

June 8, 2020

***VIA ELECTRONIC FILING***

Public Utility Commission of Oregon  
Attn: Filing Center  
201 High Street SE, Suite 100  
Salem, OR 97301-3398

**RE: UM 1729(4) – Standard Avoided Cost Purchases from Eligible Qualifying Facilities**

In compliance with ORS 758.525 and Order No. 14-058 in Docket No. UM 1610, PacifiCorp d/b/a Pacific Power (PacifiCorp or Company) hereby submits the enclosed update to its standard avoided cost schedule (formerly known as Schedule 37) to the Public Utility Commission of Oregon (Commission).

This filing satisfies the Company's obligation established in Order No. 14-058 to file avoided cost updates within 30 days of its Integrated Resource Plan being acknowledged by the Commission. This filing incorporates updates associated with PacifiCorp's 2019 IRP, which was acknowledged on May 7, 2020. The Company respectfully requests an effective date of July 8, 2020.

The Company's current standard avoided cost prices were approved in docket UM 2001 Order No. 19-156. The natural gas and electricity prices in this filing are the same as those in the Company's annual avoided cost update filed on May 1, 2020, which is currently expected to be approved with rates effective June 17, 2020.

In support of this filing, PacifiCorp submits Appendix 1 – Avoided Cost Study and Appendix 2 – Method Write-up and Minimum Filing Requirements. Also provided are the supporting documentation in both "pdf" and original formats.

PacifiCorp respectfully requests that all communications related to this filing be addressed to:

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Public Utility Commission of Oregon  
June 8, 2020  
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Please direct questions on this filing to Cathie Allen at (503) 813-5934.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mike Wilding". The signature is fluid and cursive, with the first name "Mike" and last name "Wilding" clearly distinguishable.

Mike Wilding  
Director, Net Power Costs & Regulatory Policy

Enclosure

**PACIFIC POWER  
PROPOSED TARIFF CHANGES TO STANDARD RATES  
STANDARD RATES FOR AVOIDED COST PURCHASES FROM  
ELIGIBLE QUALIFYING FACILITIES  
OREGON – JUNE 2020**

**Self Supply Option**

Owner shall elect to sell all Net Output to PacifiCorp and purchase its full electric requirements from PacifiCorp or sell Net Output surplus to its needs at the Facility site to PacifiCorp and purchase partial electric requirements service from PacifiCorp, in accordance with the terms and conditions of the power purchase agreement and the appropriate retail service.

**Pricing Options****1. Standard Fixed Avoided Cost Prices**

Prices are fixed at the time that the contract is signed by both the Qualifying Facility and the Company and will not change during the term of the contract. Standard Fixed Avoided Cost Prices are available for a contract term of up to 15 years and prices under a longer term contract (up to 20 years) will thereafter be under the Firm Market Indexed Avoided Cost Price.

The Standard Fixed Avoided Cost pricing option is available to all Qualifying Facilities. The Standard Fixed Avoided Cost Price for Wind and Solar Qualifying Facilities reflects integration costs as set forth on pages 6-7. (C)  
(C)

**2. Renewable Fixed Avoided Cost Prices**

Prices are fixed at the time that the contract is signed by both the Renewable Qualifying Facility and the Company and will not change during the term of the contract. Renewable Fixed Avoided Cost Prices are available for a contract term of up to 15 years and prices under a longer term contract (up to 20 years) will thereafter be under the Firm Market Indexed Avoided Cost Price. The Renewable Fixed Avoided Cost pricing option is available only to Renewable Qualifying Facilities. A Renewable Qualifying Facility choosing the Renewable Fixed Avoided Cost pricing option: (a) must cede all Green Tags generated by the facility, as defined in the standard contract, to the Company during the Renewable Resource Deficiency Period identified on page 8 including during any period after the first 15 years of a longer term contract (up to 20 years); and (b) will retain ownership of all Environmental Attributes generated by the facility, as defined in the standard contract, during the Renewable Resource Sufficiency Period identified on page 8.

**3. Firm Market Indexed Avoided Cost Prices**

Firm Market Index Avoided Cost Prices are available to Qualifying Facilities that contract to deliver firm power. Monthly On-Peak / Off-Peak prices paid are a blending of Intercontinental Exchange (ICE) Day Ahead Power Price Report at market hubs for On-Peak and Off-Peak prices. The monthly blending matrix is available upon request. The Firm Market Index Avoided Cost Price for Wind and Solar Qualifying Facilities will reflect integration costs. (C)  
(C)

**4. Non-Firm Market Index Avoided Cost Prices**

Non-Firm Market Index Avoided Cost Prices are available to Qualifying Facilities that do not elect to provide firm power. Qualifying Facilities taking this option will have contracts that do not include minimum delivery requirements, default damages for construction delay or, for under delivery or early termination, or default security for these purposes. Monthly On-Peak / Off-Peak prices paid are 93 percent of a blending of ICE Day Ahead Power Price Report at market hubs for on-peak and off-peak firm index prices. The monthly blending matrix is available upon request. The Non-Firm Market Index Avoided Cost pricing option is available to all Qualifying Facilities. The Non-Firm Market Index Avoided Cost Price for Wind and Solar Qualifying Facilities will reflect integration costs. (C)

(continued)

**Monthly Payments (Continued)**
**Firm Market Indexed and Non-Firm Market Index Avoided Cost Prices**

In accordance with the terms of a contract with a Qualifying Facility, the Company shall pay for all separately metered kilowatt-hours of On-Peak and Off-Peak generation at the market prices calculated at the time of delivery. On-Peak and Off-Peak are defined in the definitions section of this schedule.

**Avoided Cost Prices**
**Standard Fixed Avoided Cost Prices for Base Load and Wind QF (¢/kWh)**

Deliveries During Calendar Year	Base Load QF (1)		Wind QF (1,2)		Wind Integration
	On-Peak Energy Price	Off-Peak Energy Price	On-Peak Energy Price	Off-Peak Energy Price	All hours Energy Charge
	(a)	(b)	(c)	(d)	(e)
2020	2.58	1.92	2.54	1.88	0.39
2021	3.11	2.23	3.09	2.21	0.19
2022	3.15	2.26	3.13	2.23	0.27
2023	3.24	2.24	3.22	2.21	0.29
2024	3.33	2.32	3.29	2.29	0.35
2025	3.41	2.34	3.35	2.28	0.61
2026	5.14	3.11	6.05	3.06	0.45
2027	5.36	3.27	6.26	3.20	0.69
2028	5.61	3.47	6.51	3.38	0.93
2029	5.86	3.68	6.75	3.55	1.29
2030	6.11	3.88	6.99	3.72	1.61
2031	6.31	4.03	7.21	3.86	1.63
2032	6.51	4.18	7.43	4.00	1.74
2033	6.71	4.33	7.65	4.15	1.79
2034	6.95	4.51	7.92	4.34	1.75
2035	7.19	4.69	8.18	4.52	1.72
2036	7.40	4.84	8.44	4.69	1.58
2037	7.72	5.11	8.78	4.95	1.62
2038	7.99	5.32	9.07	5.15	1.66
2039	8.32	5.59	9.43	5.42	1.70
2040	8.50	5.70	9.63	5.53	1.74

(1) Standard Resource Sufficiency Period ends December 31, 2025 and Standard Resource Deficiency Period begins January 1, 2026.

(2) The avoided cost price has been reduced by wind or solar integration charges applicable to QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If wind or solar QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charge.

(continued)

**Effective for service on and after July 8, 2020**

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**Avoided Cost Prices (Continued)**
**Standard Fixed Avoided Cost Prices for Fixed and Tracking Solar QF (¢/kWh)**

Deliveries During Calendar Year	Fixed Solar QF (1,2)		Tracking Solar QF (1,2)		Solar Integration
	On-Peak Energy Price	Off-Peak Energy Price	On-Peak Energy Price	Off-Peak Energy Price	All hours Energy Charge
	(f)	(g)	(h)	(i)	(j)
2020	2.55	1.89	2.55	1.89	0.31
2021	3.10	2.22	3.10	2.22	0.15
2022	3.13	2.24	3.13	2.24	0.22
2023	3.22	2.22	3.22	2.22	0.24
2024	3.30	2.29	3.30	2.29	0.29
2025	3.36	2.29	3.36	2.29	0.50
2026	3.67	3.07	3.77	3.07	0.37
2027	3.83	3.22	3.94	3.22	0.56
2028	4.03	3.40	4.13	3.40	0.76
2029	4.22	3.57	4.32	3.57	1.05
2030	4.41	3.75	4.52	3.75	1.31
2031	4.57	3.90	4.68	3.90	1.32
2032	4.73	4.04	4.84	4.04	1.42
2033	4.89	4.18	5.00	4.18	1.45
2034	5.09	4.37	5.21	4.37	1.42
2035	5.29	4.55	5.41	4.55	1.40
2036	5.47	4.72	5.60	4.72	1.28
2037	5.75	4.98	5.88	4.98	1.31
2038	5.97	5.18	6.10	5.18	1.34
2039	6.26	5.45	6.39	5.45	1.37
2040	6.39	5.56	6.52	5.56	1.40

- (1) Standard Resource Sufficiency Period ends December 31, 2025 and Standard Resource Deficiency Period begins January 1, 2026.
- (2) The avoided cost price has been reduced by wind or solar integration charges applicable to QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If wind or solar QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charge.

(continued)

**Avoided Cost Prices (continued)**
**Renewable Fixed Avoided Cost Prices for Base Load and Wind QF (¢/kWh)**

Deliveries During Calendar Year	Renewable Base Load QF (1)		Wind QF (1,2)		Wind Integration
	On-Peak Energy Price	Off-Peak Energy Price	On-Peak Energy Price	Off-Peak Energy Price	All hours Energy Charge
	(a)	(b)	(c)	(d)	(e)
2020	2.58	1.92	2.54	1.88	0.39
2021	3.11	2.23	3.09	2.21	0.19
2022	3.15	2.26	3.13	2.23	0.27
2023	3.24	2.24	3.22	2.21	0.29
2024	4.16	1.69	4.56	1.65	0.35
2025	4.29	1.75	4.67	1.69	0.61
2026	4.39	1.74	4.80	1.70	0.45
2027	4.53	1.78	4.93	1.71	0.69
2028	4.64	1.88	5.02	1.78	0.93
2029	4.79	1.93	5.14	1.80	1.29
2030	4.93	1.99	5.27	1.82	1.61
2031	5.05	2.04	5.39	1.88	1.63
2032	5.13	2.14	5.48	1.96	1.74
2033	5.22	2.23	5.58	2.05	1.79
2034	5.31	2.30	5.68	2.13	1.75
2035	5.41	2.36	5.79	2.19	1.72
2036	5.52	2.39	5.93	2.24	1.58
2037	5.63	2.46	6.05	2.30	1.62
2038	5.75	2.53	6.18	2.37	1.66
2039	5.89	2.59	6.32	2.42	1.70
2040	6.03	2.64	6.48	2.47	1.74

(1) For the purpose of determining: (i) when the Renewable Qualifying Facility is entitled to renewable avoided cost prices; and (ii) the ownership of environmental attributes and the transfer of Green Tags to PacifiCorp, Renewable Sufficiency Period ends December 31, 2023 and Renewable Deficiency Period begins January 1, 2024.

(2) The avoided cost price has been reduced by wind or solar integration charges applicable to QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If wind or solar QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charge.

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**Avoided Cost Prices (continued)**
**Renewable Fixed Avoided Cost Prices for Fixed and Tracking Solar QF (¢/kWh)**

Deliveries During Calendar Year	Fixed Solar QF (1,2)		Tracking Solar QF (1,2)		Solar Integration
	On-Peak Energy Price	Off-Peak Energy Price	On-Peak Energy Price	Off-Peak Energy Price	All hours Energy Charge
	(f)	(g)	(h)	(i)	(j)
2020	2.55	1.89	2.55	1.89	0.31
2021	3.10	2.22	3.10	2.22	0.15
2022	3.13	2.24	3.13	2.24	0.22
2023	3.22	2.22	3.22	2.22	0.24
2024	2.29	1.66	2.48	1.66	0.29
2025	2.35	1.70	2.55	1.70	0.50
2026	2.42	1.71	2.62	1.71	0.37
2027	2.50	1.73	2.71	1.73	0.56
2028	2.54	1.80	2.75	1.80	0.76
2029	2.61	1.83	2.83	1.83	1.05
2030	2.69	1.85	2.91	1.85	1.31
2031	2.75	1.91	2.98	1.91	1.32
2032	2.78	2.00	3.01	2.00	1.42
2033	2.82	2.08	3.06	2.08	1.45
2034	2.86	2.16	3.10	2.16	1.42
2035	2.90	2.22	3.15	2.22	1.40
2036	2.97	2.27	3.22	2.27	1.28
2037	3.03	2.33	3.29	2.33	1.31
2038	3.09	2.40	3.35	2.40	1.34
2039	3.16	2.45	3.43	2.45	1.37
2040	3.24	2.50	3.52	2.50	1.40

(1) For the purpose of determining: (i) when the Renewable Qualifying Facility is entitled to renewable avoided cost prices; and (ii) the ownership of environmental attributes and the transfer of Green Tags to PacifiCorp, Renewable Sufficiency Period ends December 31, 2023 and Renewable Deficiency Period begins January 1, 2024.

(2) The avoided cost price has been reduced by wind or solar integration charges applicable to QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If wind or solar QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charge.

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**Effective for service on and after July 8, 2020**

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**PACIFIC POWER  
AVOIDED COST CALCULATION**

**STANDARD RATES FOR AVOIDED COST PURCHASES FROM  
ELIGIBLE QUALIFYING FACILITIES**

**OREGON – JUNE 2020**

**Exhibit 1**  
**Standard Avoided Cost Prices for Base Load QF (1)**  
**\$/MWH**

Year	Standard Avoided Resource		Base Load QF Resource				
	Avoided Firm Capacity Costs	Energy Only Price	Capacity Contribution	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	\$/kW-yr	\$/MWh	(c)	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)		(d) = (a) * (c)	(e) (d) *1000 / (100.0% x 8760 x 56%)	(f) (e) + (b)	(g) = (b)
2020	Market Based Prices					\$25.79	\$19.23
2021	2020 through 2025					\$31.13	\$22.30
2022						\$31.52	\$22.59
2023						\$32.44	\$22.39
2024						\$33.25	\$23.20
2025						\$34.10	\$23.39
2026	\$100.07	\$31.07	100.0%	100.07	\$20.38	\$51.45	\$31.07
2027	\$102.36	\$32.73	100.0%	102.36	\$20.85	\$53.58	\$32.73
2028	\$104.70	\$34.75	100.0%	104.70	\$21.32	\$56.07	\$34.75
2029	\$107.09	\$36.77	100.0%	107.09	\$21.81	\$58.58	\$36.77
2030	\$109.53	\$38.79	100.0%	109.53	\$22.31	\$61.10	\$38.79
2031	\$112.03	\$40.28	100.0%	112.03	\$22.82	\$63.10	\$40.28
2032	\$114.58	\$41.77	100.0%	114.58	\$23.34	\$65.11	\$41.77
2033	\$117.19	\$43.28	100.0%	117.19	\$23.87	\$67.14	\$43.28
2034	\$119.86	\$45.12	100.0%	119.86	\$24.41	\$69.53	\$45.12
2035	\$122.60	\$46.92	100.0%	122.60	\$24.97	\$71.89	\$46.92
2036	\$125.39	\$48.45	100.0%	125.39	\$25.54	\$73.99	\$48.45
2037	\$128.25	\$51.08	100.0%	128.25	\$26.12	\$77.20	\$51.08
2038	\$131.17	\$53.16	100.0%	131.17	\$26.72	\$79.88	\$53.16
2039	\$134.17	\$55.87	100.0%	134.17	\$27.33	\$83.20	\$55.87
2040	\$137.23	\$57.02	100.0%	137.23	\$27.95	\$84.97	\$57.02
2041	\$140.36	\$58.32	100.0%	140.36	\$28.59	\$86.91	\$58.32
2042	\$143.56	\$59.66	100.0%	143.56	\$29.24	\$88.90	\$59.66

Columns

- (a) Full fixed cost of a proxy CCCT less Capitalized Energy Cost
- (b) Fuel and Capitalized Energy Cost of the Proxy CCCT
- (c) Capacity Contribution of the Avoided Proxy and Base Load QF resources are assumed to be 100%.
- (e) 100.0% is the on-peak capacity factor of the Base Load QF resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2025 On-Peak Blended Market Prices for QF resource
- (g) 2020-2025 Off-Peak Blended Market Prices for QF resource

**Exhibit 2**  
**Standard Avoided Cost Prices for Wind QF (1,2)**  
**\$/MWH**

Year	Standard Avoided Resource		Wind QF Resource				
	Avoided Firm Capacity Costs	Energy Only Price	Capacity Contribution	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	\$/kW-yr	\$/MWh	(c)	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)		(d)	(e)	(f)	(g)
				= (a) * (c)	(d) *1000 / (37.2% x 8760 x 56%)	= (b) + (e) - Integration	= (b) - Integration
2020	Market Based Prices					\$25.40	\$18.84
2021	2020 through 2025					\$30.94	\$22.11
2022	less Wind Integration (2)					\$31.25	\$22.32
2023						\$32.15	\$22.10
2024						\$32.90	\$22.85
2025						\$33.49	\$22.78
2026	\$100.07	\$31.07	54.5%	54.58	\$29.91	\$60.53	\$30.62
2027	\$102.36	\$32.73	54.5%	55.83	\$30.60	\$62.64	\$32.04
2028	\$104.70	\$34.75	54.5%	57.11	\$31.30	\$65.11	\$33.82
2029	\$107.09	\$36.77	54.5%	58.41	\$32.01	\$67.49	\$35.48
2030	\$109.53	\$38.79	54.5%	59.74	\$32.74	\$69.92	\$37.18
2031	\$112.03	\$40.28	54.5%	61.10	\$33.49	\$72.14	\$38.65
2032	\$114.58	\$41.77	54.5%	62.49	\$34.25	\$74.28	\$40.03
2033	\$117.19	\$43.28	54.5%	63.92	\$35.03	\$76.52	\$41.49
2034	\$119.86	\$45.12	54.5%	65.37	\$35.83	\$79.20	\$43.37
2035	\$122.60	\$46.92	54.5%	66.87	\$36.65	\$81.84	\$45.20
2036	\$125.39	\$48.45	54.5%	68.39	\$37.48	\$84.35	\$46.87
2037	\$128.25	\$51.08	54.5%	69.95	\$38.34	\$87.79	\$49.46
2038	\$131.17	\$53.16	54.5%	71.54	\$39.21	\$90.71	\$51.50
2039	\$134.17	\$55.87	54.5%	73.18	\$40.11	\$94.27	\$54.17
2040	\$137.23	\$57.02	54.5%	74.85	\$41.02	\$96.30	\$55.28
2041	\$140.36	\$58.32	54.5%	76.56	\$41.96	\$98.50	\$56.54
2042	\$143.56	\$59.66	54.5%	78.30	\$42.91	\$100.75	\$57.84

- (1) The avoided cost price is reduced by a wind integration charge from Table 11 for wind QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If QF wind resource is not in PacifiCorp's BAA, prices will be increased by the integration charge from Table 11.
- (2) Wind Integration Cost from Table 11.

Columns

- (a) Full fixed cost of a proxy CCCT less Capitalized Energy Cost
- (b) Fuel and Capitalized Energy Cost of the Proxy CCCT
- (c) Capacity Contribution values for renewable QF (% of nameplate capacity), 2019 IRP  
Wind Capacity Contribution 54.5% Seasonal weighting of values from Table 14
- (e) 37.2% is the on-peak capacity factor of the Wind QF Resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2025 On-Peak Blended Market Prices for QF resource
- (g) 2020-2025 Off-Peak Blended Market Prices for QF resource

**Exhibit 3**  
**Standard Avoided Cost Prices for Fixed Solar QF**  
**\$/MWH**

Year	Standard Avoided Resource		Fixed Solar QF				
	Capacity Price	Energy Only Price	Capacity Contribution	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	\$/kW-yr	\$/MWh		(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
				= (a) * (c)	(d) * 1000 / (37.3% x 8760 x 56%)	= (b) + (e) - Integration	= (b) - Integration
2020	Market Based Prices					\$25.48	\$18.92
2021	2020 through 2025					\$30.98	\$22.15
2022	less Solar Integration (2)					\$31.30	\$22.37
2023						\$32.20	\$22.15
2024						\$32.96	\$22.91
2025						\$33.60	\$22.89
2026	\$100.07	\$31.07	11.04%	\$11.05	\$6.03	\$36.73	\$30.70
2027	\$102.36	\$32.73	11.04%	\$11.30	\$6.17	\$38.34	\$32.17
2028	\$104.70	\$34.75	11.04%	\$11.56	\$6.31	\$40.30	\$33.99
2029	\$107.09	\$36.77	11.04%	\$11.82	\$6.45	\$42.17	\$35.72
2030	\$109.53	\$38.79	11.04%	\$12.09	\$6.60	\$44.08	\$37.48
2031	\$112.03	\$40.28	11.04%	\$12.37	\$6.75	\$45.71	\$38.96
2032	\$114.58	\$41.77	11.04%	\$12.65	\$6.90	\$47.26	\$40.35
2033	\$117.19	\$43.28	11.04%	\$12.93	\$7.06	\$48.89	\$41.83
2034	\$119.86	\$45.12	11.04%	\$13.23	\$7.22	\$50.92	\$43.70
2035	\$122.60	\$46.92	11.04%	\$13.53	\$7.39	\$52.90	\$45.52
2036	\$125.39	\$48.45	11.04%	\$13.84	\$7.55	\$54.72	\$47.17
2037	\$128.25	\$51.08	11.04%	\$14.16	\$7.73	\$57.49	\$49.77
2038	\$131.17	\$53.16	11.04%	\$14.48	\$7.90	\$59.73	\$51.82
2039	\$134.17	\$55.87	11.04%	\$14.81	\$8.08	\$62.58	\$54.50
2040	\$137.23	\$57.02	11.04%	\$15.15	\$8.27	\$63.89	\$55.62
2041	\$140.36	\$58.32	11.04%	\$15.49	\$8.46	\$65.35	\$56.89
2042	\$143.56	\$59.66	11.04%	\$15.85	\$8.65	\$66.85	\$58.20

- (1) The avoided cost price is reduced by a solar integration charge from Table 11 for solar QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system). If QF solar resource is not in PacifiCorp's BAA, prices will be increased by the integration charge from Table 11.
- (2) Solar Integration Cost from Table 11

Columns

- (a) Full fixed cost of a proxy CCCT less Capitalized Energy Cost
- (b) Fuel and Capitalized Energy Cost of the Proxy CCCT
- (c) Capacity Contribution values for renewable QF (% of nameplate capacity), 2019 IRP  
Fixed Solar Capacity Contribution 11.0% Profile-specific value consistent with methodology used in Table 14
- (e) 37.3% is the on-peak capacity factor of the Fixed Solar QF Resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2025 On-Peak Blended Market Prices for QF resource
- (g) 2020-2025 Off-Peak Blended Market Prices for QF resource

**Exhibit 4**  
**Standard Avoided Cost Prices for Tracking Solar QF**  
**\$/MWH**

Year	Standard Avoided Resource		Tracking Solar QF				
	Capacity Price	Energy Only Price	Capacity Contribution	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	\$/kW-yr	\$/MWh		(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
				= (a) * (c)	(d) *1000 / (43.0% x 8760 x 56%)	= (b) + (e) - Integration	= (b) - Integration
2020	Market Based Prices					\$25.48	\$18.92
2021	2020 through 2025					\$30.98	\$22.15
2022	less Solar Integration (2)					\$31.30	\$22.37
2023						\$32.20	\$22.15
2024						\$32.96	\$22.91
2025						\$33.60	\$22.89
2026	\$100.07	\$31.07	14.80%	\$14.81	\$7.02	\$37.72	\$30.70
2027	\$102.36	\$32.73	14.80%	\$15.15	\$7.18	\$39.36	\$32.17
2028	\$104.70	\$34.75	14.80%	\$15.49	\$7.34	\$41.33	\$33.99
2029	\$107.09	\$36.77	14.80%	\$15.85	\$7.51	\$43.23	\$35.72
2030	\$109.53	\$38.79	14.80%	\$16.21	\$7.68	\$45.16	\$37.48
2031	\$112.03	\$40.28	14.80%	\$16.58	\$7.86	\$46.82	\$38.96
2032	\$114.58	\$41.77	14.80%	\$16.95	\$8.04	\$48.39	\$40.35
2033	\$117.19	\$43.28	14.80%	\$17.34	\$8.22	\$50.05	\$41.83
2034	\$119.86	\$45.12	14.80%	\$17.73	\$8.41	\$52.11	\$43.70
2035	\$122.60	\$46.92	14.80%	\$18.14	\$8.60	\$54.12	\$45.52
2036	\$125.39	\$48.45	14.80%	\$18.55	\$8.80	\$55.96	\$47.17
2037	\$128.25	\$51.08	14.80%	\$18.98	\$9.00	\$58.76	\$49.77
2038	\$131.17	\$53.16	14.80%	\$19.41	\$9.20	\$61.02	\$51.82
2039	\$134.17	\$55.87	14.80%	\$19.85	\$9.41	\$63.91	\$54.50
2040	\$137.23	\$57.02	14.80%	\$20.30	\$9.63	\$65.25	\$55.62
2041	\$140.36	\$58.32	14.80%	\$20.77	\$9.85	\$66.74	\$56.89
2042	\$143.56	\$59.66	14.80%	\$21.24	\$10.07	\$68.27	\$58.20

- (1) The avoided cost price is reduced by a solar integration charge from Table 11 for solar QF resources located in PacifiCorp's Balancing Area Authority (BAA) (in-system).  
If QF solar resource is not in PacifiCorp's BAA, prices will be increased by the integration charge from Table 11.
- (2) Solar Integration Cost from Table 11

Columns

- (a) Full fixed cost of a proxy CCCT less capitalized energy  
(b) Fuel and Capitalized Energy Cost of the Proxy CCCT  
(c) Peak Capacity Contribution values for renewables (% of nameplate capacity)  
Tracking Solar Capacity Contribution 14.8% Seasonal weighting of values from Table 14  
(e) 43.0% is the on-peak capacity factor of the Tracking Solar QF Resource  
56% is the percent of all hours that are on-peak  
(f) 2020-2025 On-Peak Blended Market Prices for QF resource  
(g) 2020-2025 Off-Peak Blended Market Prices for QF resource

**Exhibit 5**

**Renewable Standard Avoided Cost Prices for Base Load QF  
\$/MWH**

Year	Renewable Wind Avoided Resource		Renewable Base Load QF Resource				
	On-Peak	Off-Peak	Avoided Firm Capacity Costs	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	(\$/MWh)	(\$/MWh)	\$/kW-yr	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
				(c) x 86%	(d) *1000 / (100.0%x 8760 x 56%)	= (a) + (e) + Int	= (b) + Int

Year	Market Based Prices					On-Peak	Off-Peak
	2020 through 2023						
2020						\$25.79	\$19.23
2021						\$31.13	\$22.30
2022						\$31.52	\$22.59
2023						\$32.44	\$22.39
2024	\$24.61	\$16.50	\$95.66	\$81.82	\$16.66	\$41.62	\$16.85
2025	\$25.25	\$16.85	\$97.84	\$83.68	\$17.04	\$42.90	\$17.46
2026	\$26.01	\$16.98	\$100.07	\$85.59	\$17.43	\$43.89	\$17.43
2027	\$26.80	\$17.13	\$102.36	\$87.55	\$17.83	\$45.32	\$17.82
2028	\$27.21	\$17.82	\$104.70	\$89.55	\$18.24	\$46.38	\$18.75
2029	\$27.91	\$18.04	\$107.09	\$91.59	\$18.66	\$47.86	\$19.33
2030	\$28.65	\$18.24	\$109.53	\$93.68	\$19.08	\$49.34	\$19.85
2031	\$29.32	\$18.75	\$112.03	\$95.82	\$19.52	\$50.47	\$20.38
2032	\$29.64	\$19.64	\$114.58	\$98.00	\$19.96	\$51.34	\$21.38
2033	\$30.04	\$20.46	\$117.19	\$100.23	\$20.41	\$52.24	\$22.25
2034	\$30.51	\$21.25	\$119.86	\$102.51	\$20.88	\$53.14	\$23.00
2035	\$31.01	\$21.89	\$122.60	\$104.86	\$21.36	\$54.09	\$23.61
2036	\$31.74	\$22.36	\$125.39	\$107.24	\$21.84	\$55.16	\$23.94
2037	\$32.37	\$22.99	\$128.25	\$109.69	\$22.34	\$56.33	\$24.61
2038	\$33.01	\$23.66	\$131.17	\$112.19	\$22.85	\$57.52	\$25.32
2039	\$33.78	\$24.20	\$134.17	\$114.75	\$23.37	\$58.85	\$25.90
2040	\$34.63	\$24.70	\$137.23	\$117.37	\$23.91	\$60.28	\$26.44
2041	\$35.41	\$25.26	\$140.36	\$120.05	\$24.45	\$61.64	\$27.04
2042	\$36.22	\$25.83	\$143.56	\$122.78	\$25.01	\$63.05	\$27.65

**Exhibit 6**  
**Renewable Standard Avoided Cost Prices for Wind QF (1)**  
**\$/MWH**

Year	Renewable Wind Avoided Resource		Wind QF Resource			Wind QF Resource	
	On-Peak	Off-Peak	Avoided Firm Capacity Costs	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	(\$/MWh)	(\$/MWh)	\$/kW-yr	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
			(c) x 40%	(d) * 1000 / (37.2% x 8760 x 56%)		= (a) + (e) + Int	= (b) + Int

Year	Market Based Prices					On-Peak	Off-Peak
	2020 through 2023 less Wind Integration (2)						
2020						\$25.40	\$18.84
2021						\$30.94	\$22.11
2022						\$31.25	\$22.32
2023						\$32.15	\$22.10
2024	\$24.61	\$16.50	\$95.66	\$38.33	\$21.01	\$45.62	\$16.50
2025	\$25.25	\$16.85	\$97.84	\$39.20	\$21.49	\$46.74	\$16.85
2026	\$26.01	\$16.98	\$100.07	\$40.10	\$21.98	\$47.99	\$16.98
2027	\$26.80	\$17.13	\$102.36	\$41.02	\$22.48	\$49.28	\$17.13
2028	\$27.21	\$17.82	\$104.70	\$41.95	\$22.99	\$50.20	\$17.82
2029	\$27.91	\$18.04	\$107.09	\$42.91	\$23.52	\$51.43	\$18.04
2030	\$28.65	\$18.24	\$109.53	\$43.89	\$24.05	\$52.70	\$18.24
2031	\$29.32	\$18.75	\$112.03	\$44.89	\$24.60	\$53.92	\$18.75
2032	\$29.64	\$19.64	\$114.58	\$45.91	\$25.16	\$54.80	\$19.64
2033	\$30.04	\$20.46	\$117.19	\$46.96	\$25.74	\$55.78	\$20.46
2034	\$30.51	\$21.25	\$119.86	\$48.03	\$26.32	\$56.83	\$21.25
2035	\$31.01	\$21.89	\$122.60	\$49.13	\$26.92	\$57.93	\$21.89
2036	\$31.74	\$22.36	\$125.39	\$50.24	\$27.54	\$59.28	\$22.36
2037	\$32.37	\$22.99	\$128.25	\$51.39	\$28.16	\$60.53	\$22.99
2038	\$33.01	\$23.66	\$131.17	\$52.56	\$28.81	\$61.82	\$23.66
2039	\$33.78	\$24.20	\$134.17	\$53.76	\$29.46	\$63.24	\$24.20
2040	\$34.63	\$24.70	\$137.23	\$54.99	\$30.14	\$64.77	\$24.70
2041	\$35.41	\$25.26	\$140.36	\$56.24	\$30.82	\$66.23	\$25.26
2042	\$36.22	\$25.83	\$143.56	\$57.53	\$31.53	\$67.75	\$25.83

- (1) If wind QF is not in PacifiCorp's BAA, prices in all years will be increased by the wind integration charge from Table 11.  
(2) Wind Integration Cost from Table 11

Columns

- (a) Table 13 Column (d)  
(b) Table 13 Column (e)  
(c) Full fixed cost of a proxy CCCT less Capitalized Energy Cost  
(d) Column (c) multiplied by difference in capacity contribution relative to renewable proxy wind resource  
(e) 37.2% is the on-peak capacity factor of the Wind QF resource  
56% is the percent of all hours that are on-peak  
(f) 2020-2023 On-Peak Blended Market Prices for QF resource  
(g) 2020-2023 Off-Peak Blended Market Prices for QF resource

**Exhibit 7**

**Renewable Standard Avoided Cost Prices for Fixed Solar QF (1)  
\$/MWH**

Year	Renewable Wind Avoided Resource		Fixed Solar QF Resource			Fixed Solar QF	
	On-Peak	Off-Peak	Avoided Firm Capacity Costs	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	(\$/MWh)	(\$/MWh)	\$/kW-yr	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
				(c) x -3.4%	(d) *1000 / (37.3%x 8760 x 56%)	= (a) + (e) + Int	= (b) + Int
2020	Market Based Prices					\$25.48	\$18.92
2021	2020 through 2023					\$30.98	\$22.15
2022	less Solar Integration (2)					\$31.30	\$22.37
2023						\$32.20	\$22.15
2024	\$24.61	\$16.50	\$95.66	(\$3.29)	(\$1.79)	\$22.88	\$16.56
2025	\$25.25	\$16.85	\$97.84	(\$3.36)	(\$1.83)	\$23.53	\$16.96
2026	\$26.01	\$16.98	\$100.07	(\$3.44)	(\$1.88)	\$24.21	\$17.06
2027	\$26.80	\$17.13	\$102.36	(\$3.52)	(\$1.92)	\$25.01	\$17.26
2028	\$27.21	\$17.82	\$104.70	(\$3.60)	(\$1.96)	\$25.42	\$17.99
2029	\$27.91	\$18.04	\$107.09	(\$3.68)	(\$2.01)	\$26.14	\$18.28
2030	\$28.65	\$18.24	\$109.53	(\$3.76)	(\$2.05)	\$26.90	\$18.54
2031	\$29.32	\$18.75	\$112.03	(\$3.85)	(\$2.10)	\$27.53	\$19.06
2032	\$29.64	\$19.64	\$114.58	(\$3.94)	(\$2.15)	\$27.81	\$19.96
2033	\$30.04	\$20.46	\$117.19	(\$4.02)	(\$2.20)	\$28.18	\$20.80
2034	\$30.51	\$21.25	\$119.86	(\$4.12)	(\$2.25)	\$28.59	\$21.58
2035	\$31.01	\$21.89	\$122.60	(\$4.21)	(\$2.30)	\$29.03	\$22.21
2036	\$31.74	\$22.36	\$125.39	(\$4.31)	(\$2.35)	\$29.69	\$22.66
2037	\$32.37	\$22.99	\$128.25	(\$4.40)	(\$2.40)	\$30.28	\$23.30
2038	\$33.01	\$23.66	\$131.17	(\$4.50)	(\$2.46)	\$30.87	\$23.98
2039	\$33.78	\$24.20	\$134.17	(\$4.61)	(\$2.52)	\$31.59	\$24.53
2040	\$34.63	\$24.70	\$137.23	(\$4.71)	(\$2.57)	\$32.40	\$25.04
2041	\$35.41	\$25.26	\$140.36	(\$4.82)	(\$2.63)	\$33.13	\$25.61
2042	\$36.22	\$25.83	\$143.56	(\$4.93)	(\$2.69)	\$33.89	\$26.19

- (1) If solar QF is not in PacifiCorp's BAA, prices in all years will be increased by the solar integration charge from Table 11.
- (2) Solar Integration Cost from Table 11

Columns

- (a) Table 13 Column (d)
- (b) Table 13 Column (e)
- (c) Full fixed cost of a proxy CCCT less Capitalized Energy Cost
- (d) Column (c) multiplied by difference in capacity contribution relative to renewable proxy wind resource
- (e) 37.3% is the on-peak capacity factor of the Fixed Solar QF resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2023 On-Peak Blended Market Prices for QF resource
- (g) 2020-2023 Off-Peak Blended Market Prices for QF resource
- Int During the deficiency period, the stated avoided cost prices reflect the difference in integration costs for the avoided wind proxy and a solar QF in PacifiCorp's Balancing Area Authority (BAA).  
During the sufficiency period, the stated avoided cost prices are reduced by the integration charge from Table 11 applicable to solar QF resources located in PacifiCorp's BAA (in-system).



**Exhibit 8**

**Renewable Standard Avoided Cost Prices for Tracking Solar QF (1)  
\$/MWH**

Year	Renewable Wind Avoided Resource		Tracking Solar QF Resource			Tracking Solar QF	
	On-Peak	Off-Peak	Avoided Firm Capacity Costs	QF Capacity Adder	Capacity Adder Allocated to On-Peak Hours	On-Peak	Off-Peak
	(\$/MWh)	(\$/MWh)	\$/kW-yr	(\$/kW-yr)	(\$/MWh)	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d) (c) x 0.3%	(e) (d) *1000 / (43.0% x 8760 x 56%)	(f) = (a) + (e) + Int	(g) = (b) + Int
2020	Market Based Prices					\$25.48	\$18.92
2021	2020 through 2023					\$30.98	\$22.15
2022	less Solar Integration (2)					\$31.30	\$22.37
2023						\$32.20	\$22.15
2024	\$24.61	\$16.50	\$95.66	\$0.31	\$0.15	\$24.82	\$16.56
2025	\$25.25	\$16.85	\$97.84	\$0.32	\$0.15	\$25.51	\$16.96
2026	\$26.01	\$16.98	\$100.07	\$0.32	\$0.15	\$26.24	\$17.06
2027	\$26.80	\$17.13	\$102.36	\$0.33	\$0.16	\$27.09	\$17.26
2028	\$27.21	\$17.82	\$104.70	\$0.34	\$0.16	\$27.54	\$17.99
2029	\$27.91	\$18.04	\$107.09	\$0.35	\$0.16	\$28.31	\$18.28
2030	\$28.65	\$18.24	\$109.53	\$0.36	\$0.17	\$29.12	\$18.54
2031	\$29.32	\$18.75	\$112.03	\$0.36	\$0.17	\$29.80	\$19.06
2032	\$29.64	\$19.64	\$114.58	\$0.37	\$0.18	\$30.14	\$19.96
2033	\$30.04	\$20.46	\$117.19	\$0.38	\$0.18	\$30.56	\$20.80
2034	\$30.51	\$21.25	\$119.86	\$0.39	\$0.18	\$31.02	\$21.58
2035	\$31.01	\$21.89	\$122.60	\$0.40	\$0.19	\$31.52	\$22.21
2036	\$31.74	\$22.36	\$125.39	\$0.41	\$0.19	\$32.23	\$22.66
2037	\$32.37	\$22.99	\$128.25	\$0.42	\$0.20	\$32.88	\$23.30
2038	\$33.01	\$23.66	\$131.17	\$0.43	\$0.20	\$33.53	\$23.98
2039	\$33.78	\$24.20	\$134.17	\$0.44	\$0.21	\$34.32	\$24.53
2040	\$34.63	\$24.70	\$137.23	\$0.45	\$0.21	\$35.18	\$25.04
2041	\$35.41	\$25.26	\$140.36	\$0.46	\$0.22	\$35.98	\$25.61
2042	\$36.22	\$25.83	\$143.56	\$0.47	\$0.22	\$36.80	\$26.19

(1) If solar QF is not in PacifiCorp's BAA, prices in all years will be increased by the solar integration charge from Table 11.

(2) Solar Integration Cost from Table 11

**Columns**

- (a) Table 13 Column (d)
- (b) Table 13 Column (e)
- (c) Full fixed cost of a proxy CCCT less Capitalized Energy Cost
- (d) Column (c) multiplied by difference in capacity contribution relative to renewable proxy wind resource
- (e) 43.0% is the on-peak capacity factor of the Tracking Solar QF Resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2023 On-Peak Blended Market Prices for QF resource
- (g) 2020-2023 Off-Peak Blended Market Prices for QF resource
- Int During the deficiency period, the stated avoided cost prices reflect the difference in integration costs for the avoided wind proxy and a solar QF in PacifiCorp's Balancing Area Authority (BAA).  
During the sufficiency period, the stated avoided cost prices are reduced by the integration charge from Table 11 applicable to solar QF resources located in PacifiCorp's BAA (in-system).

**Exhibit 9**  
**Market Price - Blending Matrix (1)**

Period	On-Peak				Off-Peak			
	COB	Mid Columbia	Palo Verde	Total	COB	Mid Columbia	Palo Verde	Total
1/1/2020	0.0%	68.2%	31.8%	100.0%	0.0%	82.4%	17.6%	100.0%
2/1/2020	7.6%	74.2%	18.1%	100.0%	6.5%	92.5%	1.0%	100.0%
3/1/2020	0.0%	74.3%	25.7%	100.0%	4.9%	92.6%	2.5%	100.0%
4/1/2020	2.8%	77.9%	19.3%	100.0%	1.7%	65.3%	33.0%	100.0%
5/1/2020	56.7%	26.3%	17.0%	100.0%	60.5%	39.5%	0.0%	100.0%
6/1/2020	35.4%	64.6%	0.0%	100.0%	62.2%	37.8%	0.0%	100.0%
7/1/2020	19.3%	71.6%	9.0%	100.0%	14.6%	84.0%	1.4%	100.0%
8/1/2020	15.0%	81.9%	3.1%	100.0%	4.5%	86.5%	9.0%	100.0%
9/1/2020	10.0%	89.6%	0.5%	100.0%	0.0%	35.0%	65.0%	100.0%
10/1/2020	0.0%	50.9%	49.1%	100.0%	0.0%	0.0%	100.0%	100.0%
11/1/2020	0.0%	4.0%	96.0%	100.0%	0.0%	0.0%	100.0%	100.0%
12/1/2020	0.0%	44.9%	55.1%	100.0%	0.0%	0.0%	100.0%	100.0%
1/1/2021	0.0%	68.0%	32.0%	100.0%	0.0%	27.4%	72.6%	100.0%
2/1/2021	0.0%	43.0%	57.0%	100.0%	0.0%	0.0%	100.0%	100.0%
3/1/2021	0.0%	26.6%	73.4%	100.0%	6.0%	77.0%	17.0%	100.0%
4/1/2021	5.5%	51.6%	43.0%	100.0%	0.0%	94.4%	5.6%	100.0%
5/1/2021	0.0%	73.1%	26.9%	100.0%	33.3%	66.7%	0.0%	100.0%
6/1/2021	7.2%	92.8%	0.0%	100.0%	63.1%	36.9%	0.0%	100.0%
7/1/2021	10.7%	83.6%	5.7%	100.0%	4.7%	95.3%	0.0%	100.0%
8/1/2021	7.9%	89.5%	2.6%	100.0%	0.0%	93.7%	6.3%	100.0%
9/1/2021	5.2%	82.8%	12.0%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2021	0.0%	8.4%	91.6%	100.0%	0.0%	0.0%	100.0%	100.0%
11/1/2021	0.0%	5.2%	94.8%	100.0%	0.0%	0.0%	100.0%	100.0%
12/1/2021	0.0%	58.1%	41.9%	100.0%	0.0%	18.0%	82.0%	100.0%
1/1/2022	0.0%	75.1%	24.9%	100.0%	0.0%	31.3%	68.7%	100.0%
2/1/2022	0.0%	51.6%	48.4%	100.0%	0.0%	0.9%	99.1%	100.0%
3/1/2022	0.0%	22.3%	77.7%	100.0%	2.8%	77.4%	19.8%	100.0%
4/1/2022	0.9%	50.3%	48.8%	100.0%	0.0%	90.6%	9.4%	100.0%
5/1/2022	0.0%	75.8%	24.2%	100.0%	33.0%	66.9%	0.1%	100.0%
6/1/2022	2.8%	97.2%	0.0%	100.0%	37.9%	62.1%	0.0%	100.0%
7/1/2022	7.6%	86.4%	6.0%	100.0%	14.3%	85.7%	0.0%	100.0%
8/1/2022	7.0%	88.0%	5.0%	100.0%	0.0%	87.3%	12.7%	100.0%
9/1/2022	6.5%	80.4%	13.1%	100.0%	0.0%	25.6%	74.4%	100.0%
10/1/2022	0.0%	9.1%	90.9%	100.0%	0.0%	0.0%	100.0%	100.0%
11/1/2022	0.0%	6.7%	93.3%	100.0%	0.0%	0.0%	100.0%	100.0%
12/1/2022	0.0%	56.3%	43.7%	100.0%	0.0%	5.9%	94.1%	100.0%
1/1/2023	0.0%	89.7%	10.3%	100.0%	0.0%	47.8%	52.2%	100.0%
2/1/2023	0.0%	58.8%	41.2%	100.0%	0.0%	29.8%	70.2%	100.0%
3/1/2023	0.8%	44.9%	54.3%	100.0%	1.9%	85.5%	12.6%	100.0%
4/1/2023	0.0%	38.1%	61.9%	100.0%	0.0%	23.3%	76.7%	100.0%
5/1/2023	8.8%	72.2%	19.0%	100.0%	36.9%	63.1%	0.0%	100.0%
6/1/2023	2.9%	97.1%	0.0%	100.0%	5.9%	94.1%	0.0%	100.0%
7/1/2023	14.2%	78.3%	7.5%	100.0%	0.0%	100.0%	0.0%	100.0%
8/1/2023	5.2%	89.5%	5.4%	100.0%	0.0%	100.0%	0.0%	100.0%
9/1/2023	6.7%	69.2%	24.0%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2023	0.0%	18.6%	81.4%	100.0%	0.0%	0.0%	100.0%	100.0%
11/1/2023	0.0%	7.8%	92.2%	100.0%	0.0%	0.0%	100.0%	100.0%
12/1/2023	0.0%	55.5%	44.5%	100.0%	0.0%	5.5%	94.5%	100.0%
1/1/2024	0.0%	87.3%	12.7%	100.0%	0.0%	0.0%	100.0%	100.0%
2/1/2024	15.2%	48.6%	36.2%	100.0%	7.0%	62.1%	30.9%	100.0%
3/1/2024	0.0%	39.1%	60.9%	100.0%	1.1%	87.3%	11.5%	100.0%
4/1/2024	0.0%	29.7%	70.3%	100.0%	0.0%	91.7%	8.3%	100.0%
5/1/2024	46.4%	53.6%	0.0%	100.0%	52.7%	47.3%	0.0%	100.0%
6/1/2024	51.9%	34.0%	14.2%	100.0%	8.8%	91.2%	0.0%	100.0%
7/1/2024	3.8%	89.8%	6.4%	100.0%	34.6%	65.4%	0.0%	100.0%
8/1/2024	2.2%	94.4%	3.4%	100.0%	17.8%	82.2%	0.0%	100.0%
9/1/2024	2.3%	74.5%	23.2%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2024	0.0%	78.2%	21.8%	100.0%	0.0%	0.0%	100.0%	100.0%
11/1/2024	0.0%	39.8%	60.2%	100.0%	13.6%	42.8%	43.6%	100.0%
12/1/2024	0.0%	63.1%	36.9%	100.0%	0.0%	55.7%	44.3%	100.0%
1/1/2025	0.0%	84.8%	15.2%	100.0%	0.0%	0.0%	100.0%	100.0%
2/1/2025	52.2%	4.2%	43.6%	100.0%	39.7%	60.3%	0.0%	100.0%
3/1/2025	24.1%	30.7%	45.1%	100.0%	6.7%	93.3%	0.0%	100.0%
4/1/2025	10.3%	25.6%	64.2%	100.0%	24.8%	75.2%	0.0%	100.0%
5/1/2025	61.1%	38.9%	0.0%	100.0%	46.0%	54.0%	0.0%	100.0%
6/1/2025	72.2%	27.8%	0.0%	100.0%	9.7%	90.3%	0.0%	100.0%
7/1/2025	36.2%	59.1%	4.7%	100.0%	50.1%	49.9%	0.0%	100.0%
8/1/2025	7.5%	89.6%	2.9%	100.0%	4.1%	95.9%	0.0%	100.0%
9/1/2025	52.8%	18.1%	29.1%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2025	0.0%	61.8%	38.2%	100.0%	0.0%	100.0%	0.0%	100.0%
11/1/2025	0.0%	45.7%	54.3%	100.0%	0.0%	100.0%	0.0%	100.0%
12/1/2025	0.0%	83.1%	16.9%	100.0%	7.0%	34.9%	58.1%	100.0%
1/1/2026	0.0%	54.6%	45.4%	100.0%	0.0%	32.7%	67.3%	100.0%
2/1/2026	30.9%	15.8%	53.3%	100.0%	16.8%	39.2%	43.9%	100.0%
3/1/2026	25.8%	28.3%	45.9%	100.0%	12.0%	79.4%	8.6%	100.0%
4/1/2026	18.1%	29.8%	52.1%	100.0%	19.9%	80.1%	0.0%	100.0%
5/1/2026	65.5%	34.5%	0.0%	100.0%	41.2%	58.8%	0.0%	100.0%
6/1/2026	55.4%	44.6%	0.0%	100.0%	2.8%	97.2%	0.0%	100.0%
7/1/2026	8.4%	83.6%	8.0%	100.0%	38.5%	61.5%	0.0%	100.0%
8/1/2026	8.6%	89.5%	1.9%	100.0%	13.8%	86.2%	0.0%	100.0%
9/1/2026	9.6%	82.3%	8.1%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2026	0.0%	62.9%	37.1%	100.0%	35.9%	0.0%	64.1%	100.0%
11/1/2026	0.0%	59.8%	40.2%	100.0%	50.0%	50.0%	0.0%	100.0%
12/1/2026	0.0%	75.2%	24.8%	100.0%	0.0%	34.9%	65.1%	100.0%
1/1/2027	0.0%	67.9%	32.1%	100.0%	0.0%	49.3%	50.7%	100.0%
2/1/2027	44.3%	9.4%	46.4%	100.0%	11.8%	82.3%	6.0%	100.0%
3/1/2027	26.3%	29.8%	43.9%	100.0%	12.5%	75.4%	12.2%	100.0%
4/1/2027	12.0%	44.0%	44.0%	100.0%	22.6%	77.4%	0.0%	100.0%
5/1/2027	67.9%	32.1%	0.0%	100.0%	33.5%	66.5%	0.0%	100.0%
6/1/2027	62.8%	37.2%	0.0%	100.0%	5.7%	94.3%	0.0%	100.0%
7/1/2027	13.3%	84.1%	2.6%	100.0%	44.7%	55.3%	0.0%	100.0%
8/1/2027	6.1%	92.6%	1.3%	100.0%	7.7%	92.3%	0.0%	100.0%
9/1/2027	42.9%	45.4%	11.7%	100.0%	0.0%	100.0%	0.0%	100.0%
10/1/2027	13.1%	52.3%	34.6%	100.0%	80.0%	20.0%	0.0%	100.0%
11/1/2027	0.0%	57.2%	42.8%	100.0%	55.6%	0.0%	44.4%	100.0%
12/1/2027	0.0%	70.7%	29.3%	100.0%	0.0%	50.0%	50.0%	100.0%
1/1/2028	3.3%	70.3%	26.4%	100.0%	16.4%	71.8%	11.8%	100.0%
2/1/2028	13.9%	52.3%	33.8%	100.0%	26.8%	65.1%	8.1%	100.0%
3/1/2028	25.8%	51.5%	22.7%	100.0%	25.1%	63.8%	11.1%	100.0%
4/1/2028	24.0%	60.6%	15.5%	100.0%	28.0%	72.0%	0.0%	100.0%
5/1/2028	41.4%	58.6%	0.0%	100.0%	27.9%	72.1%	0.0%	100.0%
6/1/2028	43.7%	56.3%	0.0%	100.0%	15.3%	84.7%	0.0%	100.0%
7/1/2028	25.6%	65.3%	9.1%	100.0%	18.2%	79.7%	2.1%	100.0%
8/1/2028	27.4%	68.2%	4.4%	100.0%	5.7%	94.3%	0.0%	100.0%
9/1/2028	12.1%	71.3%	16.6%	100.0%	51.7%	48.3%	0.0%	100.0%
10/1/2028	10.7%	58.2%	31.1%	100.0%	34.6%	59.7%	5.7%	100.0%
11/1/2028	3.6%	68.0%	28.4%	100.0%	61.3%	38.7%	0.0%	100.0%
12/1/2028	1.5%	60.2%	38.3%	100.0%	20.9%	65.9%	13.2%	100.0%
1/1/2029	2.8%	87.5%	9.7%	100.0%	26.3%	67.8%	5.9%	100.0%
2/1/2029	20.7%	49.9%	29.4%	100.0%	14.4%	85.3%	0.3%	100.0%
3/1/2029	31.0%	45.4%	23.7%	100.0%	28.9%	59.4%	11.6%	100.0%
4/1/2029	24.1%	57.4%	18.5%	100.0%	26.8%	73.2%	0.0%	100.0%
5/1/2029	59.2%	40.8%	0.0%	100.0%	26.6%	73.4%	0.0%	100.0%
6/1/2029	60.3%	39.7%	0.0%	100.0%	36.1%	63.9%	0.0%	100.0%
7/1/2029	17.1%	75.2%	7.7%	100.0%	16.6%	82.2%	1.2%	100.0%
8/1/2029	20.0%	73.4%	6.6%	100.0%	16.0%	84.0%	0.0%	100.0%
9/1/2029	6.8%	76.4%	16.8%	100.0%	43.1%	56.9%	0.0%	100.0%
10/1/2029	10.0%	63.2%	26.8%	100.0%	29.7%	68.7%	1.6%	100.0%
11/1/2029	12.6%	76.4%	10.9%	100.0%	26.3%	68.1%	5.5%	100.0%
12/1/2029	0.1%	60.3%	39.6%	100.0%	28.8%	67.2%	4.0%	100.0%

(1) Blending weights are calculated using system balancing purchases and sales from GRID run using March 2020 Official Forward Price Curve

**Table 1**  
**2019 IRP Preferred Portfolio**

Resource	Capacity (MW)																				Resource Totals 1/			
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-year	20-year		
<b>East</b>																								
<b>Expansion Resources</b>																								
CCCT - DJohns - J 1x1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505	-	-	505	
<b>Total CCCT</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	505	-	-	505	
SCCT Frame NTN	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	-	-	-	185	555
SCCT Frame WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	-	-	370	
<b>Total SCCT</b>	-	-	-	-	-	-	-	185	-	-	-	370	-	-	-	-	-	-	-	370	-	-	185	925
Wind, GO	-	-	-	-	-	-	-	-	-	-	-	1,040	-	-	-	-	-	-	-	-	-	-	-	1,040
Wind, UT	-	-	-	-	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	69
Wind, WYAE	-	-	-	-	-	1,920	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,920	1,920
Wind+Storage, GO	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	60
<b>Total Wind</b>	-	-	-	-	69	1,920	-	-	-	-	-	1,040	-	60	-	-	-	-	-	-	-	-	1,989	3,089
Utility Solar+Storage - PV - Utah-S	-	-	-	-	-	231	-	-	-	-	-	500	-	-	-	-	-	-	-	-	-	231	731	
Utility Solar+Storage - PV - Huntington	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	909	-	-	909	
Utility Solar+Storage - PV - Utah-N	-	-	159	64	3	674	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	900	
<b>Total Solar</b>	-	-	159	64	3	904	-	-	-	-	-	500	-	-	-	-	-	-	-	909	-	-	1,131	2,540
<b>Demand Response Total</b>	4.1	-	7.0	-	18.1	-	8.2	7.2	-	-	123.3	8.2	-	12.0	-	-	15.3	3.7	10.5	136.5	44.6	354.1		
<b>Energy Efficiency Total</b>	74	83	85	88	92	92	91	90	90	87	80	77	72	70	65	49	45	35	30	32	870	1,423		
Battery Storage - Utah-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	195	-	195.0	
Battery Storage - WYSW	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.0	-	15.0	
Battery Storage - Idaho	-	-	-	-	-	-	-	-	-	-	-	-	30.0	-	-	-	-	-	-	-	150.0	-	180.0	
FOT East - Summer	-	-	-	-	-	-	-	-	-	88	300	199	174	206	298	300	300	300	300	300	300	9	138	
<b>West</b>																								
<b>Expansion Resources</b>																								
SCCT Frame WV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	443	
<b>Total SCCT</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	443	
Wind+Storage, YK	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	11	-	-	20	
<b>Total Wind</b>	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	11	-	-	20	
Utility Solar+Storage - PV - Jbridger	-	-	-	-	-	354	-	-	-	-	359	-	-	-	-	-	-	-	-	-	702	354	1,415	
Utility Solar+Storage - PV - S-Oregon	-	-	-	-	-	500	-	-	-	-	-	-	-	-	475	-	-	-	-	-	-	500	975	
Utility Solar+Storage - PV - Yakima	-	-	-	-	-	395	-	-	-	-	-	-	-	-	-	-	-	419	-	-	-	395	815	
<b>Total Solar</b>	-	-	-	-	-	1,249	-	-	-	-	359	-	-	-	475	-	-	419	-	702	1,249	3,205		
<b>Demand Response Total</b>	-	-	-	-	-	-	-	-	-	-	9.4	-	-	-	-	-	-	-	-	48.8	32.1	-	90.2	
<b>Energy Efficiency Total</b>	52	49	48	55	55	59	56	54	54	51	46	43	42	40	35	33	33	30	29	28	533	892		
Battery Storage - S-Oregon	-	-	-	-	-	-	-	-	-	-	210	-	-	60	-	-	-	-	-	-	180	-	450	
Battery Storage - Willamette Valley	-	-	-	-	-	-	-	-	-	75	45	-	-	-	-	-	-	-	-	-	-	75	120	
Battery Storage - Portland NC	-	-	-	-	-	-	-	-	-	105	-	-	-	-	-	-	-	-	-	-	-	-	105	
Battery Storage - Walla Walla	-	-	-	-	-	-	-	-	-	75	-	-	60	-	-	-	-	-	-	-	60	-	195	
Battery Storage - Yakima	-	-	-	-	-	-	-	-	-	105	-	-	-	-	-	-	-	-	-	-	-	105	105	
FOT West - Summer	998	719	493	503	498	131	126	191	264	1,075	1,075	1,075	1,075	1,075	1,075	1,075	1,074	977	1,074	1,075	500	782		
FOT West - Winter	151	131	268	303	314	44	51	53	100	232	222	173	192	128	63	-	35	-	-	-	-	165	123	
Existing Plant Retirements/Conversions	-	(61)	(573)	(224)	(1)	(412)	-	(505)	(85)	(912)	(449)	(396)	(350)	(114)	(557)	(156)	(36)	(280)	(2,260)	(745)				
Annual Additions, Long Term Resources	130	132	299	206	237	4,225	155	336	143	318	1,063	2,038	144	303	574	82	93	488	2,355	1,530				
Annual Additions, Short Term Resources	1,149	850	761	806	812	175	177	244	364	1,394	1,597	1,447	1,441	1,409	1,435	1,375	1,410	1,277	1,374	1,375				
<b>Total Annual Additions</b>	1,279	982	1,060	1,012	1,049	4,400	333	580	507	1,712	2,661	3,485	1,584	1,712	2,010	1,457	1,503	1,765	3,729	2,905				

**Table 2**  
**Avoided Costs (\$/MWh)**  
**Energy Prices**

Year	Winter Season					Summer Season				Winter Season		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>On-Peak (HLH Market Purchase)</b>												
2020	22.54	17.84	23.78	18.04	14.47	15.79	35.91	42.54	32.31	26.56	26.00	33.71
2021	35.52	30.64	22.20	19.25	18.21	17.67	45.81	50.47	45.32	25.63	25.93	36.95
2022	36.66	31.40	24.84	20.17	19.66	19.92	46.43	50.93	46.51	24.63	24.53	32.51
2023	36.86	31.81	25.80	22.25	19.84	21.78	47.30	52.05	40.63	29.32	28.24	33.39
2024	34.98	32.89	26.98	24.07	18.35	25.31	47.26	53.02	34.43	35.40	31.72	34.55
2025	33.28	32.98	27.79	25.98	19.56	25.57	51.23	55.61	34.80	33.51	32.70	36.19
2026	35.23	35.25	29.99	28.41	19.81	27.67	61.36	60.48	37.34	35.65	34.95	38.51
2027	36.53	36.96	30.54	28.94	21.18	30.23	72.80	76.60	40.87	40.63	37.09	41.50
2028	39.51	39.40	31.35	27.45	22.86	33.99	76.99	79.03	42.06	40.65	40.08	45.10
2029	43.77	42.90	33.62	31.84	23.96	30.81	78.67	103.58	46.56	43.05	39.88	47.22
2030	47.60	45.72	35.67	32.28	24.95	33.26	92.67	106.19	51.38	50.88	42.92	50.38
2031	48.66	48.01	37.02	34.54	25.43	36.95	101.53	104.65	53.48	48.27	45.77	54.89
2032	50.95	49.73	38.84	37.78	26.65	39.18	89.61	97.52	53.28	49.61	49.06	55.70
2033	50.66	50.04	38.17	34.36	27.32	40.68	86.54	91.76	53.13	58.57	51.45	58.45
2034	53.28	52.21	39.70	35.05	28.91	41.47	86.48	89.48	53.65	53.84	53.77	61.04
2035	58.03	56.73	41.06	37.50	30.01	38.57	82.36	102.67	58.19	55.33	51.36	61.71
2036	59.94	58.36	41.12	37.04	29.45	40.86	88.00	94.25	60.95	65.57	53.22	66.65
2037	63.09	62.23	44.62	40.14	31.37	44.50	92.05	99.60	67.58	62.04	58.45	70.51
2038	64.28	64.55	45.76	43.49	33.30	48.18	94.85	104.33	68.81	65.23	61.58	75.60
2039	67.60	67.01	48.38	42.48	36.25	51.55	99.87	107.77	71.91	76.97	66.38	78.67
2040	69.31	68.48	48.59	43.95	38.29	54.09	108.03	108.59	70.80	72.54	69.14	82.49
<b>Off-Peak (LLH Market Purchase)</b>												
2020	21.38	14.61	21.09	16.80	7.66	7.98	18.55	24.87	25.30	22.11	22.19	28.17
2021	30.03	25.98	19.79	15.70	12.06	10.82	21.64	25.73	24.79	24.61	24.22	32.17
2022	29.67	27.68	24.10	16.39	12.93	11.55	24.24	27.52	26.81	23.00	22.75	24.40
2023	25.47	23.03	21.47	17.82	13.46	13.25	21.53	26.27	26.44	26.39	26.08	27.48
2024	27.16	25.91	21.28	18.89	13.85	16.16	19.61	25.21	25.86	29.78	26.13	28.56
2025	31.29	25.31	20.14	17.01	15.44	18.14	21.01	27.39	26.58	23.38	24.63	30.38
2026	30.87	29.33	21.99	19.30	15.88	18.58	22.13	30.73	28.04	29.32	25.72	32.54
2027	31.42	28.12	23.45	19.88	17.76	20.02	24.96	35.25	31.70	28.55	30.67	33.97
2028	30.77	30.21	25.17	20.75	19.10	21.86	28.53	37.76	33.32	29.96	30.06	34.99
2029	32.79	31.91	27.31	23.74	20.24	22.61	31.04	41.45	38.33	30.90	30.96	36.03
2030	35.87	34.99	29.97	24.23	21.76	24.89	32.18	45.39	40.60	35.51	33.32	38.07
2031	36.05	36.00	29.20	25.67	22.33	25.70	33.84	48.11	41.61	34.50	35.74	40.27
2032	37.51	37.85	32.10	28.54	23.30	26.74	34.33	47.64	40.67	36.08	37.01	41.49
2033	39.80	38.96	31.52	28.70	24.28	27.58	37.18	46.78	41.23	41.55	38.87	43.31
2034	40.44	40.55	33.77	29.39	25.42	29.01	38.33	46.97	42.15	39.63	40.69	46.20
2035	42.63	43.20	36.49	32.33	26.32	29.79	39.48	50.94	45.82	40.73	40.38	46.49
2036	44.56	44.18	35.42	31.47	26.11	30.55	38.88	53.20	46.78	45.64	42.74	48.42
2037	47.15	47.83	39.42	34.24	28.75	33.40	42.38	56.56	50.99	44.93	46.29	51.33
2038	48.90	49.46	42.32	37.94	30.48	35.19	45.43	58.96	53.17	46.96	47.96	53.88
2039	51.63	51.79	44.76	39.21	32.71	37.84	49.10	61.82	55.51	54.20	50.62	55.77
2040	52.68	52.63	45.21	38.59	33.22	38.90	50.96	62.02	56.82	51.49	52.52	59.81

**Combined**

2020	22.04	16.45	22.62	17.50	11.54	12.43	28.44	34.95	29.30	24.65	24.36	31.33
2021	33.16	28.64	21.16	17.72	15.56	14.72	35.42	39.83	36.49	25.19	25.20	34.90
2022	33.66	29.80	24.52	18.54	16.76	16.32	36.89	40.87	38.04	23.93	23.76	29.02
2023	31.96	28.04	23.94	20.35	17.10	18.11	36.22	40.96	34.53	28.06	27.31	30.85
2024	31.62	29.89	24.53	21.84	16.41	21.38	35.37	41.06	30.75	32.98	29.32	31.97
2025	32.43	29.68	24.50	22.12	17.79	22.38	38.24	43.48	31.26	29.15	29.23	33.69
2026	33.36	32.70	26.55	24.49	18.12	23.76	44.49	47.69	33.34	32.93	30.98	35.95
2027	34.33	33.16	27.49	25.04	19.71	25.84	52.23	58.82	36.93	35.44	34.33	38.26
2028	35.75	35.45	28.70	24.57	21.25	28.77	56.15	61.28	38.30	36.05	35.77	40.75
2029	39.05	38.17	30.90	28.36	22.36	27.28	58.19	76.87	43.02	37.82	36.04	42.41
2030	42.56	41.11	33.22	28.82	23.58	29.66	66.66	80.05	46.75	44.27	38.80	45.09
2031	43.24	42.85	33.66	30.73	24.10	32.11	72.42	80.34	48.38	42.35	41.45	48.61
2032	45.17	44.63	35.94	33.81	25.21	33.83	65.84	76.07	47.86	43.79	43.88	49.59
2033	45.99	45.28	35.31	31.93	26.01	35.04	65.32	72.42	48.01	51.25	46.04	51.94
2034	47.76	47.19	37.15	32.62	27.41	36.11	65.78	71.20	48.71	47.73	48.14	54.66
2035	51.41	50.91	39.10	35.28	28.43	34.79	63.92	80.43	52.87	49.05	46.64	55.16
2036	53.33	52.26	38.67	34.64	28.01	36.43	66.88	76.60	54.86	57.00	48.71	58.81
2037	56.23	56.04	42.39	37.60	30.24	39.72	70.69	81.09	60.45	54.68	53.22	62.26
2038	57.67	58.06	44.28	41.10	32.08	42.60	73.60	84.82	62.09	57.38	55.72	66.26
2039	60.74	60.46	46.83	41.07	34.73	45.66	78.04	88.01	64.86	67.18	59.60	68.82
2040	62.16	61.67	47.14	41.64	36.11	47.56	83.49	88.57	64.79	63.49	61.99	72.74

**Annual Average**

	On-Peak	Off-Peak	Combined
2020	\$25.79	\$19.23	\$22.97
2021	\$31.13	\$22.30	\$27.33
2022	\$31.52	\$22.59	\$27.68
2023	\$32.44	\$22.39	\$28.12
2024	\$33.25	\$23.20	\$28.93
2025	\$34.10	\$23.39	\$29.50
2026	\$37.06	\$25.37	\$32.03
2027	\$41.16	\$27.15	\$35.13
2028	\$43.21	\$28.54	\$36.90
2029	\$47.15	\$30.61	\$40.04
2030	\$51.16	\$33.07	\$43.38
2031	\$53.27	\$34.09	\$45.02
2032	\$53.16	\$35.27	\$45.47
2033	\$53.43	\$36.65	\$46.21
2034	\$54.07	\$37.71	\$47.04
2035	\$56.13	\$39.55	\$49.00
2036	\$57.95	\$40.66	\$50.52
2037	\$61.35	\$43.61	\$53.72
2038	\$64.16	\$45.89	\$56.30
2039	\$67.90	\$48.75	\$59.67
2040	\$69.53	\$49.57	\$60.95

Source 2020-2040: Official Market Price Forecast dated March 2020  
 Blended Market Prices: weights are based on system balancing purchases and sales  
 from GRID run using March 2020 Official Forward Price Curve

**Table 3**  
**Capitalized Energy Costs**

Year	Combined Cycle CT Fixed Costs	Simple Cycle CT Fixed Costs	Capitalized Energy Costs	Capitalized Energy Costs 70.5% CF
	(\$/kW-yr)	(\$/kW-yr)	(\$/kW-yr)	(\$/MWh)
	(a)	(b)	(c) ((a) - (b))	(d) (c)/(8.760 x 70.5%)
2026	\$182.91	\$100.07	\$82.84	\$13.41
2027	\$187.11	\$102.36	\$84.75	\$13.72
2028	\$191.40	\$104.70	\$86.70	\$14.04
2029	\$195.77	\$107.09	\$88.68	\$14.36
2030	\$200.23	\$109.53	\$90.70	\$14.69
2031	\$204.79	\$112.03	\$92.76	\$15.02
2032	\$209.45	\$114.58	\$94.87	\$15.36
2033	\$214.20	\$117.19	\$97.01	\$15.71
2034	\$219.05	\$119.86	\$99.19	\$16.06
2035	\$224.06	\$122.60	\$101.46	\$16.43
2036	\$229.19	\$125.39	\$103.80	\$16.81
2037	\$234.43	\$128.25	\$106.18	\$17.19
2038	\$239.76	\$131.17	\$108.59	\$17.58
2039	\$245.21	\$134.17	\$111.04	\$17.98
2040	\$250.77	\$137.23	\$113.54	\$18.38
2041	\$256.52	\$140.36	\$116.16	\$18.81
2042	\$262.38	\$143.56	\$118.82	\$19.24

Columns

- (a) Table 9. Page 2 of 3 Column (f)
- (b) Table 9. Page 1 of 3 Column (f)
- (c) and (d) Capitalized energy costs reflect the incremental fixed cost of CCCT versus a SCCT

**Table 4**  
**Total Standard Avoided Energy Cost**

Year	Combined Cycle		Capitalized Energy Costs 70.5% CF	Total Standard Avoided Energy Cost
	Gas Price	Energy Cost		
	(\$/MMBtu)	(\$/MWh)	(\$/MWh)	(\$/MWh)
	(a)	(b) (a) x 6.790	(c)	(d) (b) + (c)
2026	\$2.60	\$17.65	\$13.41	\$31.07
2027	\$2.80	\$19.01	\$13.72	\$32.73
2028	\$3.05	\$20.71	\$14.04	\$34.75
2029	\$3.30	\$22.41	\$14.36	\$36.77
2030	\$3.55	\$24.10	\$14.69	\$38.79
2031	\$3.72	\$25.26	\$15.02	\$40.28
2032	\$3.89	\$26.41	\$15.36	\$41.77
2033	\$4.06	\$27.57	\$15.71	\$43.28
2034	\$4.28	\$29.06	\$16.06	\$45.12
2035	\$4.49	\$30.49	\$16.43	\$46.92
2036	\$4.66	\$31.64	\$16.81	\$48.45
2037	\$4.99	\$33.88	\$17.19	\$51.08
2038	\$5.24	\$35.58	\$17.58	\$53.16
2039	\$5.58	\$37.89	\$17.98	\$55.87
2040	\$5.69	\$38.64	\$18.38	\$57.02
2041	\$5.82	\$39.52	\$18.81	\$58.32
2042	\$5.95	\$40.42	\$19.24	\$59.66

Columns

- (a) Table 10
- (b) 6.790 MWh/MMBtu Heat Rate - Table 9. Page 3 of 3
- (c) Table 3 Column (d)

**Table 5**  
**Total Standard Avoided Cost**

Year	Avoided Firm Capacity Costs	Total Standard Avoided Energy Cost	Total Standard Avoided Costs At Stated Capacity Factor		
			75%	85%	90%
	(\$/kW-yr)	(\$/MWh)	(\$/MWh)	(\$/MWh)	(\$/MWh)
(a)	(b)	(c)	(d)	(e)	
			(b)+(a) x1000/(8760 x 0.75)	(b)+(a) x1000/(8760 x 0.85)	(b)+(a) x1000/(8760 x 0.9)
2026	\$100.07	\$31.07	\$46.30	\$44.51	\$43.76
2027	\$102.36	\$32.73	\$48.31	\$46.48	\$45.72
2028	\$104.70	\$34.75	\$50.68	\$48.81	\$48.03
2029	\$107.09	\$36.77	\$53.07	\$51.15	\$50.35
2030	\$109.53	\$38.79	\$55.46	\$53.50	\$52.68
2031	\$112.03	\$40.28	\$57.33	\$55.32	\$54.49
2032	\$114.58	\$41.77	\$59.21	\$57.16	\$56.31
2033	\$117.19	\$43.28	\$61.11	\$59.01	\$58.14
2034	\$119.86	\$45.12	\$63.37	\$61.22	\$60.33
2035	\$122.60	\$46.92	\$65.58	\$63.38	\$62.47
2036	\$125.39	\$48.45	\$67.53	\$65.29	\$64.35
2037	\$128.25	\$51.08	\$70.60	\$68.30	\$67.34
2038	\$131.17	\$53.16	\$73.13	\$70.78	\$69.80
2039	\$134.17	\$55.87	\$76.29	\$73.89	\$72.89
2040	\$137.23	\$57.02	\$77.91	\$75.45	\$74.43
2041	\$140.36	\$58.32	\$79.69	\$77.18	\$76.13
2042	\$143.56	\$59.66	\$81.51	\$78.94	\$77.87

Columns

- (a) Table 3 Column (a) minus Column (c)
- (b) Table 4 Column (d)



**Table 6**  
**On- & Off- Peak Energy Prices**

Year	Avoided Firm Capacity Costs	Capacity Cost Allocated to On-Peak Hours	Total Standard Avoided Energy Cost	On-Peak 4,910 Hours	Off-Peak 3,850 Hours
	(\$/kW-yr)	(\$/MWh)	(\$/MWh)	(\$/MWh)	(\$/MWh)
	(a)	(b)	(c)	(d)	(e)
		(a) *1000 / (100.0% x 8760 x 56%)		(b) + (c)	(c)
2026	\$100.07	\$20.38	\$31.07	\$51.45	\$31.07
2027	\$102.36	\$20.85	\$32.73	\$53.58	\$32.73
2028	\$104.70	\$21.32	\$34.75	\$56.07	\$34.75
2029	\$107.09	\$21.81	\$36.77	\$58.58	\$36.77
2030	\$109.53	\$22.31	\$38.79	\$61.10	\$38.79
2031	\$112.03	\$22.82	\$40.28	\$63.10	\$40.28
2032	\$114.58	\$23.34	\$41.77	\$65.11	\$41.77
2033	\$117.19	\$23.87	\$43.28	\$67.14	\$43.28
2034	\$119.86	\$24.41	\$45.12	\$69.53	\$45.12
2035	\$122.60	\$24.97	\$46.92	\$71.89	\$46.92
2036	\$125.39	\$25.54	\$48.45	\$73.99	\$48.45
2037	\$128.25	\$26.12	\$51.08	\$77.20	\$51.08
2038	\$131.17	\$26.72	\$53.16	\$79.88	\$53.16
2039	\$134.17	\$27.33	\$55.87	\$83.20	\$55.87
2040	\$137.23	\$27.95	\$57.02	\$84.97	\$57.02
2041	\$140.36	\$28.59	\$58.32	\$86.91	\$58.32
2042	\$143.56	\$29.24	\$59.66	\$88.90	\$59.66

Columns

- (a) Table 3 Column (a) minus Column (c)
- (b) Table 9. 100.0% is the on-peak capacity factor of the Proxy CCCT Resource
- (d) 56% is the percent of all hours that are on-peak
- (c) Table 4 Column (d)

**Table 3 (Renewable)  
Capitalized Energy Costs**

Year	Combined Cycle CT Fixed Costs	Simple Cycle CT Fixed Costs	Capitalized Energy Costs	Capitalized Energy Costs 70.5% CF
	(\$/kW-yr)	(\$/kW-yr)	(\$/kW-yr)	(\$/MWh)
	(a)	(b)	(c)	(d)
			(a) - (b)	(c)/(8.760 x 70.5%)

2018	\$152.73	\$83.57	\$69.16	\$11.20
2019	\$156.23	\$85.47	\$70.76	\$11.46
2020	\$159.81	\$87.42	\$72.39	\$11.72
2021	\$163.46	\$89.42	\$74.04	\$11.99
2022	\$167.19	\$91.45	\$75.74	\$12.26
2023	\$171.00	\$93.53	\$77.47	\$12.54
2024	\$174.89	\$95.66	\$79.23	\$12.83
2025	\$178.86	\$97.84	\$81.02	\$13.12
2026	\$182.91	\$100.07	\$82.84	\$13.41
2027	\$187.11	\$102.36	\$84.75	\$13.72
2028	\$191.40	\$104.70	\$86.70	\$14.04
2029	\$195.77	\$107.09	\$88.68	\$14.36
2030	\$200.23	\$109.53	\$90.70	\$14.69
2031	\$204.79	\$112.03	\$92.76	\$15.02
2032	\$209.45	\$114.58	\$94.87	\$15.36
2033	\$214.20	\$117.19	\$97.01	\$15.71
2034	\$219.05	\$119.86	\$99.19	\$16.06
2035	\$224.06	\$122.60	\$101.46	\$16.43
2036	\$229.19	\$125.39	\$103.80	\$16.81
2037	\$234.43	\$128.25	\$106.18	\$17.19
2038	\$239.76	\$131.17	\$108.59	\$17.58
2039	\$245.21	\$134.17	\$111.04	\$17.98
2040	\$250.77	\$137.23	\$113.54	\$18.38
2041	\$256.52	\$140.36	\$116.16	\$18.81
2042	\$262.38	\$143.56	\$118.82	\$19.24

Columns

- (a) Table 9, Page 2 of 3 Column (f)
- (b) Table 9, Page 1 of 3 Column (f)
- (c) and (d) Capitalized energy costs reflect the incremental fixed cost of CCCT versus a SCCT

**Table 4 (Renewable)  
Avoided Capacity Costs**

Year	Avoided Firm Capacity Costs
	(\$/kW-yr)
	(a)

2018	\$83.57
2019	\$85.47
2020	\$87.42
2021	\$89.42
2022	\$91.45
2023	\$93.53
2024	\$95.66
2025	\$97.84
2026	\$100.07
2027	\$102.36
2028	\$104.70
2029	\$107.09
2030	\$109.53
2031	\$112.03
2032	\$114.58
2033	\$117.19
2034	\$119.86
2035	\$122.60
2036	\$125.39
2037	\$128.25
2038	\$131.17
2039	\$134.17
2040	\$137.23
2041	\$140.36
2042	\$143.56

Columns

- (a) Table 3 (Renewable) Column (a) minus Column (c)

**Table 7**  
**Comparison between Proposed and Current Standard Fixed Avoided Costs**  
**\$/MWh**

Year	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference
	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	Base Load QF	Base Load QF	Base Load QF	Wind QF (2)	Wind QF (2)	Wind QF (2)	Fixed Solar QF	Fixed Solar QF	Fixed Solar QF	Tracking Solar QF	Tracking Solar QF	Tracking Solar QF
2020	\$22.91	\$22.91	\$0.00	\$22.53	\$22.42	\$0.10	\$24.44	\$24.10	\$0.34	\$24.31	\$24.05	\$0.26
2021	\$27.25	\$27.25	\$0.00	\$27.07	\$26.80	\$0.27	\$29.57	\$29.05	\$0.52	\$29.41	\$29.00	\$0.41
2022	\$27.60	\$27.59	\$0.00	\$27.34	\$27.14	\$0.20	\$29.88	\$29.41	\$0.47	\$29.71	\$29.35	\$0.36
2023	\$28.02	\$28.02	\$0.00	\$27.75	\$27.57	\$0.18	\$30.60	\$30.13	\$0.47	\$30.41	\$30.06	\$0.35
2024	\$28.83	\$27.89	\$0.95	\$28.50	\$27.46	\$1.04	\$31.36	\$30.58	\$0.78	\$31.17	\$30.50	\$0.68
2025	\$29.39	\$28.53	\$0.86	\$28.80	\$28.10	\$0.70	\$31.89	\$31.33	\$0.56	\$31.69	\$31.25	\$0.44
2026	\$42.49	\$31.92	\$10.57	\$47.44	\$31.46	\$15.98	\$35.77	\$34.43	\$1.34	\$36.47	\$34.35	\$2.12
2027	\$44.42	\$35.00	\$9.42	\$49.25	\$34.57	\$14.68	\$37.36	\$38.14	(\$0.78)	\$38.08	\$38.05	\$0.03
2028	\$46.70	\$36.76	\$9.94	\$51.42	\$36.32	\$15.10	\$39.29	\$40.06	(\$0.77)	\$40.03	\$39.97	\$0.06
2029	\$48.99	\$39.88	\$9.11	\$53.48	\$39.45	\$14.02	\$41.14	\$43.69	(\$2.55)	\$41.89	\$43.58	(\$1.68)
2030	\$51.29	\$49.65	\$1.64	\$55.59	\$37.58	\$18.01	\$43.03	\$67.89	(\$24.86)	\$43.80	\$69.34	(\$25.54)
2031	\$53.07	\$51.35	\$1.72	\$57.48	\$39.02	\$18.46	\$44.63	\$69.97	(\$25.34)	\$45.42	\$71.46	(\$26.04)
2032	\$54.85	\$53.05	\$1.80	\$59.29	\$40.46	\$18.84	\$46.16	\$72.06	(\$25.90)	\$46.96	\$73.58	(\$26.62)
2033	\$56.65	\$54.76	\$1.89	\$61.18	\$41.90	\$19.28	\$47.76	\$74.16	(\$26.40)	\$48.58	\$75.71	(\$27.13)
2034	\$58.80	\$56.82	\$1.99	\$63.52	\$43.69	\$19.83	\$49.77	\$76.62	(\$26.85)	\$50.61	\$78.20	(\$27.58)
2035	\$60.91	\$58.81	\$2.10	\$65.80	\$45.41	\$20.39	\$51.73	\$79.02	(\$27.29)	\$52.59	\$80.63	(\$28.05)
2036	\$62.76	\$60.54	\$2.22	\$67.94	\$46.87	\$21.08	\$53.52	\$81.16	(\$27.64)	\$54.40	\$82.81	(\$28.41)
2037	\$65.72	\$63.37	\$2.35	\$71.01	\$49.41	\$21.60	\$56.26	\$84.40	(\$28.14)	\$57.16	\$86.08	(\$28.92)
2038	\$68.14	\$65.65	\$2.48	\$73.55	\$51.42	\$22.13	\$58.47	\$87.11	(\$28.64)	\$59.39	\$88.82	(\$29.43)
2039	\$71.18			\$76.72			\$61.29			\$62.24		
2040	\$72.69			\$78.34			\$62.57			\$63.53		

15 Year Nominal Levelized Price (\$/MWh) at 6.920% Discount Rate (1)

2021 - 2035	\$40.58	\$37.31	\$3.27	\$42.99	\$33.37	\$9.63	\$37.26	\$44.60	(\$7.34)	\$37.60	\$44.98	(\$7.38)
2022 - 2036	\$42.92	\$39.34	\$3.58	\$45.73	\$34.62	\$11.11	\$38.75	\$47.77	(\$9.01)	\$39.17	\$48.25	(\$9.07)
2023 - 2037	\$45.51	\$41.58	\$3.93	\$48.75	\$36.03	\$12.72	\$40.42	\$51.24	(\$10.82)	\$40.93	\$51.82	(\$10.90)

Notes: (1) Discount Rate - 2019 IRP. Levelized values are for informational purposes only.  
(2) Avoided cost prices have been reduced by a wind and solar integration charges for QFs located in PacifiCorp's Balancing Area Authority (BAA) (in-system).  
If the QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charges

**Table 8**  
**Comparison between Proposed and Current Renewable Standard Fixed Avoided Costs**  
**\$/MWh**

Year	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference	Proposed	Eff. 6/17/20	Difference
	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard	Renewable Standard
	Base Load QF	Base Load QF	Base Load QF	Wind QF (2)	Wind QF (2)	Wind QF (2)	Fixed Solar QF	Fixed Solar QF	Fixed Solar QF	Tracking Solar QF	Tracking Solar QF	Tracking Solar QF
2020	\$22.91	\$22.91	\$0.00	\$22.53	\$22.42	\$0.10	\$24.44	\$24.10	\$0.34	\$24.31	\$24.05	\$0.26
2021	\$27.25	\$29.05	(\$1.80)	\$27.07	\$15.87	\$11.20	\$29.57	\$39.25	(\$9.68)	\$29.41	\$41.54	(\$12.13)
2022	\$27.60	\$29.78	(\$2.18)	\$27.34	\$16.26	\$11.08	\$29.88	\$39.98	(\$10.10)	\$29.71	\$42.33	(\$12.62)
2023	\$28.02	\$30.50	(\$2.47)	\$27.75	\$16.67	\$11.08	\$30.60	\$41.17	(\$10.57)	\$30.41	\$43.57	(\$13.16)
2024	\$30.74	\$31.19	(\$0.45)	\$32.87	\$17.05	\$15.83	\$21.87	\$42.32	(\$20.45)	\$23.35	\$44.78	(\$21.43)
2025	\$31.72	\$31.92	(\$0.20)	\$33.65	\$17.46	\$16.19	\$22.48	\$43.34	(\$20.86)	\$23.99	\$45.85	(\$21.86)
2026	\$32.26	\$32.64	(\$0.38)	\$34.41	\$17.87	\$16.55	\$23.07	\$44.42	(\$21.35)	\$24.61	\$46.99	(\$22.38)
2027	\$33.23	\$33.38	(\$0.14)	\$35.21	\$18.28	\$16.93	\$23.78	\$45.52	(\$21.75)	\$25.34	\$48.14	(\$22.80)
2028	\$34.24	\$34.13	\$0.11	\$36.03	\$18.69	\$17.34	\$24.23	\$46.41	(\$22.18)	\$25.84	\$49.09	(\$23.25)
2029	\$35.32	\$34.85	\$0.47	\$36.81	\$19.07	\$17.74	\$24.89	\$47.46	(\$22.57)	\$26.53	\$50.20	(\$23.67)
2030	\$36.38	\$35.58	\$0.80	\$37.62	\$19.46	\$18.16	\$25.57	\$48.54	(\$22.98)	\$27.24	\$51.34	(\$24.10)
2031	\$37.24	\$36.38	\$0.86	\$38.53	\$19.91	\$18.62	\$26.18	\$49.60	(\$23.42)	\$27.89	\$52.46	(\$24.57)
2032	\$38.17	\$37.15	\$1.03	\$39.41	\$20.31	\$19.10	\$26.56	\$50.44	(\$23.88)	\$28.33	\$53.36	(\$25.04)
2033	\$39.06	\$37.93	\$1.13	\$40.32	\$20.73	\$19.59	\$27.01	\$51.34	(\$24.34)	\$28.82	\$54.33	(\$25.50)
2034	\$39.89	\$38.73	\$1.16	\$41.26	\$21.17	\$20.09	\$27.48	\$52.29	(\$24.81)	\$29.34	\$55.34	(\$26.00)
2035	\$40.69	\$39.51	\$1.19	\$42.16	\$21.57	\$20.58	\$27.95	\$53.26	(\$25.31)	\$29.86	\$56.37	(\$26.51)
2036	\$41.44	\$40.30	\$1.14	\$43.12	\$22.00	\$21.11	\$28.57	\$54.35	(\$25.78)	\$30.53	\$57.52	(\$26.99)
2037	\$42.39	\$41.88	\$0.51	\$44.10	\$22.44	\$21.66	\$29.16	\$55.39	(\$26.23)	\$31.17	\$58.63	(\$27.46)
2038	\$43.37	\$42.73	\$0.64	\$45.11	\$22.90	\$22.22	\$29.77	\$56.46	(\$26.68)	\$31.83	\$59.77	(\$27.93)
2039	\$44.37			\$46.15			\$30.47			\$32.58		
2040	\$45.40			\$47.23			\$31.23			\$33.38		

15 Year Nominal Levelized Price (\$/MWh) at 6.920% Discount Rate (1)

Disc

\$/MWh	\$32.89	\$33.27	(\$0.38)	\$34.02	\$18.19	\$15.83	\$26.18	\$45.11	(\$18.93)	\$27.30	\$47.73	(\$20.42)
\$/MWh	\$33.84	\$34.01	(\$0.16)	\$35.14	\$18.60	\$16.54	\$25.91	\$46.12	(\$20.21)	\$27.20	\$48.79	(\$21.59)
\$/MWh	\$34.87	\$34.79	\$0.08	\$36.35	\$19.01	\$17.35	\$25.60	\$47.16	(\$21.55)	\$27.09	\$49.89	(\$22.81)

- Notes: (1) Discount Rate - 2019 IRP. Levelized values are for informational purposes only.  
(2) Avoided cost prices have been reduced by a wind and solar integration charges for QFs located in PacifiCorp's Balancing Area Authority (BAA) (in-system).  
If the QF resource is not in PacifiCorp's BAA, prices will be increased by the applicable integration charges

**Table 9  
Total Cost of Displaceable Resources**

Year	Estimated Capital Cost \$/kW	Fixed Capital Cost at Real Levelized Rate \$/kW-yr	Fixed O&M \$/kW-yr	Variable O&M \$/MWh	Total O&M at Expected CF \$/kW-yr	Total Resource Fixed Costs \$/kW-yr
	(a)	(b)	(c)	(d)	(e)	(f)

**185 MW - SCCT Frame "F" x1 - Naughton Resource (6,500')**

2018	\$745	\$51.85	\$31.72	\$6.96	\$31.72	\$83.57
2019		\$53.03	\$32.44	\$7.12	\$32.44	\$85.47
2020		\$54.24	\$33.18	\$7.28	\$33.18	\$87.42
2021		\$55.48	\$33.94	\$7.45	\$33.94	\$89.42
2022		\$56.74	\$34.71	\$7.62	\$34.71	\$91.45
2023		\$58.03	\$35.50	\$7.79	\$35.50	\$93.53
2024		\$59.35	\$36.31	\$7.97	\$36.31	\$95.66
2025		\$60.70	\$37.14	\$8.15	\$37.14	\$97.84
2026		\$62.08	\$37.99	\$8.34	\$37.99	\$100.07
2027		\$63.50	\$38.86	\$8.53	\$38.86	\$102.36
2028		\$64.95	\$39.75	\$8.72	\$39.75	\$104.70
2029		\$66.43	\$40.66	\$8.92	\$40.66	\$107.09
2030		\$67.94	\$41.59	\$9.12	\$41.59	\$109.53
2031		\$69.49	\$42.54	\$9.33	\$42.54	\$112.03
2032		\$71.07	\$43.51	\$9.54	\$43.51	\$114.58
2033		\$72.69	\$44.50	\$9.76	\$44.50	\$117.19
2034		\$74.35	\$45.51	\$9.98	\$45.51	\$119.86
2035		\$76.05	\$46.55	\$10.21	\$46.55	\$122.60
2036		\$77.78	\$47.61	\$10.44	\$47.61	\$125.39
2037		\$79.55	\$48.70	\$10.68	\$48.70	\$128.25
2038		\$81.36	\$49.81	\$10.92	\$49.81	\$131.17
2039		\$83.22	\$50.95	\$11.17	\$50.95	\$134.17
2040		\$85.12	\$52.11	\$11.42	\$52.11	\$137.23
2041		\$87.06	\$53.30	\$11.68	\$53.30	\$140.36
2042		\$89.04	\$54.52	\$11.95	\$54.52	\$143.56

Source: (a)(c)(d) Plant Costs - 2019 IRP - Table 6.1 & 6.2

- (b) = (a) x 6.959%
- (e) = (d) x (8.76 x %) + (c)
- (f) = (b) + (e)

**185 MW - SCCT Frame "F" x1 - Naughton Resource (6,500')**

2018 \$	\$745	Plant capacity cost	\$/kW
2018 \$	\$16.81	Fixed O&M & Capitalized O&M	\$/kW-yr
2018 \$	<u>\$14.90</u>	Fixed Pipeline	\$/kW-yr
2018 \$	\$31.72	Fixed O&M Including Fixed Pipeline & Capitalized O&M (	\$/kW-yr
2018 \$	\$6.96	Variable O&M and Other Costs	\$/MWH
	6.959%	Payment Factor	
	0%	Capacity Factor	
	2.28%	Cost Escalation Forecast (2019 IRP, Chapter 6, pg. 130)	

**Table 9  
Total Cost of Displaceable Resources**

Year	Estimated Capital Cost \$/kW (a)	Fixed Capital Cost at Real Levelized Rate \$/kW-yr (b)	Fixed O&M \$/kW-yr (c)	Variable O&M \$/MWh (d)	Total O&M at Expected CF \$/kW-yr (e)	Total Resource Fixed Costs \$/kW-yr (f)	Fuel Cost \$/MMBtu (g)	IRP Resource Energy Cost \$/MWh (h)	Total Avoided Costs \$/MWh (i)
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**447 MW - CCCT Drv "G/H", 1x1 - West Side Resource (1,500')**

2018	\$1,429	\$97.03	\$43.22	\$2.02	\$55.70	\$152.73			
2019		\$99.24	\$44.21	\$2.07	\$56.99	\$156.23			
2020		\$101.50	\$45.22	\$2.12	\$58.31	\$159.81			
2021		\$103.81	\$46.25	\$2.17	\$59.65	\$163.46			
2022		\$106.18	\$47.30	\$2.22	\$61.01	\$167.19			
2023		\$108.60	\$48.38	\$2.27	\$62.40	\$171.00			
2024		\$111.08	\$49.48	\$2.32	\$63.81	\$174.89			
2025		\$113.61	\$50.61	\$2.37	\$65.25	\$178.86			
2026		\$116.20	\$51.76	\$2.42	\$66.71	\$182.91	\$2.60	\$17.65	\$47.27
2027		\$118.85	\$52.94	\$2.48	\$68.26	\$187.11	\$2.80	\$19.01	\$49.31
2028		\$121.56	\$54.15	\$2.54	\$69.84	\$191.40	\$3.05	\$20.71	\$51.70
2029		\$124.33	\$55.38	\$2.60	\$71.44	\$195.77	\$3.30	\$22.41	\$54.11
2030		\$127.16	\$56.64	\$2.66	\$73.07	\$200.23	\$3.55	\$24.10	\$56.52
2031		\$130.06	\$57.93	\$2.72	\$74.73	\$204.79	\$3.72	\$25.26	\$58.42
2032		\$133.03	\$59.25	\$2.78	\$76.42	\$209.45	\$3.89	\$26.41	\$60.32
2033		\$136.06	\$60.60	\$2.84	\$78.14	\$214.20	\$4.06	\$27.57	\$62.25
2034		\$139.16	\$61.98	\$2.90	\$79.89	\$219.05	\$4.28	\$29.06	\$64.53
2035		\$142.33	\$63.39	\$2.97	\$81.73	\$224.06	\$4.49	\$30.49	\$66.77
2036		\$145.58	\$64.84	\$3.04	\$83.61	\$229.19	\$4.66	\$31.64	\$68.75
2037		\$148.90	\$66.32	\$3.11	\$85.53	\$234.43	\$4.99	\$33.88	\$71.84
2038		\$152.29	\$67.83	\$3.18	\$87.47	\$239.76	\$5.24	\$35.58	\$74.40
2039		\$155.76	\$69.38	\$3.25	\$89.45	\$245.21	\$5.58	\$37.89	\$77.59
2040		\$159.31	\$70.96	\$3.32	\$91.46	\$250.77	\$5.69	\$38.64	\$79.25
2041		\$162.94	\$72.58	\$3.40	\$93.58	\$256.52	\$5.82	\$39.52	\$81.06
2042		\$166.66	\$74.23	\$3.48	\$95.72	\$262.38	\$5.95	\$40.42	\$82.91

**Table 9  
Total Cost of Displaceable Resources**

**Sources, Inputs and Assumptions**

- Source: (a)(c)(d) Plant Costs - 2019 IRP - Table 6.1 & 6.2  
 (b) = (a) x 6.790%  
 (e) = (d) x (8.76 x 70.5%) + (c)  
 (f) = (b) + (e)  
 (g) Gas Price Forecast  
 (h) = 6790 x (g) / 1000  
 (i) = (f) / (8.76 x 'Capacity Factor' ) + (h)

**447 MW - CCCT Dry "G/H", 1x1 - West Side Resource (1,500')**

CCCT Statistics	MW	Percent	Cap Cost	Fixed
CCCT (Dry "G/H" 1x1)	396	88.6%	\$1,552	\$45.08
CCCT Duct Firing (Dry "G/H" 1x1)	<u>51</u>	<u>11.4%</u>	<u>\$478</u>	<u>\$28.76</u>
Capacity Weighted	447	100.0%	\$1,429	\$43.22

CCCT Statistics	MW	CF	aMW	Percent	Variable	Heat Rate
CCCT (Dry "G/H" 1x1)	396	78.0%	309	98.1%	\$2.05	6,788
CCCT Duct Firing (Dry "G/H" 1x1)	<u>51</u>	<u>12.0%</u>	<u>6</u>	<u>1.9%</u>	<u>\$0.15</u>	<u>6,788</u>
Energy Weighted	447	70.5%	315	100.0%	\$2.02	6,790

Rounded

- Source: Plant Costs - 2019 IRP - Table 6.1 & 6.2. 2018\$  
 \$21.72 \$5.39 Fixed O&M & Capitalized O&M  
 \$23.37 \$23.37 Fixed Pipeline

- 6.790% Payment Factor  
 100.0% Capacity Factor - On-peak 70.5% / 56.0% (percent of hours on-peak)  
 2.28% Cost Escalation Forecast (2019 IRP, Chapter 6, pg. 130)

**Table 10**  
**Gas Price Forecast**  
**\$/MMBtu**

Year	Burner tip West Side Gas Fuel Cost
2020	\$1.89
2021	\$2.32
2022	\$2.22
2023	\$2.30
2024	\$2.40
2025	\$2.50
2026	\$2.60
2027	\$2.80
2028	\$3.05
2029	\$3.30
2030	\$3.55
2031	\$3.72
2032	\$3.89
2033	\$4.06
2034	\$4.28
2035	\$4.49
2036	\$4.66
2037	\$4.99
2038	\$5.24
2039	\$5.58
2040	\$5.69
2041	\$5.82
2042	\$5.95

**Source**

2020-2040: Official Market Price Forecast dated March 2020

2041+: Escalated at Inflation

2.28% Inflation: 2019 IRP Volume I. Chapter 7. Pg. 179.



**Table 11  
Integration Cost**

<b>Year</b>	<b>Wind Integration Cost</b>	<b>Solar Integration Cost</b>
	<b>\$/MWh</b>	<b>\$/MWh</b>

2018	\$0.50	\$0.41
2019	\$0.30	\$0.25
2020	\$0.39	\$0.31
2021	\$0.19	\$0.15
2022	\$0.27	\$0.22
2023	\$0.29	\$0.24
2024	\$0.35	\$0.29
2025	\$0.61	\$0.50
2026	\$0.45	\$0.37
2027	\$0.69	\$0.56
2028	\$0.93	\$0.76
2029	\$1.29	\$1.05
2030	\$1.61	\$1.31
2031	\$1.63	\$1.32
2032	\$1.74	\$1.42
2033	\$1.79	\$1.45
2034	\$1.75	\$1.42
2035	\$1.72	\$1.40
2036	\$1.58	\$1.28
2037	\$1.62	\$1.31
2038	\$1.66	\$1.34
2039	\$1.70	\$1.37
2040	\$1.74	\$1.40
2041	\$1.78	\$1.43
2042	\$1.82	\$1.46

Source: 2018-2036 2019 IRP Volume II. Appendix F. Figure F.15.  
 2037+ Escalated at Inflation  
 2.28% Inflation: 2019 IRP Volume I. Chapter 7. Pg. 179.

**Table 12**  
**2019 IRP WY Wind Resource-2024**  
**44% Capacity Factor**

Year	Estimated Capital Cost	Fixed Capital Cost at Real Levelized Rate	Fixed O&M	Fixed Costs	Variable O&M	Tax Credit	Avoided Cost (excluding Integration Cost)	Total Resource Costs	Integration Cost
	\$/kW	\$/kW-yr	\$/kW-yr	\$/MWh	\$/MWh	\$/MWh	\$/MWh	\$/kW-yr	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(h)
<b>2019 IRP WY Wind Resource-2024 - 44% Capacity Factor</b>									
2018	\$1,301		\$27.99		\$0.65	(\$9.33)			\$0.50
2019	\$1,294		\$28.63		\$0.66	(\$9.54)			\$0.30
2020	\$1,287		\$29.28		\$0.68	(\$9.76)			\$0.39
2021	\$1,280		\$29.95		\$0.70	(\$9.98)			\$0.19
2022	\$1,271		\$30.63		\$0.71	(\$10.21)			\$0.27
2023	\$1,261		\$31.33		\$0.73	(\$10.44)			\$0.29
2024	\$1,252	\$86.40	\$32.04	\$31.01	\$0.74	(\$10.68)	\$21.07	\$80.48	\$0.35
2025		\$88.37	\$32.77	\$31.72	\$0.76	(\$10.92)	\$21.56	\$82.34	\$0.61
2026		\$90.38	\$33.52	\$32.44	\$0.78	(\$11.17)	\$22.05	\$84.22	\$0.45
2027		\$92.44	\$34.29	\$33.18	\$0.80	(\$11.43)	\$22.55	\$86.13	\$0.69
2028		\$94.55	\$35.07	\$33.94	\$0.81	(\$11.69)	\$23.06	\$88.07	\$0.93
2029		\$96.71	\$35.87	\$34.71	\$0.83	(\$11.96)	\$23.58	\$90.07	\$1.29
2030		\$98.91	\$36.69	\$35.50	\$0.85	(\$12.23)	\$24.12	\$92.14	\$1.61
2031		\$101.17	\$37.52	\$36.31	\$0.87	(\$12.51)	\$24.67	\$94.23	\$1.63
2032		\$103.48	\$38.38	\$37.14	\$0.89	(\$12.79)	\$25.24	\$96.41	\$1.74
2033		\$105.84	\$39.25	\$37.99	\$0.91	(\$13.08)	\$25.82	\$98.61	\$1.79
2034		\$108.25	\$40.15	\$38.85	\$0.93	(\$13.38)	\$26.40	\$100.85	\$1.75
2035		\$110.72	\$41.06	\$39.74	\$0.95	(\$13.69)	\$27.00	\$103.12	\$1.72
2036		\$113.24	\$42.00	\$40.65	\$0.98	(\$14.00)	\$27.63	\$105.51	\$1.58
2037		\$115.82	\$42.96	\$41.57	\$1.00	(\$14.32)	\$28.25	\$107.91	\$1.62
2038		\$118.46	\$43.94	\$42.52	\$1.02	(\$14.65)	\$28.89	\$110.34	\$1.66
2039		\$121.16	\$44.94	\$43.49	\$1.04	(\$14.98)	\$29.55	\$112.86	\$1.70
2040		\$123.92	\$45.96	\$44.48	\$1.07	(\$15.32)	\$30.23	\$115.45	\$1.74
2041		\$126.75	\$47.01	\$45.49	\$1.09	(\$15.67)	\$30.91	\$118.07	\$1.78
2042		\$129.64	\$48.08	\$46.53	\$1.12	(\$16.03)	\$31.62	\$120.77	\$1.82

**Sources, Inputs and Assumptions**

Source: (c)(f) Supply-side Resource Table  
(a) Plant capacity cost, with resource-specific escalation  
(b) = (a) x 6.899%  
(d) = ((b) + (c)) / (8.76 x 43.6%)  
(g) = (d) + (f)  
(h) Table 11

**2019 IRP WY Wind Resource-2024 - 44% Capacity Factor**

Wind	Cost and Input Assumptions
------	----------------------------

2018 \$	\$1,301	Plant capacity cost	\$/kW-yr
2018 \$	\$27.99	Fixed O&M, plus on-going capital cost	\$/kW-yr
2018 \$	\$0.65	Variable O&M	\$/MWH
2018 \$	(\$9.33)	Tax Credit \$/MWh	\$/MWH (60% PTC)
	14.5%	Capacity Contribution	
	6.899%	Payment Factor	
	43.6%	Capacity Factor	
	2.28%	Inflation: 2019 IRP Volume I, Chapter 7, Pg. 179.	

**2019 IRP Wind Capital Cost Escalation**

2019	-0.6%	2028	-0.7%	2037	0.5%
2020	-0.6%	2029	-0.7%	2038	0.5%
2021	-0.5%	2030	-0.7%	2039	0.5%
2022	-0.7%	2031	0.5%	2040	0.5%
2023	-0.7%	2032	0.5%	2041	0.5%
2024	-0.7%	2033	0.5%	2042	0.5%
2025	-0.7%	2034	0.5%	2043	0.5%
2026	-0.7%	2035	0.5%	2044	0.5%
2027	-0.7%	2036	0.5%	2045	0.5%

**Table 13**  
**2019 IRP Wind Resource**  
**Adjusted to On-Peak / Off-Peak Prices**

Year	Renewable Avoided Resource Cost	On-Peak / Off-Peak Factors		On-Peak Renewable Avoided Resource Cost	Off-Peak Renewable Avoided Resource Cost
	\$/MWH	On-Peak	Off-Peak	On-Peak	Off-Peak
	(a)	(b)	(c)	(d) (a) x (b)	(e) (a) x (c)
2024	\$21.07	1.1679	0.7831	\$24.61	\$16.50
2025	\$21.56	1.1712	0.7815	\$25.25	\$16.85
2026	\$22.05	1.1797	0.7700	\$26.01	\$16.98
2027	\$22.55	1.1884	0.7596	\$26.80	\$17.13
2028	\$23.06	1.1800	0.7727	\$27.21	\$17.82
2029	\$23.58	1.1834	0.7651	\$27.91	\$18.04
2030	\$24.12	1.1877	0.7562	\$28.65	\$18.24
2031	\$24.67	1.1886	0.7598	\$29.32	\$18.75
2032	\$25.24	1.1742	0.7781	\$29.64	\$19.64
2033	\$25.82	1.1636	0.7923	\$30.04	\$20.46
2034	\$26.40	1.1553	0.8046	\$30.51	\$21.25
2035	\$27.00	1.1487	0.8107	\$31.01	\$21.89
2036	\$27.63	1.1489	0.8095	\$31.74	\$22.36
2037	\$28.25	1.1457	0.8138	\$32.37	\$22.99
2038	\$28.89	1.1427	0.8189	\$33.01	\$23.66
2039	\$29.55	1.1430	0.8190	\$33.78	\$24.20
2040	\$30.23	1.1455	0.8170	\$34.63	\$24.70
2041	\$30.91	1.1455	0.8170	\$35.41	\$25.26
2042	\$31.62	1.1455	0.8170	\$36.22	\$25.83

Columns

- (a) Table 12 Column (g)
- (b) Ratio blended market On-Peak to annual prices
- (c) Ratio blended market Off-Peak to annual prices

**Table 14**  
**2019 IRP Capacity Contribution Values**

	Capacity Factor (%)	Capacity Contribution (%)	
	Annual	Summer	Winter
<b>Tracking Solar</b>			
<b>Idaho Falls, ID</b>	28%	12%	13%
<b>Lakeview, OR</b>	29%	15%	14%
<b>Milford, UT</b>	32%	10%	23%
<b>Yakima, WA</b>	25%	12%	10%
<b>Rock Springs, WY</b>	30%	11%	19%
<b>Wind</b>			
<b>Pocatello, ID</b>	37%	19%	27%
<b>Arlington, OR</b>	37%	57%	21%
<b>Monticello, UT</b>	29%	18%	22%
<b>Goldendale, WA</b>	37%	57%	21%
<b>Medicine Bow, WY</b>	44%	13%	35%

Source: 2019 IRP, Table N.4 – Final CF Method Capacity Contribution Values for Wind, Solar, and Storage

<b>Fixed Tilt Solar</b>			
<b>Oregon</b>	25%	11%	14%

Source: 2019 IRP, Final CF Method inputs applied to OR Fixed-Tilt Solar Profile

<b>Seasonal Contribution Weighting</b>	92%	8%
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Source: 2019 IRP, Appendix N workpapers

**PACIFIC POWER**  
**AVOIDED COST CALCULATION**

**STANDARD RATES FOR AVOIDED COST PURCHASES FROM**  
**ELIGIBLE QUALIFYING FACILITIES**

**OREGON – JUNE 2020**

**PACIFIC POWER  
AVOIDED COST CALCULATION**

**STANDARD RATES FOR AVOIDED COST PURCHASES FROM ELIGIBLE  
QUALIFYING FACILITIES**

**OREGON – JUNE 2020**

Standard avoided cost rates are paid to eligible small qualifying facilities (QFs). Oregon avoided cost filing requirements as listed in OAR 860-029-0040 and 860-029-0080 require the Company to file updated avoided costs at least every two years. The Commission Order No. 14-058, requires the Oregon investor owned utilities to update avoided cost prices annually on May 1 of each year and within 30-days of Integrated Resource Plan (IRP) acknowledgment. Annual updates, filed on May 1 of each year, are required to update the following data inputs: (1) natural gas prices; (2) on-peak and off-peak forward looking electricity market prices; (3) production tax credit status; and (4) any other action or change in an acknowledged IRP relevant to the calculation of avoided costs.

The last Oregon avoided costs were approved on April 24, 2019. This filing incorporates updates associated with PacifiCorp's 2019 IRP, which was acknowledged on May 7, 2020. The natural gas and electricity prices in the filing are the same as the annual update filed on May 1, 2020, which is currently expected to be approved for rates effective June 17, 2020.

**Sufficiency and Deficiency Periods**

In Order No. 10-488 issued in docket UM 1396, the Commission directed that the start date of the first "major resource acquisition" in the action plan of the IRP determines the resource "sufficiency" and "deficiency" periods to be used in calculations of standard avoided cost prices. The sufficiency and deficiency periods used in this filing are based on the 2019 IRP which was acknowledged by the Commission on May 7, 2020.

**Table 1** presents the 2019 IRP Preferred Portfolio and shows that the earliest acquisition of a major non-renewable resource is a simple cycle combustion turbine (SCCT) in 2026. Therefore, the resource sufficiency period for the standard avoided cost rates is from 2020-2025 and the non-renewable resource deficiency period starts in 2026. Table 1 also shows that earliest acquisition of a utility-scale renewable resource that will provide renewable energy certificates (RECs) for compliance with Oregon's renewable portfolio

standard (RPS) is in 2024, and therefore the start of the renewable resource deficiency period is 2024.<sup>1</sup>

### Avoided Cost Calculation

Based on the 2019 IRP preferred portfolio shown in **Table 1**, the standard avoided cost calculation is separated into two distinct periods: (1) Standard non-renewable resource sufficiency period (2020 through 2025); and (2) Standard non-renewable resource deficiency period (2026 and beyond). During the non-renewable resource sufficiency period (2020 through 2025), standard avoided energy costs are based on blended market prices. Market prices from the Company's Official Forward Price Curve (OFPC) are weighted by market transactions required to support the addition of an assumed 50 megawatts (MW) Oregon Qualified Facility. To calculate the weighting, two production cost studies are prepared. The only difference between the two studies is an assumed 50 average MW, zero running cost resource. System balancing sales and purchase volumes are extracted from both studies and the change between the two studies is calculated for each market hub. This volume impact is used to weight the Company's Official Market Price Forecast on-peak and off-peak market prices for California Oregon Border (COB), Mid-Columbia, and Palo Verde for each month. **Table 2** shows the result of this calculation. The prices and blending have not changed from the Company's May 1, 2020 annual update.

The sufficiency period for standard renewable rates is 2020-2023 and the standard renewable resource deficiency period starts in 2024. During the renewable resource sufficiency period (2020-2023), the renewable avoided energy costs are based on blended market prices.

During the non-renewable resource deficiency period, the avoided costs are based on the fixed and variable costs of a combined cycle combustion turbine (CCCT) proxy resource that could be avoided or deferred. The capacity and fixed costs of CCCT proxy resource used to set standard avoided cost rates beginning in 2026 is the west side CCCT from the 2019 IRP Supply Side Table.<sup>2</sup>

Since CCCTs are built as base load units that provide both capacity and energy, it is appropriate to split the fixed costs of this unit into capacity and energy components. The fixed cost of a SCCT, which is usually acquired as a capacity resource, defines the

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<sup>1</sup> The 2019 IRP preferred portfolio includes a "Customer Preference" requirement for new renewable resources that have RECs assigned to individual customers to meet their own resource preference requirements. All proxy renewable resources added in 2021-2023 in the 2019 IRP preferred portfolio are for customer preference requirements, so they will not generate RECs that can be used for compliance with Oregon's RPS. As a result, the first eligible renewable resource in the 2019 IRP preferred portfolio is in 2024.

<sup>2</sup> 396 MW CCCT (Dry "G/H" 1x1 and associated Duct Firing (DF) capability) - West Side Resource (1500') –as listed in Tables 6.1 and 6.2 of the 2019 IRP. Fuel costs are from the Company's March 2020 OFPC (2003 OFPC).

portion of the fixed cost of the CCCT that is assigned to capacity.<sup>3</sup> Fixed costs associated with the construction of a CCCT which are in excess of SCCT costs are assigned to energy and are added to the variable production (fuel) cost of the CCCT to determine the total avoided energy costs. **Table 3** shows the capitalized energy costs, which are calculated based on the difference between fixed costs of CCCT and SCCT. The fuel cost of the CCCT defines the avoided variable energy costs. The gas price forecast used as the basis for the CCCT fuel cost is discussed later in this document.

During the standard renewable resource deficiency period, the standard renewable avoided cost prices are based on resource costs of a renewable proxy wind resource in Wyoming from the 2019 IRP Supply Side Table.<sup>4</sup> The standard renewable on-peak price also includes a capacity adder calculated based on the fixed costs of the SCCT adjusted by the incremental capacity contribution of the QF resource relative to the avoided renewable proxy resource. The capacity adder is allocated to on peak hours by using the on peak capacity factor of the QF resource.

**Table 4** shows the CCCT fuel cost, the addition of capitalized energy costs at an assumed 70.5 percent capacity factor, and the total avoided energy costs.

Because energy generated by a QF may vary, total standard avoided costs are calculated at 75 percent, 85 percent and 90 percent capacity factor to illustrate the impact of differing generation levels. This calculation is shown in **Table 5**.

Standard avoided costs are differentiated between on-peak and off-peak periods, with capacity costs allocated to on-peak periods. On an annual basis, approximately 56 percent of all hours are on-peak and 44 percent are off-peak. **Table 6** shows the calculation of on-peak and off-peak avoided energy prices.

For informational purposes, **Tables 7 and 8** show a comparison between the avoided costs filed on May 1, 2020, and expected to take effect in Oregon on June 17, 2020, and the avoided costs after incorporating updates associated with the 2019 IRP.

**Table 9** shows the calculation of the total fixed costs and fuel costs of the CCCT and SCCT that are used in **Table 3** and **Table 4**. In this filing, the Company's thermal proxy resource is a CCCT located on the west side of the Company's system. Current Commission approved standard non-renewable avoided costs are also based upon a CCCT located on the west side of the Company's system. The costs of SCCT and CCCT resources are updated based on 2019 Supply Side Table. The cost escalation forecast for

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<sup>3</sup> SCCT Frame ("F"x1) – Naughton Brownfield Resource (6,500'), as listed in Tables 6.1 and 6.2 of the 2019 IRP. This resource is selected in 2026 in the 2019 IRP preferred portfolio.

<sup>4</sup> 3.6 MW Wind turbine 43.6 percent capacity factor WY, as listed in Tables 6.1 and 6.2 of the 2019 IRP. This resource is selected in 2024 (as a proxy for year-end 2023) in the 2019 IRP preferred portfolio.



these resources is equal to the 2019 IRP inflation forecast, consistent with the assumption in the 2019 IRP.<sup>5</sup>

### Gas Price Forecast

Gas prices used in this filing utilize the Company's 2003 OFPC. **Table 10** shows the natural gas price used in this avoided cost calculation.

**Table 11** shows wind and solar integration costs used in 2019 IRP.<sup>6</sup>

**Table 12** shows the calculation of total resource cost of the renewable proxy wind plant in Wyoming. The capacity costs, fixed operations and maintenance (O&M) plus on-going capital costs, variable O&M, and capacity factor values of the Wyoming Wind resource reflect assumptions from the 2019 IRP Supply Side Table.<sup>7</sup> At the time the 2019 IRP was prepared, this resource was expected to qualify for a 40 percent production tax credit (PTC), with its expected in-service date at the end of 2023. In December 2019, Congress passed a package of legislation that included a one-year extension of the PTC for wind resources. As a result, wind resources which take steps to begin construction prior to the end of 2020, and which achieve commercial operation within four years, are eligible for a 60 percent production tax credit. The proxy renewable proxy wind resource is assumed to be eligible for the 60 percent PTC for the purpose of determining avoided cost prices. The total cost of the proxy wind resource is used in the calculation of standard renewable avoided cost rates as shown in "**Exhibits 5 through 8**".

**Table 13** shows the calculation of on-peak and off-peak standard renewable avoided cost prices by applying on-peak and off-peak factors. On-peak and off-peak factors are calculated as a ratio of the average annual on-peak Mid-C market price to the flat Mid-C market price.

**Exhibit 1- Std Base Load QF** tab shows the calculation of proposed standard avoided cost rates for a base load QF. On and off-peak avoided cost rates are based on blended market rates for 2020-2025. For 2026 and beyond, the off-peak price is based on the fuel and capitalized energy cost of the CCCT proxy. The on-peak price also includes a capacity adder based on the fixed costs of the SCCT proxy (in \$/kilowatt-year (kW-yr)). The adjusted capacity adder in \$/kW-yr is allocated to on peak hours by using the on peak capacity factor of the base load QF resource, which is assumed to be equal to on peak capacity factor of the CCCT proxy resource.

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<sup>5</sup> For details on the cost-escalation forecast for various resource types, please refer to PacifiCorp's 2019 IRP, Volume I, Chapter 6, pg. 130.

<sup>6</sup> See PacifiCorp's 2019 IRP, Volume II, Appendix F, Figure F.15.

<sup>7</sup> For details on the cost-escalation forecast for various resource types, please refer to PacifiCorp's 2019 IRP, Volume I, Chapter 6, pg. 130.

**Exhibit 2- Std Wind QF** tab shows the calculation of proposed standard avoided cost rates for a wind QF. On and off-peak avoided cost rates are based on blended market rates for 2020-2025. For 2026 and beyond, the off-peak price is based on the fuel and capitalized energy cost of the CCCT proxy. The on-peak price also includes a capacity adder calculated based on fixed costs of a SCCT (in \$/kW-yr) adjusted by the expected capacity contribution of a wind QF from the 2019 IRP (Oregon Wind: 54.5 percent), as shown in Table 14. The adjusted capacity adder (in \$/kW-yr) is allocated to on peak hours using the on peak capacity factor of a west side wind QF resource. Standard avoided cost rates for a wind QF are reduced by the annual wind integration charges from **Table 11**.

**Exhibits 3 & 4- Std Solar QF** tab shows the calculation of proposed standard avoided cost rates for a solar QF. On and off-peak avoided cost rates are based on blended market rates for 2020-2025. For 2026 and beyond, the off-peak price is based on the fuel and capitalized energy cost of the CCCT proxy. The on-peak price also includes a capacity adder calculated based on the fixed costs of a SCCT (in \$/kW-yr) adjusted by expected capacity contribution of a solar QF based on the 2019 IRP (Oregon fixed solar: 11.0 percent, Oregon tracking solar: 14.8 percent), as shown in Table 14. The adjusted capacity adder (in \$/kW-yr) is allocated to on peak hours by using the on peak capacity factor of a solar QF resource. Standard avoided cost rates for a solar QF are reduced by the annual solar integration charges from **Table 11**.

**Exhibit 5- Renewable Base Load** tab shows the calculation of proposed standard renewable avoided cost rates for renewable base load QF. For 2020-2023, on- and off-peak renewable avoided cost rates are based on blended market rates. For 2024 and beyond, on- and off-peak prices are based on on-peak and off-peak prices of the renewable wind proxy resource as calculated in Table 12 and Table 13 with resource costs from the 2019 IRP Supply Side Table. Starting in 2024, the standard renewable on-peak price also includes a capacity adjustment based on the fixed costs of the SCCT (in \$/kW-yr) and the incremental capacity contribution of a renewable Base Load QF relative to the avoided renewable proxy resource, as shown in Table 14. The fixed costs of the SCCT are based on the 2019 IRP Supply Side Table. The adjusted capacity adder in \$/kW-yr is allocated to on-peak hours by using the on-peak capacity factor of a base load QF resource. Rates are increased during the renewable resource deficiency period by the avoided wind integration charge from Table 11.

**Exhibit 6- Renewable Wind** tab shows the calculation of proposed standard renewable avoided cost rates for a wind QF. On- and off-peak renewable avoided cost rates are based on blended market rates for 2020-2023. For 2024 and beyond, on- and off-peak prices are based on on-peak and off-peak prices of the renewable wind proxy resource as calculated in Table 12 and Table 13 reflecting resource costs from the 2019 IRP Supply Side Table. Starting in 2024, the standard renewable on-peak price also includes a capacity adjustment based on the fixed costs of the SCCT (in \$/kW-yr) and the incremental capacity contribution of an Oregon Wind QF relative to the capacity

contribution of the avoided renewable proxy resource, as shown in Table 14. The fixed costs of the SCCT are based on the 2019 IRP Supply Side Table. The adjusted capacity adder in \$/kW-yr is allocated to on-peak hours using the on-peak capacity factor of an Oregon wind QF resource. During the renewable resource sufficiency period of 2020-2023, the standard renewable avoided cost rates for a wind QF are reduced by the wind integration charge from Table 11.

**Exhibits 7 & 8- Renewable Solar** tab shows the calculation of proposed standard renewable avoided cost rates for a solar QFs. On- and off-peak renewable avoided cost rates are based on blended market rates for 2020-2023. For 2024 and beyond, on- and off-peak prices are based on on-peak and off-peak prices of the renewable wind proxy resource as calculated in Table 12 and Table 13 reflecting resource costs from the 2019 IRP Supply Side Table. Starting in 2024, the standard renewable on-peak price also includes a capacity adjustment based on the fixed costs of the SCCT (in \$/kW-yr) and the incremental capacity contribution of Oregon Fixed and Tracking Solar QFs relative to the avoided renewable proxy resource, as shown in Table 14. The fixed costs of the SCCT are based on the 2019 IRP Supply Side Table. The adjusted capacity adder in \$/kW-yr is allocated to on-peak hours by using the on-peak capacity factors of the solar QF resource. During the renewable resource sufficiency period, the standard renewable avoided costs rates for fixed and tracking solar QF resources are reduced by solar integration charge from Table 11. During renewable resource deficiency period, the rates are adjusted by the difference in the avoided wind and incremental solar integration charges from Table 11.

**Exhibit 9– Blending** tab shows the market blending used to weight the Company’s OFPC on-peak and off-peak market prices at COB, Palo Verde and Mid-Columbia by month, which are used in the calculation of rates shown in **Table 2**.

**Docket UM 1729(4) / Compliance Filing  
Minimum Filing Requirements  
Public Utility Commission of Oregon (OPUC) Order No. 16-174 dated May 13, 2016**

**I. Resource Sufficiency / Deficiency Demarcation**

		<b>Explanation</b>	<b>IRP Reference</b>
1.	Non-renewable: Identify the demarcation year for the end of sufficiency period / start of deficiency period.	Deficiency starting in 2026.	Table 8.18 – 2019 IRP Preferred Portfolio, page 258
2.	Non-renewable: Identify the major resource to be acquired (>100 megawatts (MW) and longer than five years) at end of sufficiency period.	West Side Combined-Cycle Combustion Turbine (CCCT) (Dry "G/H" 1x1) with Duct Firing - West Side Resource (1500').	2019 IRP Supply Side Table 6.1 and 6.2
3.	Renewable: Identify the demarcation year for the end of sufficiency period / start of deficiency period.	Deficiency starting in 2024	Table 8.18 – 2019 IRP Preferred Portfolio, page 258
4.	Renewable: Identify the major resource to be acquired (>100 MW and longer than five years) at end of sufficiency period.	Wyoming wind resource starting in 2024	2019 IRP Supply Side Table 6.1 and 6.2

**Docket UM 1729(4) / Compliance Filing  
Minimum Filing Requirements  
Public Utility Commission of Oregon (OPUC) Order No. 16-174 dated May 13, 2016**

**II. Gas Price Forecast**

		<b>Explanation</b>	<b>IRP Reference</b>
1.	Identify the source of the gas price forecast.	Official forward price curve (OFPC) March 2020	-
2.	If the forecast source differs from that used in the most recent approved avoided cost filing / explain the reason(s) for the change.	The Company updates its OFPC every quarter. The March 2020 OFPC was the most recent curve available at the time of this filing. Proposed rates filed on May 1, 2020 also used this same OFPC.	-
3.	Provide the yearly forecast price by year / and identify any rounding that has been applied.	Refer to the tabs entitled "Table 10" and "OFPC Source" of the "7_OR Standard QF AC Study_2020 06 02.xlsx"	-
4.	Quantify and describe the extent to which the gas price forecast differs from the most recent approved avoided cost filing, include a description of carbon cost / tax assumption(s).	<p>The Company updates its OFPC every quarter. The March 2020 OFPC was the most recent curve available at the time of this filing. Proposed rates filed on May 1, 2020 also used this same OFPC.</p> <p>Refer to the spreadsheet entitled "12_MFR - II.Gas Price Forecast_20200417" for the comparison of the gas price forecast. Refer to the files entitled "10_MFR - 202003 OFPC - Environmental" and "11_MFR 201812 OFPC - Environmental" for the March 2020 OFPC and December 2018 OFPC carbon tax assumptions.</p>	-

**Docket UM 1729(4) / Compliance Filing  
Minimum Filing Requirements  
Public Utility Commission of Oregon (OPUC) Order No. 16-174 dated May 13, 2016**

**III. Sufficiency Period Prices**

		<b>Explanation</b>	<b>IRP Reference</b>
1.	List the market hub(s) used for market price projections, the source for the forward price curves, and any adjustments or blending used in deriving the sufficiency period prices.	Market prices for California-Oregon Border (COB), Mid-Columbia (Mid-C) and Palo Verde (PV) from the March 2020 OFPC are blended based on the change in system balancing purchases and sales using two the Generation and Regulation Initiative Decision Tool (GRID) runs - with and without a 50 MW qualifying facility (QF) resource.	-
2.	Provide the transmission costs assumed used in sufficiency period prices.	No transmission costs are incorporated in standard sufficiency period avoided cost pricing.	-
3.	Provide all other component(s) used to calculate sufficiency period prices.	Prices for wind and solar resources are adjusted to account for integration costs from the 2019 IRP.  For the complete calculation of sufficiency period prices, refer to "7_OR Standard QF AC Study_2020 06 02.xlsx".	Flexible Reserve Study from 2019 IRP, 2019 IRP Volume II-Appendix F, Figure F.15 on Page 109

**Docket UM 1729(4) / Compliance Filing  
Minimum Filing Requirements  
Public Utility Commission of Oregon (OPUC) Order No. 16-174 dated May 13, 2016**

**IV. Standard Rates Deficiency Period Resource**

		<b>Explanation</b>	<b>IRP Reference</b>
1.	Provide the resource type, geographic location, nameplate capacity, and annual capacity factor.	CCCT (Dry "G/H" 1X1) West Side Resource (1,500') with Duct Firing available in 2026, Annual energy-weighted CF is 70.5 percent. Refer to Table 9 of "7_OR Standard QF AC Study_2020 06 02.xlsx"	2019 IRP Supply Side Table 6.1 and 6.2
2.	Provide the source of natural gas supply / and the costs assumed for interconnection / infrastructure upgrades, transmission, storage, and any other costs necessary to deliver gas.	Burner Tip West Side Gas, refer to Table 10 of "7_OR Standard QF AC Study_2020 06 02.xlsx"	-
3.	Provide the assumed heat rate. Include assumptions to account for elevation / temperature, and cooling method.	Refer to Table 9 of "7_OR Standard QF AC Study_2020 06 02.xlsx"	2019 IRP Supply Side Table 6.1 and 6.2
4.	List the costs assumed for interconnection facilities.	-	2019 IRP Supply Side Table 6.1 and 6.2
5.	List the components of transmission costs used and their respective values.	-	2019 IRP Supply Side Table 6.1 and 6.2
6.	List the tax assumptions used.	-	2019 IRP Supply Side Table 6.1 and 6.2

**Docket UM 1729(4) / Compliance Filing  
Minimum Filing Requirements  
Public Utility Commission of Oregon (OPUC) Order No. 16-174 dated May 13, 2016**

**V. Renewable Rates Deficiency Period Resource**

		<b>Explanation</b>	<b>IRP Reference</b>
1.	Provide the resource type, geographic location / nameplate capacity, and annual capacity factor.	Wyoming wind resource with 43.6% CF from the 2019 IRP Supply Side Table. Refer to Table 12 of “7_OR Standard QF AC Study_2020 06 02.xlsx”	2019 IRP Supply Side Table 6.1 and 6.2
2.	Provide assumptions used for mechanical availability, annual hours of curtailment / and annual megawatt-hours (MWh) of energy curtailed.	None.	
3.	List the costs assumed for interconnection facilities.	-	2019 IRP Supply Side Table 6.1 and 6.2
4.	List the components of transmission costs used and their respective values.	-	2019 IRP Supply Side Table 6.1 and 6.2
5.	List the tax assumptions used. This includes assumed taxes paid (federal, state / local), and assumed tax benefits (e.g. PTC / investment tax credits (ITC) / grants in lieu of credits).	60% PTC (First Year levelized value of \$9.33/MWh (in 2018\$) escalated by the 2019 IRP inflation rate). Refer to Table 12 of “7_OR Standard QF AC Study_2020 06 02.xlsx”	2019 IRP Supply Side Table 6.1 and 6.2
6.	Provide the capacity contribution value, and the method used to derive the capacity contribution value / for solar and wind resource types.	QF Capacity Contribution values - Wind: 54.5 percent, Fixed Solar: 11.0 percent, and Tracking Solar: 14.8 percent.	2019 IRP Wind and Solar Capacity Contribution Study, 2019 IRP Volume II-Appendix N, Table N.4, page 404.
7.	Provide the wind integration cost used / and the method used to derive the wind integration cost.	Prices are adjusted to account for integration costs from the 2019 IRP.	Flexible Reserve Study from 2019 IRP, 2019 IRP Volume II-Appendix F, Figure F.15 on Page 109





# Official Market Price Projection Final Documentation

**March 31, 2020**



# Aurora Assumptions

## Environmental

# State & Federal CO<sub>2</sub>: No Update

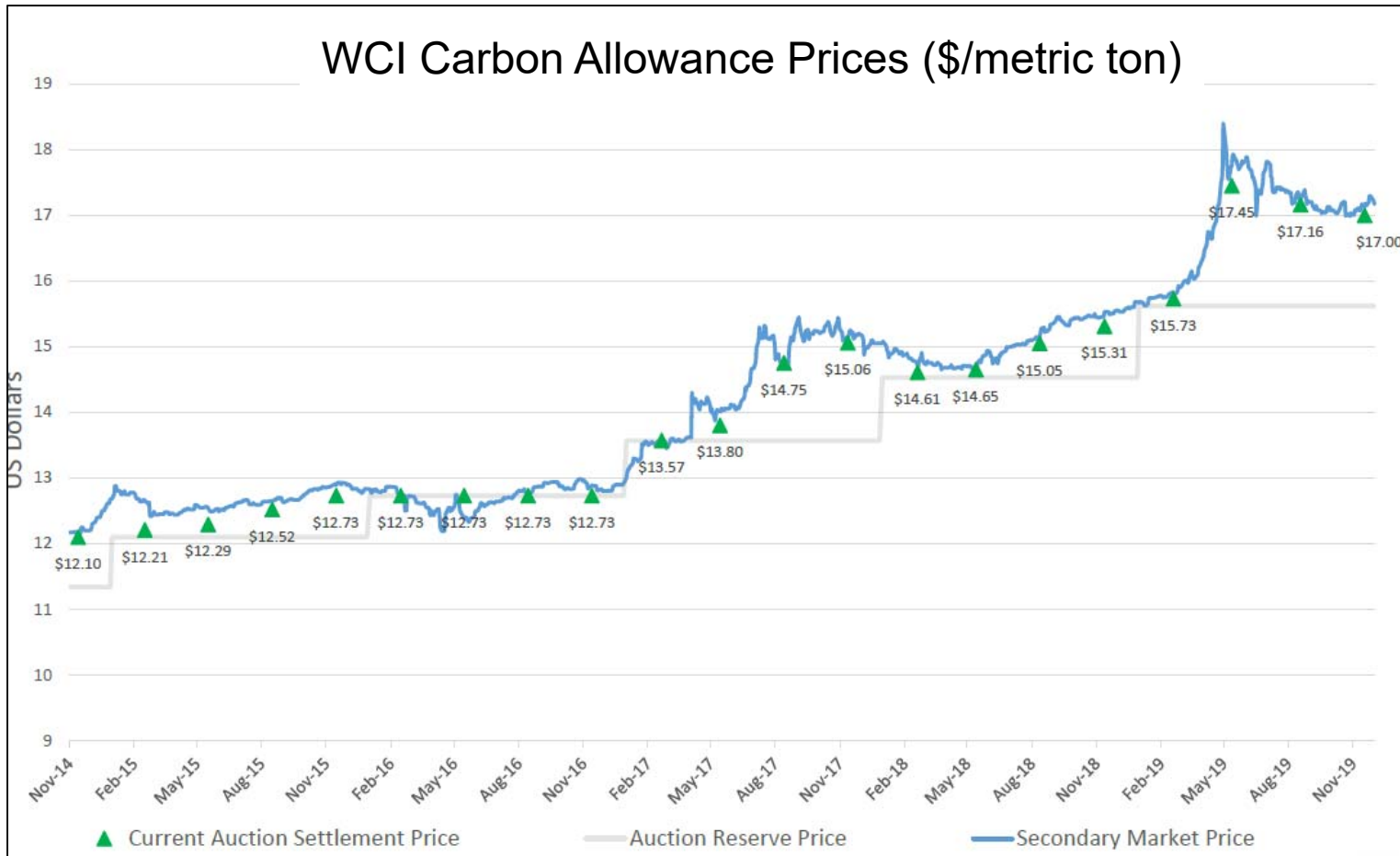
## California cap-and-trade policy assumptions in Aurora

- ▶ In the absence of a Federal CO<sub>2</sub> tax, California CO<sub>2</sub> is assumed to continue post 2030. July 25, 2017 Governor Jerry Brown signed into law the extension of California's existing cap-and-trade program to 2030, per Assembly Bill 398.
- ▶ Aurora's cap-and-trade prices come from an third-party expert's forecast of California Carbon Allowance (CCA) prices.
- ▶ All fossil-fired generating units operating within California generate emissions consistent with the CO<sub>2</sub> content of the fuel and the unit's heat rate
- ▶ For instance, a combined cycle plant with a 7,500 Btu/kWh heat rate burning natural gas, with a CO<sub>2</sub> content of 118 lb/MMBtu, would produce 0.44 tons of CO<sub>2</sub> emissions for each MWh generated
- ▶ The assumed California CO<sub>2</sub> allowance price is modeled as a dispatch cost adder and applied to plant CO<sub>2</sub> emissions.

June 19, 2019 the Trump administration finalized a rule to repeal and replace the Clean Power Plan (CPP) with the Affordable Clean Energy (ACE) rule. PacifiCorp's understanding of ACE, as it stands today, is that the rule includes no provisions to establish a federal carbon price.

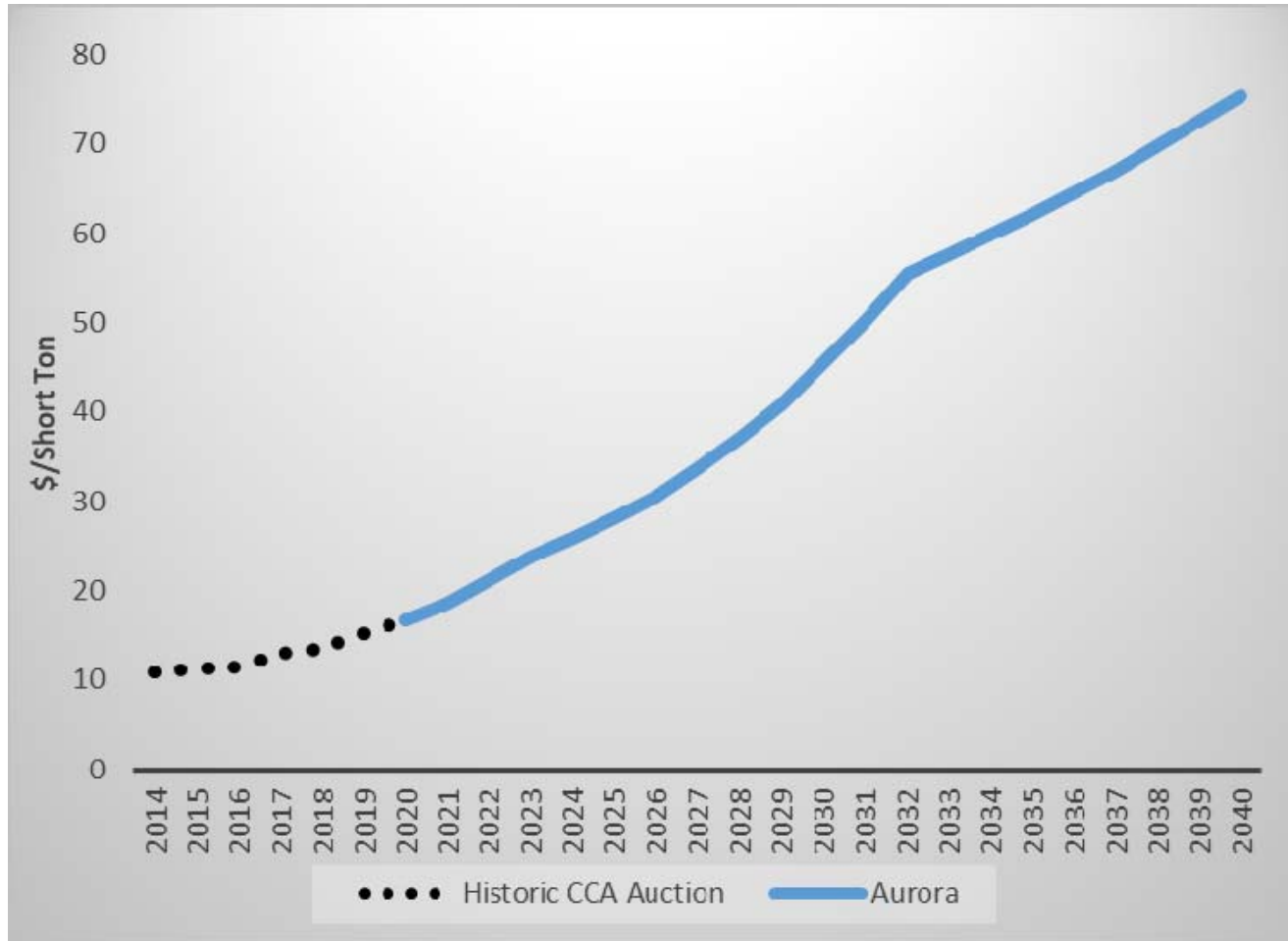
- ▶ The CPP was removed from the Aurora model in the April 2017 OFPC.
- ▶ No Federal CO<sub>2</sub> prices are assumed in Aurora. PacifiCorp continues to follow climate change legislation and EPA Rulings and update Aurora assumptions accordingly.

# Historic CA CO<sub>2</sub>:



<https://ww3.arb.ca.gov/cc/capandtrade/wcicarbonallowanceprices.pdf>

# Assumptions: California CO<sub>2</sub>



# Official Market Price Projection Final Documentation

Dec 31, 2018

# Aurora Assumptions

## Environmental

# State & Federal CO<sub>2</sub>: No Update

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## California cap-and-trade policy assumptions in Aurora

- ▶ In the absence of a Federal CO<sub>2</sub> tax, California CO<sub>2</sub> is assumed to continue post 2030. July 25, 2017 Governor Jerry Brown signed into law the extension of California's existing cap-and-trade program to 2030, per Assembly Bill 398.
- ▶ Aurora's cap-and-trade prices come from an third-party expert's forecast of California Carbon Allowance (CCA) prices.
- ▶ All fossil-fired generating units operating within California generate emissions consistent with the CO<sub>2</sub> content of the fuel and the unit's heat rate
- ▶ For instance, a combined cycle plant with a 7,500 Btu/kWh heat rate burning natural gas, with a CO<sub>2</sub> content of 118 lb/MMBtu, would produce 0.44 tons of CO<sub>2</sub> emissions for each MWh generated
- ▶ The assumed California CO<sub>2</sub> allowance price is modeled as a dispatch cost adder and applied to plant CO<sub>2</sub> emissions.

October 10, 2017 EPA Chief Scott Pruitt signed a proposal for EPA to withdraw its Clean Power Plan, without an immediate replacement.

- ▶ The CPP is no longer assumed and no Federal CO<sub>2</sub> program is currently modeled in Aurora.



### Gas Price Forecast Comparison

	OFPC March 2020	OFPC December 2018		
	West Side Gas	West Side Gas	Change	% Change
2030	3.55	5.00	(1.45)	-29%
2031	3.72	5.32	(1.60)	-30%
2032	3.89	5.64	(1.75)	-31%
2033	4.06	5.96	(1.90)	-32%
2034	4.28	6.27	(1.99)	-32%
2035	4.49	5.94	(1.45)	-24%
2036	4.66	5.99	(1.33)	-22%
2037	4.99	6.34	(1.35)	-21%
2038	5.24	6.84	(1.60)	-23%