

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

LC 65

In the Matter of

AVISTA CORPORATION dba AVISTA
UTILITIES, 2016

Integrated Resource Plan

Staff Final Comments

The Public Utility Commission of Oregon Staff (Staff) files these Final Comments on Avista Utilities' (Avista or Company) 2016 Integrated Resource Plan (IRP or Plan), filed on September 1, 2016. These Final Comments include a summary of Staff's Initial Comments and also address Avista's Reply Comments. Staff's Final Comments and recommendations on the Company's 2016 Plan are organized according to subject and begin by addressing the Action Plan. A final order is expected to follow the Commission public meeting on March 7, 2017. Per usual procedure, Staff will submit its public meeting memorandum, containing Staff's final observations and recommendations, approximately one week prior to the March 7, 2017 public meeting.

Staff finds that Avista's 2016 IRP generally adheres to the Guidelines¹ and relevant orders related to least-cost, integrated resource planning. Staff identified specific areas of interest that warranted further analysis and review in its Initial Comments.

While some issues have been addressed through on-going discovery or are discussed in Avista's Reply Comments, Staff anticipates that additional revisions to the Company's 2016 IRP Action Plan will be completed between Staff's Final Comments and the filing of Staff's public meeting memorandum which will be presented at the March 7, 2017 public meeting. Avista and Staff are working collaboratively on these revisions.

Further, Staff has been working with Avista to revise the Action Plan to include the following:

1. Carbon Policy including federal and state regulations, specifically those surrounding the Washington Clean Air Rule and the federal Clean Power Plan;
2. Weather analysis specific to Avista's service territories;
3. Stochastic Modeling and supply resources; and
4. Updated demand side management (DSM) methodology including the integration of the Energy Trust of Oregon (ETO).

¹ Docket No. UM 1056, Order No. 07-002: <http://apps.puc.state.or.us/orders/2007ords/07-002.pdf>

Summary of Staff's Initial Comments

Staff's Initial Comments² were filed on November 8, 2016, and can be reviewed in their entirety in Docket No. LC 65. In its Initial Comments, Staff identified areas requiring further investigation and potential updated analysis in Avista's 2016 IRP and/or the Company's next IRP. These areas included Avista's forecast and a request for a clearer and more consistent explanation, utilizing a correlation coefficient in addition to a visual inspection when explaining the Company's forecast methodology reasoning.

In its Initial Comments, Staff recommended that Avista continue to analyze natural gas vehicles in its 2018 IRP as a potential demand increasing factor.

Finally, Staff recommended that the Company fulfill the directive set out in Order 15-063, conduct a compliance cost assessment of Washington's Clean Air Rule and determine how compliance may or may not affect Oregon ratepayers or Avista's operations, and conduct a study of climate change implications on natural gas demand and its long term implications for Avista.

The Action Plan

Avista is seeking Commission Acknowledgement of the Action Items shown below in its 2016 IRP Action Plan. Each Action Item is addressed by subject matter in these Final Staff Comments. The Company includes the following information in its Action Plan concerning the following topics:

2017-2018 Action Plan

Avista's 2017-2018 Action Plan outlines activities for study, development and preparation for the 2018 IRP.

New Activities for the 2018 IRP:

- The price of natural gas has dropped significantly since the 2014 IRP. This is primarily due to the amount of economically extractable natural gas in shale formations, more efficient drilling techniques, and warmer than normal weather. Wells have been drilled, but left uncompleted due to the poor market economics. This is depressing natural gas prices and forcing many oil and natural gas companies into bankruptcy. Due to historically low prices Avista will research market opportunities including procuring a derivative based contract, 10-year forward strip, and natural gas reserves.*
- Avista's 2018 IRP will contain a dynamic DSM program structure in its analytics. In prior IRP's, it was a deterministic method based on Expected Case*

² Link to Staff Initial Comments: <http://edocs.puc.state.or.us/efdocs/HAC/lc65hac91211.pdf>

assumptions. In the 2018 IRP, each portfolio will have the ability to select conservation to meet unserved customer demand. Avista will explore methods to enable a dynamic analytical process for the evaluation of conservation potential within individual portfolios.

- *The Company will monitor actual demand for accelerated growth to address resource deficiencies arising from exposure to “flat demand” risk. This will include providing Commission Staff with IRP demand forecast-to-actual variance analysis on customer growth and use-per-customer at least bi-annually.*

Avista’s 2015-2016 action plan review is also provided in Chapter 8 of its plan.

Staff Final Comments: Demand Forecasts

Staff reviewed Avista’s demand forecasting methodology used in its 2016 IRP. Based upon this review, Staff offers the following observations:

In its initial comments, Staff noted that the use of Monte Carlo simulations to produce high and low price curves fails to produce scenarios with symmetric risk profiles through the IRP time horizon. Avista responded with an explanation of methodology of the three curves (low, high, and expected) and how they differ. The Company also stated that no comments were made regarding the use of Monte Carlo simulation during the February 18, 2016 TAC meeting. Additionally, the Company stated that in nominal terms, the high/low curves do increase over time.

Following Avista’s Reply Comments, Staff still views the high/low scenario methodology as inadequate, even when considering nominal terms because this approach does not fully assess risk. Although the use of historical values in a Monte Carlo simulation has the advantage of producing curves which do not rely on external estimates of future prices, the resulting curves do not achieve the goal of examining resource portfolio adequacy in a high and low price scenario compared to the expected case. In the near-term, the current “low-price” scenario is similar to the expected price scenario, and in the long-term the current “high-price” scenario utilizes values very close to the expected price. In order to adequately capture risk of price deviations and perform high/low analysis, the methodology must produce curves which are reasonable adaptations of high (low) prices in every incidence of the time horizon.

Staff Recommendation No. 1

Staff recommends in Avista’s 2018 IRP update that Avista pursue an updated methodology, wherein the low/high curves continue to be based on low (high) historic prices in a Monte Carlo setting, but are inflated to match the growth rate (yr/yr) of the expected price curve. The resulting curves would be based on historic prices and also produce symmetric risk profiles throughout the time horizon to better capture risk associated with price.

Elasticity

In its initial comments, Staff recommended that Avista perform its own analysis to verify the accuracy of the stated price elasticity included in the model. In response, the Company explained the difficulties in measuring overall elasticity across the Company's service territory, and stated that the assumed elasticity in its model was in fact derived from regression coefficient estimates from the June 2015 Oregon load forecast. On review of the Company's explanation, Staff is comfortable with the source of the elasticity and explanation for its inclusion in the model. No further changes are recommended at this time.

In regards to industrial forecasts, in its Initial Comments, Staff recommended that Avista explore whether economic variables, other than population growth, are useful for prediction (for example in the UG 288 rate case the Company used an industrial production index). Avista did not dispute this recommendation.

In regards to new markets, in Initial Comments, Staff recommended that Avista continue to analyze natural gas vehicles in its 2018 IRP as a potential demand increasing factor. Avista did not dispute this recommendation.

In its Reply Comments, Avista described changes to the residential number of customers forecast methodology between its 2014 IRP and its 2016 IRP. The Company previously calibrated its residential number of customers forecast up or down based on forecasted population growth. Now the Company directly includes population as an explanatory variable in the residential number of customer regression. Staff believes this change is an improvement. Nevertheless, Staff recommends that Avista explore an additional approach for its number of customers forecast.

In contrast to Avista, in its 2016 IRP Northwest Natural segments its number of customers forecast into two separate components. The first component is "new construction additions" and the second component is "conversion customers".³ This approach leads to a more detailed analysis of what is causing changes in the number of customers. Conversely, Avista attributes changes in both of those components to population growth; whereas, for example, construction starts might be a better dataset to predict new construction additions. Despite this potential theoretical improvement, in practice, Avista's approach will tend to produce reasonable results because the population and construction starts datasets are positively correlated. At this time, Staff believes more analysis by the Company is required in order to determine which approach has higher forecast accuracy (between forecasting the number of customers directly or by forecasting two separate components). If additional analysis by the local distribution companies (LDCs) indicates that one approach is more accurate than the other, Staff intends to recommend a uniform approach among Oregon LDCs for future IRPs.

³ See Appendix 2 in NWN's 2016 IRP at 2A.3 – 2A.6.

Staff Recommendation No. 2

Staff recommends that Avista forecast its number of customers using at least two different methods in order to, at a future date, use the actual realized number of customers to compare the forecast accuracy of the different methods.

Staff Final Comments: Demand Side Resources

Staff recommended in its Initial Comments that Avista should work along with ETO now to develop a process which will incorporate ETO's independent analysis of DSM potential and conservation supply curves into Avista's 2018 IRP. Staff also asked for an explanation regarding the Company's "Achievable Potential" from industrial customers. Avista provided further explanation on page 3 of its Reply Comments.

In Avista's Reply Comments, the Company stated that it would work with Staff to revise its 2016 Action Plan to include an updated DSM methodology including the integration of the ETO.

Staff Recommendation No. 3

Staff recommends that Avista replace its proposed 2016 Action Item:

“Avista’s 2018 IRP will contain a dynamic DSM program structure in its analytics. In prior IRP’s, it was a deterministic method based on Expected Case assumptions. In the 2018 IRP, each portfolio will have the ability to select conservation to meet unserved customer demand. Avista will explore methods to enable a dynamic analytical process for the evaluation of conservation potential within individual portfolios.”

With the following:

Avista's 2018 IRP will contain a dynamic DSM program structure in its analytics. In prior IRPs, it was a deterministic method based on Expected Case assumptions. In the 2018 IRP, each portfolio will have the ability to select conservation to meet unserved customer demand. Avista will explore methods to enable a dynamic analytical process for the evaluation of conservation potential within individual portfolios and will work with Energy Trust of Oregon in the development of this process and in producing any final results for its 2018 IRP for Oregon customers.

Staff Final Comments: Supply Side Resources

Staff stated in its Initial Comments that Avista currently has no resource deficiencies and its analysis results demonstrate that there is no need to acquire incremental supply-side resources to meet peak day demands over the next 20 years. However, the Company indicates in its Plan that it will focus on the following normal activities in the near term:

- Continue to monitor supply resource trends including the availability and price of natural gas to the region, LNG exports, supply dynamics and marketplace, and pipeline and storage infrastructure availability.
- Monitor availability of resource options and assess new resource lead-time requirements relative to resource need to preserve flexibility.
- Appropriate management of existing resources including optimizing underutilized resources to help reduce costs to customers. Avista utilizes storage at the Jackson Prairie facility in its current resource stack. Avista is one-third owner with Northwest Pipeline and Puget Sound Energy. The total working gas volume of Jackson Prairie is approximately 25 Bcf, with 398,667 Dth of daily deliverability rights.

Staff agrees with Avista’s assessment that there is currently no need to acquire incremental supply-side resources to meet peak day demands over the next 20 years, and supports the Company’s proposed near-term focus on the bulleted items above.

Staff Recommendation No. 4

Staff recommends that Avista provide Staff and stakeholders with updates regarding its discussions and analysis regarding possible regional pipeline projects that may move forward.

Staff Final Comments: Integrated Resource Portfolio

Staff finds Avista’s chosen Expected Case for peak operational planning activities, described in detail Chapter 5 of its Plan, reasonable for planning purposes.

As stated in Staff’s Initial Comments, the Company provides graphic summaries of Average Case demand as compared to existing resources on a peak day in Figures 5.8 through 5.11 on pages 94 and 95 of its Plan. Figures 5.12 through 5.15 on pages 96 through 98 summarize Expected Case peak day demand compared to existing resources, as well as demand comparisons to its 2014 IRP.

Staff Final Comments: Alternate Scenarios, Portfolios, and Stochastic Analysis

Avista’s Alternate Scenarios, Portfolios, and Stochastic Analysis effort can summarily be characterized as “curious.” Staff finds it unusual for Avista to have evaluated eleven different “alternate supply resources” (see page 118) without indicating their relevance as potential additions to its resource portfolio. The basic point of the Company’s analysis (found on page 119) is that “[t]here is no resource deficiency identified in the planning period and the existing resource portfolio is adequate to meet forecasted demand.” The only caveat to that latter point is that under “high growth, low prices” conditions the Medford/Roseburg area will be short of capacity in 2027. Not only is that negative eventuality relatively far in the future—allowing for plenty of time to make adjustments—

but the fix, adding an upsized compressing station is quite straightforward in the apparent sense of being *the* obvious corrective.

Given its confidence in its resource adequacy well into the future, it is understandable that Avista did not apply stochastic analysis in its traditional role as assisting a utility to select among alternative supply/resource portfolios to the one which manifests the “best” cost/risk profile. Instead the stochastics were dedicated to a) obtaining a measure of the number of peak day occurrences at its various service areas, and b) a statistical distribution of the 20-year revenue requirements as a function of weather and gas price Monte Carlo simulations.

The first application was of questionable relevance in the sense that no indication was given as to how far the areas’ capacities exceeded their peak day demand levels. Such would have provided additional assurance regarding the expressed resource adequacy. The “only” value in the weather-price simulation outcomes was to “confirm[] that Expected Case total portfolio cost is within an acceptable range of total portfolio costs...” But the Company does not indicate what the “acceptable range” is or how such a comparison is to be made. Again “acceptable” ordinarily signifies better than some alternatives, but in Avista’s analysis, there were no comparisons to consider *in terms of whether they involved lesser or greater risk*. Some minor variations to the standard portfolio were considered (see Table 6.4), but the results are derived from deterministic, expected case conditions, which ignores risk (*i.e.*, the degree of variability about a central tendency) altogether.

In its Reply Comments, Avista states that it “welcomes further discussion on the development of its use of stochastic analysis within the context of the 2018 Natural Gas IRP Process.”

Staff Recommendation No. 5

Staff recommends that in its 2018 IRP process, Avista work with Staff and stakeholders to establish and complete stochastic analysis that considers a range of alternative portfolios for comparison and consideration of both cost and risk.

Staff Final Comments: Distribution Planning

Avista summarizes the cost and timing, as of the filing date of its 2016 IRP, of major distribution system enhancements required to address growth-related system constraints, system integrity issues and the timing of the associated expenditures in Table 7.1 on page 136 of the Plan, as was previously stated in Staff’s Initial Comments. The Company describes its Distribution Planning Capital Projects criteria on page 135 of its Plan.

Staff finds Avista’s key, near-term reinforcement project to resolve a capacity constraint at the La Grande Gate Station in Oregon reasonable for planning purposes. Completion of

this project will ensure that the distribution system can maintain adequate pressures at Elgin during cold winter conditions. This project will require the installation of approximately 16,900 feet of high pressure steel gas main beginning in 2017. The estimated cost of this project is \$3,500,000. However, review of planned actions in the IRP is not a review of the prudence of planned actions and does not guarantee cost recovery for the Company.

Staff Final Comments: Environmental Considerations

Staff repeats its initial comments where it stated its assessment that Avista's analysis of environmental risks fall short.

In Avista's Reply Comments, the Company did not specifically address the concern raised by Staff that in Commission Order 15-063, the Commission directed the Company to convene discussions with Staff and stakeholders to discuss potential impacts of new methane regulations and potential gas price increases resulting from the implementation of the Environmental Protection Agency's Clean Power Plan. Staff continues to be concerned that Avista has not properly fulfilled this requirement. The pages referenced by Avista in its Reply Comments make no mention of how or when Avista followed through on the Commission's requirement in Order 15-063. Additionally, Avista makes no showing of when or where Avista conducted Clean Power Plan analysis. Avista cites to two slides on page 392 of its Appendix, which only demonstrates that Avista made stakeholders aware that Avista knew of the Clean Power Plan and the Washington Clean Air Rule. Staff does not believe that two such slides demonstrating awareness rises to the level of diligent analysis expected by the Commission, Staff, and stakeholders in a utility's Integrated Resource Plan.

In its Reply Comments, Avista states, regarding Washington's Clean Air Rule, "The Clean Air Rule was not proposed until after the completion of Avista's TAC meeting and the release of the initial Draft IRP." While this is correct, Washington's Department of Ecology had announced a rulemaking on September 2015 and issued a proposed rule on January 5, 2016.⁴ These events predate Avista's draft IRP and many of Avista's stakeholder workgroups. The initial proposed rule was withdrawn and a draft re-issued in May 2016 to allow for further engagement with stakeholders.⁵

Furthermore Avista's Director of Environmental Affairs Bruce Howard, did, on behalf of Avista, submit over ten pages of comments dated July 22, 2016 on the proposed Clean Air Rule.⁶ In his comments Mr. Howard noted how the Company believed the Clean Air Rule, as proposed, would affect Avista's statutory obligation to serve.⁷ Mr. Howard argued in comments that the Clean Air Rule impeded Avista's role in helping the state

⁴ <http://www.ecy.wa.gov/programs/air/rules/wac173442/1510time.html>

⁵ <http://www.ecy.wa.gov/programs/air/rules/wac173442/1510ov.html>

⁶ http://www.ecy.wa.gov/programs/air/rules/wac173442/Comments_regulated.pdf See pages 116 - 126.

⁷ http://www.ecy.wa.gov/programs/air/rules/wac173442/Comments_regulated.pdf at page 117.

improve air quality.⁸ It is evident from the Washington Department of Ecology's administrative record that Avista was an active stakeholder in the proceeding and was following the rule development to such an extent that it was developing a position and submitting comments in the months prior to the filing of its natural gas IRP on September 1, 2016.

Additionally, Staff is confused by Avista's statement that they were unable to address the Clean Air Rule in their IRP. Staff notes that Northwest Natural did discuss the Clean Air Rule with stakeholders during that Company's workshops prior to filing its IRP in August 2016, Docket LC 64. The cost of compliance under the Clean Air Rule may or may not be within the \$10/ton carbon cost starting in 2020 used by Avista in their 2016 IRP. It is Staff's understanding that the Clean Air Rule becomes operative in 2017. The regulatory obligation imposed on Avista as an LDC under Washington's Clean Air Rule to cover the carbon emission of their customers may be greater or less than \$10/ton prior to 2020.

Implications of Climate Change and Weather

Staff stands by its initial comments that Avista's load projections may not be as sound as they should be given the requirements that the Company consider environmental risk when constructing its IRP. In response to Staff's Initial Comments, Avista states in the Reply Comments that they did, in a stakeholder workgroup, present some analysis of high demand days. Staff is concerned that Avista equates change in climate patterns with simple demand growth.

Staff suggests that Avista conduct a study of how anticipated climate changes will impact Avista infrastructure and services. This analysis is similar in scope to that provided by PGE in its 2017 IRP. Such a study is the first step to understanding the adaptation and mitigation costs associated with climate change for Avista and its customers. As a local distribution company, Avista's sales volume may be affected by more mild and shorter winter heating seasons. With possibly less overall winter heating sales, Avista's rate may be affected in order to recover long run costs.

Staff appreciates Avista's commitment to work with Staff to revise its 2016 Action Plan to be filed prior to the Commission Public Meeting on March 7, 2017. In its Reply Comments, the Company states:

"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*

⁸ http://www.ecy.wa.gov/programs/air/rules/wac173442/Comments_regulated.pdf at page 118.

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.”

Staff Recommendation No. 6

Staff recommends Commission Acknowledgement of Avista’s 2016 Action Plan only with the completion of the following revisions to the Action Plan, which should include:

1. Carbon Policy including federal and state regulations specifically those surrounding the Washington Clean Air Rule and federal 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.

Conclusion

In its upcoming public meeting memorandum to be submitted in March 2017, Staff will recommend Commission acknowledgement of Avista’s 2016 IRP with suggested modifications to certain Action Items in the Company’s Plan. Finally, Staff’s upcoming March public meeting memorandum concerning this IRP will address Avista’s and parties’ Comments on Staff Recommendations (scheduled to be filed on February 7, 2017) as well as incorporate updated information and discussions held with the Company and the parties.

In conclusion, Staff makes the following recommendations:

Staff Recommendation No. 1

Staff recommends in Avista’s 2018 IRP update that Avista pursue an updated methodology, wherein the low/high gas price curves continue to be based on low (high) historic prices in a Monte Carlo setting, but are inflated to match the growth rate (yr/yr) of the expected price curve. The resulting curves would be based on historic prices and also produce symmetric risk profiles throughout the time horizon.

Staff Recommendation No. 2

Staff recommends that Avista forecast its number of customers using at least two different methods and to compare the accuracy of the different methods using actual data as a future task.

Staff Recommendation No. 3

Staff recommends that Avista replace its proposed 2016 Action Item:

“Avista’s 2018 IRP will contain a dynamic DSM program structure in its analytics. In prior IRP’s, it was a deterministic method based on Expected Case assumptions. In the 2018 IRP, each portfolio will have the ability to select conservation to meet unserved customer demand. Avista will explore methods to enable a dynamic analytical process for the evaluation of conservation potential within individual portfolios.”

With the following:

Avista’s 2018 IRP will contain a dynamic DSM program structure in its analytics. In prior IRPs, it was a deterministic method based on Expected Case assumptions. In the 2018 IRP, each portfolio will have the ability to select conservation to meet unserved customer demand. Avista will explore methods to enable a dynamic analytical process for the evaluation of conservation potential within individual portfolios and will work with Energy Trust of Oregon in the development of this process and in producing any final results for its 2018 IRP for Oregon customers.

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Staff Recommendation No. 5

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3. Stochastic Modeling and supply resources; and
4. Updated DSM methodology including the integration of ETO.

This concludes Staff's Final Comments.

Dated at Salem, Oregon, this 9th day of January 2017.



Lisa Gorsuch
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