



**Portland General Electric**  
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November 6, 2018

Public Utility Commission of Oregon  
201 High Street, S.E.  
P.O. Box 1088  
Salem, OR 97308-1088

**RE: UM 1953 Bench Request Dated October 29, 2018**

Via email: [puc.filingcenter@state.or.us](mailto:puc.filingcenter@state.or.us)

Portland General Electric Company (PGE) submits this filing pursuant to Administrative Law Judge Kirkpatrick's Bench Request dated October 29, 2018.

The Bench Request asked PGE to illustrate hypothetical plots of specific variables and scenarios related to the costs and credits for PGE's proposed green tariff. We have provided responses to the following and attached them to this letter as indicated below:

1. Illustrate hypothetical plots of the following variables over the life of a green tariff subscription, using both fixed and floating versions of PGE's preferred credit mechanism:
  - Price of energy paid by a subscribing customer: Net Power Costs + PPA Cost – Less Credit (*See Attachment A, Chart A*); and
  - Differential between the price that COS customers are paying for the PPA energy (the Credit) and the price of the energy they would have otherwise paid. (*See Attachment A, Chart B*)
2. Illustrate the variables under the following scenarios, using both a fixed and floating credit:
  - Scenario #1: Net Power Costs paid by COS customers rise over the life of the subscription. (*See Attachment A, Chart C*)
  - Scenario #2: Net Power Costs paid by COS customers decline over the life of the subscription. (*See Attachment A, Chart C*)

Should you have any questions regarding this filing, please contact Jacob Goodspeed at (503) 464-8545.

Please direct all formal correspondence and requests to [pge.opuc.filings@pgn.com](mailto:pge.opuc.filings@pgn.com)

Thank you,

A handwritten signature in blue ink, appearing to read "Andrew Speer". The signature is fluid and cursive, written over a white background.

Andrew Speer  
Regulatory Consultant

**UM 1953**

**Attachment A**

**Provided in Electronic Format**

Illustrative Plots of Credits and Costs

To perform the requested analysis, PGE used the below assumptions. These assumptions are for illustrative purposes only and actual costs and/or credits will vary depending on multiple factors.

- A \$53/MWh PPA with no escalation price
- PGE’s 2016 Integrated Resource Plan Update reference case energy prices
- 2021 Simple Cycle Combustion Turbine proxy prices and a generic capacity contribution for wind

It is PGE’s position that a fixed credit is the preferred credit mechanism as it provides certainty for both Cost of Service customers as well as program subscribers and aligns the credit values with the term of the subscription agreement. Should the Commission ultimately decide a floating credit should be offered to potential subscribers, PGE believes that a fixed credit should also be offered as an option.

**A. Program cost: subscriber perspective**

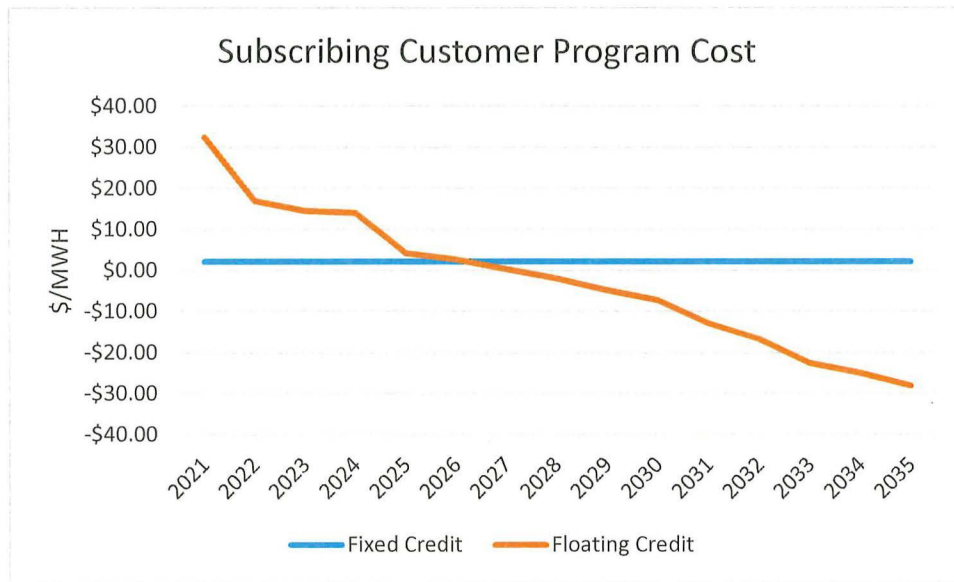


Chart A compares the incremental premium cost for program subscribers between two program design options: fixed vs. floating credit. While the costs vary between the two options in each year, the credit amounts are net present value equivalent over the term of the subscription.

**B. Program cost: all customer perspective. Differential between the price cost of service customers are paying for the PPA energy (the energy credit) and the price of the energy they would have otherwise paid**

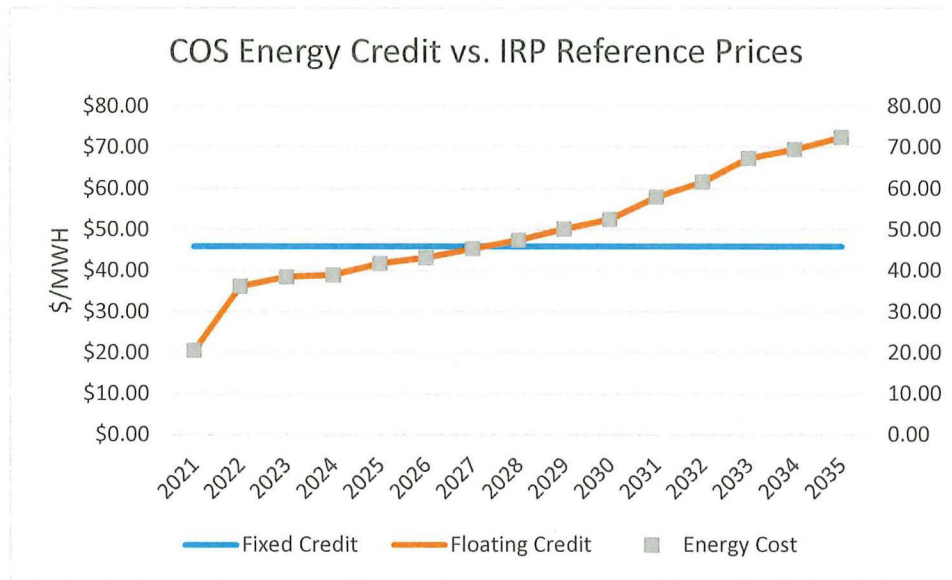


Chart B compares a fixed vs. floating energy credit design from the perspective of all cost of service customers. The energy credit, expressed on a \$/MWh basis, aligns with PGE’s 2016 IRP Update reference case and represents the most informed view of forecast market energy prices. Cost of service customers are receiving the value of the energy the incremental resource provides and the credit compensates subscribers for that value. The IRP does not forecast capacity value as there is no capacity market in the Pacific Northwest.

While the costs vary between the two options in each year, the credit amounts are net present value equivalent over the term of the subscription.

**C. Program cost: all customer perspective, varying market conditions. Illustrate the variables in an increasing and decreasing net power costs**

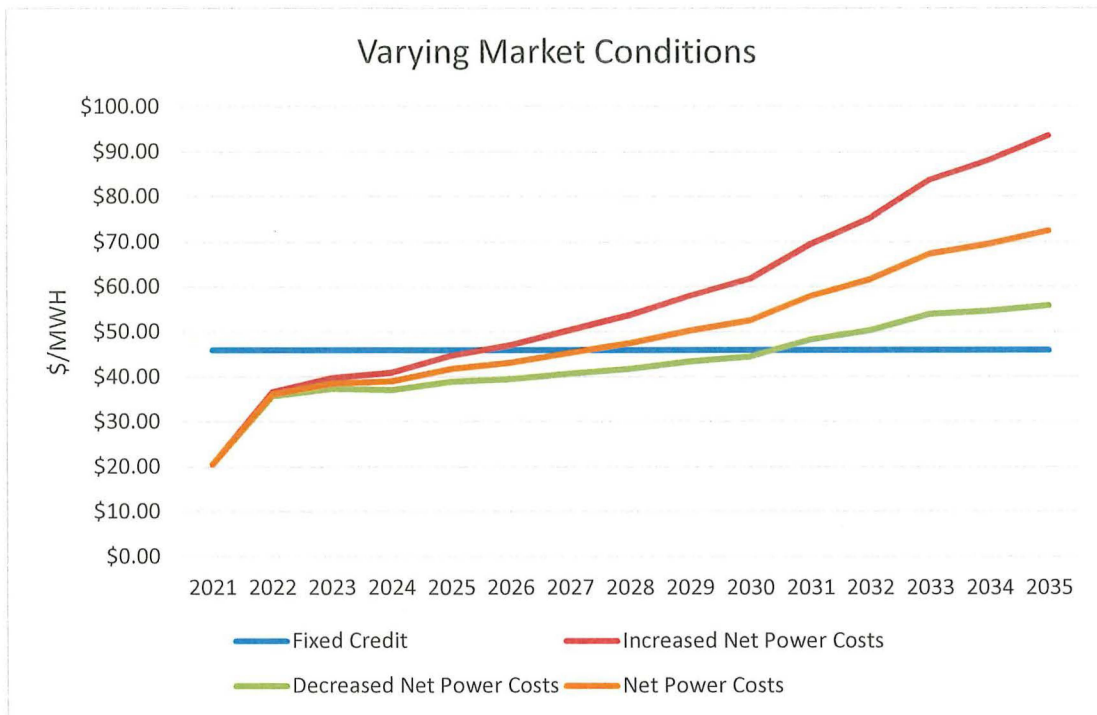


Chart C compares the fixed energy credit with a floating credit under a variety of market conditions. The orange line represents the 2016 IRP Update reference case prices; the blue line represents a fixed energy credit. Both lines are consistent with Chart B and are equivalent in net present value. The red and green lines represent scenarios in which power prices increase or decrease relative to the reference case. The floating credit would adjust to the market annually per PGE’s power cost regulatory framework.

When market prices differ from the forecast upon which the credit is based, the fixed and floating credit no longer have the same net present value to Cost of Service customers and program subscribers.

When market prices increase above the forecast (red line), a fixed credit results in lower costs for all Cost of Service customers (who provide the credit and are paying less than the market value of the energy), and lost value for program subscribers relative to the fixed credit (who receive a below market credit rather than the full value the PPA brings to the system).

When market prices fall below the forecast (green line), the reverse is true. The floating credit results in relatively lower costs for all Cost of Service customers and higher costs for subscribers.

**UM 1953**

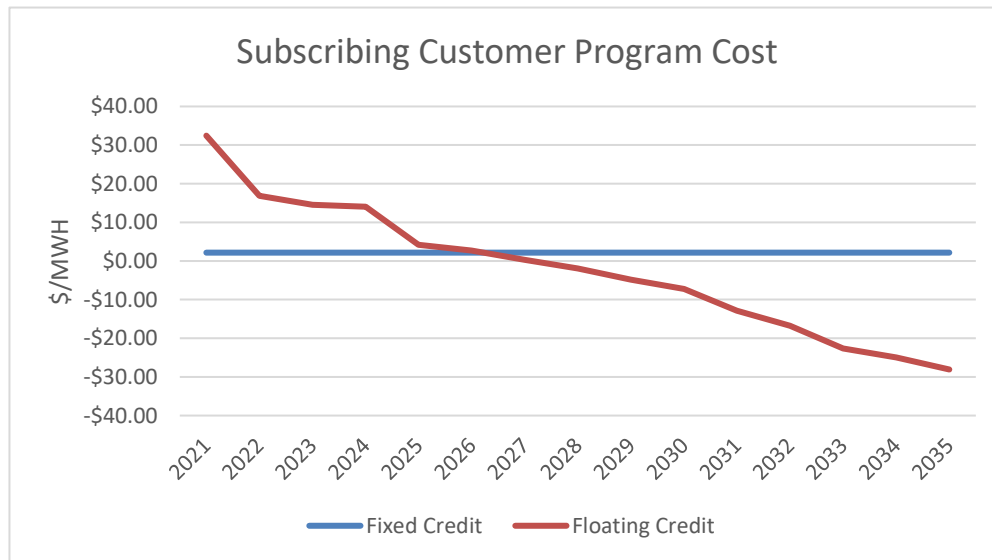
**Attachment B**

**Provided in Electronic Format Only**



### Floating

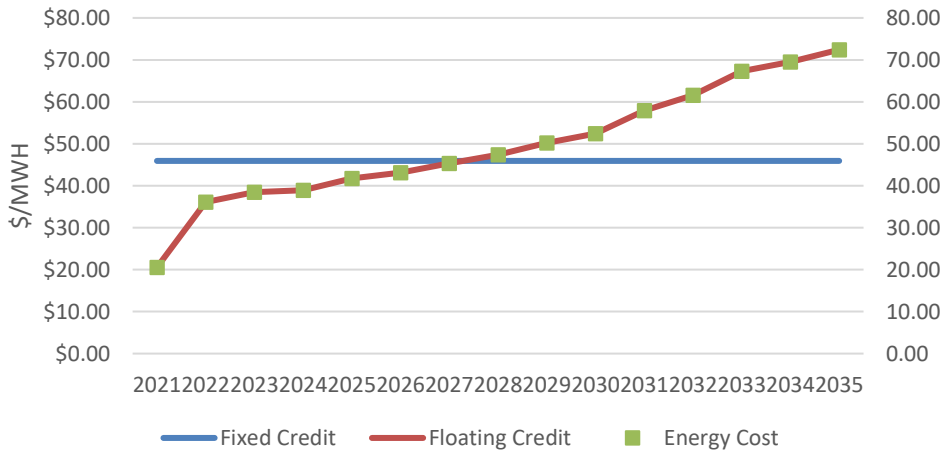
Year	Resource	Energy	Capacity	Premium	Credits	Abs Energy
1 2021	53.00	(20.56)	0.00	32.44	20.56	20.56
2 2022	53.00	(36.11)	0.00	16.89	36.11	36.11
3 2023	53.00	(38.48)	0.00	14.52	38.48	38.48
4 2024	53.00	(38.95)	0.00	14.05	38.95	38.95
5 2025	53.00	(41.72)	(7.07)	4.22	48.78	41.72
6 2026	53.00	(43.10)	(7.21)	2.69	50.31	43.10
7 2027	53.00	(45.31)	(7.36)	0.33	52.67	45.31
8 2028	53.00	(47.42)	(7.51)	(1.93)	54.93	47.42
9 2029	53.00	(50.18)	(7.66)	(4.85)	57.85	50.18
10 2030	53.00	(52.45)	(7.82)	(7.27)	60.27	52.45
11 2031	53.00	(57.92)	(7.98)	(12.90)	65.90	57.92
12 2032	53.00	(61.57)	(8.14)	(16.72)	69.72	61.57
13 2033	53.00	(67.29)	(8.31)	(22.60)	75.60	67.29
14 2034	53.00	(69.51)	(8.48)	(24.99)	77.99	69.51
15 2035	53.00	(72.42)	(8.65)	(28.07)	81.07	72.42
<b>15 year</b>	<b>496.93</b>	<b>(430.55)</b>	<b>(46.06)</b>	<b>20.32</b>	<b>476.61</b>	<b>430.55</b>
nominal levelized	53.00	(45.92)	(4.91)	2.17	50.83	45.92



**Levelized 15 year**

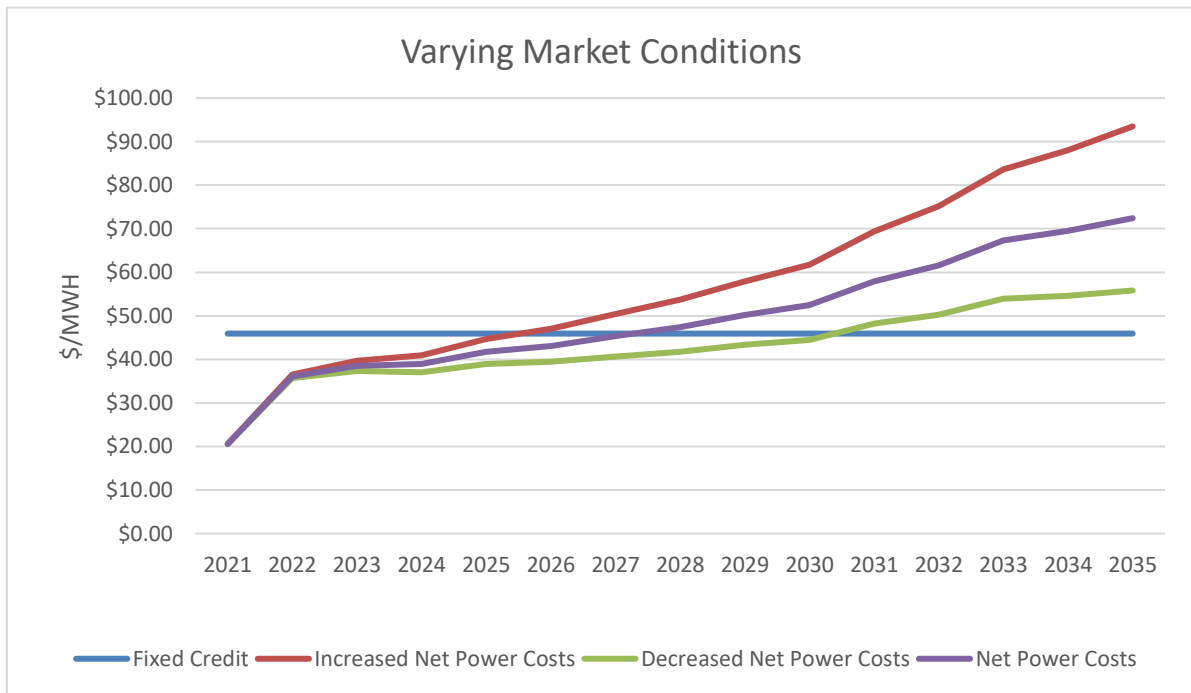
Resource	Energy	Capacity	Premium	Credits	Abs Energy
53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
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53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
53.00	(45.92)	(4.91)	2.17	50.83	45.92
496.93	(430.55)	(46.06)	20.32	476.61	430.55
53.00	(45.92)	(4.91)	2.17	50.83	45.92

**COS Energy Credit vs. IRP Reference Prices**





Market adjustments				Floating: market prices decrease	Floating: in	
Adjust	Forecast	Decrease	Increase	Year	Energy Prices	Year
2.0%	75.7%	73.7%	77.67%	2021	20.56	2021
2.0%	6.6%	4.6%	8.56%	2022	35.70	2022
2.0%	1.2%	-0.8%	3.20%	2023	37.33	2023
2.0%	7.1%	5.1%	9.12%	2024	37.03	2024
2.0%	3.3%	1.3%	5.31%	2025	38.93	2025
2.0%	5.1%	3.1%	7.13%	2026	39.44	2026
2.0%	4.7%	2.7%	6.65%	2027	40.67	2027
2.0%	5.8%	3.8%	7.83%	2028	41.75	2028
2.0%	4.5%	2.5%	6.52%	2029	43.35	2029
2.0%	10.4%	8.4%	12.42%	2030	44.44	2030
2.0%	6.3%	4.3%	8.31%	2031	48.19	2031
2.0%	9.3%	7.3%	11.28%	2032	50.27	2032
2.0%	3.3%	1.3%	5.30%	2033	53.92	2033
2.0%	4.2%	2.2%	6.19%	2034	54.63	2034
2.0%				2035	55.82	2035



market prices  
crease

Energy Prices

20.56  
36.52  
39.65  
40.92  
44.65  
47.02  
50.38  
53.73  
57.94  
61.71  
69.38  
75.15  
83.62  
88.06  
93.50