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VIA: Electronic Mail

Public Utility Commission Oregon
Attention: Filing Center
550 Capitol St. N.E. Suite 215
Salem, OR 97308-2551

Re: Docket No. LC 65 – Avista Utilities 2016 Natural Gas Integrated Resource Plan Response Comments

Avista Corporation, dba Avista Utilities or (“Avista” and/or the “Company”), appreciates the participation of Commission Staff (Staff) and the Citizens’ Utility Board of Oregon’s (CUB) in the investigation of the Company’s 2016 Natural Gas Integrated Resource Plan (IRP) and the common goal of seeking the most reasonable resource plan for Avista’s customers in Oregon. The following comments are in response to the comments filed by Staff on November 8, 2016 in Docket No. LC 65.

Demand Forecasts including Price Elasticity

In response to Staff’s comments regarding the Company’s methodology for its demand forecasts, the Company uses a multi-step forecasting approach to generate the in-house population growth forecast for the Medford region. The steps are:

1. A forecast of annual Gross Domestic Product (GDP) growth over a five year time horizon is used to generate a forecast of annual employment growth;
2. The employment growth forecast is then used to generate an annual population growth rate over a five-year time horizon;

3. The in-house growth rates are then averaged with the Information Handling Services Markit (IHS Markit) forecast for the Medford area. This creates the final population growth forecast for the Medford region; and,
4. The final population growth rates are then converted to monthly growth rates to generate a forecast of the population level over a five year time horizon.

As a result, for the Medford region (which is the largest part of Avista's Oregon service territory), GDP is embedded indirectly through the employment growth forecast, which feeds into the in-house population forecast. For the other three regions (Roseburg, La Grande, and Klamath Falls), the Company used IHS Markit's forecasts for population growth without any averaging. The population forecasts are used for Avista's residential schedule 410.

In the 2014 IRP, the assumption was made that residential customer growth in each of the four service areas would follow the population growth rate. That is, a base-line forecast was calibrated up or down to match the forecasted population growth rate. Therefore, this precluded additional growth because of retrofitting. This approach was used because following the Great Recession, it appeared that residential customer growth had fallen, for the long-term, in line with population growth. However, the approach for the 2016 IRP integrated population as a regressor in the 410 residential customer models for each region. By doing so, each model's regression coefficients would reflect the historical relationship between population growth and customer growth, where, on average, customer growth has exceeded population growth because of retro-fitting. Therefore, the customer forecasts from these models will generate customer growth rate that slightly exceeds the forecasted population growth rate.

Avista presented price elasticity at its initial Technical Advisory Committee (TAC) meeting held on January 21, 2016. A portion of this presentation reviewed the study from the American Gas Association and other publications. During this discussion Avista stated the smoothing effect items like general rate cases, purchase gas adjustments, hedging and geographic locations have on the difficulty of measuring overall elasticity. This can be seen specifically in the Company's Washington and Idaho service territories. The assumed elasticity of -0.15 reflects estimates from regression coefficients for the June 2015 load forecast for the Oregon service territory, but applied across all service territories.



Demand Side Management (DSM)

On page 56 of the IRP, the "Achievable Potential" for industrial customers of the Company's Oregon service territory is provided. However, during the discussion of the transition of certain Avista DSM programs to the Energy Trust of Oregon (ETO), it was determined that nearly all of Avista's industrial load in Oregon is comprised of transport customers whom are ineligible for DSM services under the ETO.

While the non-transport industrial segment loads are not zero, they are relatively small compared with the residential and commercial customer segments. Non-transport industrial customer loads for 2017 account for 0.7% of loads and 0.5% of achievable savings in Oregon. So there is a very small segment of industrial customers who are eligible for DSM services under the ETO.

The Company is committed to working with the ETO on the integration and development of the conservation potential assessment for Oregon customers during the next IRP.

Integrated Resource Portfolio Analysis

Bringing together demand and supply into different sensitivities and scenarios requires careful consideration, and for this reason the TAC process is utilized to help decide these factors. The major factors considered and approved by the TAC for the 2016 IRP Expected Case include the following:

- Weather: coldest day on record and an average 20 year rolling NOAA temperature;
- Coefficients: A three-year Base and Heat coefficient;
- Pricing: A mix of two consultants' fundamental forecasts; and,
- Demand: expected growth for customer count for our five major territories (WA-ID; Klamath Falls, OR; Medford, OR; Roseburg, OR; La Grande, OR).

The TAC process provides an opportunity to develop planning criteria used to build our Expected Case. The above elements are grouped into a scenario and loaded into the SENDOUT model. These results help to provide the most reasonable methodology around expectations of a peak day scenario based upon direct input from our TAC members. A stochastic model was used in the



2016 Natural Gas IRP to measure risk to the expected case as shown on page 125. A present value revenue requirement (PVRR) for each scenario's system costs were also included to indicate the deterministic value with alternate resources as shown on page 120. The only scenario experiencing a deficiency occurred in the High Growth & Low Prices case. A combination of a deterministic and stochastic models were used to solve these supply side resource deficiencies. Within the SENDOUT model Avista included a variety of resources available for the model to select the least cost as exhibited on page 118. The chosen resources from this analysis can be found on page 117. Avista welcomes further discussion on the development of its use of stochastic analysis within the context of the 2018 Natural Gas IRP process.

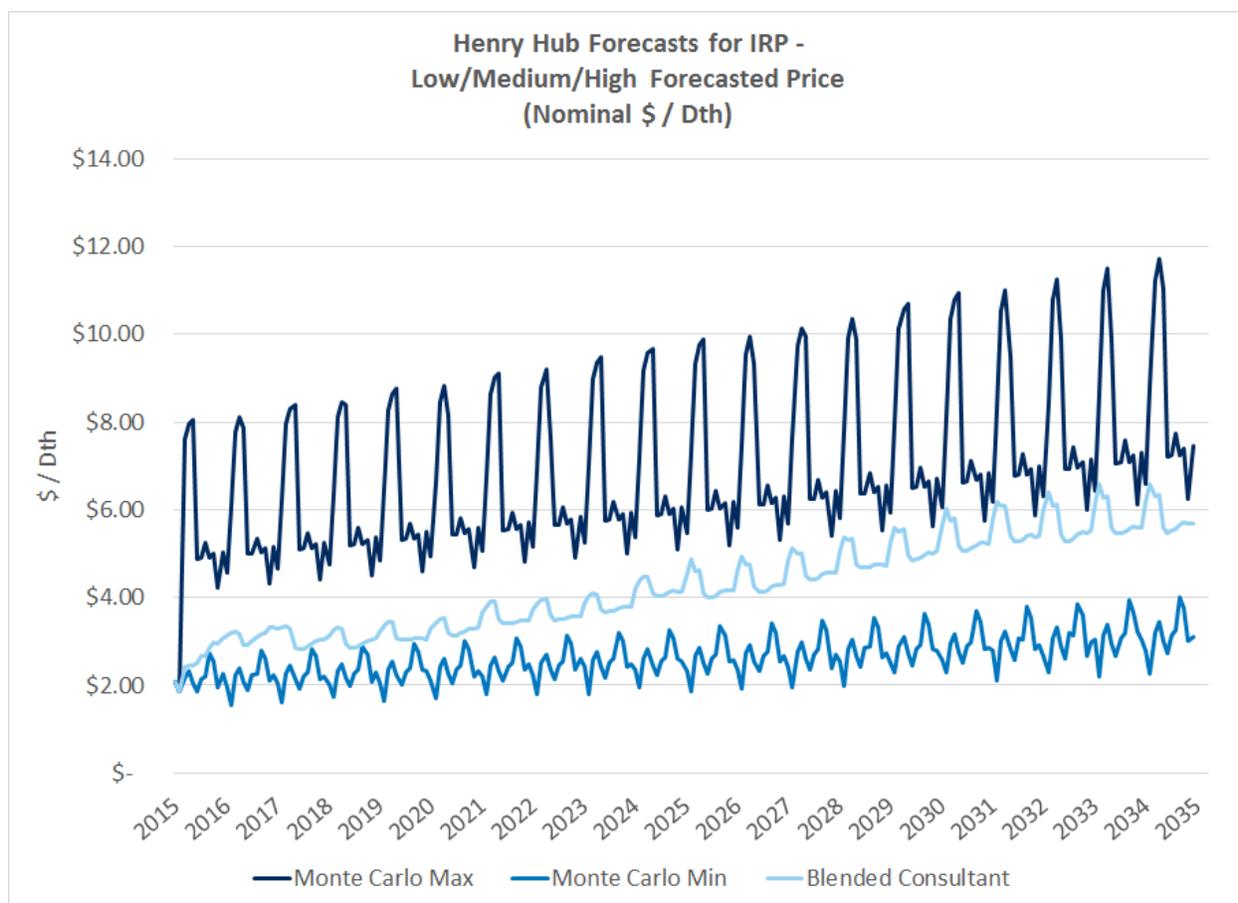
Natural Gas Price Forecasts

The methodology used to create the natural gas price forecasts for the low, expected and high price curves were different. The expected curve is a blend between two consultants and NYMEX and originates from assumptions and models as maintained and delivered in pricing by the consultants. This gives an upward rising curve from an increased demand level through our IRP horizon. The Monte Carlo simulation is not created from market based assumptions in a global model, but rather historical values in the cash market from 2009 – 2015. These draws were selected based on highest and lowest simulated price on each given day. When presented at the TAC meeting on February 18, 2016 the members had no comments regarding the pricing created by the Monte Carlo simulation.

Weather demand is the primary driver of natural gas cash price. When cold weather is observed the pricing environment has the potential to drastically change. This is due to the pipeline transportation from the supply points to the demand areas and the ability to supply a maximum volume of gas to meet demand. This can occur on an annual basis regardless of the pricing environment. These market fundamentals combined with an increasing quantity of estimated economically extractable natural gas reserves and progressively efficient drilling technologies all support Avista's assumptions as reasonable.

When shown in nominal dollars the curve does grow in order to maintain an increasing high and low price risk when adjusted for inflation, as shown in Illustration No. 1 below.



Illustration No. 1**Environmental Considerations**

Avista does not agree with Staff's representation that it did not take environmental considerations into account in its 2016 IRP. Avista presented the environmental issues both federally and within the states we serve natural gas to its TAC members. This meeting was held on February 18, 2016 and its specific contents can be found within the 2016 IRP Appendix on pages 388-393.

Avista's analysis on the environmental policy in natural gas markets was presented to the TAC in two ways. The first is through specific policies and how electric generators switching from carbon heavy emitters like coal to other fuels like natural gas and the resulting effect on prices. This is specifically done through the global model used by each of our consultants and is embedded within their pricing. A market overview with these impacts on natural gas prices, including environmental impacts, was presented at the TAC meeting on March 30, 2016. The second is by forcing a carbon adder tax into the pricing to adjust the demand through price elasticity. This helps



to show how the increasing price of natural gas can decrease demand. California is the market Avista used to model potential costs for compliance. To test this theory we presented these assumptions to our TAC members on February 18, 2016. This included explanation and criteria for the methodology of accounting for environmental factors and policy. With a varying number of potential carbon outcomes in each of our jurisdictions and federally, combined with an unknown number of potential impacts, Avista had to use a variety of carbon sensitivities to capture potential risks. By measuring the cost of carbon combined with a price elasticity, the demand from these policies can be measured in a reasonable way. Until Avista knows more about the specific policies and regulations it is impossible to bring specific elements into an IRP, which is why it helps to have sensitivities to help measure pricing and its effect on demand. Avista's carbon policy can be found on page 91 of the 2016 IRP.

Since Avista has an obligation to serve natural gas demand to its firm customers in Idaho, Oregon and Washington, measuring the potential environmental impacts through price and elasticity seemed reasonable as fuel switching is not an option.

The Clean Air Rule was not proposed until after the completion of Avista's TAC meetings and the release of the initial IRP draft. In response to Staff's initial comments on the IRP, Avista's use of a carbon tax is applied to all pricing and is not specific to one jurisdiction.

Implications of Climate change and Weather

Weather planning assumptions and potential warming impacts were discussed with the TAC and attempted to show the overall effects of changing weather on our planning assumptions (IRP Appendix pages 525-531). The frequency at which our territories have met their coldest day on record in the past 20 years combined with the potential impacts to our customers leads Avista to believe its planning standard is prudent. Unlike many coastal communities in our area, Avista's major service territories all have the potential for profound impacts to our customer's wellbeing and property due to extreme weather. Avista includes a 20 year rolling average so a warming climate, or cooling climate, would be embedded in the scenarios. While remote, peak days do occur, as on Dec. 8, 2013, when Avista matched the previous peak HDD in Klamath Falls.



Avista also utilized an alternate planning standard scenario. This is an alternate planning standard using the coldest temperature in the last twenty years. In Medford, the coldest day in 20 years is a 54 HDD, equivalent to an average daily temperature of 11 degrees Fahrenheit. In Roseburg, the coldest day in 20 years is a 48 HDD, equivalent to an average daily temperature of 17 degrees Fahrenheit. In Klamath Falls, the coldest day in 20 years is a 72 HDD, equivalent to an average daily temperature of -7 degree Fahrenheit. In La Grande, the coldest day in 20 years is a 64 HDD, equivalent to an average daily temperature of 1 degree Fahrenheit. The HDDs by area, class, and day entered into SENDOUT® are in Appendix 2.4 – Heating Degree Day Data.

Conclusion

As a part of Avista’s final TAC meeting, held on April 21, 2016, we reached out to Staff members from each Commission specifically to try to address any concerns with Avista’s methodologies used in the 2016 IRP assumptions, as well as all acknowledgement comments from the 2014 IRP prior to draft. The Oregon Public Utility Commission’s 2014 comments of acknowledgement can be found on page 642 of the 2016 Appendix for this presentation. Representatives from Idaho, Oregon and Washington were present at each of the four TAC meetings.

As a result of Staff’s review of the 2016 IRP and continuing review through the submission of their final comments/recommendations on January 9, 2017 per the Procedural Schedule, Avista commits to working with Staff to file an amended action plan prior to the Public Meeting on March 7, 2017 that may include:

1. Carbon Policy including federal and state regulations specifically those surrounding the clean air rule and clean power plan;
2. Weather analysis specific to Avista’s service territories;
3. Stochastic Modeling and supply resources; and
4. Updated DSM methodology including the integration of ETO.

Lastly, in the path of a transparent process and meeting stakeholder expectations Avista works with the TAC as a sounding board and major contributor to its IRP document. We look forward to continuing the work with the TAC and welcome additional analysis recommendations and input surrounding all considerations in the 2018 IRP.



Please contact Tom Pardee with any questions regarding these comments at 509-495-2159 or tom.pardee@avistacorp.com, or myself at 509-495-2782 or shawn.bonfield@avistacorp.com.

Sincerely,

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