

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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## AVISTA POWER SUPPLY MODELING METHODOLOGY CONCEPT PAPER

This document describes methodologies used by Avista in developing authorized power supply costs in Company General Rate Case proceedings. It is the product of multiple workshops held between Avista, Washington Utilities and Transportation Commission Staff (WUTC), Public Counsel (PC) and the Alliance of Western Energy Consumers (AWEC) between 2018 and 2020 (collectively the “Parties”). The workshop identified seven key areas where conceptual agreement was reached: source of market prices; modeling tool used; pricing methodology; hydro conditions; transportation contract hedging; system input data; and an analysis refresh with updated market and contract information prior to final rates going into effect. Each area of agreement is detailed below, followed by a brief explanation. All data and calculations supporting the methodology will be provided in each filing in excel spreadsheets with formulas intact. Should information be confidential in nature, calculations will be clearly marked as such and filed in accordance with Commission Confidentiality procedures.

### 1. Source of Market Prices

- Three month average of forward electricity and natural gas prices
- HLH/LLH prices for each modeled month at Mid-C trading hub<sup>1</sup>
- One price modeled monthly for AECO and Malin natural gas trading hubs

The Parties agree to use three-month historical averages of actual electricity and natural gas prices for the forward rate period, referred to hereafter as the “forward market.” Electricity prices are represented by heavy (HLH) and light load (LLH) hours, priced at the Mid-C trading hub. Natural gas prices are represented as a single average price for each month, priced at the AECO and Malin trading hubs.

Market forwards are incorporated directly into the model, treating Avista as a “price-taker,” representing median hydro. See further discussions under the sections *Modeling Tool* and *Hydro Conditions*.

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<sup>1</sup> COB transmission revenues will be included in the pro forma-authorized power supply base as an amount determined outside of Aurora.

## 2. Modeling Tool

- Energy Exemplar's Aurora software

Consistent with previous general rate cases (GRCs), the Parties agree to continued use of Energy Exemplar's Aurora software to calculate the proposed authorized power supply expense. Besides GRCs, the Company has used the software in integrated resource planning (IRP) and other situations since approximately 2000. In addition, several other utilities regulated by the WUTC use Aurora for a variety of modeling applications.

The Parties evaluated how Aurora was used in previous cases and identified changes to simplify the modeling process and make it more transparent going forward. No longer will Avista run its power supply model for each of the 80 years making up the full water record. Rather, Avista resources will be dispatched against forward market prices input into the model instead of having Aurora dispatch resources using Aurora-calculated market prices. A single median water year will represent Avista's hydro portfolio in this process.

## 3. Pricing Methodology

- Input daily natural gas prices averaged to forward markets for each month
- Input hourly electric prices averaged to forward markets for each month's HLH and LLH

Electricity and natural gas market prices, as described in Section 1 above, will be input directly into Aurora. As such, the software will be used for dispatching Avista resources and contracts against those forward prices. This entails translating monthly forward HLH and LLH electricity prices to hourly prices, and monthly forward natural gas prices to daily prices to create a smoothed, normalized, test year shape. Prices will be created by breaking out the monthly HLH and LLH periods, and algebraically shaping them based on actual test year prices. Weekdays also will be shifted as necessary to align the test and rate year. This means that if the rate year begins on Tuesday, but the test year begins on Monday, the test year data will be shifted one day so that the weekdays line up. Should the historical test year contain volatility from extraordinary events not expected to occur in the normalized test year, an adjustment will be made to remove such events, and the filing will document the approach used.

The calculations above will result in hourly electricity prices for the proforma period, such as 744 hours for the Mid-C in January, split between HLH and LLH. AECO and Malin natural gas prices will be calculated similarly, but on a daily basis as the natural gas spot market trades are reported as a single price for each day.

#### 4. Hydro Conditions

- Single median water year developed using the full hydro record

In previous GRCs, power supply costs were determined as the average from modeling the entire hydro record. This exercise, both time consuming and complex, was necessary because Aurora determined market prices as part of the modeling exercise. The Parties agreed that directly inputting forward market prices into Aurora, as recommended by Energy and Environmental Economics, Inc., and dispatching Avista resources against those prices using a median hydro year, would simplify the effort and increase transparency. Median water will be determined using the full hydro record of each project independently.

#### 5. AECO to Malin Transportation Contracts

- Natural gas plant dispatch based on Malin pricing, adjusted for basis differentials
- Natural gas priced at AECO up to contracted gas transportation rights
- Transportation capacity not used for dispatch valued at the difference between AECO and Malin to determine its value

Aurora will dispatch Avista's electric generation plants using their landed natural gas price based on Malin. The term "landed" price from Malin is derived by discounting the Malin forward price with fuel loss, delivery, and tax charges associated with delivery to each plant. A spreadsheet will price natural gas fuel identified by the Aurora dispatch at the AECO prices described in Section 3 above, up to the contractual rights Avista holds on GTN from AECO.<sup>2</sup> To the extent gas dispatch across the natural gas-fired fleet exceeds contractual rights from AECO, remaining gas will be priced at each plant's Malin-based landed gas price, again using prices from Section 3. Surplus transportation capacity not used for dispatch will be valued using the spread between AECO and Malin, consistent with overall market prices described in Section 3 above.

#### 6. System Input Data

- Five-year averaging for model inputs
  - Forced outages, planned maintenance outages, hydro shaping, variable generation/small contract generation levels, etc.
- Five-year averaging for other power supply variable cost inputs
  - Broker fees, CAISO sales, miscellaneous transmission revenues, etc.
- Plants where two maintenance cycles exceed the five-year window use average outage rates over past two cycles (e.g., Colstrip)
- Extraordinary events in historical maintenance and other variable datasets removed from the average with adjustment(s) explained in the filing

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<sup>2</sup> Avista has approximately 61,000 dekatherms per day of natural gas transportation rights from AECO.

Power supply modeling requires myriad data. Results are sensitive to some data that can vary greatly from year-to-year. To ensure a consistent methodology for plant forced outages, planned maintenance, intra month hydro shaping, projected generation from variable energy resources and PURPA/small contracts, and other variable datasets, costs will be based on the most recent 5-year averages.<sup>3</sup>

Two exceptions to the five-year rule are currently envisioned. First, for plants where two maintenance cycles exceed the five-year averaging window (e.g., Colstrip), an average of outage rates over the past two cycles will be used. Second, extraordinary events will be removed where adequate justification for such removal can be supported in the filing.

#### **7. Data Updates 60 Days Prior to Rates Going Into Effect**

- Natural gas and electricity market prices
- Non-natural gas fuel prices (i.e. wood, coal)
- Incremental short-term contracts for natural gas and electricity
- Power and transmission service contracts affecting the rate year

In cases including pro forma power supply adjustments, certain power supply model data will be updated 60 days prior to rates going into effect to better approximate actual costs. These include refreshing natural gas and electricity market prices, updating non-natural gas fuel prices where such prices are the result of a contract, adding all incremental contracts with terms of less than one year affecting the pro forma period for natural gas and electricity, and updating rate changes to any power and transmission service contracts included in the filing.<sup>4</sup>

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<sup>3</sup> Avista will modify Hydro Shaping Factors until each river system matches within 10 percent of its historical allocation of generation to the five-year averages during the on- and off-peak periods.

<sup>4</sup> If a pro forma power supply adjustment has been filed as part of a multi-year rate plan, only a single update would be required 60 days before the effective date of the first rate year, unless there are known, extraordinary power supply changes that should be incorporated during the rate plan.