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October 31, 2019

VIA ELECTRONIC AND US MAIL

Attention: Filing Center
Public Utility Commission of Oregon
P.O. Box 1088
Salem, Oregon 97308-1088

Re: UE ___ – Idaho Power Company's 2020 Annual Power Cost Update (APCU).

Attention Filing Center:

Enclosed for filing in the above-referenced matter are an original and five copies of Idaho Power Company's Direct Testimony and Exhibits of Nicole A. Blackwell (Idaho Power/100-110). Please direct all communications in this matter to:

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An electronic copy of this filing has been served on all parties of the 2019 APCU (UE 350).

Sincerely,

Alisha Till

Alisha Till
Paralegal

Enclosures
cc: UE 350 Service List

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

UE ___

IN THE MATTER OF IDAHO POWER COMPANY'S 2020 ANNUAL POWER COST UPDATE	)
OCTOBER UPDATE	)

IDAHO POWER COMPANY

DIRECT TESTIMONY

OF

NICOLE A. BLACKWELL

October 31, 2019

Q. Please state your name, business address, and present occupation.

A. My name is Nicole A. Blackwell. I am employed by Idaho Power Company ("Idaho Power" or "Company") as a Regulatory Analyst in the Regulatory Affairs Department. My business address is 1221 West Idaho Street, Boise, Idaho 83702.

Q. Please describe your educational background.

A. In May 2010, I received Bachelor of Science degrees in Finance and Economics from the University of Idaho. I have also attended "The Basics: Practical Regulatory Training for the Electric Industry," an electric utility ratemaking course offered through New Mexico State University's Center for Public Utilities, "Electric Utility Fundamentals & Insights," an electric utility course offered through the Western Energy Institute, and Edison Electric Institute's "Electric Rates Advanced Course."

Q. Please describe your business experience with Idaho Power.

A. In January 2016, I accepted my current position at Idaho Power as a Regulatory Analyst in the Regulatory Affairs Department. As a Regulatory Analyst, I am responsible for running the AURORA model ("AURORA") to calculate net power supply expenses ("NPSE") for ratemaking purposes, as well as the determination of the marginal cost of energy used in the Company's marginal cost analyses. My duties also include providing analytical support for other regulatory activities within the Regulatory Affairs Department.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the determination of the Company's 2020 October Update, the first portion of the Company's Annual Power Cost Update ("APCU"). If approved, the 2020 October Update will result in a revenue decrease of $176,943, or 0.32 percent, to become effective June 1, 2020.

Q. How is your testimony organized?

A. My testimony begins with a brief history of the APCU and the filing requirements associated with it. Next, my testimony describes the required updates to AURORA and the resulting modeling outputs. I then present and discuss the total NPSE for the 2020 October Update, and how it compares to last year's 2019 October Update. My testimony concludes with the quantification of the projected revenue requirement and the proposed rate implementation to recover the revenue requirement.

Q. Have you prepared exhibits for this proceeding?

A. Yes. I am sponsoring the following exhibits:

1. Exhibit 101, AURORA modeled determination of normalized power supply expenses for April 1, 2020 – March 31, 2021
2. Exhibits 102 – 104, Mid-Columbia Forward Price Curves Discounted for Inflation, Producer Price Index for Electric Power, and Forward Prices Used for Re-Pricing Purchased Power and Surplus Sales
3. Exhibit 105, Total Normalized Base Power Supply Expenses for the 2020 October Update
4. Exhibit 106, Energy Imbalance Market Benefits
5. Exhibit 107, Energy Imbalance Market Costs
6. Exhibit 108, Year-Over-Year Differences in Modeled NPSE
7. Exhibit 109, Revenue Spread
8. Exhibit 110, Revenue Impact

APCU Overview

Q. What is the APCU?

A. The APCU is a rate mechanism that is comprised of two components, an October Update and a March Forecast. The October Update establishes the prospective "base" or "normal" power supply expenses for an April through March test period. The March Forecast is a forecast of expected power supply expenses over the same test period as the October Update. "Base" or "normal" power supply expenses are calculated by modeling the test period under multiple historical water conditions; in this case, the Company modeled 91 historical water conditions (1928-2018). Expected power supply expenses are calculated by modeling the same test period as the October Update, except the power supply expenses are calculated by modeling a single forecast water condition from the Northwest River Forecast Center. The results of the October Update are reflected as an update to base rates and the results of the March Forecast are reflected in the March Forecast Rate Adjustment listed in Schedule 55, with both of the rate adjustments going into effect on June 1st of each year.

Q. What is the definition of the term "net power supply expense" as the Company and the Public Utility Commission of Oregon ("Commission") have used the term historically?

A. The Company and the Commission have used the term "net power supply expense" to refer to the sum of the following Federal Energy Regulatory Commission ("FERC") accounts: fuel expense (FERC Accounts 501 and 547), and purchased power expenses (FERC Account 555), minus surplus sales revenues (FERC Account 447).

Q. What regulatory actions led to the implementation of the APCU?

A. In its Order issued in Idaho Power's rate case, Docket No. UE 167, the Commission specifically recognized the Company's unique reliance on hydro generation and its extended amortization of deferred costs, and therefore, directed the parties to work together to "consider whether there is a more effective regulatory mechanism for Idaho Power to recover its allowable power costs." (Order No. 05-871, p. 7). Following that Order, the Company filed its request for a power cost adjustment mechanism ("PCAM"). The result of that filing was a settlement stipulation approved by the

Commission in Order No. 08-238, Docket No. UE 195, establishing the APCU and implementation of the PCAM, or the annual power supply expense true-up.

Q. What is the purpose of the APCU?

A. The APCU was implemented to adjust rates on an annual basis to capture variability in power supply expenses that occur with a predominantly hydro-based generation fleet. The APCU mechanism closely aligns the power supply expenses included in customer rates with the power supply expenses actually incurred by the Company. Prior to the APCU, the Company would defer excess power supply expenses and then amortize them at a later time for collection, which led to multiple deferrals and long amortization periods.

Q. What are the requirements of Order No. 08-238?

A. Order No. 08-238 directed the Company to model its power supply expenses using the AURORA model and identified a number of variables that were to be updated annually in AURORA. The specific variables are discussed in the following section.

Q. What is the AURORA model?

A. The AURORA model is a comprehensive electric resource dispatch model that simulates the economic dispatch of the Company's resources to determine NPSE for the APCU. The Commission has also accepted the use of AURORA to determine NPSE for general rate cases, marginal cost analyses, and resource modeling for the Company's Integrated Resource Plan.

AURORA Model Inputs and Modeling Results

Q. What are the specific variables that are to be updated during each APCU filing?

A. Commission Order No. 08-238 identified the following power supply expense variables to be updated annually:

a. Fuel prices and transportation costs

b. Wheeling expenses

c. Planned outages and forced outage rates

d. Heat rates

e. Forecast of normalized load and normalized sales

f. Contracts for wholesale power and power purchases and sales

g. Forward price curve

h. Public Utility Regulatory Policies Act of 1978 ("PURPA") contract expenses

i. The Oregon state allocation factor

The Company reviewed all the inputs and updated those that have changed since last year's October Update, as described in more detail in the following section.

Coal Fuel Expense

Q. Have any changes in coal fuel expense and coal-fired generation occurred since last year's October Update filing?

A. Yes. Total coal fuel expense included in the 2020 October Update is $40.8 million, compared to $65.2 million in the 2019 October Update, a decrease of 37 percent. Coal-fired generation also decreased from last year's October Update, from 1.78 million megawatt-hours ("MWh") to 1.05 million MWh, or approximately 41 percent. Production volumes at the Jim Bridger plant ("Bridger), the Boardman plant ("Boardman") and the North Valmy plant ("Valmy") decreased 34 percent, 54 percent, and 51 percent respectively, compared with the 2019 October Update.

Q. Why have production volumes decreased at the coal-fired plants?

A. The decrease in forecast generation at Bridger is attributable to the availability of lower-priced market power purchases and fewer economic surplus sales. The decrease in generation at Boardman is largely attributable to the retirement of the Boardman plant in December 2020. The decrease in generation at Valmy is attributable to Idaho Power ceasing participation in one of the two generating units in December 2019.

Q. Has Idaho Power modeled operations at Boardman through all 12 months of 2020?

A. No. Although Idaho Power will cease operations at Boardman at the end of 2020, the Company has modeled October 2020 as the last month of planned operations in AURORA. Due to the high costs associated with coal removal, Idaho Power and Portland General Electric ("PGE"), the Company's operating partner in Boardman, are strategically planning coal purchases in order to deplete the coal inventory before the plant shuts down. Modeling Boardman availability through the end of October reflects the likelihood that coal inventory will be completely exhausted in the fall of 2020, and aligns with the approach agreed upon for PGE in its 2020 Annual Power Cost Update Tariff, Docket No. UE 359, approved in Order No. 19-329.

Q. How did the changes in coal fuel expense and coal-fired generation impact the cost of coal production on a per-unit basis?

A. The average cost of coal production, on a per-unit basis, for the 2020 October Update is $38.90 per MWh, compared to $36.74 per MWh for the 2019 October Update. At the plant level, the per-unit cost of production decreased 2 percent at Boardman, increased 12 percent at Valmy, and increased 4 percent at Bridger.

Q. What factors are driving the changes in the per-unit cost of production at the Company's coal plants?

A. With the exception of Boardman, the average cost of coal production on a per-unit basis increased for the 2020 October Update as a result of coal generation decreasing to a higher degree than coal fuel expense. In other words, operating costs are being spread over lower production volumes. More specifically, the Company's fixed proportional share of Oil, Handling, Administrative & General ("OHAG") expenses are being spread over fewer MWh of production, increasing the per-unit costs relative to the 2019 October Update.

Q. Did Idaho Power model OHAG expenses as agreed upon in the settlement stipulations approved in the 2016 and 2017 APCU dockets?

A. Yes. Per the settlement stipulation approved by Order No. 16-206 in the Company's 2016 APCU, Docket No. UE 301, the per-MWh OHAG expense included in the AURORA model has been updated to reflect the amount of OHAG expense driven by Idaho Power's dispatch of each plant. The Company has separately accounted for its proportional share of the total OHAG expense incurred at each of the plants. Per the settlement stipulation approved by Order No. 17-165 in the Company's 2017 APCU, Docket No. UE 314, ("2017 Stipulation"), Idaho Power's proportional share of total OHAG expense incurred at each of the coal-fired plants is forecast using a three-year historical average of actual OHAG costs, with a growth (reduction) rate equal to the five-year historical average growth (reduction) rate.

Q. Have you prepared an exhibit that illustrates the calculation of OHAG expenses for the 2020 APCU?

A. Yes. Exhibit 101 reflects the AURORA-modeled OHAG expense resulting from Idaho Power's dispatch, as well as Idaho Power's fixed ownership share of total OHAG expense at each plant. This methodology effectively includes in the AURORA dispatch price the true variable component of OHAG driven by the Company's dispatch of each plant. After the AURORA-modeled dispatch has occurred, the resulting costs are adjusted to align with costs actually incurred by the Company at each of its coal-fired facilities.

For example, on Exhibit 101, Line 4 illustrates the AURORA-modeled OHAG expense resulting from Idaho Power's dispatch of Bridger. Line 5 is the difference between the total AURORA-modeled expenses, Line 3, and the AURORA-modeled OHAG expense, Line 4, at Bridger ($25,197.6 - $285.2 = $24,912.5). Line 6 represents the Company's proportional share of total OHAG expenses at Bridger using the stipulated methodology discussed above. Line 7 is the sum of the AURORA-modeled expenses (less the AURORA-modeled OHAG at Bridger, Line 5), and the Company's proportional share of total OHAG, Line 6, ($24,912.5 + $3,132.2 = $28,044.7). This line reflects the NPSE for Bridger for the 2020 October Update. This method is replicated for Boardman, as shown on Lines 9-13, and for Valmy, as shown on Lines 15-20.

Q. Does Idaho Power's 2020 APCU account for revenues received from or expenses paid to NV Energy (its ownership partner in Valmy) for usage of the Company's unused capacity or the Company's usage of NV Energy's unused capacity?

A. Yes. Per the 2017 Stipulation, Idaho Power agreed to include the three-year historical average of actual net balances associated with ownership partner use of unused capacity at Valmy as an offset or addition to total NPSE. For the 2020 October Update, the 2016-2018 historical average net revenue paid to Idaho Power associated with NV Energy's dispatch of Idaho Power's unused capacity at Valmy is $67,378 on a system basis. As shown on Line 19 of Exhibit 101, this amount has been reflected as an offset to NPSE for Valmy for the 2020 October Update. The Company will update the three-year historical average as part of the 2020 March Forecast.

Q. Did Idaho Power hold a workshop prior to the 2020 October Update filing to address Bridger Coal Company ("BCC") depreciation expense included in the APCU?

A. Yes. Pursuant to the settlement stipulation approved in Order No. 19-189 in the Company's 2019 APCU, Docket No. UE 350, Idaho Power and PacifiCorp held a workshop with Staff and the Oregon Citizens' Utility Board ("CUB") on September 23, 2019, to discuss BCC depreciation expense included in the APCU. The Company and

PacifiCorp presented on BCC operations, cost recovery, budgeting, asset lives, and depreciation methodology. No additional action items resulted from that meeting.

Natural Gas Fuel Expense

Q. How does the natural gas price forecast for the 2020 October Update compare to last year's October Update?

A. The Henry Hub price used for the 2019 October Update was $3.13 per MMBtu, while the Henry Hub price used in the 2020 October Update is $2.71 per MMBtu, a decrease of $0.42 per MMBtu or 13 percent.

Q. How is the Henry Hub gas price forecast used as an AURORA input?

A. The Company uses the gas price forecast for Henry Hub as the starting point in the AURORA model. Henry Hub is considered a reference fuel in AURORA, meaning other gas market prices are determined by applying an adjustment factor to the Henry Hub price. For example, a Henry Hub gas price of $2.71 per MMBtu applied to a Sumas basis of -$0.44 per MMBtu equals a Sumas gas price of $2.27 per MMBtu ($2.71 - $0.44 = $2.27). The Company develops a separate gas price for its natural gas units also based upon the Henry Hub gas price forecast, referred to as the Idaho Citygate price.

Q. Please explain the Idaho Citygate price.

A. The Idaho Citygate price is representative of the gas price delivered to Idaho Power's natural gas units. The Idaho Citygate price is based on the Henry Hub price and applies adjustments for Sumas basis and transport costs.

Q. How does the Idaho Citygate price for the 2020 October Update compare to last year?

A. The average Idaho Citygate price for the 2020 October Update is $2.12 per MMBtu compared to $2.08 per MMBtu for the 2019 October Forecast.

Q. If the Henry Hub gas price is decreasing, why did the Idaho Citygate price increase?

A. The increase in the Idaho Citygate price for the 2020 October Update is attributable to a 47 percent increase in the Sumas basis. Sumas, located in Washington on the border with Canada, forms the primary natural gas trading hub for consumers in the Pacific Northwest. The increase in the Sumas basis adjustment is due to the waning impact of the Enbridge natural gas pipeline explosion that occurred in October 2018. The Enbridge pipeline runs from British Columbia and connects to the Northwest Pipeline system, which feeds the Pacific Northwest with natural gas. Due to the October 2018 explosion, natural gas storage in the Pacific Northwest was depleted last year. For context, the Idaho Citygate price included in the 2019 March Forecast was $3.17 per MMBtu, when the market was still significantly impacted by the pipeline explosion. Repairs to the Enbridge pipeline have been completed, but work is still being done to return the pipeline to 100 percent deliverability.

PURPA Expense

Q. Please explain any changes in PURPA generation since last year's October Update.

A. Last year's October Update included 343 average-megawatts ("aMW") of PURPA generation, whereas PURPA generation included in the 2020 October Update is 345 aMW, an increase of 2 aMW, or less than 1 percent. The increase in PURPA generation is primarily due to normal fluctuations in estimated output from the generation facilities, as no new projects are scheduled to come online during the 2020 APCU test year.

Q. How has the annual PURPA expense changed from last year's October Update?

A. Annual PURPA expense increased from $221.1 million to $223.5 million, an increase of $2.4 million, or 1 percent. The increase in annual PURPA expense is a combination of the small increase in forecasted generation discussed above, as well as updated PURPA contract values.

Normalized Load

Q. Please describe the changes in the Company's system loads since last year's October Update.

A. The Company's normalized system load used in last year's October Update was 1,833 aMW. The Company's normalized system load used in this year's October Update is 1,860 aMW, representing an increase in load of 27 aMW, or 1 percent, between the two test periods.

Other

Q. What other AURORA inputs were modified from last year's October Update?

A. The Company updated the maintenance rates, forced outage rates, and heat rates for its thermal plants, which is a consistent practice for every APCU filing.

Modeling Results

Q. Have you prepared an exhibit that summarizes the results of the AURORA model with all of the updated inputs described above?

A. Yes. Exhibit 101 shows the results of the AURORA modeling determination of normalized NPSE for the April 2020 through March 2021 test year. Exhibit 101 presents the summary of results containing average variable power supply generation output and expenses based on 91 historical water conditions.

Q. Please summarize the sources and disposition of energy shown on Exhibit 101.

A. As can be seen on Exhibit 101, hydro generation supplies 8.8 million MWh, approximately 50 percent (8.8 million MWh / 17.6 million MWh = 50 percent) of the generation mix. Thermal generation supplies 4.2 million MWh (Bridger 0.7, Boardman 0.1, Valmy 0.2, Langley Gulch 2.2, Danskin 0.6, Bennett Mountain 0.4), approximately 24 percent (4.2 million MWh / 17.6 million MWh = 24 percent) of the generation mix.

Purchases of power are made up of short-term and longer-term market purchases, purchased power agreements ("PPA"), and PURPA. PURPA purchases reflect normalized and annualized generation levels and account for 3.0 million MWh. The generation amounts and costs associated with PURPA purchases are not shown on Exhibit 101; however, when combined with market purchases of 1.1 million MWh and PPAs of 0.5 million MWh, total purchases amount to 4.6 million MWh (3.0 million MWh + 1.1 million MWh + 0.5 million MWh = 4.6 million MWh) or approximately 26 percent of the generation mix. Of the 17.6 million MWh generated by the system, 16.3 million MWh are utilized for system loads while 1.3 million MWh are sold as surplus sales.

Base Net Power Supply Expenses

Q. How are the Base Net Power Supply Expenses to be calculated for the October Update portion of the APCU according to the settlement stipulation approved in Order No. 08-238?

A. Per the settlement stipulation approved in Order No. 08-238, the output of the AURORA model will be used to determine net power supply average dispatch cost for normal loads and average stream flow conditions, and the wholesale electric prices for purchased power and surplus sales determined by the AURORA model will be replaced with an average forward electric price curve (Docket No. UE 195, Stipulation, p. 3).

Q. Please describe the re-pricing methodology mentioned above.

A. The Company is required to re-price the AURORA-generated volumes of purchased power and surplus sales with a forward-based price curve using the Mid-Columbia ("Mid-C") hub. This methodology prescribes the use of a one-year average of the daily Mid-C forward price curves calculated from the previous 12 months of daily Mid-C heavy load and Mid-C light load forward price curves for the period starting in the April immediately following the current April through March test period. Forward prices are then adjusted for inflation back one year using the most recent Producer Price Index for Electric Power.

The re-pricing of market prices in the 2020 October Update is based upon the daily forward price curves for April 2021 through March 2022 as shown in Exhibit 102, which were then discounted for inflation back to April 2020 through March 2021 according to the quarterly inflation indices provided in Exhibit 103.

Q. What is the monthly average forward price that is used for the re-pricing of purchased power and surplus sales volumes?

A. Exhibit 104 shows the monthly prices that are used for the re-pricing of purchased power and surplus sales volumes for the 2020 October Update. The prices range from a low of $11.16 per MWh to a high of $55.90 per MWh.

Q. How does the re-pricing of purchased power and surplus sales, using a normal forward price curve, change purchased power expenses and surplus sales revenues as modeled by AURORA?

A. Lines 33 and 41 of Exhibit 101 show the purchased power expenses and surplus sales revenues, respectively, as determined by the AURORA modeling process. Lines 20 and 28 of Exhibit 105 show the same normalized generation dispatch with purchased power and surplus sales re-priced using the normalized forward price curve shown in Exhibit 104. A comparison of Exhibit 101 and Exhibit 105 demonstrates the changes due to re-pricing. Purchased power expenses increased by $8.7 million, moving from $35.4 million to $44.1 million. Surplus sales revenues increased by $4.6 million, moving from $24.7 million to $29.3 million. In this case, the NPSE resulting from the re-pricing methodology shown on Exhibit 105 is an increase in NPSE of $4.1 million as compared to the AURORA-generated expectation shown on Exhibit 101. The differences for the re-pricing of purchased power of $8.7 million and surplus sales of $4.6 million are shown on Exhibit 108, Column J.

<u>Energy Imbalance Market ("EIM") Benefits and Costs</u>

Q. Has the Company adjusted the NPSE amounts included in the 2020 October Update to reflect Idaho Power's participation in the Western EIM?

A. Yes. The NPSE requested for approval in the 2020 October Update includes both the incremental benefits and costs associated with Idaho Power's participation in the Western EIM. Because the cost-savings benefits associated with EIM participation will be reflected as decreased NPSE, it is appropriate to include an estimate of both the incremental benefits and the incremental costs required for participation as part of this APCU.

Q. What level of EIM benefits is Idaho Power proposing to include in the 2020 October Update?

A. Idaho Power is proposing to include $15.6 million in system EIM benefits as an offset to NPSE in the 2020 October Update. On an Oregon allocated basis, the EIM benefits to be included in the 2020 October Update total $724,599.

Q. How does this compare to the level of EIM benefits included in last year's October Update?

A. The settled 2019 October Update system EIM benefit was $15.1 million, or $699,431 on an Oregon allocated basis.

Q. How did the Company determine the level of EIM benefits to be included in the 2020 October Update?

A. The level of EIM benefits to be included in the 2020 October Update utilizes the California Independent System Operator ("CAISO") report of EIM benefits, for October 2018 through September 2019, as a starting point, and then accounts for necessary adjustments to quantify ongoing cost-savings benefits specific to Idaho Power's participation in the EIM. These adjustments, which I will detail individually, include an adjustment to the CAISO methodology as it pertains to the hydro-pricing cost structure, and an adjustment for third-party load included in the Company's balancing area.

Q. How does CAISO quantify EIM benefits?

A. CAISO uses a counterfactual methodology in which dispatch for an EIM Balancing Authority Area ("BAA") mimics market operations without importing or exporting through EIM transfers. The counterfactual dispatch moves units inside the BAA to meet real-time imbalance based on economic merit order. CAISO's quantification of total estimated EIM benefits is the cost savings of the EIM dispatch compared to the counterfactual without EIM dispatch. In order to determine both EIM dispatch costs and counterfactual costs, CAISO relies upon bid prices submitted by EIM entities.

Q. What concerns does the Company have regarding CAISO's EIM benefits methodology as it relates specifically to Idaho Power?

A. One of the major assumptions CAISO makes in its benefits methodology, due to lack of other data, is that the bids submitted for each participating resource reflect the true dispatch costs, or the economic value, of those resources. For most resource types, this assumption may be reasonable; however, this assumption is not accurate for hydro resources.

Idaho Power bids hydro resources based on an operational need rather than actual dispatch cost. Additionally, Idaho Power utilizes various pricing tiers for its hydro resources to protect the water from overuse in the market and to adhere to regulated water management policies.[1] The pricing tiers that Idaho Power uses are based upon certain operational parameters and can result in high bid prices when it is necessary to cease or limit water flows for a particular hydro resource's market participation. When Idaho Power operators move water into the higher tiers, which

[1] Requirements may include flood control obligations, fish flow obligations, etc.

have a higher bid price, it is a response to operational needs and does not reflect market benefits.

Without adjusting for these operating scenarios, CAISO's EIM benefit methodology incorrectly reflects the bid tier price as the economic value of hydro in the determination of both counterfactual costs and EIM dispatch costs, thereby overstating the resulting benefits. In order for the EIM benefit calculation to properly serve as an adjustment to modeled NPSE, Idaho Power made adjustments to the CAISO methodology as it pertains to the hydro-pricing cost structure.

Q. Please describe the changes Idaho Power made to the hydro-pricing cost structure for purposes of the EIM benefit calculation.

A. To reflect the correct economic value of the hydro dispatches in the EIM benefit calculation, Idaho Power made a two-part adjustment to the hydro cost structure. First, all hydro dispatch costs are held constant by applying a zero-cost. This satisfies a correction to CAISO's EIM counterfactual costs as there should not be any costs associated with Idaho Power's dispatching up and down of its hydro resources to meet its load imbalances.

Holding the dispatch costs constant by applying a zero-cost also satisfies a correction to the EIM dispatch costs. The EIM is not a capacity market. Therefore, in a hydro system with limited ability to store water long-term, the majority of EIM imports (or the dispatching down and storage of the water) will have matching exports over a given time period (that water will be exported soon thereafter). When EIM hydro imports have matching exports over a measured period, in the case of Idaho Power's analysis on a daily basis, dispatch costs should be held constant by replacing all tier prices with a zero cost. In this scenario, the actual benefit is the difference between the EIM import and export price. If the EIM dispatch cost is not held constant over the measured period, it results in an inaccurate benefit. However, when hydro imports do not equal exports, it is necessary to value, or assign a cost to, the net import / exports to the market. This is the second part of the adjustment Idaho Power made to the hydro-pricing cost structure as it pertains to the EIM benefit calculation.

Q. Why is it necessary to value net imports and exports related to the EIM?

A. When imports exceed exports during the measured period, using a zero-cost value will underestimate benefits because it is not properly accounting for the value of imported energy that served load (rather than hydro) and provided a benefit to the Company's customers. Conversely, when exports exceed imports during the measured period, the zero-cost value will inflate benefits because there are not any costs assigned to the water that was moved into the market. In either scenario, the net imports / exports for the hydro resources will show a benefit at the EIM Locational Marginal Price ("LMP") because there are no costs associated with the hydro dispatches. As a result, it is necessary to make a second adjustment to the EIM benefit calculation.

Q. Please explain the methodology used by the Company to value EIM net imports and exports of hydro-related energy.

A. Idaho Power adjusted the EIM benefits by assigning a value to the hydro net imports / exports for each day based on the average daily price in the bilateral market. Applying a market price to the net hydro import / export position, allows the Company to properly account for the cost of hydro that was imported or exported into the EIM.

With the exception of October and November 2018, Idaho Power was a net exporter in all months for the prior year (for hydro only). Therefore, the zero-cost method results in an inflated benefit overall. To correct for this error, Idaho Power replaced the zero-priced dispatch cost with an average daily bilateral price for all days that the Company was a net exporter. The difference between this value, the value the energy would have had in the bilateral market, and the LMP (under the zero-cost method, the benefit is at the LMP) is then subtracted from the total EIM benefit.

Idaho Power's methodology also accounts for days in which the Company was a net importer and therefore the zero-cost method results in an underestimated EIM benefit. In these instances, Idaho Power again used an average daily bilateral price to value the cost savings to the Company of importing energy from the EIM. The difference in this value, the value the energy would have had in the bilateral market, and the LMP (under the zero-cost method, the benefit is at the LMP) is added to the total EIM benefit.

Q. Did Idaho Power prepare an exhibit to illustrate the adjustments to the hydro-pricing cost structure of the EIM benefit calculation?

A. Yes. Exhibit 106 demonstrates Idaho Power's adjustments to the CAISO EIM benefit methodology as it pertains to the hydro-pricing cost structure for the full 12-month period. Column A of Exhibit 106 includes CAISO's reported benefits for Idaho Power for October 2018 through September 2019 of $32.5 million. Column B illustrates Idaho Power's application of a zero-cost for all hydro tier prices when EIM imports equal exports on a daily basis. This adjustment resulted in an EIM benefit of $19.1 million, a $13.4 million reduction from CAISO's stated EIM benefits for Idaho Power.

Column C of Exhibit 106 demonstrates the adjustment to the daily net import / export position for the hydro resources. As discussed previously, Idaho Power assigned a value to the net import / export position for each day based on the average daily price in the bilateral market. This adjustment resulted in a $2.2 million reduction to the EIM benefit estimate.

Exhibit 106 also illustrates an adjustment related to third-party loads in the Company's BAA that are included in CAISO's benefit calculation.

Q. Please explain the adjustment for benefits related to third-party loads in the Company's BAA that are included in CAISO's benefit calculation.

A. The benefits reported by CAISO reflect a value for the entire BAA each month; however, the Company has third-party load in its BAA whose benefits are being included in CAISO's reported benefits for Idaho Power. To better determine the benefits attributable to Idaho Power, the Company developed a method to reflect the monthly EIM BAA benefits based on a load ratio allocation between Idaho Power load and third-party customer loads in the Idaho Power BAA. Idaho Power also applied this adjustment to the 2019 APCU EIM benefit calculation.

Q. Please describe the adjustment to allocate a portion of the EIM benefits to third-party load.

A. The Company applied the monthly percentage of transmission load ratio share attributable to its third-party load customer for October 2018 through September 2019. This calculation determined that on average, approximately 7.18 percent of the BAA load relates to the third parties. In order to only include EIM benefits related to the Company, the EIM benefit was reduced by $1.2 million, which reflects the 7.18 percent of the total BAA EIM benefits.

Q. Please summarize the final estimate of EIM benefits to be included in the 2020 APCU.

A. The Company's EIM benefits forecast is based on the CAISO's EIM benefits reports, with necessary adjustments for hydro pricing and third-party loads as described in this testimony. As detailed in Exhibit 106, the Company's total estimated benefit for April 2020 through March 2021 is $15.6 million, or $0.72 million on an Oregon jurisdictional basis. The Company has included the estimate of EIM benefits as an offset to forecast NPSE for the October Update as shown in Exhibit 105.

Q. Please describe the incremental costs of Western EIM participation.

A. As stated previously, by participating in the Western EIM, the Company achieves NPSE savings, which benefit customers; however, to achieve such benefits, Idaho Power has incurred, and will continue to incur, incremental costs to participate in the Western EIM, including software and metering investments and annual, ongoing operations and maintenance ("O&M") expenses. Consistent with the 2019 APCU, the Company has included EIM-related costs in the 2020 APCU. The EIM-related costs included in the 2020 October Update consist of the annual return on net rate base from the capital investment required to participate in the Western EIM, depreciation expense, and ongoing O&M expenses. On an Oregon allocated basis, the revenue requirement associated with EIM costs to be included in the 2020 October Update is $145,713, as shown in Exhibit 107.

Q. Why does the Company believe the APCU is the appropriate mechanism to recover EIM-related costs?

A. Over the long term, the Company envisions that both the benefits and costs associated with EIM participation would be part of net power supply costs reflected in base rates as addressed in a general rate case. However, because the timing of the Company's next general rate case is unknown, it is necessary to utilize an interim rate mechanism for cost recovery to provide for proper matching of costs and benefits in customer rates.

Since participation in the Western EIM began in April 2018, the Company, and ultimately its customers, have achieved cost-saving benefits. As these benefits are in the form of reduced NPSE, it is appropriate to recover the costs of EIM participation under the mechanism in which NPSE is recovered. Including the EIM-related costs in the 2020 APCU is necessary to ensure that customer rates reflect a proper matching of EIM benefits and costs and to prevent intergenerational inequities. This treatment was approved by the Commission in Idaho Power's 2018 and 2019 APCU dockets, Docket Nos. UE 333 and UE 350, in Order Nos. 18-170 and 19-189.

Per-Unit Cost Calculation and NPSE Discussion

Q. What is the NPSE per-unit cost when you combine all of the quantifications described earlier?

A. Exhibit 105 shows total system NPSE of $376.8 million and normalized annual sales at the customer level for the April 2020 through March 2021 test year of 15,012,868 MWh, resulting in a per-unit cost for the 2020 October Update of $25.10 per MWh ($376.2 million / 15.013 million MWh = $25.10 per MWh) to become effective on June 1, 2020.

Q. How does the 2020 October Update per-unit cost of $25.10 per MWh compare to the 2019 October Update per-unit cost?

A. The 2019 October Update per-unit cost, which became effective June 1, 2019, was $25.40 per MWh based upon a determination of total NPSE of $376.8 million.

Q. Has the Company prepared an exhibit that demonstrates the changes in NPSE as compared to last year?

A. Yes. Exhibit 108 compares the AURORA-developed results, the re-pricing of purchased power and surplus sales, and the differences between the 2019 October Update and the 2020 October Update. Column H of Exhibit 108 shows the following: (1) A decrease in coal expenses of $24.4 million associated with a decrease of 0.73 million MWh in generation, (2) a decrease in natural gas expenses of $10.4 million associated with a decrease of 0.31 million MWh in generation, (3) an increase in market purchased power expenses of $33.1 million associated with an increase of 0.72 million MWh, (4) a decrease in PPA expenses of $1.3 million associated with a decrease of 0.03 million MWh, (5) an increase in PURPA expenses of $2.4 million associated with an increase of 0.01 million MWh, and finally, (6) a decrease in surplus sales revenue of $1.1 million associated with a decrease of 0.30 million MWh.

Q. Can you elaborate more on the changes in generation from the 2019 October Update to the 2020 October Update?

A. To illustrate the changes in generation, Columns D (2019) and F (2020) of Exhibit 108 calculate the percentage of generation compared to total system load. For example, Column F, line 1, shows that hydro provided 54 percent of the generation to meet the total system load of 16,298,733 MWh (8,804,407 / 16,298,733 = 54 percent). A comparison of the 2020 October Update to the 2019 October Update demonstrates that hydro generation was up slightly from 53 percent to 54 percent, coal generation decreased from 11 percent to 6 percent, natural gas generation decreased from 21 percent to 19 percent, market purchased power increased from 3 percent to 7 percent, PPA generation was unchanged at 3 percent, PURPA generation was unchanged at 19 percent, and lastly, surplus sales decreased from negative 10 percent to negative 8 percent. This comparison between resource type and total system load shows that increased market purchases and hydroelectric generation have displaced coal generation and natural gas generation.

Q. Are the changes in expenses among resource types consistent with the changes in output?

A. Yes. The changes in expenses among resource types are relatively consistent with the changes in output. The changes in expenses for each resource type are also shown in Columns D (2019) and F (2020) of Exhibit 108 as follows: Coal expense decreased from 17 percent to 11 percent of total NPSE, natural gas expense decreased from 21 percent to 18 percent, market purchased power expense increased from 3 percent to 12 percent, PPA expense was unchanged at 12 percent, PURPA expense was unchanged at 59 percent, and surplus sales revenue remained unchanged at negative 8 percent. Exhibit 108 demonstrates that the majority of movement in expenses is related to market purchases, coal, and natural gas, which is consistent with the changes in generation.

Q. What can be concluded from the information presented in Exhibit 108?

A. The information shown in Exhibit 108 suggests that low-cost market purchased power and increased hydroelectric generation are offsetting thermal generation as compared to last year's October Update. Additionally, low market prices have reduced the Company's ability to make economic off-system sales. In total, NPSE included in the 2020 October Update is nearly identical to NPSE included in the 2019 October Update.

Q. Did the Company comply with the methodology in Order No. 08-238 when it performed its analysis to determine the NPSE for the 2020 October Update?

A. Yes. The Company has complied with the methodology detailed in Order No. 08-238 for calculating this year's October Update.

Jurisdictional Allocation of NPSE

Q. How did the Company calculate the Oregon jurisdictional share of NPSE?

A. Per the 2017 Stipulation, the Oregon jurisdictional share of NPSE is calculated by multiplying the system NPSE total per-unit cost of $25.10 per MWh by the forecasted Oregon jurisdictional loss-adjusted normalized sales for the April 2020 through March 2021 test period of 695,285,576 MWh, resulting in an Oregon jurisdictional share of NPSE of $17.45 million ($25.10 x 695,285,576 MWh = $17.45 million), as shown on Line 1 of Exhibit 109.

Quantification and Discussion of the APCU Revenue Requirement

Q. Based on the determination of the Oregon jurisdictional share of NPSE, what is the APCU revenue requirement for the 2020 October Update?

A. As shown on Line 3 of Exhibit 109, the APCU revenue requirement is $17.6 million. The APCU revenue requirement is calculated by adding the 2020 October Update

Oregon jurisdictional share of NPSE of $17.45 million, Line 1, to the Oregon allocated EIM costs of $145,713, Line 2.

Q. What is the overall revenue impact of this year's October Update compared to current revenue?

A. Exhibit 109 also reveals the revenue impact resulting from this year's October Update. As shown on Line 12, base NPSE recovery under current approved APCU rates is $17.8 million, whereas the proposed 2020 APCU October Update revenue requirement is $17.6 million, as shown on Line 3. The comparison of this year's October Update to current approved revenue indicates a credit to Oregon customer rates of $0.2 million.

Rate Implementation

Q. What method of allocation did the Company use to spread the APCU revenue requirement associated with the 2020 October Update to the various customer classes?

A. The Company allocated the $17.6 million APCU revenue requirement associated with the 2020 October Update using the revenue spread methodology agreed upon in the settlement stipulation approved by Order No. 18-170 in the Company's 2018 APCU, Docket No. UE 333 ("2018 Stipulation"). The 2018 Stipulation established a revenue spread methodology whereby the total APCU revenue requirement is allocated to individual customer classes on the basis of normalized jurisdictional forecasted sales at the generation level for the test period. Additionally, any rate increases resulting from application of this revenue spread methodology as applied to a customer class will be capped at 3 percent above the overall average rate increase on a percentage of total revenue basis. In this case, the overall average rate change as a percentage of total revenue is a decrease of 0.32 percent; therefore, any rate increases applied to individual customer classes will be capped at 2.68 percent.

Q. Were any customer classes subject to the rate cap described above?

A. No. Application of the stipulated revenue spread methodology results in rate changes for all individual customer classes below the 2.68 percent cap. The highest rate change is 2.50 percent for Large Power Transmission Service customers (Tariff Schedule 19T). The final proposed revenue spread resulting from the application of the stipulated methodology is provided in Exhibit 109.

Q. Have you prepared an exhibit showing the summary of the revenue impact resulting from the October Update proposed by the Company?

A. Yes. Exhibit 110 provides a summary of the revenue change resulting from this year's October Update as compared to current revenue.

Q. Does the Company intend to provide supporting workpapers for the 2020 October Update to Staff and CUB?

A. Yes. Idaho Power will provide its supporting workpapers to Staff and CUB as part of the 2020 APCU filing, including workpapers to support the depreciable lives of BCC assets, per the 2018 Stipulation. The Company intends to provide these workpapers within five business days of filing the 2020 APCU.

Q. Does this conclude your testimony?

A. Yes, it does.

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's AURORA Modeled Power Supply Expenses for
April 1, 2020 – March 31, 2021
Normalized Loads Over 91 Water Year Conditions

October 31, 2019

IPCO NORMALIZED POWER SUPPLY EXPENSES FOR APRIL 1, 2020 -- MARCH 31, 2021 (Multiple Gas Prices/91 Hydro Year Conditions)
AURORA Developed Results - 2020 October Update
Variable Coal Handling Costs Modeled Using UE 301 & UE 314 Settlement Methodologies
AVERAGE

Line No.		April	May	June	July	August	September	October	November	December	January	February	March	Annual
1	Hydroelectric Generation (MWh)	884,062.2	979,144.2	962,295.5	712,587.6	604,327.1	541,752.0	525,094.3	455,116.8	674,522.3	826,467.3	795,636.9	843,400.6	8,804,407.0
	Bridger													
2	Energy (MWh)	254.3	-	7,165.3	127,648.4	138,388.2	45,743.0	14,715.1	106,370.6	161,793.8	72,848.4	31,317.5	6,636.5	712,881.1
3	AURORA Modeled Expense ($ x 1000)	$ 9.3	$ -	$ 254.8	$ 4,459.8	$ 4,868.9	$ 1,621.5	$ 529.6	$ 3,769.4	$ 5,641.8	$ 2,637.7	$ 1,158.6	$ 246.2	$ 25,197.6
4	AURORA Modeled Handling Expense ($ x 1000)	$ 0.1	$ -	$ 2.9	$ 51.1	$ 55.4	$ 18.3	$ 5.9	$ 42.5	$ 64.7	$ 29.1	$ 12.5	$ 2.7	$ 285.2
5	AURORA Expense less Modeled Handling Expense ($ x 1000)	$ 9.2	$ -	$ 252.0	$ 4,408.8	$ 4,813.5	$ 1,603.2	$ 523.7	$ 3,726.8	$ 5,577.0	$ 2,608.6	$ 1,146.1	$ 243.5	$ 24,912.5
6	IPC Share of OHAG Expense ($ x 1000)	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 261.0	$ 3,132.2
7	Total Expense ($ x 1000)	$ 270.2	$ 261.0	$ 513.0	$ 4,669.8	$ 5,074.5	$ 1,864.2	$ 784.7	$ 3,987.8	$ 5,838.0	$ 2,869.6	$ 1,407.1	$ 504.6	$ 28,044.7
	Boardman													
8	Energy (MWh)	4,384.8	2,435.0	6,576.9	31,264.3	32,452.7	25,598.5	18,630.4	-	-	-	-	-	121,342.7
9	AURORA Modeled Expense ($ x 1000)	$ 121.2	$ 70.7	$ 181.0	$ 821.7	$ 851.9	$ 671.2	$ 495.5	$ -	$ -	$ -	$ -	$ -	$ 3,213.2
10	AURORA Modeled Handling Expense ($ x 1000)	$ 2.1	$ 1.2	$ 3.2	$ 15.3	$ 15.9	$ 12.5	$ 9.1	$ -	$ -	$ -	$ -	$ -	$ 59.5
11	AURORA Expense less Modeled Handling Expense ($ x 1000)	$ 119.0	$ 69.5	$ 177.8	$ 806.3	$ 836.0	$ 658.6	$ 486.4	$ -	$ -	$ -	$ -	$ -	$ 3,153.7
12	IPC Share of OHAG Expense ($ x 1000)	$ 17.1	$ 17.1	$ 17.1	$ 17.1	$ 17.1	$ 17.1	$ 17.1	$ -	$ -	$ -	$ -	$ -	$ 119.8
13	Total Expense ($ x 1000)	$ 136.1	$ 86.6	$ 194.9	$ 823.5	$ 853.1	$ 675.8	$ 503.5	$ -	$ -	$ -	$ -	$ -	$ 3,273.5
	Valmy													
14	Energy (MWh)	440.6	-	2,722.4	23,385.2	20,964.4	10,090.6	6,184.3	18,897.0	29,660.6	49,579.6	31,590.2	20,650.1	214,165.1
15	AURORA Modeled Expense ($ x 1000)	$ 16.3	$ -	$ 96.9	$ 808.6	$ 729.5	$ 357.4	$ 224.3	$ 655.8	$ 1,005.4	$ 1,155.9	$ 745.9	$ 495.1	$ 6,290.9
16	AURORA Modeled Handling Expense ($ x 1000)	$ 1.0	$ -	$ 6.1	$ 52.6	$ 47.2	$ 22.7	$ 13.9	$ 42.5	$ 66.7	$ 111.6	$ 71.1	$ 46.5	$ 481.9
17	AURORA Expense less Modeled Handling Expense ($ x 1000)	$ 15.3	$ -	$ 90.7	$ 756.0	$ 682.3	$ 334.7	$ 210.3	$ 613.3	$ 938.6	$ 1,044.3	$ 674.8	$ 448.6	$ 5,809.0
18	IPC Share of OHAG Expense ($ x 1000)	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 310.2	$ 3,722.0
19	Usage Charges Paid to IPC ($ x 1000)													$ 67.4
20	Total Expense ($ x 1000)	$ 325.5	$ 310.2	$ 400.9	$ 1,066.1	$ 992.4	$ 644.9	$ 520.5	$ 923.5	$ 1,248.8	$ 1,354.5	$ 985.0	$ 758.8	$ 9,463.6
	Langley Gulch													
21	Energy (MWh)	168,394.1	201,775.7	193,108.7	198,950.8	199,048.7	194,019.1	199,317.7	191,213.0	190,172.7	170,123.7	143,009.8	155,777.5	2,204,911.3
22	Expense ($ x 1000)	$ 2,246.1	$ 2,286.5	$ 2,220.7	$ 3,095.6	$ 3,202.8	$ 3,031.6	$ 2,970.7	$ 3,852.6	$ 4,751.3	$ 4,064.3	$ 3,093.0	$ 2,856.8	$ 37,671.9
	Danskin													
23	Energy (MWh)	29,201.8	63,773.4	81,510.0	105,061.3	98,862.6	83,832.3	65,865.8	18,112.3	5,574.5	3,385.9	4,111.3	9,790.2	569,081.3
24	Expense ($ x 1000)	$ 677.4	$ 1,275.7	$ 1,681.2	$ 2,822.5	$ 2,701.1	$ 2,244.2	$ 1,681.0	$ 577.2	$ 221.5	$ 131.0	$ 144.0	$ 298.4	$ 14,455.3
	Bennett Mountain													
25	Energy (MWh)	16,851.2	34,586.7	47,877.9	68,478.3	61,413.1	45,703.9	32,515.8	8,976.2	2,172.1	1,065.0	1,591.3	5,564.0	326,795.4
26	Expense ($ x 1000)	$ 389.8	$ 694.7	$ 979.6	$ 1,817.9	$ 1,662.0	$ 1,220.1	$ 823.8	$ 286.6	$ 86.0	$ 40.7	$ 56.1	$ 172.4	$ 8,229.8
27	Fixed Capacity Charge - Gas Transportation ($ x 1000)	$ 690.0	$ 712.5	$ 690.0	$ 712.5	$ 712.5	$ 690.0	$ 712.5	$ 690.0	$ 712.5	$ 711.2	$ 643.4	$ 711.2	$ 8,388.4
	Purchased Power (Excluding PURPA)													
28	Market Energy (MWh)	8,625.2	6,344.9	67,195.2	211,395.3	231,581.3	95,535.0	57,489.5	155,349.4	102,547.2	109,959.1	43,426.8	31,816.8	1,121,265.7
29	Elkhorn Wind Energy (MWh)	26,404.6	26,527.2	25,227.4	25,865.4	22,886.0	21,015.4	23,409.4	30,182.4	27,577.6	24,216.8	24,659.9	24,425.1	302,396.9
30	Neal Hot Springs Energy (MWh)	15,249.6	11,952.5	11,189.5	9,323.4	9,575.2	12,688.0	16,619.5	18,383.0	19,941.4	18,374.9	17,111.0	17,550.7	177,958.7
31	Raft River Geothermal Energy (MWh)	4,270.5	3,263.6	3,612.4	3,828.7	3,550.0	3,797.6	3,774.9	4,094.8	4,523.1	4,600.4	4,043.7	4,344.8	47,704.4
32	Total Energy Excl. PURPA (MWh)	54,549.9	48,088.1	107,224.5	250,412.8	267,592.4	133,036.0	101,293.3	208,009.6	154,589.3	157,151.2	89,241.4	78,137.3	1,649,325.8
33	Market Expense ($ x 1000)	$ 213.1	$ 143.5	$ 1,950.7	$ 7,167.2	$ 7,607.0	$ 2,995.4	$ 1,587.1	$ 4,749.1	$ 3,347.2	$ 3,515.0	$ 1,293.7	$ 868.6	$ 35,437.8
34	Elkhorn Wind Expense ($ x 1000)	$ 1,285.4	$ 1,291.3	$ 1,670.8	$ 2,055.8	$ 1,819.0	$ 1,391.8	$ 1,550.4	$ 2,398.9	$ 2,191.9	$ 1,652.1	$ 1,682.3	$ 1,224.7	$ 20,214.3
35	Neal Hot Springs Expense ($ x 1000)	$ 1,324.1	$ 1,037.8	$ 1,325.5	$ 1,325.3	$ 1,361.1	$ 1,503.0	$ 1,968.7	$ 2,613.2	$ 2,834.7	$ 2,214.5	$ 2,062.2	$ 1,550.4	$ 21,120.7
36	Raft River Geothermal Expense ($ x 1000)	$ 215.9	$ 165.0	$ 248.5	$ 316.1	$ 293.0	$ 261.2	$ 259.7	$ 338.0	$ 373.4	$ 318.3	$ 279.8	$ 221.0	$ 3,290.0
37	Total Expense Excl. PURPA ($ x 1000)	$ 3,038.5	$ 2,637.7	$ 5,195.5	$ 10,864.4	$ 11,080.2	$ 6,151.5	$ 5,366.0	$ 10,099.2	$ 8,747.1	$ 7,699.9	$ 5,318.1	$ 3,864.7	$ 80,062.8
	Surplus Sales													
38	Energy (MWh)	336,578.4	331,143.5	159,646.4	14,767.5	3,177.3	26,890.0	64,360.5	13,348.7	20,424.3	52,206.8	105,204.7	199,036.2	1,326,784.3
39	Revenue Including Transmission Expenses ($ x 1000)	$ 6,089.5	$ 6,253.3	$ 2,973.1	$ 323.5	$ 78.4	$ 636.5	$ 1,526.8	$ 303.0	$ 567.8	$ 1,207.9	$ 2,321.9	$ 3,812.3	$ 26,094.1
40	Transmission Expenses ($ x 1000)	$ 336.6	$ 331.1	$ 159.6	$ 14.8	$ 3.2	$ 26.9	$ 64.4	$ 13.3	$ 20.4	$ 52.2	$ 105.2	$ 199.0	$ 1,326.8
41	Revenue Excluding Transmission Expenses ($ x 1000)	$ 5,753.0	$ 5,922.2	$ 2,813.4	$ 308.8	$ 75.3	$ 609.6	$ 1,462.5	$ 289.7	$ 547.4	$ 1,155.7	$ 2,216.7	$ 3,613.2	$ 24,767.3
42	Net Power Supply Expenses ($ x 1000)	$ 2,020.8	$ 2,342.8	$ 9,062.3	$ 25,563.5	$ 26,203.5	$ 15,912.7	$ 11,900.2	$ 20,127.2	$ 21,057.9	$ 15,715.5	$ 9,429.9	$ 5,553.6	$ 164,822.5

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Mid-Columbia Heavy and Light Load
Forward Price Curves

October 31, 2019

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C HL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
10/4/2018	21.5000	20.1000	20.4000	42.5000	47.7000	42.9500	26.9000	29.0500	35.2000	35.2000	30.2000	24.8000
10/5/2018	21.5500	20.1500	20.4500	42.6000	47.8500	43.0500	27.0000	29.1500	35.3000	35.3000	30.3000	24.8500
10/8/2018	21.7000	20.3000	20.6000	42.9000	48.2000	43.3500	27.2000	29.3500	35.5500	35.5500	30.5000	25.0500
10/9/2018	21.6500	20.2500	20.5500	42.7500	48.0500	43.2000	27.1000	29.2500	35.4500	35.4500	30.4000	24.9500
10/10/2018	21.7500	20.3500	20.6500	43.0000	48.3000	43.4500	27.2500	29.4000	35.6500	35.5500	30.4500	25.0000
10/11/2018	21.7000	20.3000	20.6000	42.9500	48.2500	43.4000	27.2000	29.3500	35.6000	35.5000	30.4000	24.9500
10/12/2018	21.7000	20.3000	20.6000	42.9500	48.2500	43.4000	27.2000	29.3500	35.6000	35.4000	30.3000	24.8500
10/15/2018	22.0000	20.5500	20.8500	43.5000	48.8500	43.9500	27.5500	29.7000	36.0500	35.8500	30.7000	25.1500
10/16/2018	22.0000	20.5500	20.8500	43.5000	48.8500	43.9500	27.5500	29.7000	36.0500	35.8500	30.7000	25.1500
10/17/2018	22.5000	21.0000	21.3000	44.4500	49.9500	44.9500	28.1500	30.3500	36.8500	36.6500	31.3500	25.7000
10/18/2018	23.5500	21.9500	22.3000	45.0500	50.6000	45.5500	28.5000	30.7500	37.3500	37.1500	31.7500	26.0500
10/19/2018	24.5500	22.8500	23.2500	46.9500	52.7000	47.4500	29.7000	32.0500	38.9000	38.6500	33.0500	27.1000
10/22/2018	25.2000	23.4500	23.8500	48.2000	54.1000	48.7000	30.5000	32.9000	39.9500	39.6500	33.9000	27.8000
10/23/2018	25.4000	23.6500	24.0500	48.6000	54.5500	49.1000	30.7500	33.2000	40.3000	40.0000	34.2000	28.0500
10/24/2018	25.0500	23.3000	23.7000	47.9500	53.8000	48.4000	30.3000	32.7500	39.7500	39.4500	33.7500	27.6500
10/25/2018	24.9000	23.1500	23.5500	47.6500	53.4500	48.1000	30.1000	32.5500	39.5000	39.2000	33.5500	27.5000
10/26/2018	24.6500	22.9000	23.3000	47.1500	52.9000	47.6000	29.8000	32.2000	39.1000	38.8000	33.2000	27.2000
10/29/2018	24.4500	22.7000	23.1000	46.7500	52.4500	47.2000	29.5500	31.9500	38.8000	38.4000	32.8500	26.9000
10/30/2018	24.3000	22.5500	22.9500	46.4500	52.1000	46.9000	29.3500	31.7500	38.5500	38.1500	32.6500	26.7500
10/31/2018	23.8500	22.1000	22.5000	45.5500	51.1000	46.0000	28.8000	31.1500	37.8000	37.2000	31.8000	26.0500
11/1/2018	23.9500	22.2000	22.6000	45.7000	51.3000	46.1500	28.9000	31.2500	37.9500	37.3500	31.9500	26.1500
11/2/2018	23.5000	21.7500	22.1500	44.8000	50.3000	45.2500	28.3500	30.6500	37.2000	36.6500	31.3500	25.6500
11/5/2018	23.7500	22.0000	22.4000	45.3000	50.8500	45.7500	28.6500	31.0000	37.6000	37.0500	31.6500	25.9000
11/6/2018	24.0000	22.2000	22.6000	45.7500	51.3500	46.2000	28.9000	31.3000	37.9500	37.6000	32.1000	26.2500
11/7/2018	23.3500	21.6000	21.9500	44.5000	49.9500	44.9000	28.1000	30.4500	36.9000	36.7000	31.3500	25.6000
11/8/2018	23.5000	21.7500	22.1000	44.7500	50.2500	45.1500	28.2500	30.6500	37.1000	36.9000	31.5500	25.7500
11/9/2018	24.0000	22.2000	22.5500	45.7000	51.3000	46.1000	28.8500	31.3000	37.9000	37.8000	32.3000	26.3500
11/12/2018	24.3500	22.5500	22.9000	46.4000	52.1000	46.8000	29.3000	31.7500	38.4500	38.3500	32.8000	26.7500
11/13/2018	24.1500	22.4000	22.7000	46.0500	51.7000	46.4500	29.0500	31.5000	38.1500	38.0500	32.5500	26.5500
11/14/2018	24.3500	22.5500	22.8500	46.4000	52.1000	46.8000	29.2500	31.7500	38.4500	38.3000	32.8000	26.7500
11/15/2018	24.1500	22.4000	22.7000	46.0500	51.7000	46.4500	29.0500	31.5000	38.1500	38.0500	32.5500	26.5500
11/16/2018	24.4000	22.6500	22.9500	46.5500	52.2500	46.9500	29.3500	31.8500	38.5500	37.8000	32.3000	26.3500
11/19/2018	24.4000	22.6500	22.9500	46.5500	52.2500	46.9500	29.3500	31.8500	38.5500	37.8500	32.3500	26.4000
11/20/2018	24.3000	22.5500	22.8500	46.3500	52.0000	46.7500	29.2000	31.7000	38.4000	37.7000	32.2000	26.3000
11/21/2018	24.5000	22.7000	23.0000	46.7000	52.4000	47.1000	29.4000	31.9500	38.7000	38.0000	32.4500	26.5000
11/23/2018	24.6500	22.8500	23.1500	47.0000	52.7000	47.4000	29.5500	32.1500	38.9500	38.2000	32.6500	26.6500
11/26/2018	24.9500	23.1000	23.4000	47.5500	53.3000	47.9500	29.9000	32.5500	39.4000	38.6500	33.0500	26.9500
11/27/2018	25.5000	23.6000	23.9000	48.6000	54.5000	49.0000	30.5500	33.3000	40.3000	39.5000	33.8000	27.5500
11/28/2018	25.2500	23.3500	23.6500	48.1000	53.9500	48.5000	30.2500	32.9500	39.9000	39.1000	33.4500	27.3000
11/29/2018	25.2000	23.3000	23.6000	48.0500	53.8500	48.4500	30.2000	32.9000	39.8500	39.2500	33.6000	27.4000
11/30/2018	24.9000	23.0500	23.3500	47.5000	53.2500	47.9000	29.8500	32.5500	39.4000	38.8000	33.2500	27.1000
12/3/2018	24.7500	22.9500	23.2500	47.2500	53.0000	47.6500	29.7000	32.4000	39.2000	38.6000	33.1000	26.9500
12/4/2018	24.5500	22.7500	23.0500	46.9000	52.6000	47.3000	29.4500	32.1500	38.9000	38.4000	32.9500	26.8000
12/5/2018	24.5500	22.7500	23.0500	46.9000	52.6000	47.3000	29.4500	32.1500	38.9000	38.4000	32.9500	26.8000
12/6/2018	24.6000	22.8000	23.1000	47.0500	52.7500	47.4500	29.5500	32.2500	39.0000	38.5000	33.0500	26.8500
12/7/2018	25.2500	23.4000	23.7000	48.3000	54.1500	48.7000	30.3500	33.1000	40.0500	39.5000	33.9000	27.5500
12/10/2018	25.0500	23.2000	23.5000	47.9000	53.7000	48.2500	30.1000	32.8000	39.7000	39.1500	33.6000	27.3000
12/11/2018	24.6000	22.8000	23.1000	47.0500	52.7500	47.4000	29.6000	32.2500	39.0000	38.5000	33.0500	26.8500
12/12/2018	24.6000	22.8000	23.1000	47.0500	52.7500	47.4000	29.6000	32.2500	39.0000	38.5000	33.0500	26.8500
12/13/2018	24.5500	22.7500	23.0500	46.9000	52.6000	47.2500	29.5000	32.1500	38.9000	38.4000	32.9500	26.8000
12/14/2018	24.7000	22.9000	23.2000	47.1500	52.9000	47.5000	29.6500	32.3500	39.1500	38.6000	33.1500	26.9500
12/17/2018	24.7000	22.9000	23.2000	47.1500	52.9000	47.5000	29.6500	32.3500	39.1500	38.6000	33.1500	26.9500
12/18/2018	24.7000	22.9000	23.2000	47.1500	52.9000	47.5000	29.6500	32.3500	39.1500	38.6000	33.1500	26.9500
12/19/2018	24.7000	22.9000	23.2000	47.1500	52.9000	47.5000	29.6500	32.3500	39.1500	38.6000	33.1500	26.9500
12/20/2018	24.6500	22.8500	23.1500	47.0500	52.7500	47.4000	29.5500	32.2500	39.0500	38.5000	33.0500	26.9000
12/21/2018	24.6500	22.8500	23.1500	47.0500	52.7500	47.4000	29.5500	32.2500	39.0500	38.5000	33.0500	26.9000

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C HL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
12/24/2018	24.6500	22.8500	23.1500	47.0500	52.7500	47.4000	29.5500	32.2500	39.0500	38.5000	33.0500	26.9000
12/26/2018	24.6500	22.8500	23.1500	47.0500	52.7500	47.4000	29.5500	32.2500	39.0500	38.5000	33.0500	26.9000
12/27/2018	24.6500	22.8500	23.1500	47.0500	52.7500	47.4000	29.5500	32.2500	39.0500	38.5000	33.0500	26.9000
12/28/2018	24.5000	22.7000	23.0000	46.7500	52.4000	47.1000	29.3500	32.0500	38.8000	38.2500	32.8500	26.7500
12/31/2018	24.4000	22.6000	22.9000	46.5500	52.2000	46.9000	29.2500	31.9500	38.6500	38.5500	33.1000	26.9500
1/2/2019	24.4000	22.6000	22.9000	46.5500	52.2000	46.9000	29.2500	31.9500	38.6500	38.5500	33.1000	26.9500
1/3/2019	24.2000	22.4500	22.7500	46.2000	51.8000	46.5500	29.0500	31.7000	38.3500	38.2500	32.8500	26.7500
1/4/2019	24.1500	22.4000	22.7000	46.1000	51.7000	46.4500	29.0000	31.6000	38.2500	38.1500	32.7500	26.7000
1/7/2019	24.1500	22.4000	22.7000	46.1000	51.7000	46.4500	29.0000	31.6000	38.2500	38.1500	32.7500	26.7000
1/8/2019	24.4000	22.6000	22.9000	46.5500	52.2000	46.9000	29.3000	31.9000	38.6000	38.5000	33.0500	26.9500
1/9/2019	24.4000	22.6000	22.9000	46.5500	52.2000	46.9000	29.3000	31.9000	38.6000	38.5000	33.0500	26.9500
1/10/2019	24.1000	22.3000	22.6000	46.0000	51.5500	46.3500	28.9500	31.5000	38.1500	38.0500	32.6500	26.6500
1/11/2019	24.1000	22.3000	22.6000	45.9500	51.5000	46.3000	28.9500	31.4500	38.1000	38.0000	32.6000	26.6500
1/14/2019	24.0000	22.2000	22.5000	45.7500	51.2500	46.1000	28.8000	31.3000	37.9500	37.8000	32.4500	26.5500
1/15/2019	24.1500	22.3500	22.6500	46.0000	51.5500	46.3500	28.9500	31.5000	38.1500	38.0000	32.6500	26.7000
1/16/2019	24.5500	22.7000	23.0000	46.7500	52.4000	47.1000	29.4000	32.0000	38.7500	38.6000	33.1500	27.1000
1/17/2019	24.6500	22.7500	23.0500	46.9000	52.5500	47.2500	29.5000	32.1000	38.8500	38.8000	33.3500	27.2500
1/18/2019	24.8000	22.9000	23.2000	47.2000	52.8500	47.5500	29.6500	32.3000	39.1000	39.0000	33.5500	27.4000
1/22/2019	24.8500	22.9500	23.2500	47.3000	52.9500	47.6500	29.7000	32.3500	39.1500	39.0000	33.5500	27.4000
1/23/2019	24.7000	22.8000	23.1000	47.0000	52.6500	47.3500	29.5500	32.1500	38.9000	38.8000	33.3500	27.2500
1/24/2019	24.7500	22.8500	23.1500	47.1000	52.7500	47.4500	29.6000	32.2000	39.0000	38.9000	33.4000	27.3000
1/25/2019	25.0000	23.1000	23.4000	47.6000	53.3000	47.9500	29.9000	32.5500	39.4000	39.2500	33.7000	27.5500
1/28/2019	24.9500	23.0500	23.3500	47.5500	53.2500	47.9000	29.8500	32.5000	39.3500	39.2000	33.6500	27.5000
1/29/2019	24.8000	22.9000	23.2000	47.3000	52.9500	47.6000	29.7000	32.3000	39.1000	39.0000	33.4500	27.3500
1/30/2019	25.1500	23.2500	23.5500	48.0000	53.7500	48.3000	30.1500	32.8000	39.7000	39.5500	33.9000	27.7500
1/31/2019	25.0500	23.1500	23.4500	47.8000	53.5000	48.1000	30.0000	32.6500	39.5000	39.4500	33.8000	27.7000
2/1/2019	25.0000	23.1000	23.4000	47.6500	53.3500	47.9500	29.9000	32.5500	39.4000	39.3500	33.7000	27.6000
2/4/2019	25.0000	23.1000	23.4000	47.6500	53.3500	47.9500	29.9000	32.5500	39.4000	39.3500	33.7000	27.6000
2/5/2019	25.9000	23.9000	24.2500	49.3500	55.2500	49.6500	30.9500	33.7000	40.8000	40.2000	34.4500	28.2000
2/6/2019	26.2500	24.2500	24.6000	50.0500	56.0000	50.3500	31.4000	34.1500	41.3500	40.7500	34.9000	28.6000
2/7/2019	26.3500	24.3500	24.7000	50.2500	56.2500	50.5500	31.5500	34.3000	41.5500	40.9000	35.0500	28.7000
2/8/2019	26.8000	24.7500	25.1500	51.1000	57.2000	51.4000	32.1000	34.9000	42.2500	41.5500	35.6000	29.1500
2/11/2019	26.9500	24.9000	25.3000	51.4000	57.5000	51.7000	32.3000	35.1000	42.5000	41.8000	35.8000	29.3000
2/12/2019	26.9500	24.9000	25.3000	51.4000	57.5000	51.7000	32.3000	35.1000	42.5000	41.8000	35.8000	29.3000
2/13/2019	27.3000	25.2500	25.6500	52.1000	58.2500	52.4000	32.7000	35.5500	43.0500	42.0000	36.0000	29.4500
2/14/2019	27.4000	25.3500	25.7500	52.3000	58.5000	52.6000	32.8500	35.7000	43.2500	42.2000	36.1500	29.6000
2/15/2019	27.3000	25.2500	25.6500	52.1000	58.2500	52.4000	32.7000	35.5500	43.1000	42.0500	36.0000	29.5000
2/19/2019	27.4500	25.4000	25.8000	52.4000	58.6000	52.7000	32.9000	35.7500	43.3500	42.3000	36.2000	29.6500
2/20/2019	27.4000	25.3500	25.7500	52.3500	58.5000	52.6500	32.8500	35.7000	43.3000	42.2500	36.1500	29.6000
2/21/2019	27.4000	25.3500	25.7500	52.1500	58.3000	52.4500	32.8000	35.6500	43.2500	42.2000	36.1000	29.5500
2/22/2019	28.0000	25.9000	26.3000	53.3000	59.6000	53.6000	33.5500	36.4500	44.2000	43.1500	36.9000	30.2000
2/25/2019	28.0500	25.9500	26.3500	53.3500	59.6500	53.6500	33.6000	36.5000	44.2500	43.2000	36.9500	30.2500
2/26/2019	28.0500	25.9500	26.3500	53.3500	59.6500	53.6500	33.6000	36.5000	44.2500	43.2000	36.9500	30.2500
2/27/2019	28.2500	26.1000	26.5500	53.7000	60.0500	54.0000	33.8500	36.7500	44.5500	43.5000	37.2000	30.4500
2/28/2019	28.8000	26.6000	27.0500	54.7000	61.1500	55.0000	34.5000	37.4500	45.4000	44.6000	38.1000	31.2000
3/1/2019	29.1500	26.9500	27.4000	55.4000	61.9000	55.7000	34.9500	37.9000	45.9500	45.1500	38.5500	31.6000
3/4/2019	29.2000	27.0000	27.4500	55.5000	62.0000	55.8000	35.0000	38.0000	46.0500	45.2000	38.6000	31.6500
3/5/2019	29.3500	27.1500	27.6000	55.7500	62.3000	56.0500	35.1500	38.2000	46.2500	45.4500	38.8000	31.8500
3/6/2019	29.6500	27.4000	27.8500	56.3000	62.9000	56.6000	35.5000	38.6000	46.7000	45.9000	39.2000	32.1500
3/7/2019	29.7000	27.4500	27.9000	56.3500	63.0000	56.7000	35.5500	38.6500	46.7500	45.9500	39.2500	32.2000
3/8/2019	29.5000	27.3000	27.7000	56.0000	62.6000	56.3500	35.3500	38.4000	46.4500	45.6500	39.0000	32.0000
3/11/2019	29.5000	27.3000	27.7000	56.0000	62.6000	56.3500	35.3500	38.4000	46.4500	45.6500	39.0000	32.0000
3/12/2019	29.5000	27.3000	27.7000	56.0000	62.6000	56.3500	35.3500	38.4000	46.4500	45.6500	39.0000	32.0000
3/13/2019	29.6500	27.4500	27.8500	56.2500	62.9000	56.6000	35.5000	38.6000	46.6500	45.8500	39.2000	32.1500
3/14/2019	29.6500	27.4500	27.8500	56.3000	62.9500	56.6500	35.5000	38.6000	46.7000	45.8500	39.2000	32.1500
3/15/2019	29.6500	27.4500	27.8500	56.3000	62.9500	56.6500	35.5000	38.6000	46.7000	45.8500	39.2000	32.1500

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C HL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
3/18/2019	29.6500	27.4500	27.8500	56.3000	62.9500	56.6500	35.5000	38.6000	46.7000	45.8500	39.2000	32.1500
3/19/2019	29.6500	27.4500	27.8500	56.3000	62.9500	56.6500	35.5000	38.6000	46.7000	45.8500	39.2000	32.1500
3/20/2019	29.9000	27.7000	28.1000	56.7500	63.4500	57.1000	35.8000	38.9000	47.1000	46.1500	39.5000	32.4000
3/21/2019	29.9000	27.7000	28.1000	56.7500	63.4500	57.1000	35.8000	38.9000	47.1000	46.3000	39.6500	32.5000
3/22/2019	30.0000	27.7500	28.1500	56.9000	63.6000	57.2500	35.9000	39.0000	47.2000	46.4000	39.7500	32.6000
3/25/2019	29.9500	27.7000	28.1000	56.8000	63.5000	57.1500	35.8500	38.9500	47.1500	46.3500	39.7000	32.5500
3/26/2019	29.9000	27.6500	28.0500	56.7000	63.4000	57.0500	35.8000	38.9000	47.1000	46.3000	39.6500	32.5000
3/27/2019	29.5000	27.3000	27.7000	56.0000	62.6000	56.3500	35.3500	38.4000	46.5000	46.1500	39.5000	32.4000
3/28/2019	29.3500	27.1500	27.5500	55.7000	62.2500	56.0500	35.1500	38.2000	46.2500	45.9000	39.3000	32.2500
3/29/2019	29.3000	27.1000	27.5000	55.6000	62.1500	55.9500	35.1000	38.1500	46.2000	45.8500	39.2500	32.2000
4/1/2019	29.5500	27.3500	27.7500	56.1000	62.7500	56.4500	35.4500	38.5000	46.6500	46.4000	39.7000	32.5500
4/2/2019	29.3000	27.1500	27.5500	55.6500	62.2500	56.0000	35.1500	38.2000	46.3000	46.1000	39.4500	32.3500
4/3/2019	29.0000	26.8500	27.2500	55.1000	61.6000	55.4000	34.8000	37.8000	45.8000	46.3000	39.6000	32.5000
4/4/2019	29.0500	26.9000	27.3000	55.2000	61.7000	55.5000	34.8500	37.8500	45.8500	46.3500	39.6500	32.5500
4/5/2019	29.1000	26.9500	27.3500	55.3500	61.8500	55.6500	34.9500	37.9500	45.9500	46.4500	39.7500	32.6500
4/8/2019	28.8000	26.7000	27.1000	54.8000	61.2500	55.1000	34.6000	37.5500	45.5000	46.0000	39.3500	32.3500
4/9/2019	28.8000	26.7000	27.1000	54.8000	61.3000	55.1000	34.6000	37.5500	45.5000	46.1000	39.4000	32.4000
4/10/2019	28.8000	26.7000	27.1000	54.7500	61.2500	55.0500	34.6000	37.5500	45.4500	46.0500	39.4000	32.4000
4/11/2019	28.8500	26.7500	27.1500	54.8500	61.3500	55.1500	34.6500	37.6500	45.5500	46.1500	39.4500	32.4500
4/12/2019	28.7500	26.6500	27.0500	54.6500	61.1000	54.9500	34.5000	37.5000	45.3500	46.0000	39.3000	32.3500
4/15/2019	28.7000	26.6000	27.0000	54.5500	61.0000	54.8500	34.4500	37.4500	45.2500	45.9000	39.2500	32.3000
4/16/2019	28.7500	26.6500	27.0500	54.6000	61.0500	54.9000	34.5000	37.5000	45.3000	45.9500	39.3000	32.3500
4/17/2019	28.8000	26.7000	27.1000	54.6500	61.1500	54.9500	34.5500	37.5500	45.3500	46.0000	39.3500	32.4000
4/18/2019	28.7500	26.6500	27.0500	54.5500	61.0500	54.8500	34.5000	37.5000	45.3000	46.0000	39.3500	32.4000
4/22/2019	28.8000	26.7000	27.1000	54.6500	61.1500	54.9500	34.5500	37.5500	45.4000	46.1000	39.4500	32.5000
4/23/2019	28.8500	26.7500	27.1500	54.7500	61.2500	55.0500	34.6000	37.6000	45.4500	46.1500	39.5000	32.5500
4/24/2019	28.8000	26.7000	27.1000	54.6000	61.1000	54.9000	34.5000	37.5000	45.3500	46.0500	39.4000	32.4500
4/25/2019	28.9000	26.8000	27.2000	54.8000	61.3000	55.1000	34.6000	37.6000	45.5000	46.2000	39.5000	32.5500
4/26/2019	29.0000	26.9000	27.3000	54.9500	61.5000	55.2500	34.7000	37.7000	45.6500	46.3500	39.6000	32.6500
4/29/2019	29.1000	27.0000	27.4000	55.1500	61.7500	55.4500	34.8500	37.8500	45.8500	46.5500	39.7500	32.7500
4/30/2019	29.1000	27.0000	27.4000	55.1000	61.7000	55.4000	34.8500	37.8500	45.8000	46.5000	39.7500	32.7500
5/1/2019	29.4000	27.2500	27.7000	55.6500	62.3500	55.9500	35.2000	38.2500	46.2500	46.9500	40.1500	33.0500
5/2/2019	29.4000	27.2500	27.7000	55.6500	62.3000	55.9500	35.2000	38.2500	46.2500	46.9500	40.1500	33.0500
5/3/2019	29.3500	27.2000	27.6500	55.5500	62.2000	55.8500	35.1500	38.2000	46.2000	46.9000	40.1000	33.0000
5/6/2019	29.7000	27.5500	28.0000	56.2500	62.9500	56.5500	35.6000	38.6500	46.7500	47.7500	40.8500	33.6000
5/7/2019	29.5500	27.4000	27.8500	56.0000	62.6500	56.3000	35.4500	38.4500	46.5500	47.5500	40.7000	33.4500
5/8/2019	29.4500	27.3500	27.8000	55.8500	62.5000	56.1500	35.3500	38.3500	46.4500	47.4500	40.6000	33.3500
5/9/2019	29.3000	27.2000	27.6500	55.5000	62.1500	55.8000	35.1500	38.1500	46.2000	47.2000	40.3500	33.1500
5/10/2019	29.2000	27.1000	27.5500	55.3500	62.0000	55.6500	35.0500	38.0500	46.0500	47.0500	40.2500	33.0500
5/13/2019	29.1000	27.0000	27.4500	55.1500	61.7500	55.4500	34.9000	37.9000	45.8500	47.4000	40.5500	33.3000
5/14/2019	29.1500	27.0500	27.5000	55.2000	61.8000	55.5000	34.9500	37.9500	45.9000	47.4500	40.6000	33.3500
5/15/2019	29.0500	26.9500	27.4000	54.9500	61.5500	55.2500	34.8000	37.8000	45.7000	47.6500	40.7500	33.5000
5/16/2019	27.9500	25.9000	26.3500	53.4000	59.8000	53.7000	37.2000	40.4000	48.8000	48.1500	41.1500	33.8500
5/17/2019	27.8000	25.7500	26.2000	53.0500	59.4500	53.3500	36.9500	40.1500	48.5000	47.9500	41.0000	33.7000
5/20/2019	27.7500	25.7000	26.1500	52.9000	59.3000	53.2000	36.8500	40.0500	48.3500	47.8500	40.9000	33.6000
5/21/2019	27.6000	25.6000	26.0500	52.6500	59.0500	52.9500	36.7000	39.8500	48.1500	47.6500	40.7000	33.4500
5/22/2019	27.5000	25.5000	25.9500	52.4500	58.8500	52.7500	36.5500	39.7000	48.0000	47.5000	40.5500	33.3500
5/23/2019	27.5000	25.5000	25.9500	52.4500	58.8500	52.7500	36.5500	39.7000	48.0000	47.5000	40.5500	33.3500
5/24/2019	27.4500	25.4500	25.9000	52.4000	58.8000	52.7000	36.5000	39.6500	47.9500	47.4500	40.5000	33.3000
5/28/2019	27.7000	25.7000	26.1500	52.9000	59.3500	53.2000	36.8500	40.0000	48.4000	47.8500	40.8500	33.6000
5/29/2019	28.0500	26.0000	26.4500	53.5500	60.0500	53.8500	37.3000	40.5000	49.0000	48.4000	41.3000	34.0000
5/30/2019	27.4000	25.4000	25.8000	52.2500	58.6000	52.5500	36.4000	39.5500	47.8500	47.2500	40.3500	33.2000
5/31/2019	27.0500	25.1000	25.5000	51.6000	57.9000	51.9000	35.9500	39.0500	47.2500	46.7000	39.9000	32.8000
6/3/2019	26.9500	25.0000	25.4000	51.3500	57.6500	51.6500	35.8000	38.9000	47.0500	46.5000	39.7500	32.6500
6/4/2019	26.9000	24.9500	25.3500	51.2500	57.5500	51.5500	35.7500	38.8500	46.9500	46.3500	39.6500	32.5500
6/5/2019	26.9000	24.9500	25.3500	51.2500	57.5500	51.5500	35.7500	38.8500	46.9500	46.4500	39.7500	32.6000

Mid-C HL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
6/6/2019	25.1000	23.2500	23.6500	51.9500	58.3500	52.2500	36.2500	39.4000	47.6000	46.8000	40.0500	32.8500
6/7/2019	25.5000	23.6500	24.0500	52.8000	59.3000	53.1000	36.8500	40.0500	48.4000	47.3000	40.5000	33.2000
6/10/2019	25.5000	23.6500	24.0500	52.7500	59.2500	53.0500	36.8000	40.0000	48.3500	47.1500	40.3500	33.1000
6/11/2019	25.5500	23.7000	24.1000	52.8000	59.3000	53.1000	36.8500	40.0500	48.4000	47.0500	40.2500	33.0000
6/12/2019	25.8500	24.0000	24.4000	53.4000	60.0000	53.7000	37.3500	40.5500	49.0500	47.5000	40.6000	33.3000
6/13/2019	25.8000	24.0000	24.4000	53.5000	60.1000	53.8000	37.4000	40.6000	49.1500	47.4500	40.5500	33.2500
6/14/2019	25.8500	24.0500	24.4500	53.6500	60.2500	53.9500	37.5000	40.7000	49.3000	47.6000	40.6500	33.3500
6/17/2019	25.7500	23.9500	24.3500	53.4000	60.0000	53.7000	37.4000	40.6000	49.1500	47.4000	40.5000	33.2000
6/18/2019	25.7000	23.9000	24.3000	53.3000	59.9000	53.6000	37.3000	40.5000	49.0500	47.3000	40.4000	33.1500
6/19/2019	25.6000	23.8000	24.2000	53.1000	59.7000	53.4000	37.1500	40.3500	48.9000	47.1500	40.2500	33.0500
6/20/2019	25.6000	23.8000	24.2000	53.1000	59.7000	53.4000	37.1500	40.3500	48.9000	47.1500	40.2500	33.0500
6/21/2019	25.6500	23.8500	24.2500	53.2000	59.8000	53.5000	37.2000	40.4500	49.0000	47.3000	40.3500	33.1500
6/24/2019	25.5500	23.7500	24.1500	52.9500	59.5000	53.2500	37.0000	40.2500	48.7500	47.1000	40.1500	33.0000
6/25/2019	25.4500	23.6500	24.0500	52.7500	59.2500	53.0500	36.8500	40.1000	48.5500	47.0500	40.1000	32.9500
6/26/2019	25.6500	23.8500	24.2500	53.2000	59.7500	53.5000	37.1500	40.4000	48.9500	47.5000	40.5000	33.2500
6/27/2019	25.2000	23.4500	23.8500	52.4000	58.8500	52.7000	36.6000	39.8000	48.2000	46.8000	39.9000	32.7500
6/28/2019	25.1500	23.4000	23.8000	52.3000	58.7500	52.6000	36.5500	39.7500	48.1500	46.6500	39.7500	32.6500
7/1/2019	25.1000	23.3500	23.7500	52.2000	58.6500	52.5000	36.5000	39.7000	48.0500	46.5500	39.7000	32.6000
7/2/2019	24.6500	22.9500	23.3500	51.2500	57.6000	51.5500	35.8500	39.0000	47.2000	45.7500	39.0000	32.0500
7/3/2019	22.1500	20.6000	20.9500	52.4500	58.9500	52.7500	35.6000	38.7500	46.8500	45.0500	38.4000	31.5500
7/5/2019	22.1500	20.6000	20.9500	52.4500	58.9500	52.7500	35.6000	38.7500	46.8500	45.0500	38.4000	31.5500
7/8/2019	22.3000	20.7500	21.1000	52.8000	59.3000	53.1000	34.8000	37.8500	45.7500	46.9000	40.0000	32.8500
7/9/2019	21.7000	20.2000	20.5000	52.4000	58.8500	52.7000	34.5500	37.5500	45.4000	47.5000	40.5500	33.3000
7/10/2019	21.5500	20.1000	20.4000	50.4500	56.6500	50.7500	34.3500	37.3500	45.1500	44.5500	38.0000	31.2000
7/11/2019	21.8500	20.3500	20.7000	51.1500	57.4000	51.4500	34.8000	37.8500	45.7500	45.1500	38.5000	31.6000
7/12/2019	21.5500	20.0500	20.4000	50.4500	56.6000	50.7500	34.3000	37.3000	45.1000	43.9000	37.4500	30.7000
7/15/2019	21.4500	20.0000	20.3000	50.2500	56.4000	50.5500	34.1500	37.1500	44.9500	43.7500	37.3000	30.6000
7/16/2019	20.9500	19.5500	19.8000	49.0500	55.0500	49.3500	33.3500	36.2500	43.9000	42.1000	35.9000	29.4500
7/17/2019	22.1500	20.6500	20.9000	46.0000	51.6500	46.3000	35.2500	38.3000	46.3500	42.1500	35.9500	29.5000
7/18/2019	22.2000	20.7000	20.9500	46.1000	51.7500	46.4000	35.3500	38.4000	46.4500	42.2500	36.0500	29.5500
7/19/2019	22.3000	20.8000	21.0500	46.3500	52.0500	46.6500	35.5500	38.6000	46.7000	42.5000	36.2500	29.7000
7/22/2019	22.0500	20.5500	20.8000	45.8000	51.4500	46.1000	35.1500	38.1500	46.1500	42.0500	35.9000	29.4000
7/23/2019	21.8500	20.3500	20.6000	45.3500	50.9500	45.6500	34.8000	37.8000	45.7000	41.8000	35.7000	29.2500
7/24/2019	21.8500	20.3500	20.6000	45.3500	50.9500	45.6500	34.8000	37.8000	45.7000	42.9000	36.6000	30.0000
7/25/2019	21.6500	20.1500	20.4000	44.9500	50.5000	45.2500	34.5000	37.4500	45.3000	42.5500	36.3000	29.7500
7/26/2019	21.3500	19.9000	20.1500	44.3500	49.8500	44.6500	34.0500	36.9500	44.7000	42.8500	36.5500	29.9500
7/29/2019	21.3500	19.9000	20.1500	44.3000	49.8000	44.6000	34.0000	36.9000	44.6500	42.8000	36.5000	29.9000
7/30/2019	21.4500	20.0000	20.2500	44.5000	50.0500	44.8000	34.1500	37.1000	44.8500	43.0000	36.6500	30.0500
7/31/2019	20.6000	19.2000	19.4500	44.7000	50.3000	45.0000	34.3000	37.2500	45.0500	43.6500	37.2000	30.5000
8/1/2019	20.5500	19.1500	19.4000	44.8500	50.4500	45.1500	34.4000	37.4000	45.2000	43.7500	37.3000	30.6000
8/2/2019	20.3500	18.9500	19.2000	44.4000	49.9500	44.7000	34.0500	37.0500	44.7500	43.3500	36.9500	30.3000
8/5/2019	20.4000	19.0000	19.2500	44.5500	50.1000	44.8500	34.1500	37.1500	44.9000	44.0000	37.5000	30.7500
8/6/2019	20.4500	19.0500	19.3000	44.6000	50.2000	44.9000	34.2000	37.2000	44.9500	43.8500	37.4000	30.6500
8/7/2019	19.5500	18.2000	18.4500	45.7000	51.4500	46.0000	32.6500	35.5000	42.9000	42.9500	36.6500	30.0000
8/8/2019	19.5000	18.1500	18.4000	45.5500	51.2500	45.8500	32.5500	35.3500	42.7500	42.8000	36.5000	29.9000
8/9/2019	19.5000	18.1500	18.4000	45.5000	51.2000	45.8000	32.5500	35.3500	42.7000	42.7500	36.5000	29.9000
8/12/2019	19.4500	18.1000	18.3500	45.3500	51.0000	45.6500	32.4500	35.2000	42.5500	42.6000	36.3500	29.8000
8/13/2019	19.4000	18.0500	18.3000	45.2500	50.9000	45.5500	32.4000	35.1000	42.4500	42.5000	36.2500	29.7500
8/14/2019	19.4500	18.1000	18.3500	45.3500	51.0000	45.6500	32.4500	35.2000	42.5500	42.6000	36.3500	29.8000
8/15/2019	19.6000	18.2500	18.5000	45.7500	51.4500	46.0500	32.7500	35.5000	42.9000	42.9000	36.6000	30.0000
8/16/2019	19.5500	18.2000	18.4500	44.9000	50.5000	45.2000	32.1500	34.8500	42.1000	42.2000	36.0000	29.5000
8/19/2019	19.6000	18.2500	18.5000	45.0000	50.6000	45.3000	32.2000	34.9000	42.1500	42.2000	36.0000	29.5000
8/20/2019	19.4000	18.0500	18.3000	43.7500	49.2000	44.0500	31.9000	34.5500	41.7500	41.5000	35.4000	29.0000
8/21/2019	19.4500	18.1000	18.3500	43.3500	48.7500	43.6500	32.1500	34.8000	42.0500	41.4500	35.3500	28.9500
8/22/2019	19.3000	17.9500	18.2000	43.4500	48.8500	43.7500	32.2000	34.8500	42.1500	41.4500	35.3500	28.9500
8/23/2019	19.2500	17.9000	18.1500	43.3500	48.7000	43.6500	32.1000	34.7500	42.0000	41.2500	35.2000	28.8000

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C HL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
8/26/2019	19.3000	17.9500	18.2000	43.5000	48.9000	43.8000	32.2000	34.9000	42.1500	41.5000	35.4000	28.9500
8/27/2019	19.2500	17.9000	18.1500	43.5000	48.9000	43.8000	32.2000	34.9000	42.1500	41.5000	35.4000	28.9500
8/28/2019	19.4500	18.1000	18.3500	43.9500	49.4000	44.2500	32.5500	35.2500	42.6000	41.9000	35.7500	29.2500
8/29/2019	19.3000	17.9500	18.2000	43.4500	48.8500	43.7500	33.0000	35.7500	43.2000	42.4500	36.2000	29.6500
8/30/2019	19.6000	18.2000	18.4500	44.1000	49.5500	44.4000	33.5000	36.3000	43.8500	43.0500	36.7000	30.0500
9/3/2019	19.9000	18.5000	18.7500	44.8000	50.3500	45.1000	34.0500	36.8500	44.5500	43.7000	37.2500	30.5000
9/4/2019	19.1500	17.8000	18.0500	43.7500	49.2000	44.0500	32.8000	35.5000	42.9000	42.4000	36.1500	29.6000
9/5/2019	18.9000	17.5500	17.8000	43.1500	48.5500	43.4500	32.3500	35.0500	42.3500	41.8500	35.7000	29.2500
9/6/2019	19.2000	17.8000	18.0500	43.7000	49.2000	44.0500	32.8500	35.6000	43.0000	42.3500	36.1000	29.6000
9/9/2019	19.2000	17.8000	18.0500	43.7500	49.2500	44.1000	32.8500	35.6000	43.0500	42.4000	36.1000	29.6000
9/10/2019	19.2500	17.8500	18.1000	43.9000	49.4000	44.2500	32.9500	35.7000	43.2000	42.5000	36.2000	29.7000
9/11/2019	19.6000	18.1500	18.4000	43.8000	49.2500	44.1500	33.5500	36.3500	44.0000	42.9500	36.5500	30.0000
9/12/2019	19.4500	18.0500	18.3000	43.5000	48.9000	43.8500	33.3000	36.1000	43.7000	42.6500	36.3000	29.8000
9/13/2019	19.3500	17.9500	18.2000	43.3500	48.7000	43.7000	33.1500	35.9500	43.5000	42.4500	36.1500	29.6500
9/16/2019	19.5000	18.1000	18.3500	43.8500	49.2500	44.2000	33.5500	36.3500	44.0000	42.8500	36.5000	29.9000
9/17/2019	19.7500	18.3500	18.6000	44.4500	49.9000	44.8000	34.0000	36.8500	44.6000	43.4000	36.9500	30.3000
9/18/2019	19.9000	18.5000	18.7500	44.8500	50.3000	45.2000	34.2500	37.1000	44.9500	43.7000	37.2000	30.5000
9/19/2019	19.5500	18.1500	18.4000	44.3500	49.7000	44.6500	33.8500	36.6500	44.4000	43.1500	36.7500	30.1500
9/20/2019	19.7000	18.3000	18.5500	44.7000	50.1000	45.0000	34.1000	36.9500	44.7500	43.4500	37.0000	30.4000
9/23/2019	19.7500	18.3500	18.6000	44.8000	50.2500	45.1000	34.2000	37.0500	44.8500	43.5500	37.1000	30.5000
9/24/2019	19.9000	18.5000	18.7500	45.1500	50.6500	45.4500	34.4500	37.3500	45.2000	43.8500	37.3500	30.7500
9/25/2019	19.9000	18.5000	18.7500	45.1500	50.6500	45.4500	34.4500	37.3500	45.2000	43.8500	37.3500	30.7500
9/26/2019	19.9000	18.5000	18.7500	45.1500	50.6500	45.4500	34.3000	37.2000	45.0000	43.7500	37.2500	30.7000
9/27/2019	19.7000	18.3000	18.5500	47.2000	52.9500	47.5000	33.9500	36.8500	44.5500	43.4500	37.0000	30.5000
9/30/2019	19.2000	17.8000	18.0500	46.0000	51.6000	46.3000	33.0500	35.8500	43.3500	42.2500	35.9500	29.6500
10/1/2019	19.0500	17.7000	17.9500	46.2500	51.9000	46.5500	32.8000	35.6000	43.0500	42.1500	35.8500	29.6000
10/2/2019	18.9000	17.5500	17.8000	45.9000	51.5000	46.2000	32.5000	35.3000	42.7000	41.9500	35.7000	29.4500
10/3/2019	18.9500	17.6000	17.8500	46.3000	51.9500	46.6000	32.0500	34.8000	42.1000	43.8000	37.2500	30.7500
10/4/2019	18.5000	17.2000	17.4500	47.9000	53.7500	48.2500	31.3000	34.0000	41.1000	42.9000	36.5000	30.1500

Average HL	24.71	22.92	23.26	49.32	55.30	49.65	32.80	35.62	43.12	42.57	36.39	29.83
Max HL	30.00	27.75	28.15	56.90	63.60	57.25	37.50	40.70	49.30	48.40	41.30	34.00
Min HL	18.50	17.20	17.45	42.50	47.70	42.95	26.90	29.05	35.20	35.20	30.20	24.80
Spread	11.50	10.55	10.70	14.40	15.90	14.30	10.60	11.65	14.10	13.20	11.10	9.20

Mid-C LL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
10/4/2018	14.4500	11.4500	9.9000	24.8500	29.4500	28.6000	22.1500	23.9500	28.0500	27.6500	24.8000	21.0000
10/5/2018	14.5000	11.5000	9.9500	24.9500	29.5500	28.7000	22.2000	24.0000	28.1000	27.7000	24.8500	21.0500
10/8/2018	14.7000	11.7000	10.1500	25.3500	30.0000	29.1000	22.4500	24.3000	28.4500	28.0500	25.1500	21.3000
10/9/2018	14.6000	11.6000	10.0500	25.1000	29.7500	28.8500	22.3000	24.1000	28.2500	27.8500	24.9500	21.1500
10/10/2018	14.6000	11.6500	10.1000	25.1500	29.8000	28.9000	22.3000	24.1000	28.2500	27.9000	24.9500	21.1500
10/11/2018	14.6000	11.6500	10.1000	25.1000	29.7500	28.8500	22.3000	24.1000	28.2500	27.9000	24.9500	21.1500
10/12/2018	14.6000	11.6500	10.1000	25.1000	29.7500	28.8500	22.3000	24.1000	28.2500	27.8000	24.8500	21.0500
10/15/2018	14.9000	11.9000	10.3500	25.6500	30.3500	29.4000	22.6500	24.4500	28.7000	28.2500	25.2500	21.3500
10/16/2018	14.9000	11.9000	10.3500	25.6500	30.3500	29.4000	22.6500	24.4500	28.7000	28.2500	25.2500	21.3500
10/17/2018	15.4000	12.3500	10.8000	26.6000	31.4500	30.4000	23.2500	25.1000	29.5000	29.0500	25.9000	21.9000
10/18/2018	16.4500	13.3000	11.8000	27.2000	32.1000	31.0000	23.6000	25.5000	30.0000	28.4000	25.3000	21.4000
10/19/2018	17.4000	14.1500	12.7000	29.0000	34.1000	32.8000	24.7000	26.7000	31.4500	29.9000	26.6000	22.4500
10/22/2018	18.0500	14.7500	13.3000	30.2500	35.5000	34.0500	25.5000	27.5500	32.5000	30.9000	27.4500	23.1500
10/23/2018	18.2500	14.9500	13.5000	30.6500	35.9500	34.4500	25.7500	27.8500	32.8500	31.2500	27.7500	23.4000
10/24/2018	17.9000	14.6000	13.1500	30.0000	35.2000	33.7500	25.3000	27.4000	32.3000	30.7000	27.3000	23.0000
10/25/2018	17.7500	14.4500	13.0000	29.7000	34.8500	33.4500	25.1000	27.2000	32.0500	30.4500	27.1000	22.8500
10/26/2018	17.5000	14.2000	12.7500	29.2000	34.3000	32.9500	24.8000	26.8500	31.6500	30.0500	26.7500	22.5500
10/29/2018	17.0500	13.8000	12.4000	28.4000	33.4000	32.1000	24.2000	26.2000	30.9000	29.2500	26.0500	21.9500
10/30/2018	16.6000	13.4000	12.0500	27.6000	32.5000	31.2500	23.6000	25.5500	30.1000	28.4000	25.3000	21.3500
10/31/2018	16.1500	12.9500	11.6000	26.7000	31.5000	30.3500	23.0500	24.9500	29.3500	27.7500	24.7500	20.9000
11/1/2018	15.9500	12.8000	11.4500	26.4000	31.1000	29.9500	22.7500	24.6000	28.9500	27.4000	24.4500	20.6500
11/2/2018	15.7500	12.6000	11.2000	26.0000	30.6500	29.6000	22.6000	24.4500	28.7500	27.1500	24.2500	20.5000
11/5/2018	15.8500	12.7000	11.3500	26.2500	30.9000	29.8000	22.7000	24.5500	28.9000	27.3000	24.3500	20.6000
11/6/2018	16.1500	12.9500	11.6000	26.7500	31.5000	30.3500	23.0500	24.9000	29.3500	27.7000	24.7000	20.9000
11/7/2018	15.9000	12.6500	11.2500	26.1500	30.9000	29.8500	22.8500	24.7000	29.0500	27.3500	24.4000	20.7000
11/8/2018	16.0500	12.8000	11.4000	26.4500	31.2500	30.1500	23.0500	24.9000	29.3000	27.6000	24.6000	20.9000
11/9/2018	16.3000	13.0500	11.7000	26.9500	31.8000	30.6000	23.3000	25.1500	29.6000	27.9500	24.8500	21.1000
11/12/2018	16.6500	13.4000	12.0500	27.6500	32.6000	31.3000	23.7500	25.6000	30.1500	28.5000	25.3500	21.5000
11/13/2018	16.5500	13.3000	11.9000	27.4000	32.3500	31.0500	23.6000	25.4500	29.9500	28.3000	25.2000	21.4000
11/14/2018	16.9000	13.6000	12.2000	28.0000	33.0000	31.6500	24.0500	25.9000	30.5000	28.8000	25.6500	21.8000
11/15/2018	16.8000	13.5000	12.1000	27.8000	32.7500	31.4500	23.9500	25.7500	30.3500	28.6500	25.5000	21.7000
11/16/2018	16.8000	13.5500	12.1500	27.8500	32.8000	31.4500	23.9000	25.7000	30.3000	28.6500	25.5000	21.7000
11/19/2018	16.9500	13.6500	12.2500	28.1000	33.0500	31.7000	24.1000	25.9000	30.5500	28.9000	25.7000	21.9000
11/20/2018	16.8500	13.5500	12.1500	27.9000	32.8000	31.5000	23.9500	25.7500	30.4000	29.0000	25.8000	22.0000
11/21/2018	17.0500	13.7000	12.3000	28.2500	33.2000	31.8500	24.1500	26.0000	30.7000	29.3000	26.0500	22.2000
11/23/2018	17.2000	13.8500	12.4500	28.5500	33.5000	32.1500	24.3000	26.2000	30.9500	29.5000	26.2500	22.3500
11/26/2018	17.5000	14.1000	12.7000	29.1000	34.1000	32.7000	24.6500	26.6000	31.4000	29.9500	26.6500	22.6500
11/27/2018	18.0500	14.6000	13.2000	30.1500	35.3000	33.7500	25.3000	27.3500	32.3000	30.8000	27.4000	23.2500
11/28/2018	17.3500	14.0000	12.6500	28.9500	33.9000	32.4500	24.3500	26.3500	31.1000	29.6000	26.3500	22.3500
11/29/2018	17.5000	14.1000	12.7500	29.1500	34.1500	32.7000	24.5500	26.5500	31.3500	29.7000	26.4000	22.4000
11/30/2018	17.2500	13.8500	12.5000	28.6500	33.6000	32.2000	24.2500	26.2000	30.9500	29.3000	26.0500	22.1000
12/3/2018	16.9000	13.5500	12.2000	28.0500	32.9000	31.5500	23.8000	25.7000	30.3500	28.7500	25.6000	21.7000
12/4/2018	16.9500	13.5500	12.2000	28.0500	32.9000	31.6000	23.9000	25.8000	30.4500	28.8000	25.6500	21.7500
12/5/2018	17.0000	13.6000	12.2000	28.1000	32.9500	31.6500	23.9500	25.8500	30.5000	28.8000	25.6500	21.7500
12/6/2018	17.1000	13.7000	12.3000	28.2500	33.1500	31.8000	24.0500	25.9500	30.6500	28.9500	25.7500	21.8500
12/7/2018	17.7500	14.3000	12.9000	29.5000	34.5500	33.0500	24.8500	26.8000	31.7000	29.9500	26.6000	22.5500
12/10/2018	17.4500	14.0500	12.6500	28.9500	33.9000	32.4500	24.4500	26.4000	31.2000	29.4500	26.2000	22.2000
12/11/2018	17.2500	13.8000	12.4000	28.5000	33.4000	32.0000	24.2500	26.1500	30.9000	29.1500	25.9500	22.0000
12/12/2018	17.3000	13.8500	12.4500	28.5500	33.4500	32.0500	24.3000	26.2000	30.9500	29.2000	26.0000	22.0500
12/13/2018	17.2500	13.8000	12.4000	28.4000	33.3000	31.9000	24.2000	26.1000	30.8500	29.1000	25.9000	22.0000
12/14/2018	17.4000	13.9500	12.5500	28.6500	33.6000	32.1500	24.3500	26.3000	31.0500	29.3000	26.1000	22.1500
12/17/2018	17.4000	13.9500	12.5500	28.6500	33.6000	32.1500	24.3500	26.3000	31.0500	29.3000	26.1000	22.1500
12/18/2018	17.5000	14.0500	12.6500	28.8000	33.8000	32.3500	24.5000	26.4500	31.2500	29.3500	26.1500	22.2000
12/19/2018	17.5000	14.0500	12.6500	28.8000	33.8000	32.3500	24.5000	26.4500	31.2500	29.3500	26.1500	22.2000
12/20/2018	17.4500	14.0000	12.6000	28.7000	33.6500	32.2500	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500
12/21/2018	17.4500	14.0000	12.6000	28.7000	33.6500	32.2500	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C LL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
12/24/2018	17.4500	14.0000	12.6000	28.7000	33.6500	32.2500	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500
12/26/2018	17.4500	14.0000	12.6000	28.7000	33.6500	32.2500	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500
12/27/2018	17.4500	14.0000	12.6000	28.7000	33.6500	32.2500	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500
12/28/2018	17.4500	13.9500	12.5500	28.6500	33.6000	32.2000	24.4500	26.4000	31.1500	29.2500	26.0500	22.1500
12/31/2018	17.4500	13.9500	12.5500	28.6000	33.6000	32.2000	24.4500	26.4000	31.1500	29.3500	26.1500	22.2000
1/2/2019	17.4500	13.9500	12.5500	28.6000	33.6000	32.2000	24.4500	26.4000	31.1500	29.3500	26.1500	22.2000
1/3/2019	17.2500	13.8000	12.4000	28.2500	33.2000	31.8500	24.2500	26.1500	30.8500	29.0500	25.9000	22.0000
1/4/2019	17.2000	13.7500	12.3500	28.2000	33.1500	31.8000	24.2000	26.1000	30.8000	29.0000	25.8500	22.0000
1/7/2019	17.2000	13.7500	12.3500	28.2000	33.1500	31.8000	24.2000	26.1000	30.8000	29.0000	25.8500	22.0000
1/8/2019	17.1500	13.7500	12.4000	28.2000	33.1500	31.7500	24.1000	26.0000	30.7000	28.9500	25.8000	21.9500
1/9/2019	17.1500	13.7500	12.4000	28.2000	33.1500	31.7500	24.1000	26.0000	30.7000	28.9500	25.8000	21.9500
1/10/2019	17.2000	13.7500	12.3500	28.2000	33.1500	31.8000	24.2000	26.1000	30.8500	29.0000	25.9000	22.0500
1/11/2019	17.2000	13.7500	12.3500	28.1500	33.1000	31.7500	24.2000	26.0500	30.8000	28.9500	25.8500	22.0500
1/14/2019	17.1000	13.6500	12.2500	27.9500	32.8500	31.5500	24.0500	25.9000	30.6000	28.8000	25.7000	21.9500
1/15/2019	17.2500	13.8000	12.4000	28.2000	33.1500	31.8000	24.2000	26.1000	30.8000	29.0000	25.9000	22.1000
1/16/2019	17.7000	14.2000	12.8000	29.0000	34.0500	32.6000	24.7000	26.6500	31.5000	29.5500	26.3500	22.5000
1/17/2019	17.8500	14.3000	12.9000	29.2500	34.3000	32.8500	24.8500	26.8500	31.7000	29.7500	26.5000	22.6500
1/18/2019	17.7000	14.2000	12.8500	29.0500	34.0500	32.6000	24.6500	26.6000	31.4500	29.5000	26.3000	22.4500
1/22/2019	17.6000	14.1000	12.8000	28.9000	33.8500	32.4000	24.5000	26.4500	31.2500	29.3000	26.1500	22.3000
1/23/2019	17.4500	13.9500	12.6500	28.6000	33.5500	32.1000	24.3500	26.2500	31.0000	29.1000	25.9500	22.1500
1/24/2019	17.4500	13.9500	12.6500	28.6000	33.5500	32.1000	24.3500	26.2500	31.0000	29.1000	25.9500	22.1500
1/25/2019	17.4000	13.9500	12.7000	28.6000	33.5500	32.0500	24.2500	26.1500	30.9000	29.0500	25.9000	22.1000
1/28/2019	17.3000	13.8500	12.6000	28.4000	33.3500	31.8500	24.1000	26.0000	30.7000	28.9000	25.7500	21.9500
1/29/2019	17.1500	13.7000	12.4500	28.1500	33.0500	31.5500	23.9500	25.8000	30.4500	28.7000	25.5500	21.8000
1/30/2019	17.3500	13.9000	12.7000	28.6000	33.5500	32.0000	24.2000	26.0500	30.7500	28.9500	25.7500	21.9500
1/31/2019	17.3500	13.9000	12.7000	28.5500	33.5500	32.0000	24.2000	26.0500	30.7500	28.9500	25.7500	21.9500
2/1/2019	17.6000	14.1000	12.8500	28.9500	34.0000	32.4500	24.5500	26.4500	31.2000	29.3500	26.1000	22.2500
2/4/2019	17.6000	14.1000	12.8500	28.9500	34.0000	32.4500	24.5500	26.4500	31.2000	29.3500	26.1000	22.2500
2/5/2019	17.9500	14.5000	13.3000	29.7500	34.8500	33.2000	24.9000	26.8000	31.6500	29.6000	26.3000	22.4000
2/6/2019	18.4000	14.9000	13.7000	30.5500	35.7500	34.0500	25.4500	27.4000	32.3500	30.1500	26.8000	22.8000
2/7/2019	18.5000	15.0000	13.8000	30.7500	36.0000	34.2500	25.6000	27.5500	32.5500	30.2500	26.9000	22.9000
2/8/2019	18.4500	15.0000	13.8500	30.7500	36.0000	34.2000	25.4500	27.4000	32.3500	30.0500	26.7000	22.7500
2/11/2019	18.5500	15.1000	13.9500	31.0000	36.2500	34.4500	25.6000	27.5500	32.5500	30.2500	26.8500	22.9000
2/12/2019	18.5000	15.0500	13.9000	30.9000	36.1500	34.3500	25.5500	27.4500	32.4500	30.1500	26.7500	22.8500
2/13/2019	18.6000	15.2000	14.0500	31.1500	36.4000	34.5500	25.6500	27.5500	32.6000	30.3000	26.9000	22.9500
2/14/2019	18.7000	15.3000	14.1500	31.3500	36.6500	34.7500	25.8000	27.7000	32.8000	30.5000	27.0500	23.1000
2/15/2019	18.6000	15.2000	14.0500	31.1500	36.4000	34.5500	25.6500	27.5500	32.6000	30.2500	26.8500	22.9500
2/19/2019	18.7500	15.3500	14.2000	31.4500	36.7500	34.8500	25.8500	27.7500	32.8500	30.5000	27.0500	23.1000
2/20/2019	18.7000	15.3000	14.1500	31.4000	36.6500	34.8000	25.8000	27.7000	32.8000	30.4500	27.0000	23.0500
2/21/2019	18.7000	15.3000	14.1500	31.2000	36.4500	34.6000	25.7500	27.6500	32.7500	30.4000	26.9500	23.0000
2/22/2019	19.3000	15.8500	14.7000	32.3500	37.7500	35.7500	26.5000	28.4500	33.7000	31.3500	27.7500	23.6500
2/25/2019	19.2500	15.8000	14.6500	32.2500	37.6000	35.6500	26.4000	28.3500	33.6000	31.2500	27.6500	23.5500
2/26/2019	19.2500	15.8000	14.6500	32.2500	37.6000	35.6500	26.4000	28.3500	33.6000	31.2500	27.6500	23.5500
2/27/2019	19.4500	15.9500	14.8500	32.6000	38.0000	36.0000	26.6500	28.6000	33.9000	31.5500	27.9000	23.7500
2/28/2019	19.4500	16.0000	14.9500	32.7000	38.0500	36.0000	26.5500	28.5000	33.8000	31.5000	27.8000	23.6500
3/1/2019	19.8000	16.3500	15.3000	33.4000	38.8000	36.7000	27.0000	28.9500	34.3500	32.0500	28.2500	24.0500
3/4/2019	19.6000	16.2000	15.1500	33.1000	38.4500	36.3500	26.7500	28.6500	34.0000	31.9500	28.1500	23.9500
3/5/2019	19.6500	16.2500	15.2000	33.2000	38.5500	36.4500	26.8000	28.7000	34.0500	32.1000	28.3000	24.0500
3/6/2019	19.5500	16.2000	15.2000	33.1500	38.4500	36.3000	26.6500	28.5500	33.8500	32.1000	28.3000	24.0000
3/7/2019	19.5000	16.1500	15.1500	33.0500	38.3000	36.1500	26.5500	28.4500	33.7000	32.0000	28.2000	23.9000
3/8/2019	19.3000	16.0000	15.0000	32.7000	37.9000	35.8000	26.3500	28.2000	33.4000	31.7000	27.9500	23.7000
3/11/2019	19.2500	15.9500	14.9500	32.6000	37.8000	35.7000	26.3000	28.1500	33.3000	31.7500	28.0000	23.7500
3/12/2019	19.2500	15.9500	14.9500	32.5500	37.7500	35.6500	26.3000	28.1500	33.2500	31.8000	28.0000	23.7500
3/13/2019	19.4000	16.1000	15.1000	32.8500	38.1000	36.0000	26.5000	28.4000	33.5500	32.0500	28.2500	23.9500
3/14/2019	19.4000	16.1000	15.1000	32.9000	38.1500	36.0500	26.5000	28.4000	33.6000	32.0500	28.2500	23.9500
3/15/2019	19.4000	16.1000	15.1000	32.9000	38.1500	36.0500	26.5000	28.4000	33.6000	32.0500	28.2500	23.9500

Mid-C LL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
3/18/2019	19.4000	16.1000	15.1000	32.9000	38.1500	36.0500	26.5000	28.4000	33.6000	32.0500	28.2500	23.9500
3/19/2019	19.4000	16.1000	15.1000	32.9000	38.1500	36.0500	26.5000	28.4000	33.6000	32.0500	28.2500	23.9500
3/20/2019	19.6500	16.3000	15.3500	33.3500	38.6500	36.5000	26.8000	28.7000	34.0000	32.4500	28.5500	24.2000
3/21/2019	19.9500	16.5500	15.5500	33.8500	39.2000	37.0500	27.2000	29.1000	34.5000	32.9000	28.9500	24.5500
3/22/2019	20.0500	16.6000	15.6000	34.0000	39.3500	37.2000	27.3000	29.2000	34.6000	33.0000	29.0500	24.6500
3/25/2019	20.0000	16.5500	15.5500	33.9500	39.2500	37.1500	27.2500	29.1500	34.5500	32.9500	29.0000	24.6000
3/26/2019	19.9500	16.5000	15.5000	33.8500	39.1500	37.0500	27.2000	29.1000	34.5000	32.9000	28.9500	24.5500
3/27/2019	19.9500	16.4500	15.4500	33.8000	39.1000	37.0500	27.2500	29.1500	34.5500	32.9000	28.9500	24.5500
3/28/2019	19.9500	16.4500	15.4000	33.7500	39.0500	37.0500	27.3000	29.2000	34.6000	32.9000	28.9500	24.5500
3/29/2019	19.9000	16.4000	15.3500	33.6500	38.9000	36.9000	27.2000	29.1000	34.5000	32.8500	28.9000	24.5000
4/1/2019	20.0000	16.5000	15.4500	33.9000	39.1500	37.1000	27.3000	29.2000	34.6500	33.0000	29.0000	24.6000
4/2/2019	19.8500	16.3500	15.3000	33.6000	38.8500	36.8500	27.1500	29.0500	34.4500	32.8000	28.8000	24.4500
4/3/2019	20.0000	16.4500	15.4000	33.8500	39.1500	37.1500	27.4500	29.3500	34.8000	33.1000	29.0500	24.7000
4/4/2019	20.0500	16.5000	15.4500	33.9000	39.2500	37.2000	27.5000	29.4000	34.8500	33.1500	29.1000	24.7500
4/5/2019	20.0500	16.5000	15.4500	33.9000	39.2500	37.2000	27.5000	29.4000	34.8500	33.2500	29.2000	24.8000
4/8/2019	19.7500	16.2000	15.1500	33.3000	38.5500	36.6000	27.1000	29.0000	34.3500	32.8000	28.8500	24.5000
4/9/2019	19.7500	16.2000	15.1500	33.3500	38.6000	36.6500	27.1000	29.0000	34.3500	32.9000	28.9000	24.5500
4/10/2019	19.7500	16.2000	15.1500	33.3000	38.5500	36.6000	27.1000	29.0000	34.3000	32.8500	28.9000	24.5500
4/11/2019	19.5500	16.0500	15.0000	33.0000	38.2000	36.2500	26.8500	28.7500	34.0000	32.8500	28.9000	24.5500
4/12/2019	19.4000	15.9000	14.8500	32.7000	37.9000	35.9500	26.6500	28.5500	33.7500	32.6500	28.7500	24.4000
4/15/2019	19.3500	15.8500	14.8000	32.6000	37.8000	35.8500	26.6000	28.5000	33.7000	32.6000	28.7000	24.3500
4/16/2019	19.3000	15.8500	14.8000	32.5500	37.7500	35.8000	26.5500	28.4500	33.6500	32.5500	28.6500	24.3000
4/17/2019	19.3000	15.8500	14.8000	32.5500	37.7000	35.7500	26.5000	28.4000	33.6000	32.6500	28.7000	24.3500
4/18/2019	19.3000	15.8500	14.7500	32.5000	37.6500	35.7000	26.5000	28.3500	33.5500	32.6500	28.7000	24.3500
4/22/2019	19.3500	15.9000	14.8000	32.6000	37.7500	35.8000	26.5500	28.4000	33.6500	32.7500	28.8000	24.4000
4/23/2019	19.4000	15.9500	14.8500	32.6500	37.8000	35.8500	26.6000	28.4500	33.7000	32.8500	28.9000	24.4500
4/24/2019	19.3500	15.9000	14.8000	32.5000	37.6500	35.7000	26.5000	28.3500	33.6000	32.7500	28.8000	24.3500
4/25/2019	19.4500	16.0000	14.9000	32.6500	37.8500	35.8500	26.6000	28.4500	33.7500	32.9000	28.9000	24.4500
4/26/2019	19.5000	16.0500	14.9500	32.8000	38.0000	35.9500	26.6500	28.5500	33.8500	33.0500	29.0500	24.5500
4/29/2019	19.6500	16.2000	15.1000	33.1000	38.3500	36.2500	26.8500	28.8000	34.1500	33.2000	29.2000	24.6500
4/30/2019	19.6500	16.2000	15.1000	33.1000	38.3500	36.2500	26.8500	28.8000	34.2000	33.2000	29.2000	24.6500
5/1/2019	19.9500	16.4500	15.4000	33.6500	39.0000	36.8000	27.2000	29.2000	34.6500	33.6500	29.6000	24.9500
5/2/2019	19.6500	16.2000	15.2000	33.1500	38.4500	36.3000	26.8000	28.8000	34.1500	33.2000	29.2000	24.6000
5/3/2019	19.8500	16.3500	15.3500	33.5000	38.8500	36.7000	27.1000	29.1000	34.5500	33.5500	29.5000	24.8500
5/6/2019	19.9500	16.4500	15.4500	33.7000	39.0500	36.8500	27.1500	29.1500	34.6000	33.6500	29.5500	24.9000
5/7/2019	19.8000	16.3000	15.3000	33.4500	38.7500	36.6000	27.0000	28.9500	34.4000	33.4500	29.3500	24.7500
5/8/2019	19.9000	16.4000	15.3500	33.6000	38.9500	36.8000	27.1500	29.1000	34.6000	33.6000	29.5000	24.9000
5/9/2019	19.7500	16.2500	15.2000	33.2500	38.6000	36.4500	26.9500	28.9000	34.3500	33.3500	29.2500	24.7000
5/10/2019	19.6500	16.1500	15.1000	33.1000	38.4500	36.3000	26.8500	28.8000	34.2000	33.2000	29.1500	24.6000
5/13/2019	19.5500	16.0500	15.0000	32.9000	38.2000	36.1000	26.7000	28.6500	34.0000	33.5500	29.4500	24.8500
5/14/2019	19.5500	16.0500	15.0000	32.9000	38.2000	36.1000	26.7000	28.6500	34.0000	33.6000	29.5000	24.9000
5/15/2019	19.3500	15.8500	14.8000	32.5000	37.7500	35.7000	26.4000	28.3500	33.6500	33.7000	29.6000	24.9500
5/16/2019	18.9000	15.3500	14.2500	32.1000	37.3500	35.4000	27.0000	29.0500	34.5000	34.1500	29.9500	25.2500
5/17/2019	18.7500	15.2000	14.1000	31.8500	37.0500	35.1500	26.8000	28.8500	34.2500	34.0000	29.8000	25.1500
5/20/2019	18.7000	15.1500	14.0500	31.7000	36.9000	35.0000	26.7000	28.7500	34.1000	33.8500	29.7000	25.0500
5/21/2019	18.5500	15.0500	13.9500	31.4500	36.6500	34.7500	26.5500	28.5500	33.9000	33.6500	29.5000	24.9000
5/22/2019	18.4500	14.9500	13.8500	31.2500	36.4500	34.5500	26.4000	28.4000	33.7500	33.5000	29.3500	24.8000
5/23/2019	18.4500	14.9500	13.8500	31.2500	36.4500	34.5500	26.4000	28.4000	33.7500	33.5000	29.3500	24.8000
5/24/2019	18.4000	14.9000	13.8000	31.2000	36.4000	34.5000	26.3500	28.3500	33.7000	33.4500	29.3000	24.7500
5/28/2019	18.7000	15.1500	14.0500	31.7500	37.0000	35.0500	26.7500	28.8000	34.2000	34.0000	29.7500	25.1500
5/29/2019	18.5000	15.0500	13.9500	31.5000	36.6500	34.7000	26.4500	28.4500	33.8000	34.5500	30.2000	25.5500
5/30/2019	18.2500	14.7500	13.6500	30.9500	36.0500	34.2000	26.1500	28.1500	33.4000	33.4000	29.2000	24.7500
5/31/2019	18.4500	14.8500	13.7000	31.2000	36.3500	34.5500	26.4500	28.4500	33.7500	33.7500	29.5000	25.0000
6/3/2019	18.3500	14.7500	13.6000	31.0000	36.1000	34.3500	26.3000	28.3000	33.5500	33.5500	29.3500	24.8500
6/4/2019	18.4000	14.7500	13.6000	31.0500	36.1500	34.4000	26.3500	28.3500	33.6000	33.6000	29.4000	24.9000
6/5/2019	18.4000	14.7500	13.6000	31.0500	36.1500	34.4000	26.3500	28.3500	33.6000	33.7000	29.5000	25.0000

Mid-C LL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
6/6/2019	16.6000	13.0500	11.9000	31.8000	37.0000	35.1500	26.8500	28.9000	34.3000	34.1000	29.8500	25.3000
6/7/2019	17.1000	13.5000	12.3500	32.8000	38.1000	36.1500	27.5500	29.6500	35.2000	34.8500	30.5000	25.8500
6/10/2019	17.0500	13.4500	12.3000	32.6500	37.9500	36.0000	27.4500	29.5500	35.0500	34.6000	30.3000	25.7000
6/11/2019	17.1500	13.5500	12.4000	32.9000	38.2500	36.2500	27.6500	29.7500	35.3000	34.5000	30.2000	25.6500
6/12/2019	17.2500	13.6500	12.5500	33.1500	38.5000	36.4500	27.8000	29.9500	35.5500	34.5000	30.2000	25.6500
6/13/2019	17.2000	13.6000	12.5000	33.1500	38.5000	36.4500	27.8000	29.9500	35.5500	34.5000	30.2000	25.6500
6/14/2019	17.3000	13.7000	12.6000	33.3500	38.7000	36.6500	27.9500	30.1000	35.7500	34.7000	30.4000	25.8000
6/17/2019	17.2000	13.6000	12.5000	33.1000	38.4500	36.4000	27.8500	29.9500	35.6000	34.5000	30.2500	25.6500
6/18/2019	17.1500	13.5500	12.4500	33.0000	38.3500	36.3000	27.7500	29.8500	35.5000	34.4000	30.1500	25.6000
6/19/2019	17.0500	13.4500	12.3500	32.8000	38.1500	36.1000	27.6000	29.7000	35.3500	34.2500	30.0000	25.5000
6/20/2019	17.0500	13.4500	12.3500	32.8000	38.1500	36.1000	27.6000	29.7000	35.3500	34.2500	30.0000	25.5000
6/21/2019	17.0500	13.5000	12.4000	32.8500	38.2000	36.1500	27.6500	29.7500	35.4000	34.4000	30.1000	25.6000
6/24/2019	16.9500	13.4000	12.3000	32.6000	37.9000	35.9000	27.4500	29.5500	35.1500	34.2000	29.9000	25.4500
6/25/2019	16.9000	13.3500	12.2500	32.4500	37.7500	35.7500	27.3500	29.4500	35.0000	34.2000	29.9000	25.4500
6/26/2019	16.9500	13.4500	12.3500	32.6000	37.9000	35.9000	27.4500	29.5500	35.1000	34.4000	30.0500	25.5500
6/27/2019	16.5000	13.0500	11.9500	31.8000	37.0000	35.1000	26.9000	28.9500	34.3500	33.8000	29.5500	25.1500
6/28/2019	16.4500	13.0000	11.9000	31.7000	36.8500	35.0000	26.8000	28.8500	34.2500	33.7500	29.5000	25.1500
7/1/2019	16.4500	13.0000	11.9000	31.7000	36.8500	35.0000	26.8000	28.8500	34.2500	33.7500	29.5000	25.1500
7/2/2019	16.0500	12.6000	11.5000	30.8500	35.9000	34.1500	26.2500	28.2500	33.5000	33.0500	28.9000	24.6500
7/3/2019	16.6500	12.6000	11.2000	28.0000	32.5000	30.8500	29.1000	31.3500	37.1500	33.3500	29.2000	24.9000
7/5/2019	16.6500	12.6000	11.2000	28.0000	32.5000	30.8500	29.1000	31.3500	37.1500	33.3500	29.2000	24.9000
7/8/2019	16.8000	12.7500	11.3500	28.3500	32.8500	31.2000	28.3000	30.4500	36.0500	35.2000	30.8000	26.2000
7/9/2019	16.2000	12.2000	10.7500	27.9500	32.4000	30.8000	28.0500	30.1500	35.7000	35.8000	31.3500	26.6500
7/10/2019	16.3500	12.3000	10.8500	26.5000	30.8000	29.4000	28.3500	30.5000	36.1000	35.7500	31.3500	26.7500
7/11/2019	16.6500	12.5500	11.1500	27.2000	31.5500	30.1000	28.8000	31.0000	36.7000	36.3500	31.8500	27.1500
7/12/2019	16.0500	12.0500	10.6500	26.0000	30.2000	28.8500	27.8000	29.9000	35.4000	35.2000	30.8500	26.3500
7/15/2019	15.9500	12.0000	10.5500	25.8000	30.0000	28.6500	27.6500	29.7500	35.2500	35.0500	30.7000	26.2500
7/16/2019	15.4500	11.5500	10.0500	24.6000	28.6500	27.4500	26.8500	28.8500	34.2000	33.4000	29.3000	25.1000
7/17/2019	16.6500	12.6500	11.1500	27.1500	31.8000	30.7500	28.7500	30.9000	36.6500	33.4500	29.3500	25.1500
7/18/2019	16.7000	12.7000	11.2000	27.2500	31.9000	30.8500	28.8500	31.0000	36.7500	33.5500	29.4500	25.2000
7/19/2019	16.8000	12.8000	11.3000	27.5000	32.2000	31.1000	29.0500	31.2000	37.0000	33.8000	29.6500	25.3500
7/22/2019	16.5500	12.5500	11.0500	26.9500	31.6000	30.5500	28.6500	30.7500	36.4500	33.3500	29.3000	25.0500
7/23/2019	16.4500	12.4500	10.9000	26.7000	31.3000	30.3000	28.5000	30.6000	36.2500	33.1000	29.1000	24.9000
7/24/2019	16.4500	12.4500	10.9000	26.7000	31.3000	30.3000	28.5000	30.6000	36.2500	34.2000	30.0000	25.6500
7/25/2019	16.2500	12.2500	10.7000	26.3000	30.8500	29.9000	28.2000	30.2500	35.8500	33.8500	29.7000	25.4000
7/26/2019	15.9500	12.0000	10.4500	25.7000	30.2000	29.3000	27.7500	29.7500	35.2500	34.1500	29.9500	25.6500
7/29/2019	15.9500	12.0000	10.4500	25.6500	30.1500	29.2500	27.7000	29.7000	35.2000	34.1000	29.9000	25.6000
7/30/2019	16.0500	12.1000	10.5500	25.8500	30.4000	29.4500	27.8500	29.9000	35.4000	34.3000	30.0500	25.7500
7/31/2019	15.2000	11.3000	9.7500	26.0500	30.6500	29.6500	28.0000	30.0500	35.6000	34.9500	30.6000	26.2000
8/1/2019	15.1500	11.2500	9.7000	26.2000	30.8000	29.8000	28.1000	30.2000	35.7500	35.0500	30.7000	26.3000
8/2/2019	14.9500	11.0500	9.5000	25.7500	30.3000	29.3500	27.7500	29.8500	35.3000	34.6500	30.3500	26.0000
8/5/2019	15.0000	11.1000	9.5500	25.9000	30.4500	29.5000	27.8500	29.9500	35.4500	35.3000	30.9000	26.4500
8/6/2019	15.0500	11.1500	9.6000	25.9500	30.5500	29.5500	27.9000	30.0000	35.5000	35.1500	30.8000	26.3500
8/7/2019	14.1500	10.3000	8.7500	26.9500	31.7000	30.5500	26.3500	28.3000	33.4500	34.2500	30.0500	25.7000
8/8/2019	14.1000	10.2500	8.7000	26.8000	31.5000	30.4000	26.2500	28.1500	33.3000	34.1000	29.9000	25.6000
8/9/2019	14.1000	10.2500	8.7000	26.7500	31.4500	30.3500	26.2500	28.1500	33.2500	34.0500	29.9000	25.6000
8/12/2019	14.0500	10.2000	8.6500	26.6000	31.2500	30.2000	26.1500	28.0000	33.1000	33.9000	29.7500	25.5000
8/13/2019	14.0000	10.1500	8.6000	26.5000	31.1500	30.1000	26.1000	27.9000	33.0000	33.8000	29.6500	25.4500
8/14/2019	14.0500	10.2000	8.6500	26.6000	31.2500	30.2000	26.1500	28.0000	33.1000	33.9000	29.7500	25.5000
8/15/2019	14.2000	10.3500	8.8000	27.0000	31.7000	30.6000	26.4500	28.3000	33.4500	34.2000	30.0000	25.7000
8/16/2019	14.1500	10.3000	8.7500	26.1500	30.7500	29.7500	25.8500	27.6500	32.6500	33.5000	29.4000	25.2000
8/19/2019	14.2000	10.3500	8.8000	26.2500	30.8500	29.8500	25.9000	27.7000	32.7000	33.5000	29.4000	25.2000
8/20/2019	14.0000	10.1500	8.6000	25.0000	29.4500	28.6000	25.6000	27.3500	32.3000	32.8000	28.8000	24.7000
8/21/2019	14.0500	10.2000	8.6500	24.6000	29.0000	28.2000	25.8000	27.6000	32.6000	32.7500	28.7500	24.6500
8/22/2019	13.9000	10.0500	8.5000	24.7000	29.1000	28.3000	25.8500	27.6500	32.7000	32.7500	28.7500	24.6500
8/23/2019	13.8500	10.0000	8.4500	24.6000	28.9500	28.2000	25.6500	27.4000	32.4000	32.5500	28.6000	24.5000

Mid-Columbia Heavy Load and Light Load Daily Forward Curves
April 2020 - March 2021

Mid-C LL	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22
8/26/2019	13.9000	10.0500	8.5000	24.7500	29.1500	28.3500	25.7500	27.5500	32.5500	32.8000	28.8000	24.6500
8/27/2019	13.8500	10.0000	8.4500	24.7500	29.1500	28.3500	25.7500	27.5500	32.5500	32.8000	28.8000	24.6500
8/28/2019	14.0500	10.2000	8.6500	25.2000	29.6500	28.8000	26.1000	27.9000	33.0000	33.2000	29.1500	24.9500
8/29/2019	13.9000	10.0500	8.5000	24.7000	29.1000	28.3000	26.5500	28.4000	33.6000	33.7500	29.6000	25.3500
8/30/2019	14.2000	10.3000	8.7500	25.3500	29.8000	28.9500	27.0500	28.9500	34.2500	34.3500	30.1000	25.7500
9/3/2019	14.5000	10.6000	9.0500	26.0500	30.6000	29.6500	27.6000	29.5000	34.9500	35.0000	30.6500	26.2000
9/4/2019	13.7500	9.9000	8.3500	25.0000	29.4500	28.6000	26.3500	28.1500	33.3000	33.7000	29.5500	25.3000
9/5/2019	13.5000	9.6500	8.1000	24.4000	28.8000	28.0000	25.9000	27.7000	32.7500	33.1500	29.1000	24.9500
9/6/2019	13.8000	9.9000	8.3500	24.9500	29.4500	28.6000	26.4000	28.2500	33.4000	33.6500	29.5000	25.3000
9/9/2019	13.8000	9.9000	8.3500	25.0000	29.5000	28.6500	26.4000	28.2500	33.4500	33.7000	29.5500	25.3500
9/10/2019	13.8500	9.9500	8.4000	25.1500	29.6500	28.8000	26.5000	28.3500	33.6000	34.0500	29.8500	25.6000
9/11/2019	14.2000	10.2500	8.7000	25.0500	29.5000	28.7000	27.1000	29.0000	34.4000	34.5000	30.2000	25.9000
9/12/2019	14.0500	10.1500	8.6000	24.7500	29.1500	28.4000	26.8500	28.7500	34.1000	34.2000	29.9500	25.7000
9/13/2019	13.9500	10.0500	8.5000	24.6000	28.9500	28.2500	26.7000	28.6000	33.9000	34.0000	29.8000	25.5500
9/16/2019	14.1000	10.2000	8.6500	25.1000	29.5000	28.7500	27.1000	29.0000	34.4000	34.4000	30.1500	25.8000
9/17/2019	14.3500	10.4500	8.9000	25.7000	30.1500	29.3500	27.5500	29.5000	35.0000	34.9500	30.6000	26.2000
9/18/2019	14.5000	10.6000	9.0500	26.1000	30.5500	29.7500	27.8000	29.7500	35.3500	35.2500	30.8500	26.4000
9/19/2019	14.1500	10.2500	8.7000	25.6000	29.9500	29.2000	27.4000	29.3000	34.8000	34.7000	30.4000	26.0500
9/20/2019	14.3000	10.4000	8.8500	25.9500	30.3500	29.5500	27.6500	29.6000	35.1500	35.0000	30.6500	26.3000
9/23/2019	14.3500	10.4500	8.9000	26.0500	30.5000	29.6500	27.7500	29.7000	35.2500	35.1000	30.7500	26.4000
9/24/2019	14.5000	10.6000	9.0500	26.4000	30.9000	30.0000	28.0000	30.0000	35.6000	35.4000	31.0000	26.6500
9/25/2019	14.5000	10.6000	9.0500	26.4000	30.9000	30.0000	28.0000	30.0000	35.6000	35.4000	31.0000	26.6500
9/26/2019	14.5000	10.6000	9.0500	26.4000	30.9000	30.0000	27.8500	29.8500	35.4000	33.4000	29.2500	25.1500
9/27/2019	14.3000	10.4000	8.8500	28.4500	33.2000	32.0500	27.5000	29.5000	34.9500	33.1000	29.0000	24.9500
9/30/2019	13.8000	9.9000	8.3500	27.2500	31.8500	30.8500	26.6000	28.5000	33.7500	31.9000	27.9500	24.1000
10/1/2019	13.6500	9.8000	8.2500	27.5000	32.1500	31.1000	26.3500	28.2500	33.4500	31.8000	27.8500	24.0500
10/2/2019	13.5000	9.6500	8.1000	27.1500	31.7500	30.7500	26.0500	27.9500	33.1000	32.7000	28.6500	24.7500
10/3/2019	13.5500	9.7000	8.1500	27.5500	32.2000	31.1500	25.6000	27.4500	32.5000	34.0500	29.8000	25.7000
10/4/2019	13.1000	9.3000	7.7500	29.1500	34.0000	32.8000	24.8500	26.6500	31.5000	33.1500	29.0500	25.1000
Average LL	17.13	13.59	12.28	29.36	34.31	32.81	25.94	27.88	32.99	31.85	28.10	23.91
Max LL	20.05	16.60	15.60	34.00	39.35	37.20	29.10	31.35	37.15	36.35	31.85	27.15
Min LL	13.10	9.30	7.75	24.40	28.65	27.45	22.15	23.95	28.05	27.15	24.25	20.50
Spread	6.95	7.30	7.85	9.60	10.70	9.75	6.95	7.40	9.10	9.20	7.60	6.65

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Producer Price Index for Electric Power

October 31, 2019

Mnemonic:	**FXPPIFU4.IUSA**
Description:	**PPI: Electric Power - Total, (Index 1982=100, NSA) for United States**
Source:	**U.S. Bureau of Labor Statistics (BLS); Moody's Analytics (ECCA) Forecast**
Native Frequency:	**QUARTERLY**
Geography:	**United States**
Last Updated:	**10/08/2019**

2012Q1	185.8333
2012Q2	188.8333
2012Q3	196.8667
2012Q4	190.4000
2013Q1	189.1667
2013Q2	193.1667
2013Q3	199.3000
2013Q4	191.7667
2014Q1	195.7333
2014Q2	200.8333
2014Q3	208.3000
2014Q4	199.0000
2015Q1	200.8333
2015Q2	203.5667
2015Q3	212.0333
2015Q4	199.3000
2016Q1	196.3667
2016Q2	199.7667
2016Q3	209.5667
2016Q4	200.0333
2017Q1	205.5667
2017Q2	211.1000
2017Q3	218.4000
2017Q4	208.4667
2018Q1	210.6333
2018Q2	213.4000
2018Q3	220.0667
2018Q4	209.2333
2019Q1	210.4000
2019Q2	214.0667
2019Q3	222.6305
2019Q4	212.9236
2020Q1	213.4538
2020Q2	218.8576
2020Q3	227.5090
2020Q4	218.2219
2021Q1	219.2855
2021Q2	225.0042
2021Q3	233.8561
2021Q4	224.3449
2022Q1	225.6099
2022Q2	231.7939
2022Q3	241.1785
2022Q4	231.5652

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Forward Price Curves Discounted for Inflation
Used to Re-Price Purchased Power
and Surplus Sales for the October Update

October 31, 2019

IDAHO POWER COMPANY
Mid-C Forward Price Curves Discounted for Inflation
Used to Re-Price Purchased Power and Surplus Sales for the October Update (UE 195 Settlement Methodology)

Line No.													
1	**Forward Curve Prices**	**Apr-21**	**May-21**	**Jun-21**	**Jul-21**	**Aug-21**	**Sep-21**	**Oct-21**	**Nov-21**	**Dec-21**	**Jan-22**	**Feb-22**	**Mar-22**
2	Relevant Quarter	2021 Q2	2021 Q2	2021 Q2	2021 Q3	2021 Q3	2021 Q3	2021 Q4	2021 Q4	2021 Q4	2022 Q1	2022 Q1	2022 Q1
3	Deflator	2.2500	2.2500	2.2500	2.3386	2.3386	2.3386	2.2434	2.2434	2.2434	2.2561	2.2561	2.2561
4	**Water Year**	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**	**Oct-20**	**Nov-20**	**Dec-20**	**Jan-21**	**Feb-21**	**Mar-21**
5	Relevant Quarter	2020 Q2	2020 Q2	2020 Q2	2020 Q3	2020 Q3	2020 Q3	2020 Q4	2020 Q4	2020 Q4	2021 Q1	2021 Q1	2021 Q1
6	Inflator	2.1886	2.1886	2.1886	2.2751	2.2751	2.2751	2.1822	2.1822	2.1822	2.1929	2.1929	2.1929
7	**Average Prices**	**Apr-21**	**May-21**	**Jun-21**	**Jul-21**	**Aug-21**	**Sep-21**	**Oct-21**	**Nov-21**	**Dec-21**	**Jan-22**	**Feb-22**	**Mar-22**
8	Mid-C HL	24.71	22.92	23.26	49.32	55.30	49.65	32.80	35.62	43.12	42.57	36.39	29.83
9	Mid-C LL	17.13	13.59	12.28	29.36	34.31	32.81	25.94	27.88	32.99	31.85	28.10	23.91
10	**Inflation Adjusted**	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**	**Oct-20**	**Nov-20**	**Dec-20**	**Jan-21**	**Feb-21**	**Mar-21**
11	Mid-C HL	24.03	22.29	22.63	47.98	53.80	48.31	31.90	34.65	41.94	41.37	35.37	28.99
12	Mid-C LL	16.66	13.22	11.95	28.57	33.38	31.92	25.23	27.12	32.09	30.96	27.31	23.24
13	**Difference**	**Apr-21**	**May-21**	**Jun-21**	**Jul-21**	**Aug-21**	**Sep-21**	**Oct-21**	**Nov-21**	**Dec-21**	**Jan-22**	**Feb-22**	**Mar-22**
14	Mid-C HL	0.67	0.63	0.64	1.34	1.50	1.35	0.90	0.97	1.18	1.19	1.02	0.84
15	Mid-C LL	0.47	0.37	0.34	0.80	0.93	0.89	0.71	0.76	0.90	0.89	0.79	0.67
16	**Reallocated Prices**	**Apr-20**	**May-20**	**Jun-20**	**Jul-20**	**Aug-20**	**Sep-20**	**Oct-20**	**Nov-20**	**Dec-20**	**Jan-21**	**Feb-21**	**Mar-21**
17	**HL Purchased Power**												
18	103.9%	24.97	23.16	23.51	49.85	55.90	50.19	33.15	36.00	43.57	42.99	36.75	30.12
19	**LL Purchased Power**												
20	107.1%	17.85	14.15	12.80	30.59	35.75	34.18	27.02	29.04	34.36	33.16	29.25	24.89
21	**HL Surplus Sales**												
22	96.4%	23.17	21.49	21.81	46.25	51.86	46.57	30.76	33.40	40.43	39.89	34.10	27.95
23	**LL Surplus Sales**												
24	93.4%	15.56	12.34	11.16	26.68	31.18	29.81	23.56	25.33	29.97	28.92	25.51	21.70

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Power Supply Expenses for April 1, 2020 – March 31, 2021
(Multiple Gas Prices – 91 Water Year Conditions)

October 31, 2019

IPCO NORMALIZED POWER SUPPLY EXPENSES FOR APRIL 1, 2020 -- MARCH 31, 2021 (Multiple Gas Prices/91 Hydro Year Conditions)
Repriced Using UE 195 Settlement Methodology - 2020 October Update
AVERAGE

Line No.		April	May	June	July	August	September	October	November	December	January	February	March	Annual
1	Hydroelectric Generation (MWh)	884,062.2	979,144.2	962,295.5	712,587.6	604,327.1	541,752.0	525,094.3	455,116.8	674,522.3	826,467.3	795,636.9	843,400.6	8,804,407.0
	Bridger													
2	Energy (MWh)	254.3	-	7,165.3	127,648.4	138,388.2	45,743.0	14,715.1	106,370.6	161,793.8	72,848.4	31,317.5	6,636.5	712,881.1
3	Expense ($ x 1000)	$ 270.2	$ 261.0	$ 513.0	$ 4,669.8	$ 5,074.5	$ 1,864.2	$ 784.7	$ 3,987.8	$ 5,838.0	$ 2,869.6	$ 1,407.1	$ 504.6	$ 28,044.7
	Boardman													
4	Energy (MWh)	4,384.8	2,435.0	6,576.9	31,264.3	32,452.7	25,598.5	18,630.4	-	-	-	-	-	121,342.7
5	Expense ($ x 1000)	$ 136.1	$ 86.6	$ 194.9	$ 823.5	$ 853.1	$ 675.8	$ 503.5	$ -	$ -	$ -	$ -	$ -	$ 3,273.5
	Valmy													
6	Energy (MWh)	440.6	-	2,722.4	23,385.2	20,964.4	10,090.6	6,184.3	18,897.0	29,660.6	49,579.6	31,590.2	20,650.1	214,165.1
7	Expense ($ x 1000)	$ 319.9	$ 304.5	$ 395.3	$ 1,060.5	$ 986.8	$ 639.2	$ 514.9	$ 917.8	$ 1,243.2	$ 1,348.9	$ 979.4	$ 753.2	$ 9,463.6
	Langley Gulch													
8	Energy (MWh)	168,394.1	201,775.7	193,108.7	198,950.8	199,048.7	194,019.1	199,317.7	191,213.0	190,172.7	170,123.7	143,009.8	155,777.5	2,204,911.3
9	Expense ($ x 1000)	$ 2,246.1	$ 2,286.5	$ 2,220.7	$ 3,095.6	$ 3,202.8	$ 3,031.6	$ 2,970.7	$ 3,852.6	$ 4,751.3	$ 4,064.3	$ 3,093.0	$ 2,856.8	$ 37,671.9
	Danskin													
10	Energy (MWh)	29,201.8	63,773.4	81,510.0	105,061.3	98,862.6	83,832.3	65,865.8	18,112.3	5,574.5	3,385.9	4,111.3	9,790.2	569,081.3
11	Expense ($ x 1000)	$ 677.4	$ 1,275.7	$ 1,681.2	$ 2,822.5	$ 2,701.1	$ 2,244.2	$ 1,681.0	$ 577.2	$ 221.5	$ 131.0	$ 144.0	$ 298.4	$ 14,455.3
	Bennett Mountain													
12	Energy (MWh)	16,851.2	34,586.7	47,877.9	68,478.3	61,413.1	45,703.9	32,515.8	8,976.2	2,172.1	1,065.0	1,591.3	5,564.0	326,795.4
13	Expense ($ x 1000)	$ 389.8	$ 694.7	$ 979.6	$ 1,817.9	$ 1,662.0	$ 1,220.1	$ 823.8	$ 286.6	$ 86.0	$ 40.7	$ 56.1	$ 172.4	$ 8,229.8
14	Fixed Capacity Charge - Gas Transportation ($ x 1000)	$ 690.0	$ 712.5	$ 690.0	$ 712.5	$ 712.5	$ 690.0	$ 712.5	$ 690.0	$ 712.5	$ 711.2	$ 643.4	$ 711.2	$ 8,388.4
	Purchased Power (Excluding CSPP)													
15	Market Energy (MWh)	8,625.2	6,344.9	67,195.2	211,395.3	231,581.3	95,535.0	57,489.5	155,349.4	102,547.2	109,959.1	43,426.8	31,816.8	1,121,265.7
16	Elkhorn Wind Energy (MWh)	26,404.6	26,527.2	25,227.4	25,865.4	22,886.0	21,015.4	23,409.4	30,182.4	27,577.6	24,216.8	24,659.9	24,425.1	302,396.9
17	Neal Hot Springs Energy (MWh)	15,249.6	11,952.5	11,189.5	9,323.4	9,575.2	12,688.0	16,619.5	18,383.0	19,941.4	18,374.9	17,111.0	17,550.7	177,958.7
18	Raft River Geothermal Energy (MWh)	4,270.5	3,263.6	3,612.4	3,828.7	3,550.0	3,797.6	3,774.9	4,094.8	4,523.1	4,600.4	4,043.7	4,344.8	47,704.4
19	Total Energy Excl. CSPP (MWh)	54,549.9	48,088.1	107,224.5	250,412.8	267,592.4	133,036.0	101,293.3	208,009.6	154,589.3	157,151.2	89,241.4	78,137.3	1,649,325.8
20	Market Expense ($ x 1000)	$ 193.4	$ 126.5	$ 1,322.4	$ 9,082.8	$ 11,276.8	$ 4,248.1	$ 1,779.8	$ 5,206.5	$ 4,130.8	$ 4,340.5	$ 1,479.5	$ 898.8	$ 44,085.9
21	Elkhorn Wind Expense ($ x 1000)	$ 1,285.4	$ 1,291.3	$ 1,670.8	$ 2,055.8	$ 1,819.0	$ 1,391.8	$ 1,550.4	$ 2,398.9	$ 2,191.9	$ 1,652.1	$ 1,682.3	$ 1,224.7	$ 20,214.3
22	Neal Hot Springs Expense ($ x 1000)	$ 1,324.1	$ 1,037.8	$ 1,325.5	$ 1,325.3	$ 1,361.1	$ 1,503.0	$ 1,968.7	$ 2,613.2	$ 2,834.7	$ 2,214.5	$ 2,062.2	$ 1,550.4	$ 21,120.7
23	Raft River Geothermal Expense ($ x 1000)	$ 215.9	$ 165.0	$ 248.5	$ 316.1	$ 293.0	$ 261.2	$ 259.7	$ 338.0	$ 373.4	$ 318.3	$ 279.8	$ 221.0	$ 3,290.0
24	Total Expense Excl. CSPP ($ x 1000)	$ 3,018.8	$ 2,620.7	$ 4,567.2	$ 12,779.9	$ 14,749.9	$ 7,404.2	$ 5,558.6	$ 10,556.6	$ 9,530.7	$ 8,525.5	$ 5,503.9	$ 3,894.9	$ 88,710.9
	Surplus Sales													
25	Energy (MWh)	336,578.4	331,143.5	159,646.4	14,767.5	3,177.3	26,890.0	64,360.5	13,348.7	20,424.3	52,206.8	105,204.7	199,036.2	1,326,784.3
26	Revenue Including Transmission Costs ($ x 1000)	$ 6,843.1	$ 5,987.0	$ 2,847.9	$ 575.2	$ 140.3	$ 1,084.1	$ 1,806.8	$ 405.7	$ 746.0	$ 1,868.7	$ 3,250.2	$ 5,098.8	$ 30,653.8
27	Transmission Costs ($ x 1000)	$ 336.6	$ 331.1	$ 159.6	$ 14.8	$ 3.2	$ 26.9	$ 64.4	$ 13.3	$ 20.4	$ 52.2	$ 105.2	$ 199.0	$ 1,326.8
28	Revenue Excluding Transmission Costs ($ x 1000)	$ 6,506.5	$ 5,655.8	$ 2,688.3	$ 560.4	$ 137.1	$ 1,057.2	$ 1,742.5	$ 392.3	$ 725.6	$ 1,816.5	$ 3,145.0	$ 4,899.8	$ 29,327.1
29	Net Power Supply Expenses ($ x 1000)	$ 1,241.9	$ 2,586.5	$ 8,553.5	$ 27,221.8	$ 29,805.8	$ 16,712.1	$ 11,807.3	$ 20,476.3	$ 21,657.6	$ 15,874.7	$ 8,681.8	$ 4,291.6	**$ 168,911.0**
30	PURPA ($ x 1000)	$ 25,591.5	$ 24,383.8	$ 18,383.1	$ 16,279.5	$ 17,799.4	$ 16,617.6	$ 14,198.7	$ 15,356.4	$ 14,025.7	$ 18,382.5	$ 19,106.4	$ 23,437.1	$ 223,561.9
31	EIM Benefits													$ 15,645.8
32	Total Net Power Supply Expenses ($ x 1000)	$ 26,833.4	$ 26,970.3	$ 26,936.7	$ 43,501.3	$ 47,605.2	$ 33,329.7	$ 26,006.0	$ 35,832.7	$ 35,683.4	$ 34,257.2	$ 27,788.2	$ 27,728.7	**$ 376,827.0**
33	Sales at Customer Level (In 000s MWH)	1,033.794	1,091.012	1,265.207	1,548.646	1,616.825	1,436.194	1,123.870	1,039.822	1,167.969	1,311.961	1,248.050	1,129.515	15,012.868
34	Hours in Month	720	744	720	744	744	720	744	721	744	744	672	743	8,760
35	Unit Cost / MWH (for PCAM)	$25.96	$24.72	$21.29	$28.09	$29.44	$23.21	$23.14	$34.46	$30.55	$26.11	$22.27	$24.55	**$25.10**
	Prices Used in Purchased Power & Surplus Sales Above:													
	Heavy Load													
36	Portion of Purchased Power considered HL Purchases	**64.25%**	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	64.25%	
37	Purchased Power HL Price	$24.97	$23.16	$23.51	$49.85	$55.90	$50.19	$33.15	$36.00	$43.57	$42.99	$36.75	$30.12	
38	Portion of Surplus Sales considered HL Surplus Sales	**62.70%**	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	62.70%	
39	Surplus Sales HL Price	$23.17	$21.49	$21.81	$46.25	$51.86	$46.57	$30.76	$33.40	$40.43	$39.89	$34.10	$27.95	
	Light Load													
40	Portion of Purchased Power considered LL Purchases	**35.75%**	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	35.75%	
41	Purchased Power LL Price	$17.85	$14.15	$12.80	$30.59	$35.75	$34.18	$27.02	$29.04	$34.36	$33.16	$29.25	$24.89	
42	Portion of Surplus Sales considered LL Surplus Sales	**37.30%**	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	37.30%	
43	Surplus Sales LL Price	$15.56	$12.34	$11.16	$26.68	$31.18	$29.81	$23.56	$25.33	$29.97	$28.92	$25.51	$21.70	

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's
Energy Imbalance Market Benefits

October 31, 2019

IDAHO POWER COMPANY
2020 APCU October Update
Energy Imbalance Market Benefit Forecast
Based on October 2018-September 2019 Historical Data

	(A)	(B)	(C)	(D)	(E)	(F)
	CAISO Benefit	Zero-cost Hydro Adjustment	Hydro Net (Export)/Import Adjustment	BPA Load Share %	BPA Load Share Adjustment	Idaho Power EIM Benefit
Oct-18	$ 4,583,970	$ 1,009,784	$ 69,768	7.24%	$ (78,173.36)	$ 1,001,380
Nov-18	$ 2,970,586	$ 509,156	$ 82,140	7.23%	$ (42,763.50)	$ 548,533
Dec-18	$ 2,820,096	$ 810,242	$ (30,331)	7.20%	$ (56,158.76)	$ 723,751
	$ 10,374,652	$ 2,329,182	$ 121,577		$ (177,096)	$ 2,273,664
Jan-19	$ 1,640,110	$ 1,160,833	$ (105,823)	7.21%	$ (76,018)	$ 978,992
Feb-19	$ 4,207,430	$ 3,183,080	$ (490,339)	7.24%	$ (194,869)	$ 2,497,872
Mar-19	$ 2,598,353	$ 2,127,533	$ (972,713)	7.22%	$ (83,377)	$ 1,071,444
	$ 8,445,893	$ 6,471,446	$ (1,568,875)		$ (354,264)	$ 4,548,307
Apr-19	$ 2,028,444	$ 1,561,902	$ (216,663)	7.19%	$ (96,735)	$ 1,248,504
May-19	$ 2,107,396	$ 1,679,997	$ (148,497)	7.17%	$ (109,799)	$ 1,421,702
Jun-19	$ 4,189,491	$ 3,117,435	$ (155,195)	7.13%	$ (211,081)	$ 2,751,159
	$ 8,325,332	$ 6,359,334	$ (520,355)		$ (417,615)	$ 5,421,365
Jul-19	$ 1,569,384	$ 1,272,737	$ (105,504)	7.12%	$ (83,146.46)	$ 1,084,086
Aug-19	$ 1,518,655	$ 1,065,393	$ (8,290)	7.12%	$ (75,302)	$ 981,802
Sep-19	$ 2,271,843	$ 1,560,976	$ (121,272)	7.16%	$ (103,116.48)	$ 1,336,588
	$ 5,359,882	$ 3,899,106	$ (235,066)		$ (261,565)	$ 3,402,475
Total	**$ 32,505,759**	**$ 19,059,069**	**$ (2,202,719)**	**7.18%**	**$ (1,210,539)**	**$ 15,645,811**

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Energy Imbalance Market Costs

October 31, 2019

Idaho Power Company
2020 October Update
Oregon Jurisdictional EIM Revenue Requirement

2020 Calendar Year Revenue Requirement

Capital Investment	$359,933
ADIT	($16,658)
Accumulated Depreciation	($1,688)
Amortization of Other Plant	($55,296)
Net Rate Base	$286,292
Return on Rate Base	**$22,208**
O&M (On-going)	$68,373
Depreciation	$50,521
Taxes	($32,896)
Total Operating Expenses	**$85,999**
Net-to-Gross Tax Multiplier	1.347
Total Revenue Requirement	**$145,713**

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Year-Over-Year
Differences in Modeled Power Supply Expenses

October 31, 2019

IDAHO POWER COMPANY
YEAR OVER YEAR DIFFERENCES IN AURORA DEVELOPED NPSE
2020 OCTOBER UPDATE

	AURORA DEVELOPED NPSE RESULTS BEFORE MARKET ENERGY RE-PRICING			REPRICED USING FORWARD MARKET PRICES					DIFFERENCES			
	GENERATION			GENERATION					GENERATION			
		A	B		C	D	E	F	G	H	I	J
Line No.	Resource Type	2019 October Update	2020 October Update	Resource Type	2019 October Update		2020 October Update		(B-A)	(E-C)	(C-A)	(E-B)
1	Hydro (MWh)	8,553,211	8,804,407	Hydro (MWh)	8,553,211	53%	8,804,407	54%	251,196	251,196	-	-
2	Coal (MWh)	1,775,354	1,048,389	Coal (MWh)	1,775,354	11%	1,048,389	6%	(726,966)	(726,966)	-	-
3	Natural Gas (MWh)	3,412,661	3,100,788	Natural Gas (MWh)	3,412,661	21%	3,100,788	19%	(311,873)	(311,873)	-	-
4	Market Purchased Power (MWh)	405,435	1,121,266	Market Purchased Power (MWh)	405,435	3%	1,121,266	7%	715,831	715,831	-	-
5	Purchased Power Agreements (MWh)	561,952	528,060	Purchased Power Agreements (MWh)	561,952	3%	528,060	3%	(33,892)	(33,892)	-	-
6	PURPA (MWh)	3,016,404	3,022,607	PURPA (MWh)	3,016,404	19%	3,022,607	19%	6,203	6,203	-	-
7	Surplus Sales (MWh)	1,624,061	1,326,784	Surplus Sales (MWh)	1,624,061	-10%	1,326,784	-8%	(297,276)	(297,276)	-	-
8	System Generation (MWh)	17,725,017	17,625,517	System Generation (MWh)	17,725,017		17,625,517					
9	System Load (MWh)	16,100,957	16,298,733	System Load (MWh)	16,100,957	100%	16,298,733	100%	197,776	197,776	-	-
10	System Load (aMW)	1,833	1,861	System Load (aMW)	1,833		1,861		28	28	-	-
	NET POWER SUPPLY EXPENSES			NET POWER SUPPLY EXPENSES					NET POWER SUPPLY EXPENSES			
		A	B		C	D	E	F	G	H	I	J
	Resource Type	2019 October Update	2020 October Update	Resource Type	2019 October Update		2020 October Update		(B-A)	(E-C)	(C-A)	(E-B)
11	Hydro ($ x 1000)	$ -	$ -	Hydro ($ x 1000)	$ -		$ -		$ -	$ -	$ -	$ -
12	Coal ($ x 1000)	$ 65,221.0	$ 40,781.7	Coal ($ x 1000)	$ 65,221.0	17%	$ 40,781.7	11%	$ (24,439.2)	$ (24,439.2)	$ -	$ -
13	Natural Gas ($ x 1000)	$ 79,120.3	$ 68,745.4	Natural Gas ($ x 1000)	$ 79,120.3	21%	$ 68,745.4	18%	$ (10,374.9)	$ (10,374.9)	$ -	$ -
14	Market Purchased Power ($ x 1000)	$ 13,348.6	$ 35,437.8	Market Purchased Power ($ x 1000)	$ 10,981.5	3%	$ 44,085.9	12%	$ 22,089.1	$ 33,104.5	$ (2,367.2)	$ 8,648.2
15	Purchased Power Agreements ($ x 1000)	$ 45,885.2	$ 44,625.0	Purchased Power Agreements ($ x 1000)	$ 45,885.2	12%	$ 44,625.0	12%	$ (1,260.2)	$ (1,260.2)	$ -	$ -
16	PURPA ($ x 1000)	$ 221,135.0	$ 223,561.9	PURPA ($ x 1000)	$ 221,135.0	59%	$ 223,561.9	59%	$ 2,426.8	$ 2,426.8	$ -	$ -
17	Surplus Sales ($ x 1000)	$ (36,106.3)	$ (24,767.3)	Surplus Sales ($ x 1000)	$ (30,397.0)	-8%	$ (29,327.1)	-8%	$ 11,338.9	$ 1,069.9	$ 5,709.3	$ (4,559.7)
18	EIM Benefits	$ (15,120.1)	$ (15,645.8)	EIM Benefits	$ (15,120.1)	-4%	$ (15,645.8)	-4%	$ (525.7)	$ (525.7)	$ -	$ -
19	Total System ($ x 1000)	$ 373,483.7	$ 372,738.6	Total System ($ x 1000)	$ 376,825.8	100%	$ 376,827.0	100%	$ (745.2)	$ 1.2	$ 3,342.1	$ 4,088.5

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Rate Spread for APCU October Update

October 31, 2019

Idaho Power Company
Stipulated Revenue Spread
2020 October Update

Line No.		
1	2020 October Update Oregon Jurisdictional Share of Base NPSE = $25.10/MWh x 695,285.576 MWhs =	$17,451,668
2	Oregon Allocated EIM Costs	$145,713
3	**Proposed October Update APCU Revenue Requirement**	**$17,597,381**

Line No.		TOTAL SYSTEM	RESIDENTIAL (1)	GEN SRV (7)	GEN SRV SECONDARY (9-S)	GEN SRV PRIMARY (9-P)	GEN SRV TRANS (9-T)	AREA LIGHTING (15)	LG POWER PRIMARY (19-P)	LG POWER TRANS (19-T)	IRRIGATION SECONDARY (24-S)	UNMETERED GEN SERVICE (40)	MUNICIPAL ST LIGHT (41)	TRAFFIC CONTROL (42)
4	**April 2020 - March 2021 Generation Level Normalized Sales (kWh)**	**748,721,878**	200,415,526	20,601,767	130,871,344	16,511,521	2,945,056	474,418	183,215,969	119,255,488	73,423,976	5,904.00	976,356.00	24,553.00
5	**Class Share of April 2020 - March 2021 Generation Level Normalized Sales (kWh)**	**100%**	26.77%	2.75%	17.48%	2.21%	0.39%	0.06%	24.47%	15.93%	9.81%	0.00%	0.13%	0.00%
6	**2020 October Update Class Allocated Base NPSE**	$ 17,597,381	$ 4,710,412	$ 484,208	$ 3,075,899	$ 388,074	$ 69,218	$ 11,150	$ 4,306,167	$ 2,802,889	$ 1,725,700	$ 139	$ 22,948	$ 577
7	**June 2020 - May 2021 Loss-Adjusted Normalized Sales (kWh)**	**696,508,751**	182,860,882	18,824,509	119,604,569	15,581,878	2,848,217	432,863	172,937,798	115,505,413	66,993,996	5,388	890,836	22,402
8	**Proposed APCU Rates for 2020 October Update ($/kWh)**	**0.025265**	**0.025760**	**0.025722**	**0.025717**	**0.024905**	**0.024302**	**0.025760**	**0.024900**	**0.024266**	**0.025759**	**0.025754**	**0.025760**	**0.025760**
9	**Proposed October Update APCU Revenue Requirement**	**$17,597,381**	$4,710,412	$484,208	$3,075,899	$388,074	$69,218	$11,150	$4,306,167	$2,802,889	$1,725,700	$139	$22,948	$577

Line No.		TOTAL SYSTEM	RESIDENTIAL (1)	GEN SRV (7)	GEN SRV SECONDARY (9-S)	GEN SRV PRIMARY (9-P)	GEN SRV TRANS (9-T)	AREA LIGHTING (15)	LG POWER PRIMARY (19-P)	LG POWER TRANS (19-T)	IRRIGATION SECONDARY (24-S)	UNMETERED GEN SERVICE (40)	MUNICIPAL ST LIGHT (41)	TRAFFIC CONTROL (42)
10	**APCU Rates for 2019 October Update ($/kWh) - Order No. 19-189**	**0.024477**	0.026372	0.026342	0.026341	0.025504	0.024880	0.026372	0.025504	0.022731	0.026355	0.026366	0.026372	0.024477
11	**June 2020 - May 2021 Loss-Adjusted Normalized Sales (kWh)**	**696,508,751**	182,860,882	18,824,509	119,604,569	15,581,878	2,848,217	432,863	172,937,798	115,505,413	66,993,996	5,388	890,836	22,402
12	**Base NPSE Recovered under Current APCU Rates**	**$17,774,324**	$4,822,354	$495,872	$3,150,445	$397,405	$70,863	$11,415	$4,410,592	$2,625,595	$1,765,599	$142	$23,493	$548

BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

IDAHO POWER COMPANY

Exhibit Accompanying Testimony of Nicole A. Blackwell

Idaho Power Company's Current Base Revenue to
Proposed Base Revenue

October 31, 2019

Idaho Power Company
Calculation of Revenue Impact
State of Oregon
APCU October Update
Effective June 1, 2020

Summary of Revenue Impact
Current Base Revenue to Proposed Base Revenue

Line No	Tariff Description	Rate Sch. No.	Average Number of Customers	Normalized Energy (kWh) [1]	Current Base Revenue	Proposed Adjustments to Base Revenue	Proposed Base Revenue	Percent Change Base to Base Revenue
	Uniform Tariff Rates:							
1	Residential Service	1	13,472	182,860,882	$17,744,879	($111,942)	$17,632,937	(0.63)%
2	Small General Service	7	2,665	18,824,509	$2,033,369	($11,664)	$2,021,705	(0.57)%
3	Large General Secondary	9S	943	119,604,569	$9,589,128	($74,546)	$9,514,583	(0.78)%
4	Large General Primary	9P	5	15,581,878	$1,134,364	($9,331)	$1,125,032	(0.82)%
5	Large General Transmission	9T	1	2,848,217	$189,665	($1,645)	$188,020	(0.87)%
6	Dusk to Dawn Lighting	15	0	432,863	$107,901	($265)	$107,636	(0.25)%
8	Large Power Primary	19P	6	172,937,798	$11,067,822	($104,426)	$10,963,396	(0.94)%
9	Large Power Transmission	19T	1	115,505,413	$7,101,652	$177,294	$7,278,946	2.50%
10	Agricultural Irrigation Service	24	2,050	66,993,996	$6,709,535	($39,899)	$6,669,637	(0.59)%
11	Unmetered General Service	40	2	5,388	$390	($3)	$386	(0.85)%
12	Street Lighting	41	26	890,836	$148,333	($545)	$147,788	(0.37)%
13	Traffic Control Lighting	42	8	22,402	$2,229	$29	$2,257	1.29%
14	Total Uniform Tariffs		19,179	696,508,751	55,829,266	(176,943)	55,652,323	(0.32)%
15	Total Oregon Retail Sales		19,179	696,508,751	55,829,266	(176,943)	55,652,323	(0.32)%

(1) Updated June 2020-May 2021 Test Year

CERTIFICATE OF SERVICE

I hereby certify that I served a true and correct copy of the foregoing document on the parties to Docket UE 350, Idaho Power's 2019 Adjusted Power Cost Update, on the date indicated by email addressed to said person(s) at his or her last-known address(es) indicated below.

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DATED: October 31, 2019

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