

May 1, 2020

***VIA ELECTRONIC FILING***

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

**RE: UM 1729(3)—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 on May 1 of each year. Consistent with Order No. 14-058, this annual update is limited to the following four factors: (i) natural gas prices; (ii) on-peak and off-peak forward looking electricity market prices; (iii) production tax credit status; and (iv) any other action or change in an acknowledged integrated resource plan relevant to the calculation of avoided costs. The proposed updates consist of changes to natural gas and electricity prices only as the Company has not identified any changes to avoided costs related to factors (iii) and (iv) from Order No. 14-058. The Company respectfully requests an effective date of June 1, 2020.

The Company's current standard avoided cost prices were approved in docket UM 2001 Order No. 19-156.

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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Please direct questions on this filing to Cathie Allen at (503) 813-5934.

UM 1729(3)  
Public Utility Commission of Oregon  
May 1, 2020  
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Sincerely,

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

Mike Wilding  
Director, Regulation

Enclosure

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

**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)**
**Fixed Prices ¢/kWh**

| Deliveries<br>During<br>Calendar<br>Year | Base Load QF (1,3)         |                             | Wind QF (2,3)              |                             |
|--|----------------------------|-----------------------------|----------------------------|-----------------------------|
|  | On-Peak<br>Energy<br>Price | Off-Peak<br>Energy<br>Price | On-Peak<br>Energy<br>Price | Off-Peak<br>Energy<br>Price |
|  | (a)                        | (b)                         | (c)                        | (d)                         |
| 2020                                     | 2.58                       | 1.92                        | 2.52                       | 1.86                        |
| 2021                                     | 3.11                       | 2.23                        | 3.05                       | 2.17                        |
| 2022                                     | 3.15                       | 2.26                        | 3.09                       | 2.20                        |
| 2023                                     | 3.24                       | 2.24                        | 3.18                       | 2.17                        |
| 2024                                     | 3.33                       | 2.11                        | 3.26                       | 2.04                        |
| 2025                                     | 3.41                       | 2.14                        | 3.34                       | 2.08                        |
| 2026                                     | 3.71                       | 2.54                        | 3.64                       | 2.47                        |
| 2027                                     | 4.12                       | 2.72                        | 4.05                       | 2.64                        |
| 2028                                     | 4.32                       | 2.85                        | 4.25                       | 2.78                        |
| 2029                                     | 4.72                       | 3.06                        | 4.64                       | 2.99                        |
| 2030                                     | 6.25                       | 3.33                        | 4.13                       | 3.25                        |
| 2031                                     | 6.45                       | 3.46                        | 4.28                       | 3.38                        |
| 2032                                     | 6.65                       | 3.60                        | 4.43                       | 3.52                        |
| 2033                                     | 6.84                       | 3.73                        | 4.58                       | 3.65                        |
| 2034                                     | 7.08                       | 3.90                        | 4.77                       | 3.82                        |
| 2035                                     | 7.31                       | 4.07                        | 4.95                       | 3.98                        |
| 2036                                     | 7.51                       | 4.20                        | 5.10                       | 4.11                        |
| 2037                                     | 7.82                       | 4.45                        | 5.37                       | 4.35                        |
| 2038                                     | 8.08                       | 4.64                        | 5.57                       | 4.54                        |

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**AVOIDED COST PURCHASES FROM  
 ELIGIBLE QUALIFYING FACILITIES**
**Avoided Cost Prices (Continued)**
**Standard Fixed Avoided Cost Prices for Fixed and Tracking Solar QF (¢/kWh)**

| Deliveries<br>During<br>Calendar<br>Year | Fixed Solar QF (2,3)              |                                    | Tracking Solar QF (2,3)           |                                    |
|--|-----------------------------------|------------------------------------|-----------------------------------|------------------------------------|
|  | On-Peak<br>Energy<br>Price<br>(e) | Off-Peak<br>Energy<br>Price<br>(f) | On-Peak<br>Energy<br>Price<br>(g) | Off-Peak<br>Energy<br>Price<br>(h) |
| 2020                                     | 2.51                              | 1.86                               | 2.51                              | 1.86                               |
| 2021                                     | 3.05                              | 2.16                               | 3.05                              | 2.16                               |
| 2022                                     | 3.08                              | 2.19                               | 3.08                              | 2.19                               |
| 2023                                     | 3.17                              | 2.17                               | 3.17                              | 2.17                               |
| 2024                                     | 3.25                              | 2.03                               | 3.25                              | 2.03                               |
| 2025                                     | 3.34                              | 2.07                               | 3.34                              | 2.07                               |
| 2026                                     | 3.63                              | 2.46                               | 3.63                              | 2.46                               |
| 2027                                     | 4.04                              | 2.64                               | 4.04                              | 2.64                               |
| 2028                                     | 4.24                              | 2.77                               | 4.24                              | 2.77                               |
| 2029                                     | 4.63                              | 2.98                               | 4.63                              | 2.98                               |
| 2030                                     | 7.46                              | 3.24                               | 7.67                              | 3.24                               |
| 2031                                     | 7.68                              | 3.37                               | 7.90                              | 3.37                               |
| 2032                                     | 7.91                              | 3.51                               | 8.12                              | 3.51                               |
| 2033                                     | 8.13                              | 3.64                               | 8.35                              | 3.64                               |
| 2034                                     | 8.39                              | 3.81                               | 8.62                              | 3.81                               |
| 2035                                     | 8.65                              | 3.97                               | 8.88                              | 3.97                               |
| 2036                                     | 8.88                              | 4.10                               | 9.11                              | 4.10                               |
| 2037                                     | 9.22                              | 4.35                               | 9.46                              | 4.35                               |
| 2038                                     | 9.50                              | 4.54                               | 9.75                              | 4.54                               |

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- (1) Capacity Contribution to Peak for Avoided Proxy Resource and Base Load QF resource are assumed 100%.
- (2) The standard avoided cost price for wind and solar QFs located in PacifiCorp's balancing authority area (BAA) are reduced by an integration charge of \$0.57/MWh (\$2016) and solar integration charge of \$0.60/MWh (\$2016), respectively.  
 For Solar and Wind QFs not located in PacifiCorp's BAA, the renewable avoided cost price will be increased by wind integration charge of \$0.57/MWh (\$2016) and solar integration charge of \$0.60/MWh (\$2016), respectively.
- (3) Standard Resource Sufficiency Period ends December 31, 2029 and Standard Resource Deficiency Period begins January 1, 2030.

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**Effective for service on and after June 1, 2020**

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

| Deliveries<br>During<br>Calendar<br>Year | Renewable Base Load QF<br>(1,4)   |                                    | Wind QF (1,2,3)                   |                                    |
|--|-----------------------------------|------------------------------------|-----------------------------------|------------------------------------|
|  | On-Peak<br>Energy<br>Price<br>(a) | Off-Peak<br>Energy<br>Price<br>(b) | On-Peak<br>Energy<br>Price<br>(c) | Off-Peak<br>Energy<br>Price<br>(d) |
| 2020                                     | 2.58                              | 1.92                               | 2.52                              | 1.86                               |
| 2021                                     | 4.05                              | 1.44                               | 1.74                              | 1.38                               |
| 2022                                     | 4.11                              | 1.53                               | 1.74                              | 1.47                               |
| 2023                                     | 4.25                              | 1.52                               | 1.82                              | 1.46                               |
| 2024                                     | 4.38                              | 1.51                               | 1.89                              | 1.45                               |
| 2025                                     | 4.49                              | 1.54                               | 1.94                              | 1.48                               |
| 2026                                     | 4.60                              | 1.56                               | 2.00                              | 1.49                               |
| 2027                                     | 4.72                              | 1.57                               | 2.07                              | 1.50                               |
| 2028                                     | 4.81                              | 1.63                               | 2.09                              | 1.56                               |
| 2029                                     | 4.92                              | 1.65                               | 2.15                              | 1.58                               |
| 2030                                     | 5.04                              | 1.67                               | 2.20                              | 1.59                               |
| 2031                                     | 5.15                              | 1.71                               | 2.25                              | 1.63                               |
| 2032                                     | 5.22                              | 1.79                               | 2.26                              | 1.71                               |
| 2033                                     | 5.31                              | 1.86                               | 2.29                              | 1.78                               |
| 2034                                     | 5.40                              | 1.93                               | 2.32                              | 1.84                               |
| 2035                                     | 5.50                              | 1.98                               | 2.35                              | 1.89                               |
| 2036                                     | 5.61                              | 2.02                               | 2.40                              | 1.93                               |
| 2037                                     | 5.85                              | 2.07                               | 2.44                              | 1.98                               |
| 2038                                     | 5.96                              | 2.12                               | 2.48                              | 2.03                               |

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

| Deliveries<br>During<br>Calendar<br>Year | Fixed Solar QF (1,2,3)            |                                    | Tracking Solar QF (1,2,3)         |                                    |
|--|-----------------------------------|------------------------------------|-----------------------------------|------------------------------------|
|  | On-Peak<br>Energy<br>Price<br>(e) | Off-Peak<br>Energy<br>Price<br>(f) | On-Peak<br>Energy<br>Price<br>(g) | Off-Peak<br>Energy<br>Price<br>(h) |
| 2020                                     | 2.51                              | 1.86                               | 2.51                              | 1.86                               |
| 2021                                     | 4.41                              | 1.38                               | 4.71                              | 1.38                               |
| 2022                                     | 4.48                              | 1.46                               | 4.78                              | 1.46                               |
| 2023                                     | 4.62                              | 1.45                               | 4.94                              | 1.45                               |
| 2024                                     | 4.76                              | 1.44                               | 5.08                              | 1.44                               |
| 2025                                     | 4.88                              | 1.47                               | 5.21                              | 1.47                               |
| 2026                                     | 5.00                              | 1.48                               | 5.34                              | 1.48                               |
| 2027                                     | 5.13                              | 1.49                               | 5.48                              | 1.49                               |
| 2028                                     | 5.23                              | 1.55                               | 5.58                              | 1.55                               |
| 2029                                     | 5.35                              | 1.57                               | 5.71                              | 1.57                               |
| 2030                                     | 5.47                              | 1.58                               | 5.84                              | 1.58                               |
| 2031                                     | 5.59                              | 1.63                               | 5.97                              | 1.63                               |
| 2032                                     | 5.68                              | 1.70                               | 6.06                              | 1.70                               |
| 2033                                     | 5.77                              | 1.77                               | 6.16                              | 1.77                               |
| 2034                                     | 5.87                              | 1.83                               | 6.27                              | 1.83                               |
| 2035                                     | 5.98                              | 1.88                               | 6.38                              | 1.88                               |
| 2036                                     | 6.10                              | 1.92                               | 6.51                              | 1.92                               |
| 2037                                     | 6.22                              | 1.97                               | 6.64                              | 1.97                               |
| 2038                                     | 6.33                              | 2.02                               | 6.76                              | 2.02                               |

- (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, 2020 and Renewable Deficiency Period begins January 1, 2021.
- (2) During the Renewable Resource Sufficiency Period, the renewable avoided cost price for a wind and solar Qualifying Facility located in PacifiCorp's BAA is reduced by wind integration charge of \$0.57/MWh (\$2016) and solar integration charge of \$0.60/MWh (\$2016), respectively.  
For Solar and Wind QFs not located in PacifiCorp's BAA, the renewable avoided cost price will be increased by the avoided wind integration charge of \$0.57/MWh (\$2016) and solar integration charge of \$0.60/MWh (\$2016), respectively.
- (3) During the Renewable Resource Deficiency Period, the renewable avoided cost price for a solar Qualifying Facility located in PacifiCorp's BAA is reduced by the difference between the solar integration charge of \$0.60/MWh (\$2016) and wind integration charge of \$0.57/MWh (\$2016). For a wind Qualifying Facility located in PacifiCorp's (BAA), the adjustment is zero. For a solar Qualifying Facility not located in PacifiCorp's BAA, the renewable avoided cost price for solar QF will be increased by the difference between the solar integration and wind integration charges.
- (4) During the Renewable Resource Deficiency Period, the renewable avoided cost price for Base Load is increased by the avoided wind integration charge of \$0.57/MWh (\$2016).

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**Effective for service on and after June 1, 2020**

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**PACIFIC POWER  
AVOIDED COST CALCULATION**

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

**OREGON – MAY 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            |                       | (\$/kW-yr)         | (\$/MWh)                                  | \$/MWh           | \$/MWh       |
|      | (a)                         | (b)               | (c)                   | (d)<br>= (a) * (c) | (e)<br>(d) * 1000 / (100.0% x 8760 x 56%) | (f)<br>(e) + (b) | (g)<br>= (b) |
| 2020 | Market Based Prices         |                   |                       |                    |   | \$25.79          | \$19.23      |
| 2021 | 2020 through 2030           |                   |                       |                    |   | \$31.13          | \$22.30      |
| 2022 |                             |                   |                       |                    |   | \$31.52          | \$22.59      |
| 2023 |                             |                   |                       |                    |   | \$32.44          | \$22.39      |
| 2024 |                             |                   |                       |                    |   | \$33.25          | \$21.05      |
| 2025 |                             |                   |                       |                    |   | \$34.10          | \$21.44      |
| 2026 |                             |                   |                       |                    |   | \$37.06          | \$25.37      |
| 2027 |                             |                   |                       |                    |   | \$41.16          | \$27.15      |
| 2028 |                             |                   |                       |                    |   | \$43.21          | \$28.54      |
| 2029 |                             |                   |                       |                    |   | \$47.15          | \$30.61      |
| 2030 | \$143.51                    | \$33.27           | 100.0%                | 143.51             | \$29.23                                   | \$62.50          | \$33.27      |
| 2031 | \$146.58                    | \$34.62           | 100.0%                | 146.58             | \$29.86                                   | \$64.48          | \$34.62      |
| 2032 | \$149.66                    | \$35.97           | 100.0%                | 149.66             | \$30.48                                   | \$66.45          | \$35.97      |
| 2033 | \$152.77                    | \$37.32           | 100.0%                | 152.77             | \$31.12                                   | \$68.44          | \$37.32      |
| 2034 | \$155.92                    | \$39.02           | 100.0%                | 155.92             | \$31.76                                   | \$70.78          | \$39.02      |
| 2035 | \$159.11                    | \$40.65           | 100.0%                | 159.11             | \$32.41                                   | \$73.06          | \$40.65      |
| 2036 | \$162.36                    | \$42.01           | 100.0%                | 162.36             | \$33.07                                   | \$75.08          | \$42.01      |
| 2037 | \$165.64                    | \$44.46           | 100.0%                | 165.64             | \$33.74                                   | \$78.20          | \$44.46      |
| 2038 | \$168.95                    | \$46.37           | 100.0%                | 168.95             | \$34.41                                   | \$80.78          | \$46.37      |

(1) Capacity Contribution of the Avoided Proxy and Base Load QF resources are assumed to be 100%.

Columns

- (a) Full fixed cost of a proxy CCCT less capitalized energy
- (b) Fuel and Capitalized Energy Cost of the Proxy CCCT
- (c) 100.0% is the on-peak capacity factor of the Base Load QF resource
- (d) 56% is the percent of all hours that are on-peak
- (e) 2020-2029 On-Peak Blended Market Prices for QF resource
- (f) 2020-2029 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            |                       | (\$/kW-yr)        | (\$/MWh)                                  | \$/MWh      | \$/MWh   |
|      | (a)                         | (b)               | (c)                   | (d)               | (e)                                       | (f)         | (g)      |
|      |                             |                   |                       | = (a) * (c)       | (d) *1000 / (39.3% x 8760 x 56%)          | = (b) + (e) | = (b)    |
| 2020 | Market Based Prices         |                   |                       |                   |   | \$25.18     | \$18.62  |
| 2021 | 2020 through 2029           |                   |                       |                   |   | \$30.51     | \$21.68  |
| 2022 | less Wind Integration (2)   |                   |                       |                   |   | \$30.89     | \$21.96  |
| 2023 |                             |                   |                       |                   |   | \$31.79     | \$21.74  |
| 2024 |                             |                   |                       |                   |   | \$32.58     | \$20.38  |
| 2025 |                             |                   |                       |                   |   | \$33.42     | \$20.76  |
| 2026 |                             |                   |                       |                   |   | \$36.37     | \$24.68  |
| 2027 |                             |                   |                       |                   |   | \$40.45     | \$26.44  |
| 2028 |                             |                   |                       |                   |   | \$42.48     | \$27.81  |
| 2029 |                             |                   |                       |                   |   | \$46.40     | \$29.86  |
| 2030 | \$143.51                    | \$33.27           | 11.8%                 | 16.90             | \$8.76                                    | \$41.26     | \$32.50  |
| 2031 | \$146.58                    | \$34.62           | 11.8%                 | 17.26             | \$8.95                                    | \$42.78     | \$33.83  |
| 2032 | \$149.66                    | \$35.97           | 11.8%                 | 17.62             | \$9.14                                    | \$44.29     | \$35.16  |
| 2033 | \$152.77                    | \$37.32           | 11.8%                 | 17.99             | \$9.32                                    | \$45.82     | \$36.49  |
| 2034 | \$155.92                    | \$39.02           | 11.8%                 | 18.36             | \$9.52                                    | \$47.68     | \$38.17  |
| 2035 | \$159.11                    | \$40.65           | 11.8%                 | 18.74             | \$9.71                                    | \$49.49     | \$39.78  |
| 2036 | \$162.36                    | \$42.01           | 11.8%                 | 19.12             | \$9.91                                    | \$51.03     | \$41.12  |
| 2037 | \$165.64                    | \$44.46           | 11.8%                 | 19.51             | \$10.11                                   | \$53.66     | \$43.55  |
| 2038 | \$168.95                    | \$46.37           | 11.8%                 | 19.90             | \$10.31                                   | \$55.75     | \$45.44  |

(1) The avoided cost price is reduced by a wind integration charge of \$0.57/MWh (\$2016) 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 \$0.57/MWh (\$2016) integration charges.

(2) Wind Integration Cost is \$0.57 (2017 IRP Volume II-Appendix F)

**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), 2017 IRP
- (d) Column (c) multiplied by difference between capacity contributions of renewable Base Load QF and renewable proxy wind resource
- (e) 39.3% is the on-peak capacity factor of the Wind QF Resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2029 On-Peak Blended Market Prices for QF resource
- (g) 2020-2029 Off-Peak Blended Market Prices for QF resource

Wind Capacity Contribution 11.8%

**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) | = (b)    |
| 2020 | Market Based Prices       |                   |                       |                   |   | \$25.14     | \$18.58  |
| 2021 | 2020 through 2030         |                   |                       |                   |   | \$30.46     | \$21.63  |
| 2022 |                           |                   |                       |                   |   | \$30.83     | \$21.90  |
| 2023 |                           |                   |                       |                   |   | \$31.73     | \$21.68  |
| 2024 |                           |                   |                       |                   |   | \$32.52     | \$20.32  |
| 2025 |                           |                   |                       |                   |   | \$33.35     | \$20.69  |
| 2026 |                           |                   |                       |                   |   | \$36.29     | \$24.60  |
| 2027 |                           |                   |                       |                   |   | \$40.37     | \$26.36  |
| 2028 |                           |                   |                       |                   |   | \$42.40     | \$27.73  |
| 2029 |                           |                   |                       |                   |   | \$46.32     | \$29.78  |
| 2030 | \$143.51                  | \$33.27           | 53.86%                | \$77.30           | \$42.18                                   | \$74.60     | \$32.42  |
| 2031 | \$146.58                  | \$34.62           | 53.86%                | \$78.95           | \$43.08                                   | \$76.83     | \$33.75  |
| 2032 | \$149.66                  | \$35.97           | 53.86%                | \$80.61           | \$43.99                                   | \$79.07     | \$35.08  |
| 2033 | \$152.77                  | \$37.32           | 53.86%                | \$82.28           | \$44.90                                   | \$81.32     | \$36.41  |
| 2034 | \$155.92                  | \$39.02           | 53.86%                | \$83.98           | \$45.83                                   | \$83.92     | \$38.09  |
| 2035 | \$159.11                  | \$40.65           | 53.86%                | \$85.70           | \$46.77                                   | \$86.47     | \$39.70  |
| 2036 | \$162.36                  | \$42.01           | 53.86%                | \$87.45           | \$47.72                                   | \$88.76     | \$41.04  |
| 2037 | \$165.64                  | \$44.46           | 53.86%                | \$89.22           | \$48.69                                   | \$92.15     | \$43.47  |
| 2038 | \$168.95                  | \$46.37           | 53.86%                | \$91.00           | \$49.66                                   | \$95.02     | \$45.36  |

(1) The avoided cost price is reduced by a solar integration charge of \$0.60/MWh (\$2016) 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 \$0.60/MWh (\$2016) integration charges.

(2) Solar Integration Cost is \$0.60 (2017 IRP Volume II-Appendix F)

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), 2017 IRP
- (d) Column (c) multiplied by the capacity contribution of a Standard Fixed Solar QF
- (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) 2020-2029 On-Peak Blended Market Prices for QF resource
- (g) 2020-2029 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 / (42.8% x 8760 x 56%)          | = (b) + (e) | = (b)    |
| 2020 | Market Based Prices       |                   |                       |                   |   | \$25.14     | \$18.58  |
| 2021 | 2020 through 2030         |                   |                       |                   |   | \$30.46     | \$21.63  |
| 2022 |                           |                   |                       |                   |   | \$30.83     | \$21.90  |
| 2023 |                           |                   |                       |                   |   | \$31.73     | \$21.68  |
| 2024 |                           |                   |                       |                   |   | \$32.52     | \$20.32  |
| 2025 |                           |                   |                       |                   |   | \$33.35     | \$20.69  |
| 2026 |                           |                   |                       |                   |   | \$36.29     | \$24.60  |
| 2027 |                           |                   |                       |                   |   | \$40.37     | \$26.36  |
| 2028 |                           |                   |                       |                   |   | \$42.40     | \$27.73  |
| 2029 |                           |                   |                       |                   |   | \$46.32     | \$29.78  |
| 2030 | \$143.51                  | \$33.27           | 64.80%                | \$93.00           | \$44.26                                   | \$76.68     | \$32.42  |
| 2031 | \$146.58                  | \$34.62           | 64.80%                | \$94.99           | \$45.21                                   | \$78.95     | \$33.75  |
| 2032 | \$149.66                  | \$35.97           | 64.80%                | 96.98             | \$46.15                                   | \$81.23     | \$35.08  |
| 2033 | \$152.77                  | \$37.32           | 64.80%                | 99.00             | \$47.11                                   | \$83.53     | \$36.41  |
| 2034 | \$155.92                  | \$39.02           | 64.80%                | 101.04            | \$48.09                                   | \$86.17     | \$38.09  |
| 2035 | \$159.11                  | \$40.65           | 64.80%                | 103.11            | \$49.07                                   | \$88.77     | \$39.70  |
| 2036 | \$162.36                  | \$42.01           | 64.80%                | 105.21            | \$50.07                                   | \$91.11     | \$41.04  |
| 2037 | \$165.64                  | \$44.46           | 64.80%                | 107.34            | \$51.08                                   | \$94.55     | \$43.47  |
| 2038 | \$168.95                  | \$46.37           | 64.80%                | 109.48            | \$52.10                                   | \$97.46     | \$45.36  |

(1) The avoided cost price is reduced by a solar integration charge of \$0.60/MWh (\$2016) 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 \$0.60/MWh (\$2016) integration charges.

(2) Solar Integration C \$0.60 (2017 IRP Volume II-Appendix F)

**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), 2017 IRP
- (d) Column (c) multiplied by the capacity contribution of a Standard Tracking Solar QF
- (e) 42.8% is the on-peak capacity factor of the Tracking Solar QF Resource  
56% is the percent of all hours that are on-peak
- (f) 2020-2029 On-Peak Blended Market Prices for QF resource
- (g) 2020-2029 Off-Peak Blended Market Prices for QF resource

**Exhibit 5**

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

| Year | Renewable Wind Avoided Resource |          | Renewable Base Load QF Resource |                                  |   | On-Peak | Off-Peak |
|------|---------------------------------|----------|---------------------------------|----------------------------------|---|---------|----------|
|      | On-Peak                         | Off-Peak | Avoided Firm Capacity Costs     | QF Capacity Adder                | Capacity Adder Allocated to On-Peak Hours |         |          |
|      | (\$/MWh)                        | (\$/MWh) | \$/kW-yr                        | (\$/kW-yr)                       | (\$/MWh)                                  |         |          |
|      | (a)                             | (b)      | (c)                             | (d)                              | (e)                                       |         |          |
|      |                                 |          | (c) x 84%                       | (d) *1000 / (100.0%x 8760 x 56%) | = (a) + (e)                               | = (b)   |          |
| 2020 |                                 |          |                                 |                                  |   | \$25.79 | \$19.23  |
| 2021 | \$19.81                         | \$13.81  | \$117.10                        | \$98.60                          | \$20.08                                   | \$40.51 | \$14.43  |
| 2022 | \$19.91                         | \$14.67  | \$120.05                        | \$101.08                         | \$20.59                                   | \$41.13 | \$15.30  |
| 2023 | \$20.75                         | \$14.57  | \$122.90                        | \$103.48                         | \$21.08                                   | \$42.48 | \$15.22  |
| 2024 | \$21.55                         | \$14.45  | \$125.77                        | \$105.90                         | \$21.57                                   | \$43.79 | \$15.12  |
| 2025 | \$22.11                         | \$14.75  | \$128.69                        | \$108.36                         | \$22.07                                   | \$44.86 | \$15.43  |
| 2026 | \$22.78                         | \$14.87  | \$131.62                        | \$110.82                         | \$22.57                                   | \$46.04 | \$15.56  |
| 2027 | \$23.46                         | \$14.99  | \$134.52                        | \$113.27                         | \$23.07                                   | \$47.24 | \$15.70  |
| 2028 | \$23.80                         | \$15.58  | \$137.44                        | \$115.72                         | \$23.57                                   | \$48.10 | \$16.31  |
| 2029 | \$24.39                         | \$15.77  | \$140.44                        | \$118.25                         | \$24.09                                   | \$49.23 | \$16.52  |
| 2030 | \$25.01                         | \$15.92  | \$143.51                        | \$120.84                         | \$24.61                                   | \$50.39 | \$16.69  |
| 2031 | \$25.55                         | \$16.34  | \$146.58                        | \$123.42                         | \$25.14                                   | \$51.48 | \$17.13  |
| 2032 | \$25.77                         | \$17.08  | \$149.66                        | \$126.01                         | \$25.67                                   | \$52.25 | \$17.89  |
| 2033 | \$26.07                         | \$17.75  | \$152.77                        | \$128.63                         | \$26.20                                   | \$53.10 | \$18.58  |
| 2034 | \$26.42                         | \$18.40  | \$155.92                        | \$131.28                         | \$26.74                                   | \$54.01 | \$19.25  |
| 2035 | \$26.81                         | \$18.92  | \$159.11                        | \$133.97                         | \$27.29                                   | \$54.97 | \$19.79  |
| 2036 | \$27.36                         | \$19.28  | \$162.36                        | \$136.71                         | \$27.85                                   | \$56.10 | \$20.17  |
| 2037 | \$27.83                         | \$19.77  | \$165.64                        | \$146.13                         | \$29.77                                   | \$58.51 | \$20.68  |
| 2038 | \$28.31                         | \$20.29  | \$168.95                        | \$149.05                         | \$30.36                                   | \$59.60 | \$21.22  |

Columns

- (a) Table 13 Column (d)
- (b) Table 13 Column (e)
- (c) Full fixed cost of a proxy CCCT less capitalized energy
- (d) Column (c) multiplied by difference between capacity contributions of renewable Base Load QF and renewable proxy wind resource
- (e) 100.0% is the on-peak capacity factor of the Proxy CCCT Resource  
56% is the percent of all hours that are on-peak
- (f) 2019-2020 On-Peak Blended Market Prices for QF resource
- (g) 2019-2020 Off-Peak Blended Market Prices for QF resource

(1) The renewable avoided cost prices during the deficiency period are increased by the avoided integration charge

**Exhibit 6**  
**Renewable Standard Avoided Cost Prices for Wind QF (1) (2) (3)**  
**\$/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 -4%                   | (d) *1000 / (39.3% x 8760 x 56%) |   | = (a) + (e)      | = (b)    |
| 2020 |                                 |          |                             |                                  |   | \$25.18          | \$18.62  |
| 2021 | \$19.81                         | \$13.81  | \$117.10                    | (\$4.71)                         | (\$2.44)                                  | \$17.37          | \$13.81  |
| 2022 | \$19.91                         | \$14.67  | \$120.05                    | (\$4.83)                         | (\$2.50)                                  | \$17.41          | \$14.67  |
| 2023 | \$20.75                         | \$14.57  | \$122.90                    | (\$4.94)                         | (\$2.56)                                  | \$18.19          | \$14.57  |
| 2024 | \$21.55                         | \$14.45  | \$125.77                    | (\$5.06)                         | (\$2.62)                                  | \$18.93          | \$14.45  |
| 2025 | \$22.11                         | \$14.75  | \$128.69                    | (\$5.18)                         | (\$2.68)                                  | \$19.43          | \$14.75  |
| 2026 | \$22.78                         | \$14.87  | \$131.62                    | (\$5.30)                         | (\$2.74)                                  | \$20.04          | \$14.87  |
| 2027 | \$23.46                         | \$14.99  | \$134.52                    | (\$5.41)                         | (\$2.81)                                  | \$20.65          | \$14.99  |
| 2028 | \$23.80                         | \$15.58  | \$137.44                    | (\$5.53)                         | (\$2.87)                                  | \$20.93          | \$15.58  |
| 2029 | \$24.39                         | \$15.77  | \$140.44                    | (\$5.65)                         | (\$2.93)                                  | \$21.46          | \$15.77  |
| 2030 | \$25.01                         | \$15.92  | \$143.51                    | (\$5.77)                         | (\$2.99)                                  | \$22.02          | \$15.92  |
| 2031 | \$25.55                         | \$16.34  | \$146.58                    | (\$5.90)                         | (\$3.06)                                  | \$22.49          | \$16.34  |
| 2032 | \$25.77                         | \$17.08  | \$149.66                    | (\$6.02)                         | (\$3.12)                                  | \$22.65          | \$17.08  |
| 2033 | \$26.07                         | \$17.75  | \$152.77                    | (\$6.15)                         | (\$3.19)                                  | \$22.88          | \$17.75  |
| 2034 | \$26.42                         | \$18.40  | \$155.92                    | (\$6.27)                         | (\$3.25)                                  | \$23.17          | \$18.40  |
| 2035 | \$26.81                         | \$18.92  | \$159.11                    | (\$6.40)                         | (\$3.32)                                  | \$23.49          | \$18.92  |
| 2036 | \$27.36                         | \$19.28  | \$162.36                    | (\$6.53)                         | (\$3.39)                                  | \$23.97          | \$19.28  |
| 2037 | \$27.83                         | \$19.77  | \$165.64                    | (\$6.66)                         | (\$3.45)                                  | \$24.38          | \$19.77  |
| 2038 | \$28.31                         | \$20.29  | \$168.95                    | (\$6.80)                         | (\$3.52)                                  | \$24.79          | \$20.29  |

- (1) During the deficiency period, avoided cost prices will be adjusted by the difference between the avoided integration costs and QF's integration costs. If the QF is in PacifiCorp's Balancing Area Authority (BAA), the adjustment is zero ( integration costs cancel each other out).  
If QF wind resource is not in PacifiCorp's BAA, \$0.57/MWh (\$2016) will be added for avoided integration charges.
- (2) During the sufficiency period, avoided cost prices are reduced by an integration charge of \$0.57/MWh (\$2016) for wind QF resources located in PacifiCorp's BAA (in-system).  
If QF wind resource is not in PacifiCorp's BAA, prices will be increased by the \$0.57/MWh (\$2016) integration charges.
- (3) Wind Integration Charge is \$0.57 (2017 IRP Volume II-Appendix F)

Columns

- (a) Table 13 Column (d)  
(b) Table 13 Column (e)  
(c) Full fixed cost of a proxy CCCT less capitalized energy  
(d) Column (c) multiplied by difference between capacity contributions of renewable Wind QF and renewable proxy wind resource  
(e) 39.3% is the on-peak capacity factor of the Wind QF resource  
56% is the percent of all hours that are on-peak  
(f) 2020 On-Peak Blended Market Prices for QF resource  
(g) 2020 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)<br>(c) x 38.1% | (e)<br>(d) *1000 / (37.3%x 8760 x 56%)    | (f)<br>= (a) + (e) | (g)<br>= (b) |
| 2020 |                                 |          |                             |                    |   | \$25.14            | \$18.58      |
| 2021 | \$19.81                         | \$13.81  | \$117.10                    | \$44.57            | \$24.32                                   | \$44.08            | \$13.76      |
| 2022 | \$19.91                         | \$14.67  | \$120.05                    | \$45.69            | \$24.94                                   | \$44.79            | \$14.61      |
| 2023 | \$20.75                         | \$14.57  | \$122.90                    | \$46.78            | \$25.53                                   | \$46.22            | \$14.51      |
| 2024 | \$21.55                         | \$14.45  | \$125.77                    | \$47.87            | \$26.12                                   | \$47.61            | \$14.39      |
| 2025 | \$22.11                         | \$14.75  | \$128.69                    | \$48.98            | \$26.73                                   | \$48.77            | \$14.68      |
| 2026 | \$22.78                         | \$14.87  | \$131.62                    | \$50.10            | \$27.34                                   | \$50.04            | \$14.79      |
| 2027 | \$23.46                         | \$14.99  | \$134.52                    | \$51.20            | \$27.94                                   | \$51.32            | \$14.91      |
| 2028 | \$23.80                         | \$15.58  | \$137.44                    | \$52.31            | \$28.55                                   | \$52.27            | \$15.50      |
| 2029 | \$24.39                         | \$15.77  | \$140.44                    | \$53.45            | \$29.17                                   | \$53.48            | \$15.69      |
| 2030 | \$25.01                         | \$15.92  | \$143.51                    | \$54.62            | \$29.81                                   | \$54.74            | \$15.84      |
| 2031 | \$25.55                         | \$16.34  | \$146.58                    | \$55.79            | \$30.45                                   | \$55.92            | \$16.26      |
| 2032 | \$25.77                         | \$17.08  | \$149.66                    | \$56.96            | \$31.09                                   | \$56.78            | \$17.00      |
| 2033 | \$26.07                         | \$17.75  | \$152.77                    | \$58.15            | \$31.73                                   | \$57.72            | \$17.67      |
| 2034 | \$26.42                         | \$18.40  | \$155.92                    | \$59.35            | \$32.39                                   | \$58.73            | \$18.32      |
| 2035 | \$26.81                         | \$18.92  | \$159.11                    | \$60.56            | \$33.05                                   | \$59.78            | \$18.84      |
| 2036 | \$27.36                         | \$19.28  | \$162.36                    | \$61.80            | \$33.72                                   | \$61.00            | \$19.20      |
| 2037 | \$27.83                         | \$19.77  | \$165.64                    | \$63.04            | \$34.40                                   | \$62.15            | \$19.69      |
| 2038 | \$28.31                         | \$20.29  | \$168.95                    | \$64.30            | \$35.09                                   | \$63.32            | \$20.21      |

Columns

- (a) Table 13 Column (d)
- (b) Table 13 Column (e)
- (c) Full fixed cost of a proxy CCCT less capitalized energy
- (d) Column (c) multiplied by difference between capacity contributions of Fixed Solar QF and 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 On-Peak Blended Market Prices for QF resource
- (g) 2020 Off-Peak Blended Market Prices for QF resource

- (1) Adjustment for integration costs:  
During Renewable Sufficiency period, the prices are decreased by Solar integration charges  
During Renewable Deficiency Period, the prices are decreased by the difference in Wind and Solar integration charge

**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)<br>(c) x 49.0% | (e)<br>(d) *1000 / (42.8% x 8760 x 56%)   | (f)<br>= (a) + (e) | (g)<br>= (b) |
| 2020 |                                 |          |                             |                    |   | \$25.14            | \$18.58      |
| 2021 | \$19.81                         | \$13.81  | \$117.10                    | \$57.38            | \$27.31                                   | \$47.07            | \$13.76      |
| 2022 | \$19.91                         | \$14.67  | \$120.05                    | \$58.83            | \$28.00                                   | \$47.85            | \$14.61      |
| 2023 | \$20.75                         | \$14.57  | \$122.90                    | \$60.22            | \$28.66                                   | \$49.35            | \$14.51      |
| 2024 | \$21.55                         | \$14.45  | \$125.77                    | \$61.63            | \$29.33                                   | \$50.82            | \$14.39      |
| 2025 | \$22.11                         | \$14.75  | \$128.69                    | \$63.06            | \$30.01                                   | \$52.05            | \$14.68      |
| 2026 | \$22.78                         | \$14.87  | \$131.62                    | \$64.50            | \$30.69                                   | \$53.39            | \$14.79      |
| 2027 | \$23.46                         | \$14.99  | \$134.52                    | \$65.92            | \$31.37                                   | \$54.75            | \$14.91      |
| 2028 | \$23.80                         | \$15.58  | \$137.44                    | \$67.35            | \$32.05                                   | \$55.77            | \$15.50      |
| 2029 | \$24.39                         | \$15.77  | \$140.44                    | \$68.82            | \$32.75                                   | \$57.06            | \$15.69      |
| 2030 | \$25.01                         | \$15.92  | \$143.51                    | \$70.32            | \$33.47                                   | \$58.40            | \$15.84      |
| 2031 | \$25.55                         | \$16.34  | \$146.58                    | \$71.83            | \$34.18                                   | \$59.65            | \$16.26      |
| 2032 | \$25.77                         | \$17.08  | \$149.66                    | \$73.34            | \$34.90                                   | \$60.59            | \$17.00      |
| 2033 | \$26.07                         | \$17.75  | \$152.77                    | \$74.86            | \$35.63                                   | \$61.62            | \$17.67      |
| 2034 | \$26.42                         | \$18.40  | \$155.92                    | \$76.41            | \$36.36                                   | \$62.70            | \$18.32      |
| 2035 | \$26.81                         | \$18.92  | \$159.11                    | \$77.97            | \$37.11                                   | \$63.84            | \$18.84      |
| 2036 | \$27.36                         | \$19.28  | \$162.36                    | \$79.56            | \$37.86                                   | \$65.14            | \$19.20      |
| 2037 | \$27.83                         | \$19.77  | \$165.64                    | \$81.17            | \$38.63                                   | \$66.38            | \$19.69      |
| 2038 | \$28.31                         | \$20.29  | \$168.95                    | \$82.79            | \$39.40                                   | \$67.63            | \$20.21      |

Columns

- (a) Table 13 Column (d)
- (b) Table 13 Column (e)
- (c) Full fixed cost of a proxy CCCT less capitalized energy
- (d) Column (c) multiplied by difference between capacity contribution of Tracking Solar QF and renewable proxy wind resource.
- (e) 42.8% 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 On-Peak Blended Market Prices for QF resource
- (g) 2020 Off-Peak Blended Market Prices for QF resource

- (1) Adjustment for integration costs:  
During Renewable Sufficiency period, the prices are decreased by Solar integration charges  
During Renewable Deficiency Period, the prices are decreased by the difference in Wind and Solar integration charge



**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%     | 0.0%         | 0.0%       | 0.0%   |
| 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% |

| Period    | On-Peak |              |            |        | Off-Peak |              |            |        |
|-----------|---------|--------------|------------|--------|----------|--------------|------------|--------|
|           | COB     | Mid Columbia | Palo Verde | Total  | COB      | Mid Columbia | Palo Verde | Total  |
| 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%     | 0.0%         | 0.0%       | 0.0%   |
| 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**  
**2017 IRP Preferred Portfolio**  
**Excerpt from 2017 IRP Table 8.17**

| Resource                               | Capacity (MW) |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | Resource Totals 1/ |         |
|--|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------|---------|
|  | 2017          | 2018 | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  | 2025  | 2026  | 2027  | 2028  | 2029  | 2030  | 2031  | 2032  | 2033  | 2034  | 2035  | 2036  | 10-year            | 20-year |
| <b>East</b>                            |               |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                    |         |
| <b>Expansion Resources</b>             |               |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                    |         |
| CCCT - DJohns - J 1x1                  | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 477   | -     | -     | -     | -                  | 477     |
| <b>Total CCCT</b>                      | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 477   | -     | -     | -     | -                  | 477     |
| SCCT Frame DJ                          | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 200   | -     | -     | -     | -                  | 200     |
| SCCT Frame UTN                         | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 200   | -     | -     | -     | -     | -     | -     | -     | -                  | 200     |
| Wind, Djohnston                        | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 85    | -     | -     | -     | -     | -     | -                  | 85      |
| Wind, GO                               | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 774   | -                  | 774     |
| Wind, WYAE                             | -             | -    | -     | -     | 1,100 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 1,100              | 1,100   |
| <b>Total Wind</b>                      | -             | -    | -     | -     | 1,100 | -     | -     | -     | -     | -     | -     | -     | -     | -     | 85    | -     | -     | -     | -     | 774   | 1,100              | 1,959   |
| Utility Solar - PV - Utah-S            | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 79    | 167   | 210   | 41    | 291   | 13    | -                  | 800     |
| <b>DSM, Class 1 Total</b>              | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | 123.8 | 90.5  | 4.8   | -     | 3.4   | 3.1   | 3.7   | 3.1   | 11.6  | -                  | 243.8   |
| <b>DSM, Class 2 Total</b>              | 97            | 74   | 79    | 75    | 81    | 77    | 85    | 85    | 82    | 84    | 82    | 77    | 73    | 73    | 74    | 62    | 55    | 47    | 44    | 44    | 819                | 1,450   |
| FOT Mona - SMR                         | -             | -    | -     | -     | -     | -     | -     | -     | -     | 27    | 27    | 300   | 300   | 291   | 300   | 300   | 300   | 300   | 300   | 300   | 3                  | 137     |
| <b>West</b>                            |               |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                    |         |
| <b>Expansion Resources</b>             |               |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                    |         |
| CCCT - WilliamValce - G 1x1            | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 436   | -     | -     | -     | -     | -     | -     | -                  | 436     |
| <b>Total CCCT</b>                      | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 436   | -     | -     | -     | -     | -     | -     | -                  | 436     |
| Utility Solar - PV - Yakima            | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | 11    | 97    | -     | 38    | 70    | 16    | 8     | -     | -     | -                  | 240     |
| <b>DSM, Class 1 Total</b>              | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | 69.1  | 49.1  | -     | 3.3   | -     | -     | -     | -     | -     | -                  | 121.5   |
| <b>DSM, Class 2 Total</b>              | 57            | 53   | 52    | 46    | 42    | 37    | 33    | 33    | 29    | 27    | 27    | 25    | 23    | 23    | 22    | 21    | 20    | 19    | 19    | 18    | 410                | 627     |
| Geothermal, Greenfield - West          | -             | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | 30    | -     | -     | -     | -     | -     | -     | -                  | 30      |
| FOT COB - SMR                          | -             | -    | 3     | -     | -     | 41    | -     | 10    | 167   | 76    | 137   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 364   | 30                 | 200     |
| FOT MidColumbia - SMR                  | 400           | 400  | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400   | 400                | 400     |
| FOT MidColumbia - SMR - 2              | -             | 21   | 375   | 307   | 299   | 375   | 344   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 375   | 285   | 330                | 330     |
| FOT NOB - SMR                          | 100           | 100  | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100                | 100     |
| FOT MidColumbia - WTR                  | 281           | 332  | 273   | 307   | -     | 308   | -     | 287   | 295   | -     | -     | -     | 400   | 41    | 390   | 351   | -     | 377   | 4     | 291   | 208                | 197     |
| FOT MidColumbia - WTR2                 | -             | -    | -     | -     | 319   | -     | 306   | -     | -     | 297   | 289   | 312   | 51    | 375   | -     | -     | 337   | -     | 375   | 375   | 92                 | 152     |
| FOT NOB - WTR                          | -             | -    | -     | -     | -     | -     | -     | -     | 53    | 54    | 8     | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 100   | 11                 | 51      |
| Existing Plant Retirements/Conversions | -             | -    | (257) | -     | (387) | -     | -     | -     | -     | (82)  | -     | (762) | (354) | (357) | (78)  | -     | (717) | -     | (82)  | -     |                    |         |
| Annual Additions, Long Term Resources  | 154           | 128  | 131   | 122   | 1,223 | 114   | 118   | 118   | 112   | 111   | 109   | 306   | 563   | 536   | 303   | 323   | 980   | 117   | 356   | 861   |                    |         |
| Annual Additions, Short Term Resources | 781           | 853  | 1,151 | 1,115 | 1,118 | 1,223 | 1,150 | 1,172 | 1,390 | 1,329 | 1,336 | 1,987 | 2,126 | 2,081 | 2,065 | 2,026 | 2,012 | 2,052 | 2,054 | 2,305 |                    |         |
| <b>Total Annual Additions</b>          | 935           | 981  | 1,282 | 1,236 | 2,341 | 1,337 | 1,268 | 1,289 | 1,501 | 1,440 | 1,445 | 2,293 | 2,688 | 2,618 | 2,368 | 2,349 | 2,992 | 2,169 | 2,411 | 3,166 |                    |         |

The 2017 IRP was prepared using a 13% planning reserve margin. See 2017 IRP, page 10.

**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 |
| <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  | -     | 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 | -             | 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 |

**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 | 19.63 | 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 | 19.10 | 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 |

**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 | \$21.05  | \$28.00  |
| 2025 | \$34.10 | \$21.44  | \$28.66  |
| 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  |

Source Official Market Price Forecast dated March 2020

Blended Market Prices (Blending weights which are used to calculate blended prices 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<br>Cycle CT<br>Fixed Costs | Simple<br>Cycle CT<br>Fixed Costs | Capitalized<br>Energy Costs | Capitalized<br>Energy Costs<br>70.5% CF |
|------|-------------------------------------|-----------------------------------|-----------------------------|---|
|      | (\$/kW-yr)                          | (\$/kW-yr)                        | (\$/kW-yr)                  | (\$/MWh)                                |
|      | (a)                                 | (b)                               | (c)<br>((a) - (b))          | (d)<br>(c)/(8.760 x 70.5%)              |
| 2030 | \$200.13                            | \$143.51                          | \$56.62                     | \$9.17                                  |
| 2031 | \$204.39                            | \$146.58                          | \$57.81                     | \$9.36                                  |
| 2032 | \$208.67                            | \$149.66                          | \$59.01                     | \$9.56                                  |
| 2033 | \$213.01                            | \$152.77                          | \$60.24                     | \$9.75                                  |
| 2034 | \$217.41                            | \$155.92                          | \$61.49                     | \$9.96                                  |
| 2035 | \$221.88                            | \$159.11                          | \$62.77                     | \$10.16                                 |
| 2036 | \$226.39                            | \$162.36                          | \$64.03                     | \$10.37                                 |
| 2037 | \$230.95                            | \$165.64                          | \$65.31                     | \$10.58                                 |
| 2038 | \$235.57                            | \$168.95                          | \$66.62                     | \$10.79                                 |
| 2039 | \$240.27                            | \$172.33                          | \$67.94                     | \$11.00                                 |
| 2040 | \$245.07                            | \$175.78                          | \$69.29                     | \$11.22                                 |

Columns

- (a) Table 9 Column (f)
- (b) Table 9 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<br>Energy Costs<br>70.5% CF | Total<br>Standard Avoided<br>Energy Cost |
|------|----------------|-------------|---|--|
|      | Gas Price      | Energy Cost |   |  |
|      | (\$/MMBtu)     | (\$/MWh)    | (\$/MWh)                                | (\$/MWh)                                 |
|      | (a)            | (b)         | (c)                                     | (d)                                      |
|      |                | (a) x 6.790 |   | (b) + (c)                                |
| 2030 | \$3.55         | \$24.10     | \$9.17                                  | \$33.27                                  |
| 2031 | \$3.72         | \$25.26     | \$9.36                                  | \$34.62                                  |
| 2032 | \$3.89         | \$26.41     | \$9.56                                  | \$35.97                                  |
| 2033 | \$4.06         | \$27.57     | \$9.75                                  | \$37.32                                  |
| 2034 | \$4.28         | \$29.06     | \$9.96                                  | \$39.02                                  |
| 2035 | \$4.49         | \$30.49     | \$10.16                                 | \$40.65                                  |
| 2036 | \$4.66         | \$31.64     | \$10.37                                 | \$42.01                                  |
| 2037 | \$4.99         | \$33.88     | \$10.58                                 | \$44.46                                  |
| 2038 | \$5.24         | \$35.58     | \$10.79                                 | \$46.37                                  |
| 2039 | \$5.58         | \$37.89     | \$11.00                                 | \$48.89                                  |
| 2040 | \$5.69         | \$38.64     | \$11.22                                 | \$49.85                                  |

Columns

- (a) Table 10
- (b) 6.790 MWh/MMBtu Heat Rate - Table 9
- (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) |
| 2030 | \$143.51                    | \$33.27                            | \$55.12  | \$52.55                     | \$51.48                    |
| 2031 | \$146.58                    | \$34.62                            | \$56.93  | \$54.31                     | \$53.21                    |
| 2032 | \$149.66                    | \$35.97                            | \$58.75  | \$56.07                     | \$54.95                    |
| 2033 | \$152.77                    | \$37.32                            | \$60.57  | \$57.84                     | \$56.70                    |
| 2034 | \$155.92                    | \$39.02                            | \$62.75  | \$59.96                     | \$58.79                    |
| 2035 | \$159.11                    | \$40.65                            | \$64.87  | \$62.02                     | \$60.83                    |
| 2036 | \$162.36                    | \$42.01                            | \$66.72  | \$63.81                     | \$62.60                    |
| 2037 | \$165.64                    | \$44.46                            | \$69.67  | \$66.70                     | \$65.47                    |
| 2038 | \$168.95                    | \$46.37                            | \$72.08  | \$69.06                     | \$67.80                    |
| 2039 | \$172.33                    | \$48.89                            | \$75.12  | \$72.03                     | \$70.75                    |
| 2040 | \$175.78                    | \$49.85                            | \$76.61  | \$73.46                     | \$72.15                    |

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 4,909 Hours | Off-Peak 3,851 Hours |
|------|-----------------------------|--|------------------------------------|---------------------|----------------------|
|      | (\$/kW-yr)                  | (\$/MWh)                                 | (\$/MWh)                           | (\$/MWh)            | (\$/MWh)             |
|      | (a)                         | (b)                                      | (c)                                | (d)                 | (e)                  |
|      |                             | (a) *1000 / (100.0% x 8760 x 56%)        |                                    | (b) + (c)           | (c)                  |
| 2030 | \$143.51                    | \$29.23                                  | \$33.27                            | \$62.50             | \$33.27              |
| 2031 | \$146.58                    | \$29.86                                  | \$34.62                            | \$64.48             | \$34.62              |
| 2032 | \$149.66                    | \$30.48                                  | \$35.97                            | \$66.45             | \$35.97              |
| 2033 | \$152.77                    | \$31.12                                  | \$37.32                            | \$68.44             | \$37.32              |
| 2034 | \$155.92                    | \$31.76                                  | \$39.02                            | \$70.78             | \$39.02              |
| 2035 | \$159.11                    | \$32.41                                  | \$40.65                            | \$73.06             | \$40.65              |
| 2036 | \$162.36                    | \$33.07                                  | \$42.01                            | \$75.08             | \$42.01              |
| 2037 | \$165.64                    | \$33.74                                  | \$44.46                            | \$78.20             | \$44.46              |
| 2038 | \$168.95                    | \$34.41                                  | \$46.37                            | \$80.78             | \$46.37              |
| 2039 | \$172.33                    | \$35.10                                  | \$48.89                            | \$83.99             | \$48.89              |
| 2040 | \$175.78                    | \$35.81                                  | \$49.85                            | \$85.66             | \$49.85              |

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

|      |          |          |         |         |
|------|----------|----------|---------|---------|
| 2018 | \$151.52 | \$108.67 | \$42.85 | \$6.94  |
| 2019 | \$155.00 | \$111.16 | \$43.84 | \$7.10  |
| 2020 | \$159.12 | \$114.11 | \$45.01 | \$7.29  |
| 2021 | \$163.31 | \$117.10 | \$46.21 | \$7.48  |
| 2022 | \$167.42 | \$120.05 | \$47.37 | \$7.67  |
| 2023 | \$171.42 | \$122.90 | \$48.52 | \$7.86  |
| 2024 | \$175.43 | \$125.77 | \$49.66 | \$8.04  |
| 2025 | \$179.49 | \$128.69 | \$50.80 | \$8.23  |
| 2026 | \$183.58 | \$131.62 | \$51.96 | \$8.41  |
| 2027 | \$187.62 | \$134.52 | \$53.10 | \$8.60  |
| 2028 | \$191.68 | \$137.44 | \$54.24 | \$8.78  |
| 2029 | \$195.88 | \$140.44 | \$55.44 | \$8.98  |
| 2030 | \$200.13 | \$143.51 | \$56.62 | \$9.17  |
| 2031 | \$204.39 | \$146.58 | \$57.81 | \$9.36  |
| 2032 | \$208.67 | \$149.66 | \$59.01 | \$9.56  |
| 2033 | \$213.01 | \$152.77 | \$60.24 | \$9.75  |
| 2034 | \$217.41 | \$155.92 | \$61.49 | \$9.96  |
| 2035 | \$221.88 | \$159.11 | \$62.77 | \$10.16 |
| 2036 | \$226.39 | \$162.36 | \$64.03 | \$10.37 |
| 2037 | \$230.95 | \$165.64 | \$65.31 | \$10.58 |
| 2038 | \$235.57 | \$168.95 | \$66.62 | \$10.79 |
| 2039 | \$240.27 | \$172.33 | \$67.94 | \$11.00 |
| 2040 | \$245.07 | \$175.78 | \$69.29 | \$11.22 |

Columns

- (a) Table 9 Column (f)
- (b) Table 9 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<br>Capacity<br>Costs |
|------|-----------------------------------|
|      | (\$/kW-yr)                        |
|      | (a)                               |

|      |          |
|------|----------|
| 2018 | \$108.67 |
| 2019 | \$111.16 |
| 2020 | \$114.11 |
| 2021 | \$117.10 |
| 2022 | \$120.05 |
| 2023 | \$122.90 |
| 2024 | \$125.77 |
| 2025 | \$128.69 |
| 2026 | \$131.62 |
| 2027 | \$134.52 |
| 2028 | \$137.44 |
| 2029 | \$140.44 |
| 2030 | \$143.51 |
| 2031 | \$146.58 |
| 2032 | \$149.66 |
| 2033 | \$152.77 |
| 2034 | \$155.92 |
| 2035 | \$159.11 |
| 2036 | \$162.36 |
| 2037 | \$165.64 |
| 2038 | \$168.95 |
| 2039 | \$172.33 |
| 2040 | \$175.78 |

Columns

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

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

| Year | Proposed     | Current      | Difference   | Proposed    | Current     | Difference  | Proposed       | Current        | Difference     | Proposed          | Current           | 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      | \$27.28      | (\$4.38)     | \$22.42     | \$26.86     | (\$4.43)    | \$24.10        | \$29.29        | (\$5.19)       | \$24.05           | \$29.23           | (\$5.18)          |
| 2021 | \$27.25      | \$28.41      | (\$1.16)     | \$26.80     | \$27.94     | (\$1.14)    | \$29.05        | \$29.89        | (\$0.83)       | \$29.00           | \$29.84           | (\$0.84)          |
| 2022 | \$27.59      | \$31.19      | (\$3.60)     | \$27.14     | \$30.72     | (\$3.58)    | \$29.41        | \$32.71        | (\$3.30)       | \$29.35           | \$32.66           | (\$3.31)          |
| 2023 | \$28.02      | \$33.56      | (\$5.54)     | \$27.57     | \$33.07     | (\$5.50)    | \$30.13        | \$35.13        | (\$5.00)       | \$30.06           | \$35.08           | (\$5.02)          |
| 2024 | \$27.89      | \$37.52      | (\$9.63)     | \$27.46     | \$37.04     | (\$9.58)    | \$30.58        | \$39.46        | (\$8.88)       | \$30.50           | \$39.39           | (\$8.90)          |
| 2025 | \$28.53      | \$40.29      | (\$11.76)    | \$28.10     | \$39.81     | (\$11.71)   | \$31.33        | \$42.39        | (\$11.05)      | \$31.25           | \$42.32           | (\$11.07)         |
| 2026 | \$31.92      | \$42.97      | (\$11.05)    | \$31.46     | \$42.49     | (\$11.03)   | \$34.43        | \$45.17        | (\$10.74)      | \$34.35           | \$45.10           | (\$10.75)         |
| 2027 | \$35.00      | \$42.88      | (\$7.88)     | \$34.57     | \$42.37     | (\$7.80)    | \$38.14        | \$44.93        | (\$6.79)       | \$38.05           | \$44.87           | (\$6.82)          |
| 2028 | \$36.76      | \$43.00      | (\$6.24)     | \$36.32     | \$42.47     | (\$6.15)    | \$40.06        | \$44.98        | (\$4.92)       | \$39.97           | \$44.92           | (\$4.95)          |
| 2029 | \$39.88      | \$46.57      | (\$6.69)     | \$39.45     | \$46.02     | (\$6.57)    | \$43.69        | \$48.70        | (\$5.01)       | \$43.58           | \$48.63           | (\$5.05)          |
| 2030 | \$49.65      | \$59.50      | (\$9.85)     | \$37.58     | \$47.43     | (\$9.85)    | \$67.89        | \$77.73        | (\$9.85)       | \$69.34           | \$79.19           | (\$9.85)          |
| 2031 | \$51.35      | \$62.22      | (\$10.86)    | \$39.02     | \$49.88     | (\$10.86)   | \$69.97        | \$80.84        | (\$10.86)      | \$71.46           | \$82.32           | (\$10.86)         |
| 2032 | \$53.05      | \$64.94      | (\$11.88)    | \$40.46     | \$52.34     | (\$11.88)   | \$72.06        | \$83.94        | (\$11.88)      | \$73.58           | \$85.46           | (\$11.88)         |
| 2033 | \$54.76      | \$67.66      | (\$12.90)    | \$41.90     | \$54.80     | (\$12.90)   | \$74.16        | \$87.06        | (\$12.90)      | \$75.71           | \$88.61           | (\$12.90)         |
| 2034 | \$56.82      | \$70.33      | (\$13.51)    | \$43.69     | \$57.20     | (\$13.51)   | \$76.62        | \$90.13        | (\$13.51)      | \$78.20           | \$91.71           | (\$13.51)         |
| 2035 | \$58.81      | \$68.66      | (\$9.85)     | \$45.41     | \$55.26     | (\$9.85)    | \$79.02        | \$88.87        | (\$9.85)       | \$80.63           | \$90.48           | (\$9.85)          |
| 2036 | \$60.54      | \$69.57      | (\$9.03)     | \$46.87     | \$55.90     | (\$9.03)    | \$81.16        | \$90.19        | (\$9.03)       | \$82.81           | \$91.84           | (\$9.03)          |
| 2037 | \$63.37      | \$72.53      | (\$9.17)     | \$49.41     | \$58.58     | (\$9.17)    | \$84.40        | \$93.57        | (\$9.17)       | \$86.08           | \$95.24           | (\$9.17)          |
| 2038 | \$65.65      | \$76.52      | (\$10.86)    | \$51.42     | \$62.28     | (\$10.86)   | \$87.11        | \$97.97        | (\$10.86)      | \$88.82           | \$99.68           | (\$10.86)         |

15 Year (2020 - 2034) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$35.03 \$42.68 (\$7.65) \$31.80 \$39.42 (\$7.62) \$41.22 \$48.47 (\$7.25) \$41.51 \$48.77 (\$7.26)

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

15 Year (2021 - 2035) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$37.31 \$45.40 (\$8.09) \$33.37 \$41.42 (\$8.06) \$44.60 \$52.19 (\$7.58) \$44.98 \$52.58 (\$7.59)

15 Year (2022 - 2036) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$39.34 \$48.22 (\$8.89) \$34.62 \$43.48 (\$8.85) \$47.77 \$56.14 (\$8.38) \$48.25 \$56.64 (\$8.39)

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

| Year | Proposed           | Current            | Difference         | Proposed           | Current            | Difference         | Proposed           | Current            | Difference         | Proposed           | Current            | 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            | \$27.28            | (\$4.38)           | \$22.42            | \$26.86            | (\$4.43)           | \$24.10            | \$29.29            | (\$5.19)           | \$24.05            | \$29.23            | (\$5.18)           |
| 2021 | \$29.05            | \$29.05            | \$0.00             | \$15.87            | \$15.87            | \$0.00             | \$39.25            | \$39.28            | (\$0.03)           | \$41.54            | \$41.57            | (\$0.03)           |
| 2022 | \$29.78            | \$29.78            | (\$0.00)           | \$16.26            | \$16.26            | (\$0.01)           | \$39.98            | \$40.08            | (\$0.10)           | \$42.33            | \$42.43            | (\$0.09)           |
| 2023 | \$30.50            | \$30.50            | (\$0.01)           | \$16.67            | \$16.65            | \$0.01             | \$41.17            | \$40.88            | \$0.29             | \$43.57            | \$43.29            | \$0.28             |
| 2024 | \$31.19            | \$31.21            | (\$0.02)           | \$17.05            | \$17.03            | \$0.01             | \$42.32            | \$41.84            | \$0.48             | \$44.78            | \$44.31            | \$0.47             |
| 2025 | \$31.92            | \$31.93            | (\$0.00)           | \$17.46            | \$17.42            | \$0.04             | \$43.34            | \$42.77            | \$0.57             | \$45.85            | \$45.29            | \$0.56             |
| 2026 | \$32.64            | \$32.64            | \$0.00             | \$17.87            | \$17.81            | \$0.05             | \$44.42            | \$43.68            | \$0.75             | \$46.99            | \$46.26            | \$0.73             |
| 2027 | \$33.38            | \$33.38            | \$0.00             | \$18.28            | \$18.21            | \$0.07             | \$45.52            | \$44.61            | \$0.91             | \$48.14            | \$47.25            | \$0.89             |
| 2028 | \$34.13            | \$34.12            | \$0.01             | \$18.69            | \$18.62            | \$0.07             | \$46.41            | \$45.57            | \$0.85             | \$49.09            | \$48.27            | \$0.83             |
| 2029 | \$34.85            | \$34.86            | (\$0.01)           | \$19.07            | \$19.01            | \$0.06             | \$47.46            | \$46.55            | \$0.92             | \$50.20            | \$49.31            | \$0.89             |
| 2030 | \$35.58            | \$35.62            | (\$0.04)           | \$19.46            | \$19.42            | \$0.03             | \$48.54            | \$47.54            | \$1.01             | \$51.34            | \$50.36            | \$0.98             |
| 2031 | \$36.38            | \$36.36            | \$0.02             | \$19.91            | \$19.81            | \$0.09             | \$49.60            | \$48.50            | \$1.10             | \$52.46            | \$51.38            | \$1.08             |
| 2032 | \$37.15            | \$37.15            | (\$0.00)           | \$20.31            | \$20.24            | \$0.07             | \$50.44            | \$49.49            | \$0.95             | \$53.36            | \$52.43            | \$0.93             |
| 2033 | \$37.93            | \$37.92            | \$0.01             | \$20.73            | \$20.66            | \$0.07             | \$51.34            | \$50.47            | \$0.87             | \$54.33            | \$53.48            | \$0.85             |
| 2034 | \$38.73            | \$38.71            | \$0.02             | \$21.17            | \$21.09            | \$0.08             | \$52.29            | \$51.51            | \$0.78             | \$55.34            | \$54.58            | \$0.76             |
| 2035 | \$39.51            | \$39.50            | \$0.01             | \$21.57            | \$21.52            | \$0.05             | \$53.26            | \$52.63            | \$0.63             | \$56.37            | \$55.76            | \$0.61             |
| 2036 | \$40.30            | \$40.30            | \$0.00             | \$22.00            | \$21.96            | \$0.05             | \$54.35            | \$53.71            | \$0.63             | \$57.52            | \$56.91            | \$0.62             |
| 2037 | \$41.88            | \$41.12            | \$0.76             | \$22.44            | \$22.40            | \$0.04             | \$55.39            | \$54.80            | \$0.59             | \$58.63            | \$58.05            | \$0.58             |
| 2038 | \$42.73            | \$41.95            | \$0.78             | \$22.90            | \$22.85            | \$0.05             | \$56.46            | \$55.84            | \$0.61             | \$59.77            | \$59.17            | \$0.60             |

15 Year (2020 - 2034) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$31.97 \$32.42 (\$0.45) \$18.50 \$18.91 (\$0.42) \$42.65 \$42.66 (\$0.01) \$44.98 \$45.00 (\$0.02)

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

15 Year (2021 - 2035) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$33.27 \$33.27 (\$0.00) \$18.19 \$18.15 \$0.04 \$45.11 \$44.52 \$0.58 \$47.73 \$47.16 \$0.57  
15 Year (2021 - 2035) Nominal levelized Price at 6.920% Discount Rate (1)  
\$/MWh \$34.01 \$34.01 (\$0.00) \$18.60 \$18.55 \$0.04 \$46.12 \$45.46 \$0.65 \$48.79 \$48.16 \$0.64

**Table 9  
Total Cost of Displaceable Resources**

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

**194 MW - SCCT Frame "F" x1 - East Side Resource (5,050')**

|      |       |         |         |         |         |          |
|------|-------|---------|---------|---------|---------|----------|
| 2018 | \$843 | \$58.66 | \$30.90 | \$6.61  | \$50.01 | \$108.67 |
| 2019 |       | \$60.01 | \$31.61 | \$6.76  | \$51.15 | \$111.16 |
| 2020 |       | \$61.60 | \$32.45 | \$6.94  | \$52.51 | \$114.11 |
| 2021 |       | \$63.22 | \$33.30 | \$7.12  | \$53.88 | \$117.10 |
| 2022 |       | \$64.81 | \$34.14 | \$7.30  | \$55.24 | \$120.05 |
| 2023 |       | \$66.36 | \$34.95 | \$7.47  | \$56.54 | \$122.90 |
| 2024 |       | \$67.91 | \$35.77 | \$7.64  | \$57.86 | \$125.77 |
| 2025 |       | \$69.48 | \$36.60 | \$7.82  | \$59.21 | \$128.69 |
| 2026 |       | \$71.06 | \$37.43 | \$8.00  | \$60.56 | \$131.62 |
| 2027 |       | \$72.62 | \$38.25 | \$8.18  | \$61.90 | \$134.52 |
| 2028 |       | \$74.19 | \$39.08 | \$8.36  | \$63.25 | \$137.44 |
| 2029 |       | \$75.81 | \$39.94 | \$8.54  | \$64.63 | \$140.44 |
| 2030 |       | \$77.46 | \$40.81 | \$8.73  | \$66.05 | \$143.51 |
| 2031 |       | \$79.11 | \$41.68 | \$8.92  | \$67.47 | \$146.58 |
| 2032 |       | \$80.77 | \$42.55 | \$9.11  | \$68.89 | \$149.66 |
| 2033 |       | \$82.45 | \$43.44 | \$9.30  | \$70.32 | \$152.77 |
| 2034 |       | \$84.15 | \$44.34 | \$9.49  | \$71.77 | \$155.92 |
| 2035 |       | \$85.88 | \$45.25 | \$9.68  | \$73.23 | \$159.11 |
| 2036 |       | \$87.63 | \$46.17 | \$9.88  | \$74.73 | \$162.36 |
| 2037 |       | \$89.40 | \$47.10 | \$10.08 | \$76.24 | \$165.64 |
| 2038 |       | \$91.19 | \$48.04 | \$10.28 | \$77.76 | \$168.95 |
| 2039 |       | \$93.01 | \$49.00 | \$10.49 | \$79.32 | \$172.33 |
| 2040 |       | \$94.87 | \$49.98 | \$10.70 | \$80.91 | \$175.78 |

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

- (b) = (a) x Payment Factor
- (e) = (d) x (8.76 x 33%) + (c)
- (f) = (b) + (e)

**194 MW - SCCT Frame "F" x1 - East Side Resource (5,050')**

|         |                |  |          |
|---------|----------------|--|----------|
|         | 194            | MW Plant capacity                                    | MW       |
| 2018 \$ | \$843          | Plant capacity cost                                  | \$/kW    |
| 2018 \$ | \$15.97        | Fixed O&M & Capitalized O&M                          | \$/kW-yr |
| 2018 \$ | <u>\$14.93</u> | Fixed Pipeline                                       | \$/kW-yr |
| 2018 \$ | \$30.90        | Fixed O&M Including Fixed Pipeline & Capitalized O&M | \$/kW-yr |
| 2018 \$ | \$6.61         | Variable O&M and Other Costs                         | \$/MWH   |
|         | 6.959%         | Payment Factor                                       |          |
|         | 33%            | Capacity Factor                                      |          |

**Table 9  
Total Cost of Displaceable Resources**

| Year | Estimated Capital Cost<br>\$/kW | Capital Cost at Real Levelized Rate<br>\$/kW-yr | Fixed O&M<br>\$/kW-yr | Variable O&M<br>\$/MWh | Total O&M at Expected CF<br>\$/kW-yr | Total Resource Fixed Costs<br>\$/kW-yr | Fuel Cost<br>\$/MMBtu | IRP Resource Energy Cost<br>\$/MWh | Total Avoided Costs<br>\$/MWh |
|------|---------------------------------|---|-----------------------|------------------------|--------------------------------------|--|-----------------------|------------------------------------|-------------------------------|
|      | (a)                             | (b)   | (c)                   | (d)                    | (e)                                  | (f)                                    | (g)                   | (h)                                | (i)                           |

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

|      |         |          |         |        |         |          |        |         |         |
|------|---------|----------|---------|--------|---------|----------|--------|---------|---------|
| 2018 | \$1,429 | \$97.03  | \$43.19 | \$1.83 | \$54.49 | \$151.52 |        |         |         |
| 2019 |         | \$99.26  | \$44.18 | \$1.87 | \$55.74 | \$155.00 |        |         |         |
| 2020 |         | \$101.90 | \$45.35 | \$1.92 | \$57.22 | \$159.12 |        |         |         |
| 2021 |         | \$104.58 | \$46.54 | \$1.97 | \$58.73 | \$163.31 |        |         |         |
| 2022 |         | \$107.21 | \$47.71 | \$2.02 | \$60.21 | \$167.42 |        |         |         |
| 2023 |         | \$109.77 | \$48.85 | \$2.07 | \$61.65 | \$171.42 |        |         |         |
| 2024 |         | \$112.34 | \$49.99 | \$2.12 | \$63.09 | \$175.43 |        |         |         |
| 2025 |         | \$114.94 | \$51.15 | \$2.17 | \$64.55 | \$179.49 |        |         |         |
| 2026 |         | \$117.56 | \$52.31 | \$2.22 | \$66.02 | \$183.58 |        |         |         |
| 2027 |         | \$120.15 | \$53.46 | \$2.27 | \$67.47 | \$187.62 |        |         |         |
| 2028 |         | \$122.75 | \$54.62 | \$2.32 | \$68.93 | \$191.68 |        |         |         |
| 2029 |         | \$125.44 | \$55.82 | \$2.37 | \$70.44 | \$195.88 |        |         |         |
| 2030 |         | \$128.16 | \$57.03 | \$2.42 | \$71.97 | \$200.13 | \$3.55 | \$24.10 | \$56.51 |
| 2031 |         | \$130.89 | \$58.24 | \$2.47 | \$73.50 | \$204.39 | \$3.72 | \$25.26 | \$58.36 |
| 2032 |         | \$133.63 | \$59.46 | \$2.52 | \$75.04 | \$208.67 | \$3.89 | \$26.41 | \$60.20 |
| 2033 |         | \$136.41 | \$60.70 | \$2.57 | \$76.60 | \$213.01 | \$4.06 | \$27.57 | \$62.06 |
| 2034 |         | \$139.23 | \$61.95 | \$2.62 | \$78.18 | \$217.41 | \$4.28 | \$29.06 | \$64.26 |
| 2035 |         | \$142.09 | \$63.22 | \$2.67 | \$79.79 | \$221.88 | \$4.49 | \$30.49 | \$66.42 |
| 2036 |         | \$144.98 | \$64.51 | \$2.72 | \$81.41 | \$226.39 | \$4.66 | \$31.64 | \$68.30 |
| 2037 |         | \$147.90 | \$65.81 | \$2.77 | \$83.05 | \$230.95 | \$4.99 | \$33.88 | \$71.28 |
| 2038 |         | \$150.86 | \$67.13 | \$2.83 | \$84.71 | \$235.57 | \$5.24 | \$35.58 | \$73.72 |
| 2039 |         | \$153.87 | \$68.47 | \$2.89 | \$86.40 | \$240.27 | \$5.58 | \$37.89 | \$76.80 |
| 2040 |         | \$156.94 | \$69.84 | \$2.95 | \$88.13 | \$245.07 | \$5.69 | \$38.64 | \$78.32 |

**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 0.0679  
 (e) = (d) x (8.76 x 70.5%) + (c)  
 (f) = (b) + (c)  
 (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      | \$45.05        |
| 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      | \$43.19        |

| CCCT Statistics                  | MW        | CF           | aMW      | Percent     | Variable    | Heat Rate    |
|----------------------------------|-----------|--------------|----------|-------------|-------------|--------------|
| CCCT (Dry "G/H" 1x1)             | 396       | 78.0%        | 309      | 98.1%       | \$1.86      | 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%      | \$1.83      | 6,790        |

Rounded

**CCCT    Duct Firing    Plant Costs - 2019 IRP - Table 6.1 & 6.2**

|         |                |                |   |
|---------|----------------|----------------|---|
|         | 396            | 51             | MW Plant capacity   |
| 2018 \$ | \$1,552        | \$478          | Plant capacity cost   |
| 2018 \$ | \$21.68        | \$5.39         | Fixed O&M & Capitalized O&M   |
| 2018 \$ | <u>\$23.37</u> | <u>\$23.37</u> | Fixed Pipeline  |
|         | \$45.05        | \$28.76        | Fixed O&M Including Fixed Pipeline & Capitalized O&M (\$/kW-Yr)       |
|         | \$1.86         | \$0.15         | Variable O&M and Other Costs  |
|         | 6,788          | 6,788          | Heat Rate in btu/kWh  |
|         | 6.790%         | 6.790%         | Payment Factor  |
|         | 78.0%          | 12.0%          | Capacity Factor   |
|         |                | 70.5%          | Energy Weighted Capacity Factor                                       |
|         |                | 100.0%         | Capacity Factor - On-peak    70.5% / 56.0% (percent of hours on-peak) |

**Company Official Inflation Forecast - Dated March 2018**

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| 2017 | 1.8% | 2023 | 2.4% | 2029 | 2.2% | 2035 | 2.1% |
| 2018 | 2.0% | 2024 | 2.3% | 2030 | 2.2% | 2036 | 2.0% |
| 2019 | 2.3% | 2025 | 2.3% | 2031 | 2.1% | 2037 | 2.0% |
| 2020 | 2.7% | 2026 | 2.3% | 2032 | 2.1% | 2038 | 2.0% |
| 2021 | 2.6% | 2027 | 2.2% | 2033 | 2.1% | 2039 | 2.0% |
| 2022 | 2.5% | 2028 | 2.2% | 2034 | 2.1% | 2040 | 2.0% |

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

| <b>Year</b> | <b>Burner tip<br/>West Side Gas<br/>Fuel Cost</b> |
|-------------|---|
| 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  |

**Source**

Official Market Price Forecast dated March 2020



**Table 11  
Integration Cost**

| <b>Year</b> | <b>Wind<br/>Integration Cost</b> | <b>Solar<br/>Integration<br/>Cost</b> |
|-------------|----------------------------------|---------------------------------------|
|             | \$/MWh                           | \$/MWh                                |
| 2016        | \$0.57                           | \$0.60                                |
| 2017        | \$0.58                           | \$0.62                                |
| 2018        | \$0.59                           | \$0.63                                |
| 2019        | \$0.60                           | \$0.64                                |
| 2020        | \$0.61                           | \$0.65                                |
| 2021        | \$0.62                           | \$0.67                                |
| 2022        | \$0.63                           | \$0.69                                |
| 2023        | \$0.65                           | \$0.71                                |
| 2024        | \$0.67                           | \$0.73                                |
| 2025        | \$0.68                           | \$0.75                                |
| 2026        | \$0.69                           | \$0.77                                |
| 2027        | \$0.71                           | \$0.79                                |
| 2028        | \$0.73                           | \$0.81                                |
| 2029        | \$0.75                           | \$0.83                                |
| 2030        | \$0.77                           | \$0.85                                |
| 2031        | \$0.79                           | \$0.87                                |
| 2032        | \$0.81                           | \$0.89                                |
| 2033        | \$0.83                           | \$0.91                                |
| 2034        | \$0.85                           | \$0.93                                |
| 2035        | \$0.87                           | \$0.95                                |
| 2036        | \$0.89                           | \$0.97                                |
| 2037        | \$0.91                           | \$0.99                                |
| 2038        | \$0.93                           | \$1.01                                |
| 2039        | \$0.95                           | \$1.03                                |
| 2040        | \$0.97                           | \$1.05                                |

Note: 2017 IRP Volume II-Appendix F

| <b>Company Official Inflation Forecast Dated December 31, 2018</b> |      |      |      |      |      |      |      |
|--|------|------|------|------|------|------|------|
| 2017   | 2.0% | 2023 | 2.4% | 2029 | 2.3% | 2035 | 2.2% |
| 2018   | 2.3% | 2024 | 2.4% | 2030 | 2.3% | 2036 | 2.2% |
| 2019   | 2.2% | 2025 | 2.2% | 2031 | 2.3% | 2037 | 2.2% |
| 2020   | 2.3% | 2026 | 2.2% | 2032 | 2.3% | 2038 | 2.2% |
| 2021   | 2.4% | 2027 | 2.2% | 2033 | 2.2% | 2039 | 2.2% |
| 2022   | 2.4% | 2028 | 2.3% | 2034 | 2.2% | 2040 | 2.2% |

**Table 12**  
**2019 IRP Wyoming Wind Resource**  
**44% Capacity Factor**

| Year | Estimated Capital Cost | Capital Cost at Real Levelized Rate | Fixed O&M | Fixed Costs | Variable O&M | Tax Credit | Avoided Cost | Wind Integration Cost |
|------|------------------------|-------------------------------------|-----------|-------------|--------------|------------|--------------|-----------------------|
|      | \$/kW                  | \$/kW-yr                            | \$/kW-yr  | \$/MWh      | \$/MWh       | \$/MWh     | \$/MWh       | \$/MWh                |
|      | (a)                    | (b)                                 | (c)       | (d)         | (e)          | (f)        | (g)          | (h)                   |

**2019 IRP Wyoming Wind Resource - 44% Capacity Factor**

|      |         |          |         |         |        |           |         |        |
|------|---------|----------|---------|---------|--------|-----------|---------|--------|
| 2016 |         |          |         |         |        |           |         |        |
| 2017 |         |          |         |         |        |           |         |        |
| 2018 | \$1,301 | \$89.76  | \$27.99 | \$30.83 | \$0.65 | (\$15.55) | \$15.93 | \$0.59 |
| 2019 |         | \$91.82  | \$28.63 | \$31.54 | \$0.66 | (\$15.91) | \$16.29 | \$0.60 |
| 2020 |         | \$94.26  | \$29.39 | \$32.37 | \$0.68 | (\$16.33) | \$16.72 | \$0.61 |
| 2021 |         | \$96.74  | \$30.16 | \$33.23 | \$0.70 | (\$16.76) | \$17.17 | \$0.62 |
| 2022 |         | \$99.18  | \$30.92 | \$34.06 | \$0.72 | (\$17.18) | \$17.60 | \$0.63 |
| 2023 |         | \$101.55 | \$31.66 | \$34.88 | \$0.74 | (\$17.59) | \$18.03 | \$0.65 |
| 2024 |         | \$103.92 | \$32.40 | \$35.69 | \$0.76 | (\$18.00) | \$18.45 | \$0.67 |
| 2025 |         | \$106.32 | \$33.15 | \$36.52 | \$0.78 | (\$18.42) | \$18.88 | \$0.68 |
| 2026 |         | \$108.74 | \$33.90 | \$37.35 | \$0.80 | (\$18.84) | \$19.31 | \$0.69 |
| 2027 |         | \$111.13 | \$34.65 | \$38.17 | \$0.82 | (\$19.25) | \$19.74 | \$0.71 |
| 2028 |         | \$113.54 | \$35.40 | \$39.00 | \$0.84 | (\$19.67) | \$20.17 | \$0.73 |
| 2029 |         | \$116.02 | \$36.17 | \$39.85 | \$0.86 | (\$20.10) | \$20.61 | \$0.75 |
| 2030 |         | \$118.54 | \$36.96 | \$40.71 | \$0.88 | (\$20.54) | \$21.05 | \$0.77 |
| 2031 |         | \$121.06 | \$37.75 | \$41.58 | \$0.90 | (\$20.98) | \$21.50 | \$0.79 |
| 2032 |         | \$123.59 | \$38.54 | \$42.45 | \$0.92 | (\$21.42) | \$21.95 | \$0.81 |
| 2033 |         | \$126.16 | \$39.34 | \$43.33 | \$0.94 | (\$21.87) | \$22.40 | \$0.83 |
| 2034 |         | \$128.77 | \$40.15 | \$44.23 | \$0.96 | (\$22.32) | \$22.87 | \$0.85 |
| 2035 |         | \$131.42 | \$40.97 | \$45.14 | \$0.98 | (\$22.78) | \$23.34 | \$0.87 |
| 2036 |         | \$134.09 | \$41.80 | \$46.05 | \$1.00 | (\$23.24) | \$23.81 | \$0.89 |
| 2037 |         | \$136.79 | \$42.64 | \$46.98 | \$1.02 | (\$23.71) | \$24.29 | \$0.91 |
| 2038 |         | \$139.52 | \$43.49 | \$47.92 | \$1.04 | (\$24.18) | \$24.78 | \$0.93 |
| 2039 |         | \$142.32 | \$44.36 | \$48.88 | \$1.06 | (\$24.67) | \$25.27 | \$0.95 |
| 2040 |         | \$145.19 | \$45.25 | \$49.86 | \$1.08 | (\$25.17) | \$25.77 | \$0.97 |

**Sources, Inputs and Assumptions**

|         |        |  |
|---------|--------|--|
| Source: | (c)(f) | Plant Costs 2017 IRP (Table 6.2) in \$2016 |
|         | (a)    | Plant capacity cost                        |
|         | (b)    | = (a) x 0.06899                            |
|         | (d)    | = ((b) + (c)) / (8.76 x 43.6%)             |
|         | (g)    | = (d) + (f)                                |
|         | (h)    | 2017 IRP Volume II-Appendix F              |

| 2019 IRP Wyoming Wind Resource - 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 \$ | 0.57      | Integration Cost                      |          |
| 2018 \$ | \$0.65    | Variable O&M                          | \$/MWh   |
| 2019 \$ | (\$15.55) | Tax Credit \$/MWh                     | \$/MWh   |
|         | 15.8%     | East Wind Capacity Contribution       |          |
|         | 6.899%    | Payment Factor                        |          |
|         | 43.6%     | Capacity Factor                       |          |

| Company Official Inflation Forecast - Dated March 2018 |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|--|--|--|--|--|--|--|--|

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| 2017 | 1.8% | 2023 | 2.4% | 2029 | 2.2% | 2035 | 2.1% |
| 2018 | 2.0% | 2024 | 2.3% | 2030 | 2.2% | 2036 | 2.0% |
| 2019 | 2.3% | 2025 | 2.3% | 2031 | 2.1% | 2037 | 2.0% |
| 2020 | 2.7% | 2026 | 2.3% | 2032 | 2.1% | 2038 | 2.0% |
| 2021 | 2.6% | 2027 | 2.2% | 2033 | 2.1% | 2039 | 2.0% |
| 2022 | 2.5% | 2028 | 2.2% | 2034 | 2.1% | 2040 | 2.0% |

Company Official Inflation

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

| Year | Renewable<br>Avoided Resource<br>Cost | On-Peak / Off-Peak Factors |          | On-Peak Renewable<br>Avoided Resource<br>Cost | Off-Peak Renewable<br>Avoided Resource<br>Cost |
|------|---------------------------------------|----------------------------|----------|---|--|
|      | \$/MWH                                | On-Peak                    | Off-Peak | On-Peak                                       | Off-Peak                                       |
|      | (a)                                   | (b)                        | (c)      | (d)   | (e)  |
|      |                                       |                            |          | (a) x (b)                                     | (a) x (c)                                      |
| 2020 | \$16.72                               | 1.1234                     | 0.8427   | \$18.79                                       | \$14.09  |
| 2021 | \$17.17                               | 1.1538                     | 0.8048   | \$19.81                                       | \$13.81  |
| 2022 | \$17.60                               | 1.1312                     | 0.8334   | \$19.91                                       | \$14.67  |
| 2023 | \$18.03                               | 1.1512                     | 0.8084   | \$20.75                                       | \$14.57  |
| 2024 | \$18.45                               | 1.1679                     | 0.7831   | \$21.55                                       | \$14.45  |
| 2025 | \$18.88                               | 1.1712                     | 0.7815   | \$22.11                                       | \$14.75  |
| 2026 | \$19.31                               | 1.1797                     | 0.7700   | \$22.78                                       | \$14.87  |
| 2027 | \$19.74                               | 1.1884                     | 0.7596   | \$23.46                                       | \$14.99  |
| 2028 | \$20.17                               | 1.1800                     | 0.7727   | \$23.80                                       | \$15.58  |
| 2029 | \$20.61                               | 1.1834                     | 0.7651   | \$24.39                                       | \$15.77  |
| 2030 | \$21.05                               | 1.1877                     | 0.7562   | \$25.01                                       | \$15.92  |
| 2031 | \$21.50                               | 1.1886                     | 0.7598   | \$25.55                                       | \$16.34  |
| 2032 | \$21.95                               | 1.1742                     | 0.7781   | \$25.77                                       | \$17.08  |
| 2033 | \$22.40                               | 1.1636                     | 0.7923   | \$26.07                                       | \$17.75  |
| 2034 | \$22.87                               | 1.1553                     | 0.8046   | \$26.42                                       | \$18.40  |
| 2035 | \$23.34                               | 1.1487                     | 0.8107   | \$26.81                                       | \$18.92  |
| 2036 | \$23.81                               | 1.1489                     | 0.8095   | \$27.36                                       | \$19.28  |
| 2037 | \$24.29                               | 1.1457                     | 0.8138   | \$27.83                                       | \$19.77  |
| 2038 | \$24.78                               | 1.1427                     | 0.8189   | \$28.31                                       | \$20.29  |

Columns

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

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

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

**OREGON – MAY 2020**

**PACIFIC POWER  
AVOIDED COST CALCULATION**

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

**OREGON – MAY 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.

**Sufficiency and Deficiency Periods**

In Docket UM-1396 Order 10-488, 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 2017 IRP which was acknowledged by the Commission on March 27, 2018.

**Table 1** presents 2017 IRP Preferred Portfolio and shows that the earliest acquisition of a Combine Cycle Combustion Turbine (CCCT) is planned to be in 2030. Therefore, the resource sufficiency period for the standard avoided cost rates is from 2020-2029 and the non-renewable resource deficiency period starts in 2030. Table 1 also shows that earliest acquisition of the utility scale renewable resource is in 2021, and therefore the start of the renewable resource deficiency period is 2021.

**Avoided Cost Calculation**

Based on the 2017 IRP preferred portfolio shown in **Table 1**, the standard avoided cost calculation is separated into two distinct periods: (1) Standard non-renewable resource sufficiency (2020 through 2029) period; and (2) Standard non-renewable resource deficiency (2030 and beyond) period. During the non-renewable resource sufficiency period (2020 through 2029), standard avoided energy costs are based on blended market prices. Market prices from the Company’s Official Forward Price Curve are weighted by market transactions required to support the addition of an assumed 50 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 aMW, 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 COB, Mid-Columbia, and Palo Verde for each month. **Table 2** shows the result of this calculation.

The sufficiency period for standard renewable rates is 2020 and the standard renewable resource deficiency period starts in 2021. During the renewable resource sufficiency period (2020), 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 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 2030 is a west side CCCT from the 2019 IRP Supply Side Table.<sup>1</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 simple cycle combustion turbine (SCCT), which is usually acquired as a capacity resource, defines the portion of the fixed cost of the CCCT that is assigned to capacity.<sup>2</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 standard renewable resource deficiency period, the standard renewable avoided cost prices are based on resource costs of renewable proxy wind resource from the 2019 IRP Supply Side Table. 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 72.1% capacity factor, and the total avoided energy costs.

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<sup>1</sup> 396 MW CCCT (Dry "G/H" 1x1) - 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 Official Forward Price Curve (2003 OFPC).

<sup>2</sup> SCCT Frame ("F"x1) – East Side Resource (5,050'), as listed in Tables 6.1 and 6.2 of the 2019 IRP.

Because energy generated by a QF may vary, total standard avoided costs are calculated at 75%, 85% and 90% 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% of all hours are on-peak and 44% 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 current avoided costs currently in effect in Oregon and the avoided costs proposed by Staff in this filing. An alternate version of Tables 7 and 8 compares Staff's proposal to the Company's proposed avoided costs.

**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. Inflation forecast is not updated and still based on values from March 2018 Official Forward Price Curve.

### **Gas Price Forecast**

Gas prices used in this filing utilize the Company's March 2020 Official Forward Price Curve (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 2017 IRP.

**Table 12** shows the calculation of total resource cost of the renewable proxy wind plant in Wyoming. The capacity costs, fixed O&M plus on-going capital costs, variable O&M, PTC tax credit and capacity factor values of the Wyoming Wind resource are updated based on 2019 IRP Supply Side Table. 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 2020-2029. For 2030 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 \$/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 CCCT proxy resource.

**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 2020-2029. For 2030 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 SCCT (in \$/kW-yr) adjusted by the expected capacity contribution of a wind QF as identified in the 2017 IRP (West side Wind: 11.8%). The fixed costs of SCCT was updated based on 2019 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 west side wind QF resource. Standard avoided cost rates for a wind QF are reduced by a wind integration charge of \$0.57/MWh (\$2016).

**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 2020-2029. For 2030 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 SCCT (in \$/kW-yr) adjusted by expected capacity contribution of a solar QF as identified in the 2017 IRP (West side fixed solar: 53.9%, tracking solar: 64.8%). The fixed costs of SCCT was updated based on 2019 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 solar QF resource. Standard avoided cost rates for a solar QF are reduced by a solar integration charge of \$0.60/MWh (\$2016).

**Exhibit 5- Renewable Base Load** tab shows the calculation of proposed standard renewable avoided cost rates for renewable base load QF. For 2020, on- and off-peak renewable avoided cost rates are based on blended market rates. For 2021 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 updated based on 2019 IRP Supply Side Table. Starting in 2021, the standard renewable on-peak price also includes a capacity adder calculated based on the fixed costs of the SCCT (in \$/kW-yr), adjusted by the incremental capacity contribution of a renewable Base Load QF relative to the avoided renewable east side wind proxy resource. The fixed costs of SCCT was updated based on 2019 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, which is assumed to be equal to on peak capacity factor of CCCT proxy resource. During resource deficiency period rates are increased by avoided wind integration charge.



**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. For 2021 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 13 reflecting resource costs from 2019 IRP Supply Side Table. Starting in 2021, the standard renewable on-peak price also includes a capacity adder calculated based on the fixed costs of the SCCT (in \$/kW-yr), adjusted by the incremental capacity contribution of a renewable west side Wind QF relative to the capacity contribution of the avoided east side renewable proxy wind resource. The fixed costs of SCCT was updated based on 2019 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 west side wind QF resource. During renewable resource sufficiency period of 2020, the standard renewable avoided cost rates for a wind QF are reduced by wind integration charge.

**Exhibits 7 & 8- Renewable Solar** tab shows the calculation of proposed standard renewable avoided cost rates for a Renewable Solar QF. On- and off-peak renewable avoided cost rates are based on blended market rates for 2020. For 2021 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 updated based on 2019 IRP Supply Side Table.. Starting in 2021, the standard renewable on-peak price also includes a capacity adder calculated based on the fixed costs of SCCT (in \$/kW-yr), adjusted by the incremental capacity contribution of a renewable Fixed and Tracking Solar QF relative to the avoided renewable east side wind proxy resource. The fixed costs of SCCT was updated based on 2019 Supply Side Table. The adjusted capacity adder in \$/kW-yr is allocated to on peak hours by using the on peak capacity factors of a solar QF resource. During renewable resource sufficiency period, the standard renewable avoided costs rates for fixed and tracking solar QF resources are reduced by solar integration charge. During renewable resource deficiency period, the rates are adjusted by the difference in avoided wind and solar integration charges.

**Exhibit 9– Blending** tab shows the market blending used to weight the Company’s Official Forward Price Curve 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 / 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 2030.  | Table 8.17 – 2017 IRP Preferred Portfolio, page 244   |
| 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<br><a href="http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2019_IRP/Table_6.1-6.3-TRC_for_Supply-Side_Resource_Options_19_IRP_for_PDF.pdf">http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2019_IRP/Table_6.1-6.3-TRC_for_Supply-Side_Resource_Options_19_IRP_for_PDF.pdf</a> |
| 3. | Renewable: Identify the demarcation year for the end of sufficiency period / start of deficiency period.                                 | Deficiency starting in 2021   | Table 8.17 – 2017 IRP Preferred Portfolio, page 244   |
| 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 2021  | 2019 IRP Supply Side Table 6.1 and 6.2  |

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**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. Currently effective rates were based on the December 2018 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 Sch 37 AC Study_2020 04 14.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 style="text-align: center;">The Company updates its OFPC every quarter. The March 2020 OFPC was the most recent curve available for the Company's May 2020 update. Currently approved rates were based on December 2018 OFPC.</p> <p style="text-align: center;">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> | -                    |

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**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 2016 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 resources are adjusted to account for wind and solar integration costs. Wind integration cost: \$0.57/MWh (2016\$), Solar integration cost:\$0.60/MWh (2016\$)<br><br>For the complete calculation of sufficiency period prices, refer to "7_OR Sch 37 AC Study_2020 04 14.xlsx".                                      | Flexible Reserve Study from 2017 IRP, 2017 IRP Volume II-Appendix F, Table F.2 on Page 75 |

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**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 2030, Annual Energy weighted CF is 70.5 percent. Refer to Table 9 of "7_OR Sch 37 AC Study_2020 04 14.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 Sch 37 AC Study_2020 04 14.xlsx"  | -                                      |
| 3. | Provide the assumed heat rate. Include assumptions to account for elevation / temperature, and cooling method.   | Refer to Table 9 of "7_OR Sch 37 AC Study_2020 04 14.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 |

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**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 Sch 37 AC Study_2020 04 14.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). | PTC (First Year levelized value of \$15.55/MWh (in 2018\$) escalated by inflation rate from March 2018 OFPC). Refer to Table 12 of “7_OR Sch 37 AC Study_2020 04 14.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.   | Capacity Contribution values - Wind: 11.8 percent, Fixed Solar: 53.9 percent, and Tracking Solar: 64.8 percent.   | 2017 IRP Wind and Solar Capacity Contribution Study, 2017 IRP Volume II-Appendix N, Table N.1, page 316. |
| 7. | Provide the wind integration cost used / and the method used to derive the wind integration cost.   | Wind integration cost: \$0.57/MWh (2016\$), Solar integration cost:\$0.60/MWh (2016\$)  | Flexible Reserve Study from 2017 IRP, 2017 IRP Volume II-Appendix F, Table F.2 on Page 75                |



# Official Market Price Projection Final Documentation

**March 31, 2020**



# Aurora Assumptions

## Environmental



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

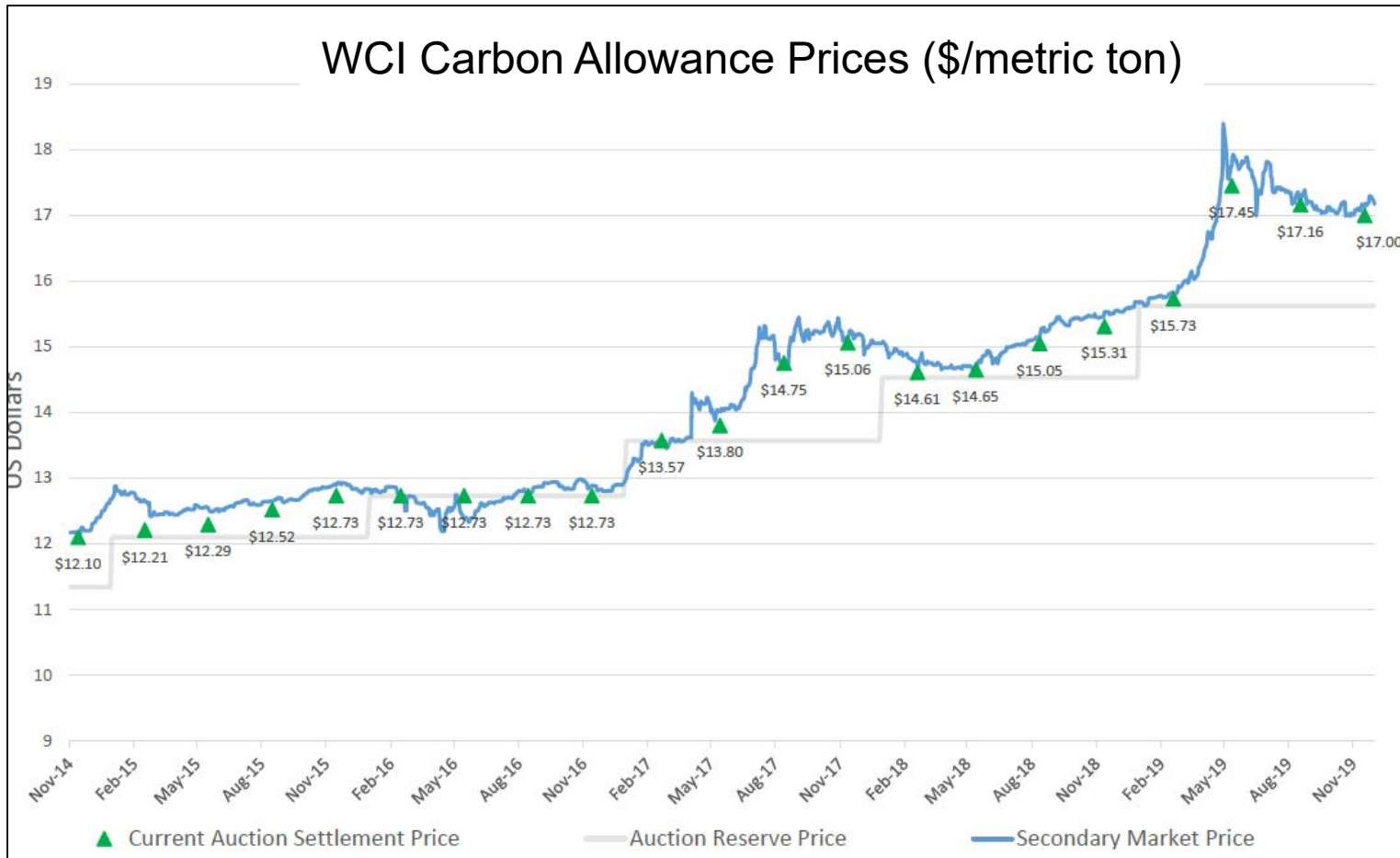
## California cap-and-trade policy assumptions in Aurora

- ▶ 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.

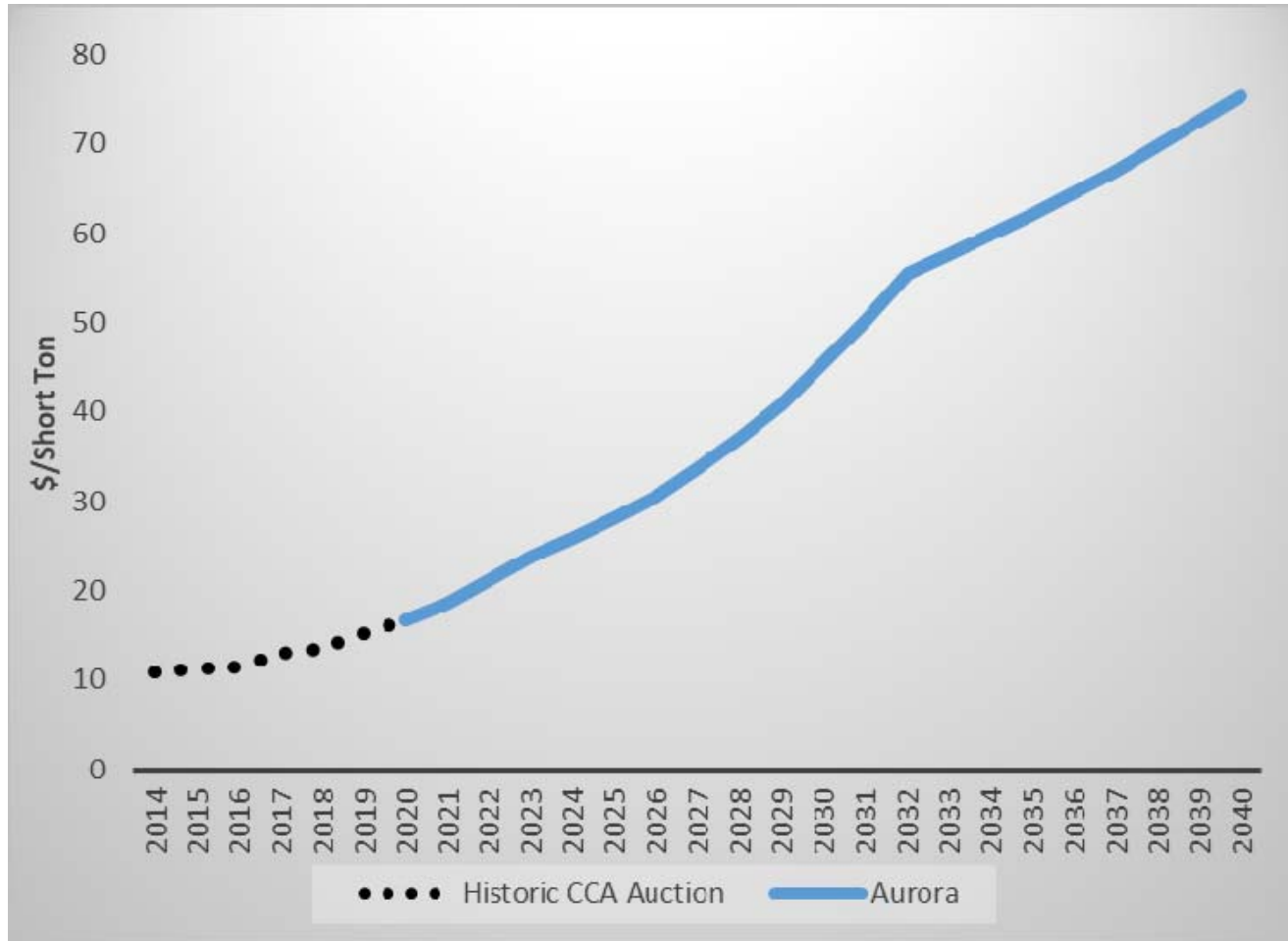
- ▶ The CPP was removed from the Aurora model in the April 2017 OFPC.
- ▶ No Federal CO<sub>2</sub> prices are assumed in Aurora. PacifiCorp continues to follow climate change legislation and EPA Rulings and update Aurora assumptions accordingly.

# 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%     |