. Clarify the Risk Adjustment and Eliminate it for Large Customers**

6 **Q. WHY DO YOU BELIEVE THAT THE RISK ADJUSTMENT SHOULD BE**
7 **ELIMINATED?**

8 A. As noted above, PGE’s testimony makes oblique reference to a risk premium that it might
9 charge to participating customers to account for issues like differing contract lengths and
10 subscriber performance obligations.^{10/} From the testimony, it is not clear if PGE is actually
11 proposing this adjustment, or just anticipating that it may propose such an adjustment in the
12 future. There is also no indication what PGE might charge for this risk premium or how it
13 would be calculated. This would seem to make it difficult for the Commission to approve such
14 a charge as fair and reasonable.

15 **Q. WHY DOES PGE PROPOSE THE RISK ADJUSTMENT?**

16 A. PGE identifies “inherent uncertainties that result from a program that incorporates specific
17 generation resources, differing contract lengths and individual subscriber performance
18 obligations.”^{11/} It is not clear what PGE is getting at with respect to this risk. To be clear,
19 AWEC agrees with PGE that PGE shareholders, not ratepayers, should bear the risk associated
20 with an undersubscribed resource.^{12/} If undersubscription is what PGE is attempting to
21 quantify with respect to the risk adjustment, then I believe that proposal should be rejected.

^{10/} PGE/200 at 15:20-16:1.

^{11/} Id. at 15:21:16:1.

^{12/} Id. at 16:21-22.

1 **Q. SHOULD SUCH AN ADJUSTMENT BE APPLICABLE TO LARGE CUSTOMERS?**

2 A. No. Regardless of what the risk premium represents, such an adjustment should be explicitly
3 rejected, at least for large customers who are the sole subscriber to a resource. In that
4 circumstance, there should be no need for a risk adjustment of the nature described by PGE
5 since the PPA would be fully subscribed and would have a single subscription length,
6 presumably matching the PPA term. Further, any risks associated with this type of customer
7 can be addressed through the contracting process.

8 **d. Base Integration Costs On PGE's Open Access Transmission Tariff Rates**

9 **Q. DID PGE IDENTIFY HOW IT WOULD CALCULATE INTEGRATION COSTS FOR**
10 **THE RENEWABLE RESOURCE?**

11 A. PGE notes that it will assign integration costs to the participating customer, but does not
12 identify which ancillary services are represented in the integration costs it seeks to directly
13 assign. In the rider, PGE also identifies "shaping, firming, and other relevant program
14 expenses," as being assignable to the participating customers. However, it does not identify
15 how those costs might be calculated. One might assume that PGE would use its IRP to
16 develop some estimate of integration costs.

17 **Q. IS IT POSSIBLE TO MEASURE THE ACTUAL INTEGRATION COSTS FOR ANY**
18 **PARTICULAR RESOURCE?**

19 A. The energy imbalance market provides an indication of the cost of integrating a renewable
20 resource over the course of an hour. Otherwise, it is very difficult to determine the actual cost
21 of integrating a resource in actual operations because integration costs are not a cost per se, but
22 rather opportunity costs. The premise behind integration costs is that, but for the variability of
23 the intermittent resource, the system would have dispatched at a lower cost. Quantifying that

1 lower cost and how the system would have dispatched in the absence of a particular
2 intermittent resource, however, is an inherently difficult exercise.

3 **Q. WHY DO YOU RECOMMEND TYING THE INTEGRATION COSTS TO THE OPEN**
4 **ACCESS TRANSMISSION TARIFF (“OATT”)?**

5 A. The OATT already provides charges for ancillary services necessary to deliver renewable
6 resources to loads. Rather than relying on some undefined methodology, it is appropriate to
7 rely on the OATT to establish integration costs, as those costs have been reviewed and
8 considered at the FERC. The specific ancillary service schedules representative of integration
9 costs include: Schedule 5 – Operating Reserves (Spinning) (Generation portion only);
10 Schedule 6 – Operating Reserves (Supplemental) (Generation portion only); and Schedule 10 –
11 Generator Imbalance Service.

12 **Q. SHOULD PGE BE ALLOWED TO DIRECTLY ASSIGN SHAPING, FIRING AND**
13 **OTHER RELEVANT EXPENSES?**

14 A. No. From the tariff, it is unclear whether PGE considers shaping and firming expenses to
15 include more costs than those integration costs identified above. To the extent PGE does
16 propose additional cost with respect to firming and shaping, however, doing so would be
17 inappropriate because participating customers are already paying for those costs in the base
18 portfolio.

19 For example, customers subscribing to the renewable resource do not need a shaping
20 service because they are paying for shaping services service through their cost of service rates.
21 The cost of shaping each customer’s load is embedded into the rates, and the marginal cost of
22 service assigned to each rate class. The net shape of the customer load plus the renewable
23 generation cannot not be viewed as any more or less costly than any other customer’s load
24 shape taking service without the subscription resource. Accordingly, the shaping services

1 embedded in load rates are sufficient to cover whatever shaping that might be applicable to the
2 subscription resource.

3 Further, with respect to firming, since the capacity contribution is being used to
4 establish the capacity credit, there is no need for a further firming adjustment. The capacity
5 value would only apply to the “firm” output from the renewable resource based on the capacity
6 contribution percentage.

7 For these reasons, directly assigning additional firming and shaping costs is
8 unnecessary and duplicative to the participating customer.

9 **Q. WHAT LANGUAGE DO YOU PROPOSE TO ADDRESS THIS CONCERN?**

10 A. I recommend modifying the section titled “Price Structure,” paragraph 2, bullet 2, as follows:

11 An administrative charge to account for program administration costs and
12 applicable ancillary service costs identified in PGE’s open access
13 transmission tariff (Schedules 5*,6*, 10). *generation portion only

14 **IV. CONCLUSION**

15 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

16 A. In summary, AWEC recommends that the Commission approve the proposed green tariff,
17 subject to the changes I have identified above.

18 **Q. DOES THIS CONCLUDE YOUR RESPONSE TESTIMONY?**

19 A. Yes.

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1953

In the Matter of)
)
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EXHIBIT NO. AWEC/101

QUALIFICATION STATEMENT OF BRADLEY G. MULLINS

1 **QUALIFICATION STATEMENT**

2 **Q. PLEASE SUMMARIZE YOUR EDUCATION AND WORK EXPERIENCE.**

3 A. I have a Master of Accounting degree from the University of Utah. After obtaining my
4 master's degree, I worked at Deloitte in San Jose, California, where I specialized in
5 performing research and development tax credit studies. I later worked at PacifiCorp as
6 an analyst involved in power cost forecasting. I began performing independent energy
7 and utility consulting in 2013 and currently provide services to utility customers on
8 matters such as revenue requirements, power cost forecasting, and rate design. I have
9 sponsored testimony in several regulatory jurisdictions around the United States,
10 including before the Oregon Public Utilities Commission.

11 **Q. PLEASE PROVIDE A LIST OF YOUR REGULATORY APPEARANCES.**

12 A. I have sponsored testimony in the following regulatory proceedings:

- 13 • In the Matter of PacifiCorp, dba Pacific Power, 2019 Transition Adjustment Mechanism,
14 Or.PUC, Docket No. UE 339.
- 15 • In re Portland General Electric Company, Request for a General Rate Revision. Or.PUC
16 Docket No UE 335.
- 17 • In re Northwest Natural Gas Company, dba NW Natural, Request for a General Rate
18 Revision, Or.PUC Docket No. UG 344.
- 19 • In re Cascade Natural Gas Corporation Request for a General Rate Revision, Wa.UTC,
20 Docket No. UE-170929.
- 21 • In the Matter of Hydro One Limited, Application for Authorization to Exercise
22 Substantial Influence over the Policies and Actions of Avista Corporation, Or.PUC,
23 Docket No. UM 1897.
- 24 • In re Pacific Power & Light Company 2016 Power Cost Adjustment Mechanism,
25 Wa.UTC, Docket No. UE-170717.

- 26 • In re the Application of Rocky Mountain Power for Approval of a Significant Energy
27 Resource Decision and Request to Construct Wind Resource and Transmission Facilities,
28 Ut.PSC, Docket No. 17-035-040.
- 29 • In re The Application of PacifiCorp dba Rocky Mountain) Power For A Certificate Of
30 Public Convenience and Necessity and Binding Ratemaking Treatment For New Wind
31 And Transmission Facilities, Id.PUC Case No. PAC-E-17-07.
- 32 • In re Avista Corporation Request for a General Rate Revision, Wa.UTC, Docket No. UE-
33 170485 (Cons.).
- 34 • Application of Nevada Power Company d/b/a NV Energy for Authority to Adjust its
35 Annual Revenue Requirement for General Rates Charged to All Classes of Electric
36 Customers and For Relief Properly Related Thereto, Nv.PUC, Docket No. 17-06003
37 (Cons.).
- 38 • In the Matter of PacifiCorp, dba Pacific Power, 2016 Power Cost Adjustment
39 Mechanism, Or.PUC, Docket No. UE-327.
- 40 • In re the 2018 General Rate Case of Puget Sound Energy, Wa.UTC, Docket No. 170033
41 (Cons.).
- 42 • In re PacifiCorp, dba Pacific Power, 2018 Transition Adjustment Mechanism, Or.PUC,
43 Docket No. UE 323.
- 44 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
45 Docket No. UE 319.
- 46 • In re Portland General Electric Company, Application for Transportation Electrification
47 Programs, Or.PUC, UM 1811.
- 48 • In re Pacific Power & Light Company, Application for Transportation Electrification
49 Programs, Or.PUC, Docket No. UM 1810.
- 50 • In re the Public Utility Commission of Oregon, Investigation to Examine PacifiCorp, dba
51 Pacific Power's Non-Standard Avoided Cost Pricing, Or.PUC, Docket No. UM 1802.
- 52 • In re Pacific Power & Light Co., Revisions to Tariff WN U-75, Advice No. 16-05, to
53 modify the Company's existing tariffs governing permanent disconnection and removal
54 procedures, Wa.UTC, Docket No. UE-161204.
- 55 • In re Puget Sound Energy's Revisions to Tariff WN U-60, Adding Schedule 451,
56 Implementing a New Retail Wheeling Service, Wa.UTC, Docket No. UE-161123.

- 57 • 2018 Joint Power and Transmission Rate Proceeding, Bonneville Power Administration,
58 Case No. BP-18.
- 59 • In re Portland General Electric Company Application for Approval of Sale of Harborton
60 Restoration Project Property, Or.PUC, Docket No. UP 334 (Cons.).
- 61 • In re An Investigation of Policies Related to Renewable Distributed Electric Generation,
62 Ar.PSC, Matter No. 16-028-U.
- 63 • In re Net Metering and the Implementation of Act 827 of 2015, Ar.PSC, Matter No. 16-
64 027-R.
- 65 • In re the Application of Rocky Mountain Power for Approval of the 2016 Energy
66 Balancing Account, Ut.PSC, Docket No. 16-035-01
- 67 • In re Avista Corporation Request for a General Rate Revision, Wa.UTC, Docket No. UE-
68 160228 (Cons.).
- 69 • In re the Application of Rocky Mountain Power to Decrease Current Rates by \$2.7
70 Million to Recover Deferred Net Power Costs Pursuant to Tariff Schedule 95 and to
71 Increase Rates by \$50 Thousand Pursuant to Tariff Schedule 93, Wy.PSC, Docket No.
72 20000-292-EA-16.
- 73 • In re PacifiCorp, dba Pacific Power, 2017 Transition Adjustment Mechanism, Or.PUC,
74 Docket No. UE 307.
- 75 • In re Portland General Electric Company, 2017 Annual Power Cost Update Tariff
76 (Schedule 125), Or.PUC, Docket No. UE 308.
- 77 • In re PacifiCorp, Request to Initiate an Investigation of Multi-Jurisdictional Issues and
78 Approve an Inter-Jurisdictional Cost Allocation Protocol, Or.PUC, UM 1050.
- 79 • In re Pacific Power & Light Company, General rate increase for electric services,
80 Wa.UTC, Docket No. UE-152253.
- 81 • In The Matter of the Application of Rocky Mountain Power for Authority of a General
82 Rate Increase in Its Retail Electric Utility Service Rates in Wyoming of \$32.4 Million Per
83 Year or 4.5 Percent, Wy.PSC, Docket No. 20000-469-ER-15.
- 84 • In re Avista Corporation, General Rate Increase for Electric Services, Wa.UTC, Docket
85 No. UE-150204.
- 86 • In re the Application of Rocky Mountain Power to Decrease Rates by \$17.6 Million to
87 Recover Deferred Net Power Costs Pursuant to Tariff Schedule 95 to Decrease Rates by
88 \$4.7 Million Pursuant to Tariff Schedule 93, Wy.PSC, Docket No. 20000-472-EA-15.

- 89 • Formal complaint of The Walla Walla Country Club against Pacific Power & Light
90 Company for refusal to provide disconnection under Commission-approved terms and
91 fees, as mandated under Company tariff rules, Wa.UTC, Docket No. UE-143932.
- 92 • In re PacifiCorp, dba Pacific Power, 2016 Transition Adjustment Mechanism, Or.PUC,
93 Docket No. UE 296.
- 94 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
95 Docket No. UE 294.
- 96 • In re Portland General Electric Company and PacifiCorp dba Pacific Power, Request for
97 Generic Power Cost Adjustment Mechanism Investigation, Or.PUC, Docket No. UM
98 1662.
- 99 • In re PacifiCorp, dba Pacific Power, Application for Approval of Deer Creek Mine
100 Transaction, Or.PUC, Docket No. UM 1712.
- 101 • In re Public Utility Commission of Oregon, Investigation to Explore Issues Related to a
102 Renewable Generator’s Contribution to Capacity, Or.PUC, Docket No. UM 1719.
- 103 • In re Portland General Electric Company, Application for Deferral Accounting of Excess
104 Pension Costs and Carrying Costs on Cash Contributions, Or.PUC, Docket No. UM
105 1623.
- 106 • 2016 Joint Power and Transmission Rate Proceeding, Bonneville Power Administration,
107 Case No. BP-16.
- 108 • In re Puget Sound Energy, Petition to Update Methodologies Used to Allocate Electric
109 Cost of Service and for Electric Rate Design Purposes, Wa.UTC, Docket No. UE-
110 141368.
- 111 • In re Pacific Power & Light Company, Request for a General Rate Revision Resulting in
112 an Overall Price Change of 8.5 Percent, or \$27.2 Million, Wa.UTC, Docket No. UE-
113 140762.
- 114 • In re Puget Sound Energy, Revises the Power Cost Rate in WN U-60, Tariff G, Schedule
115 95, to reflect a decrease of \$9,554,847 in the Company’s overall normalized power
116 supply costs, Wa.UTC, Docket No. UE-141141.
- 117 • In re the Application of Rocky Mountain Power for Authority to Increase Its Retail
118 Electric Utility Service Rates in Wyoming Approximately \$36.1 Million Per Year or 5.3
119 Percent, Wy.PSC, Docket No. 20000-446-ER-14.

- 120 • In re Avista Corporation, General Rate Increase for Electric Services, RE, Tariff WN U-
121 28, Which Proposes an Overall Net Electric Billed Increase of 5.5 Percent Effective
122 January 1, 2015, Wa.UTC, Docket No. UE-140188.

- 123 • In re PacifiCorp, dba Pacific Power, Application for Deferred Accounting and Prudence
124 Determination Associated with the Energy Imbalance Market, Or.PUC, Docket No. UM
125 1689.

- 126 • In re PacifiCorp, dba Pacific Power, 2015 Transition Adjustment Mechanism, Or.PUC,
127 Docket No. UE 287.

- 128 • In re Portland General Electric Company, Request for a General Rate Revision, Or.PUC,
129 Docket No. UE 283.

- 130 • In re Portland General Electric Company's Net Variable Power Costs (NVPC) and
131 Annual Power Cost Update (APCU), Or.PUC, Docket No. UE 286.

- 132 • In re Portland General Electric Company 2014 Schedule 145 Boardman Power Plant
133 Operating Adjustment, Or.PUC, Docket No. UE 281.

- 134 • In re PacifiCorp, dba Pacific Power, Transition Adjustment, Five-Year Cost of Service
135 Opt-Out (adopting testimony of Donald W. Schoenbeck), Or.PUC, Docket No. UE 267.