

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

LC 61

In the Matter of

AVISTA CORPORATION dba AVISTA
UTILITIES

2014 Integrated Resource Plan

Staff's Final Comments

Introduction

The primary goal of an Integrated Resource Plan (IRP) is the selection of a portfolio of resources with the best combination of expected cost and associated risks and uncertainties for the utility and its customers.¹

Summary from Initial Comments:

On October 31, 2014, Staff of the Public Utility Commission of Oregon (Staff) filed Initial Comments related to the Avista Corporation dba Avista Utilities (Avista) 2014 IRP. As noted in Staff's Initial Comments, Staff identified several specific areas of concern that warranted further examination and analysis. Before filing final comments and recommendations, Staff was to further review Avista's IRP, responses to recent data requests (DRs) and parties' comments. The following is a list of the subjects and concerns Staff raised in its Initial Comments:

- Demand side management
- Portfolio analysis
- Demand forecast
- Natural gas procurement and risk management
- Distribution planning
- Climate change regulation
- Action plan

¹ Order 07-047, Appendix at 1-2, Adopted Integrated Resource Plan (IRP) Guidelines, Guideline 1.c.

Following are the Final Comments and recommendations of Staff regarding the Avista 2014 IRP. The Final Staff Comments set forth below address near-term issues and action items, as well as recommendations for future IRPs and related processes. Staff's comments are grouped by subject, addressing demand side management, portfolio analysis, demand forecast, natural gas procurement and risk management, distribution planning, climate change regulation, and action plan. Staff's recommendations are identified below in bold print.

In its 2014 IRP, Avista is not proposing to add supply-side resources. In its 20-year long-term planning, the first supply-side resource additions appear in 2029, but only in the high growth and low price scenario. In all other scenarios, no supply-side resource additions are anticipated during the 20-year planning period. In the meantime, only demand side management (DSM) resource additions are anticipated. In addition, Avista's 2014 IRP included no Action Items related to the 2015-2016 Action Plan.

The Citizens' Utility Board of Oregon (CUB) filed Opening Comments related to Avista's 2014 IRP on October 30, 2014. Northwest Industrial Gas Users filed a letter October 31, 2014, stating that it would not be filing initial comments. Avista filed Response Comments on November 24, 2014.

With Avista's attention to incorporating or resolving these Final Comments, Staff believes the areas of concern will have been adequately addressed for this IRP. As a result, Staff will find that Avista's 2014 IRP generally adheres to the Guidelines and relevant Orders put forth by the Commission related to integrated resource planning.

Demand Side Management

In Staff's Initial DSM Comments:

1. Staff requested to see the following information required by Order No. 13-159, to the extent possible, during review of the 2014 IRP, rather than waiting until April 30, 2015:
 - Savings and cost effectiveness of DSM programs;
 - Actions taken to reduce delivery costs, including administration costs and audit costs;
 - Actions taken to increase the number of cost effective efficiency measures in the portfolio;
 - An analysis of non-natural gas benefits of existing and proposed DSM measures; and
 - An analysis of measure lives for all measures.

2. Staff noted its concern that Avista did not include the Commission's requirements contained in Order No. 13-159 in its 2014 IRP. One requirement was that Avista would develop a potential mechanism for allocating funding for a separate low income energy efficiency program. Another requirement was that Avista would report on progress toward achieving the targets of 225,000 therms in 2013 and 250,000 therms in 2014.
3. Staff commented that in Chapter 3 of Avista's IRP document, natural gas savings targets for Oregon for 2015 and 2016 are 161,000 therms and 111,000 therms, respectively. This represents a 36 percent reduction in 2015 from what was required in 2014, under Order No. 13-159, and then an additional reduction of 31 percent from 2015 to 2016.
4. Staff commented that it was looking at ramp rate assumptions and how Avista's third party Conservation Potential Assessment (CPA) savings projection ramp rates were adjusted to "better align with Avista's recent program accomplishments," as described by Avista on page 44 of the IRP.
5. Staff stated that Avista needs to include a specific action item related to DSM acquisition over the next two to four years in its Action Plan in this 2014 IRP.
6. Staff concluded its Initial Comments by stating that its primary focus is that Avista's customers receive the full benefit of cost effective energy efficiency, and that where appropriate, cost effectiveness exceptions from Order No. 94-590 are applied.

In Opening Comments, CUB expressed its view that there is little risk in investing in DSM, but the risk of not investing in DSM could be significant. An extreme weather event, such as the more recent 2014 snow storms, new environmental regulations such as 111(d), or political events can cause price excursions that may triple or quadruple natural gas costs in a short period of time. DSM not only decreases energy demand but can also be structured in part to follow peak so that capacity can be tempered as well. Given that capacity has a stronger impact on prices, the investment in DSM can pay off twofold.

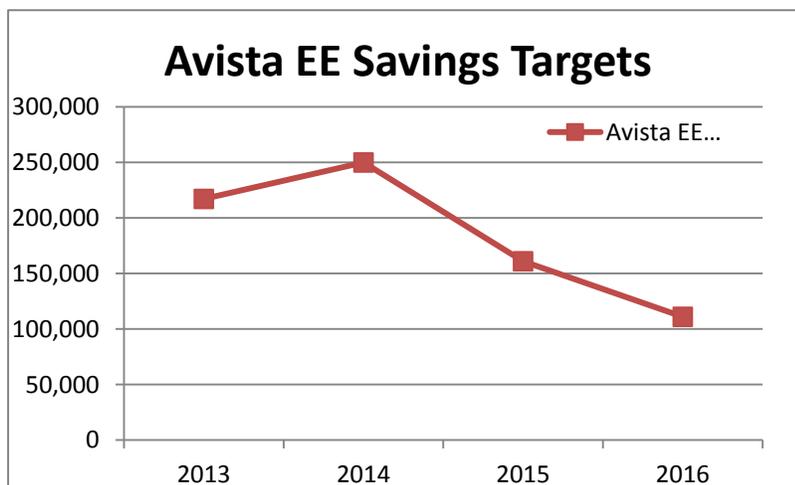
In its Response Comments, Avista:

1. Reported the most recent information relevant to information required by Order No. 13-159.
2. Stated it did not assume that the exceptions granted in Docket No. UM 551, Order No. 94-590 would persist for the 20-year horizon of the IRP process, and thus did not incorporate them into that full time period. Avista advised that it looks forward to working with Staff, and other interested parties, to further clarify the nature and duration of these exceptions and how they should be incorporated into the IRP and planning process.

3. Noted, regarding ramp rate assumptions, its CPA, Applied Energy Group (AEG, formerly EnerNOC), mapped each of the measures to the appropriate Sixth Plan supply curve ramp rates from the Northwest Power & Conservation Council.
4. Advised that action items specifically related to DSM were not identified in the 2014 IRP, but that it had identified the following two action items in DSM acquisition over the next two to four years related to resource targets and regional market transformation as discussed below. Avista stated it will identify DSM related action items in the 2016 IRP, as necessary.
 - Avista commits to pursuing the achievement of the numeric demand-side management resource target as part of a portfolio composed of cost-effective or otherwise authorized measures. Avista will also continue to work towards the development of a demand-side management portfolio that is optimized for a lower avoided cost environment.
 - Avista will work with the Northwest Energy Efficiency Alliance to develop an approach to pursuing regional market transformation activities that will bring value to its customers and feed a pipeline of efficiency opportunities suitable for future development through local programs.

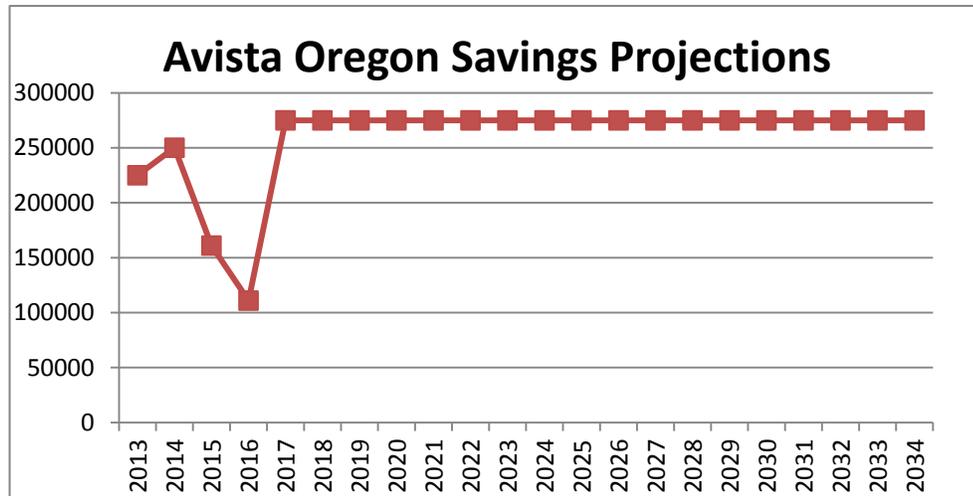
In Avista's 2014 IRP, natural gas savings targets for Oregon for 2015 and 2016 are listed as 161,000 therms and 111,000 therms, respectively (Chapter 3). According to Avista's response to Staff's Data Request (DR) 22, Avista's residential weatherization program increased from a Total Resource Cost (TRC) benefit/cost ratio (BCR) of 0.9 in 2012 to 1.32 in 2013. This increase incorporates savings based on steps Avista took to increase cost effectiveness of DSM programs, including adjusting insulation measure lives, making tariff changes to reduce administration costs, separating out audit costs, and creating a separate low income program. However, Avista's total projected efficiency savings decreases by 56 percent between 2014 and 2016, from 250,000 therms to 111,000 therms, as shown in the following figure. This decrease is of concern to Staff.

Figure 1.



Additionally, savings targets for 2015 and 2016 are well below what Avista is projecting for savings from 2017 to 2034, as shown in Attachment A, Table 1 and illustrated in Figure 2 below. Attachment A, Table 1 was developed based on data from Table 3.4 of Avista’s IRP and Avista’s response to Staff DR 33.

Figure 2.



In Avista’s Response Comments, which were filed on November 24, 2014, Avista presented that actual savings achieved in 2013 were 217,177 therms, which was 97 percent of goal. Avista indicates in its Response Comments that year-to-date savings for 2014 are 157,943 therms, out of the total IRP target of 250,000 therms. Staff notes that often savings in November and December are much greater than other months of the year, so it cannot be projected at this point what the total 2014 savings are likely to be.

Avista’s savings projections for 2015, 2016 and beyond do not include any measure with a TRC BCR of 1.0 or less. Avista did not assume any of the Commission’s Docket UM No. 551, Order No. 94-957 exceptions were applied to measures going forward. Additionally, TRC BCRs that Avista used to calculate the economic DSM potential did not include any non-natural gas benefits.

Attachment A, Tables 2 and 3 show TRC BCRs for ceiling insulation and windows, as provided by Avista in response to Staff DR 23. Attachment A, Table 2 shows the non-equipment measures with TRC BCRs that are between 1.0 and 0.7, as provided by Avista in response to Staff DR 23. Finally, Attachment A, Table 3 shows non-equipment measures with TRC BCRs between 0.7 and 0.5 based on Avista’s response to Staff DR 23.

Avista indicates it will perform a measure level evaluation of cost effectiveness in the first quarter of 2015. This evaluation will take into account data from a residential audit program that will allow non-energy benefits to be quantified. In Avista’s response to Staff DR 37, Avista specifies that a new audit tool is being used to characterize the electric energy savings associated with insulation for those homes in Avista’s service territory with air conditioning. Avista estimates it will have initial conclusions from the

residential audit program by the end of March 2015. In response to Staff DR 26, Avista states that once sufficient data is available, it will be able to determine which measures it believes should qualify for exceptions under Commission Order No. 94-590.

Avista did not provide a sensitivity analysis or alternatives for DSM acquisition targets given different levels of cost-effectiveness exceptions or different potential outcomes of Avista's ongoing analysis. Staff finds that Avista should have done more to consider alternatives for DSM acquisition in this IRP, including potentials of various levels of cost effectiveness exceptions and various outcomes of Avista's ongoing evaluations.

On page 7 of Staff's Initial Comments, Staff notes that although Avista lists DSM targets for 2015 and 2016 in Chapter 3 of the IRP, Avista does not explicitly identify an Action Item related to DSM, as it did in its last IRP. Staff made clear that there is a need for an additional Action Item specific to DSM acquisition over the next two to four years. Staff does not recommend the Commission acknowledge the DSM targets presented in Chapter 3 of this IRP, because of the incomplete nature of Avista's analysis.

On page 5 of Avista's Response Comments, Avista acknowledges that no Action Items specifically related to DSM are identified in its 2014 IRP, but it proposes the following two Action Items related to DSM acquisition over the next two to four years:

1. Avista commits to pursuing the achievement of the numeric demand-side management resource target as part of a portfolio composed of cost-effective or otherwise authorized measures. Avista will also continue to work toward the development of a demand-side management portfolio that is optimized for a lower avoided cost environment.
2. Avista will work with the Northwest Energy Efficiency Alliance (NEEA) to develop an approach to pursuing regional market transformation activities that will bring value to our customers and feed a pipeline of efficiency opportunities suitable for future development through local programs.

Commission IRP Guideline 4.n. of Order No. 07-002, states that at minimum an IRP must include "an action plan with resource activities the utility intends to undertake over the next two to four years to acquire the identified resources..." Action Items must be specific and actionable. Staff **will recommend** the following revised Action Items replace the two proposed Action Items:

1. By May 1, 2015, in addition to those items specified in Order No. 13-159, Avista shall file for Commission approval specific DSM targets for the next two to four years. As part of the filing Avista should:
 - a) Provide TRC BCRs and utility cost test (UCT) BCRs for each measure and program which has a TRC or UCT BCR of less than one.
 - b) Provide projected achievable savings for each measure and program identified in item a) above.

- c) Recommend which, if any, measures it is requesting an exception for under Docket No. UM 551, Order No. 94-590.
2. Participate in NEEA's new gas market transformation initiative and in the next IRP include and note specific gas market transformation savings potential that are part of the achievable resource potential.

Portfolio Analysis

Staff's Initial Comments recognized there is no resource deficiency in meeting Avista's demand forecast during this IRP planning period. Staff noted concern however that Avista's IRP is using a flawed portfolio analysis approach. To avoid difficulty in future IRPs when there may be a need to identify additional resources to meet forecasted demand, Staff offered clarifications and suggestions.

Avista's Response Comments argued that the methodology used in its analysis of portfolios is practical for the varying array of cases modeled in the IRP. Avista stated it welcomes input and looks forward to working with Staff to enhance our processes surrounding portfolio analysis and further discussion on the development of portfolio analysis will be included in the 2016 IRP Technical Advisory Committee (TAC) process.

As noted in Staff's Initial Comments, there may be no need in this IRP to perform portfolio analysis to identify the best resource additions. If that is the case, Avista's IRP must clearly state that conclusion rather than present Portfolio Evaluation and Stochastic Analysis as though it were indeed seeking to identify the portfolio of resources offering the best combination of cost and risk. For this IRP, Staff noted a requirement for a discussion and analysis that documents why the existing portfolio of resources offers the best combination of cost and risk for meeting the forecasted demand during the planning period. Staff DR 51 requested this discussion and analysis.

Avista's initial response to Staff DR 51 discussed how the existing portfolio of resources is structured and managed to minimize cost and risk to the ratepayers. Most of that information was also included in the 2014 IRP. Avista's initial response, however, did not discuss why the existing portfolio of resources offers the best combination of cost and risk. Avista provided a revised response stating that it is extremely unlikely a different portfolio of resources could be constructed with a better combination of cost and risk than offered by the existing portfolio of resources. Avista noted this is the case because the existing resources include legacy capacity contracts on existing interstate pipelines, and legacy storage capacity located on the Northwest Pipeline where Avista holds transportation capacity to its service territories. Avista stated that replacement of this transportation and storage capacity would likely lead to greater expense. In addition, Avista stated that its procurement plan is structured and updated regularly to obtain natural gas from the supply basins with the most advantage to ratepayers. Staff accepts Avista's assessment for purposes of this IRP.

The process of developing and comparing prospective supply portfolios is complicated for an Oregon natural gas utility (local distribution company or LDC) because of the supply transportation dependency on interstate pipeline companies whose future expansions are something which an LDC can influence, but cannot control.

The conventional approach to risk evaluation which Staff expects from electric utilities is, for each studied resource portfolio, develop revenue requirement probability distribution functions by using Monte Carlo simulations whose inputs are the probability distribution functions for weather (primarily hydro conditions), gas and electricity wholesale market prices, and load volatility. Because an electric utility can deploy resources that employ different fuels and can substitute its own production for market purchases, the revenue requirement distributions have meaning in terms of making a best cost/risk portfolio selection. But LDCs do not generally produce natural gas, nor is there a meaningful fuel substitution that would make one particular portfolio less risky than another. The conventional approach to risk evaluation which Staff expects from electric utilities does not work well for LDCs.

For future IRPs, Staff **will recommend** that Avista perform the following analyses:

1. Deterministic Analysis – a process where various more or less “worst case” scenarios are defined, and the expected 20-year PVRR outcomes from the alternate portfolios of resources are compared. Combining these outcomes with the expected PVRR under “normal” conditions, the more attractive portfolios become the pool warranting further consideration – in stochastic and refined sensitivity analyses.
2. Stochastic Analysis – a process where various conditions (e.g. weather, gas prices) are “shocked/sampled” using defined probability distribution functions in order to create, in turn, and for each resource portfolio under consideration, a probability density function of discounted, twenty-year future PVRR. That density function enables stochastic mean and ninety-percentile PVRR estimates.

Avista’s Response Comments in this docket recognized the need for improved portfolio analysis in future IRPs.

Demand Forecast

In its Initial Comments, Staff noted concern with Avista’s regression model specifications used for forecasting customer growth and gas usage per customer for each customer class - residential, commercial and industrial. Staff continued its investigation which resulted in the following Final Comments.

Customer and Usage Per Customer Forecasts

Recognizing there is no identified need for additional resources identified in this IRP, Staff investigated the load forecasting methodology seeking to identify the most reliable

methodology so that future resource needs may be clearly identified. In that investigation, Staff issued several data requests. Staff reviewed Avista's data request responses related to customer and usage per customer forecasts and **will recommend** that Staff and Avista work together during the period leading to the next IRP on the following issues:

1. Customer forecast model: Currently, for the Medford region, the average population growth rate is calculated as the average of population growth forecast generated by Avista and population growth forecast from Global Insight (GI). The average population growth rate is then used to adjust the base-line ARIMA customer forecasts developed by Avista, so that the annual growth rate of forecasted customers are in line with the average population growth rate. For the other three regions – Klamath Falls, Roseburg, and LaGrande, GI's population growth forecast is used to match with Avista's baseline ARIMA customer forecasts. Staff suggests that customer forecast models for the next IRP include population as an exogenous variable in the base-line ARIMA customer forecast model so that the effect of population can be directly estimated from the customer time-series model. The ARIMA based model with error orders (identified by considering several candidate models with different order structures and comparing the diagnostic statistics), and population as one of the predicting variables will integrate population into the customer model and take account of autocorrelation in an effective way.
2. Time-period for analysis: Staff found that different time periods are used by Avista for forecasting customer or usage per customer. For instance, Medford residential use per customer forecast model considers actual data from January 2006 onwards, while commercial and industrial use per customer models for Medford consider actual data from January 2007 onwards and January 2008 onwards respectively. Staff suggests that entire available data and not the subset of data be considered for future modeling purposes.
3. Analysis of residuals and regression estimates: Currently Avista does not save statistical tests performed for the residual analysis as well as regression estimates of the customer/use per customer models. Avista's response to Staff DR 9 Attachment A shows the regression output for Roseburg residential service schedule 410 usage per customer, which was developed for Avista's rate case filed in 2013, Docket No. UG 246. Staff suggests that Avista retain the residual diagnostics and parameter estimates for all forecast models in future.

Natural Gas Procurement and Risk Management

Staff's Initial Comments noted that Chapter 4 of Avista's IRP differed from the draft reviewed by Staff in that it included a brief discussion of Avista's Procurement Plan and Market-Related Risks and Risk Management. This discussion, however, did not provide sufficient detail to allow Staff to do a thorough review of the purchasing, hedging and risk management plans/policies/strategies. As a result, Staff issued DR 5 and Avista responded by providing Avista's Gas Procurement Plan and Risk Management Policy for review and discussion in the context of this IRP. Avista's responses to Staff data

requests DR 17 to DR 21 showed that overall, Avista's hedging strategy has resulted in substantial losses for its customers. Yet, Avista intends to continue its current hedging strategy. Avista has not included in its IRP an action item to modify the strategy or a description of any future changes in its hedging strategy.

CUB's Opening Comments suggested that Avista may be able to mitigate the risk of price volatility by exploring a variety of long-term hedging strategies.

At Staff's request, Avista provided a detailed description of its Gas Procurement Plan and Risk Management Policy. Avista's Response Comments also included responses to Staff DR 17 to DR 21 which were specific to the results of Avista's past hedging strategies. Avista disagreed with Staff's characterization that Avista's hedging strategy has resulted in "substantial losses for its customers", and that "Yet, Avista intends to continue its current hedging strategy". Avista went on to argue that in the past three Staff Purchased Gas Adjustment (PGA) memoranda, Staff complimented Avista for following the Natural Gas Portfolio Development Guidelines. Staff does not disagree with Avista's account. However, Staff's past analysis related to Avista's PGA filings was not intended to scrutinize executed hedges but was merely recognizing that Avista followed a set of guidelines.

Like CUB, Staff wishes to encourage Avista to explore more long-term hedging strategies in future IRPs. However, Staff believes that all hedging strategies should minimize costs to Avista's customers given that Avista does not share much in the losses from its hedging strategies even though it has a lot of discretion in the implementation of the strategies.

Staff believes that Avista always maintains some level of discretion and may choose not to execute some of its hedging transactions when there is a likelihood of harming its customers. However, responses to DR 17 to DR 21 do show that the customers of Avista paid hedge prices that frequently were above prevailing market prices and for a considerable length of time. Staff believes that there are risks associated with any hedging strategies and thus some level of risk premium must be embedded in hedge prices. However, customers should not be exposed to higher losses without the prospect of receiving benefits that are associated with hedging strategies.

IRP Guideline 1.c requires gas utilities to provide a "discussion of the proposed use and impact on costs and risks of physical and financial hedging." Staff **will recommend** in future IRPs Avista provide a discussion of Avista's hedging strategies as to their impact on customer rates, how hedge prices compare with prevailing spot market prices, and any action taken by Avista to protect its customers from unnecessary losses associated with its hedging strategies.

Distribution Planning

As noted in Staff's Initial Comments, Staff **will recommend** that future IRPs must include a clear presentation of how Avista decides which distribution system projects to include in the IRP, and a clear description of the included projects, along with a

justification for recommending or proceeding with the projects. Without this information in the IRP, a prudence determination may be difficult at the time of request to include the projects in rates. Avista's Response Comments recognized the need for an enhanced distribution planning presentation in future IRPs.

Climate Change Regulation

As noted in its Initial Comments, Staff is concerned that all of the climate change regulatory implications beyond simply the immediate regulatory effects of the Environmental Protection Agency's proposed rules under Section 111 (d) of the federal Clean Air Act, are not currently accounted for in the planning period. Therefore, Staff recognizes it is time for Avista to begin exploring how to better analyze regulations intended to address climate change. Avista's Response Comments did not directly address Staff's concerns or related recommendation.

Staff **will recommend** that Avista and stakeholders convene climate change risk and opportunity analysis discussions as part of Avista's next IRP process.

Action Plan Summary

Avista's 2014 IRP included no Action Items for Commission Acknowledgement. In its Response Comments, Avista proposed two DSM acquisition Action Items for the next two to four years, as follows:

1. Avista commits to pursuing the achievement of the numeric demand-side management resource target as part of a portfolio composed of cost-effective or otherwise authorized measures. Avista will also continue to work towards the development of a demand-side management portfolio that is optimized for a lower avoided cost environment.
2. Avista will work with the Northwest Energy Efficiency Alliance to develop an approach to pursuing regional market transformation activities that will bring value to our customers and feed a pipeline of efficiency opportunities suitable for future development through local programs.

As noted in Demand Side Management comments above, Staff **will recommend** the following revised Action Items replace the two Action Items proposed in Avista's Response Comments:

1. By May 1, 2015, in addition to those items specified in Order No. 13-159, Avista shall file for Commission approval specific DSM targets for the next two to four years. As part of the filing Avista should:
 - a) Provide TRC BCRs and UCT BCRs for each measure and program which has a TRC or UCT BCR of less than one.

- b) Provide projected achievable savings for each gas measure and program identified in item a) above.
 - c) Recommend which, if any, measures it is requesting an exception for under Docket No. UM 551, Order No. 94-590.
2. Participate in NEEA's new gas market transformation initiative and in the next IRP include and note specific gas market transformation savings potential that are part of the achievable resource potential.

While no Action Items were included in the filed IRP, a 2015-2016 Action Plan was included. The Action Plan identified many activities that can be considered routine business operations. Staff does not typically recommend acknowledgement of these types of activities. Rather they are the type of activities that a reasonable utility would do in the regular course of business. Staff simply notes that an Action Plan was included in the filed IRP.

This concludes Staff's Final Comments

Dated at Salem, Oregon, this 19th of December, 2014.



Erik Colville
Senior Utility Analyst
Energy Resources & Planning

Attachment A

Table 1. TRC BCRs for ceiling insulation and windows.

Measure	Sector	Segment	Vintage	TRC BCR
Insulation - Ceiling	Commercial	Large Commercial (OR)	New	0.71
Insulation - Ceiling	Commercial	Large Commercial (OR)	Existing	0.51
Insulation - Ceiling	Commercial	Small Commercial (OR)	New	1.54
Insulation - Ceiling	Commercial	Small Commercial (OR)	Existing	0.75
Insulation - Ceiling	Industrial	Industrial (OR)	New	0.12
Insulation - Ceiling	Industrial	Industrial (OR)	Existing	0.07
Insulation - Ceiling	Residential	Mobile Home (OR)	New	1.3
Insulation - Ceiling	Residential	Mobile Home (OR)	Existing	0.35
Insulation - Ceiling	Residential	Multi Family (OR)	Existing	0.79
Insulation - Ceiling	Residential	Multi Family (OR)	New	0.69
Insulation - Ceiling	Residential	Single Family (OR)	Existing	0.37
Insulation - Ceiling	Residential	Single Family (OR)	New	0.21
Windows - High Efficiency	Commercial	Large Commercial (OR)	Existing	0.34
Windows - High Efficiency	Commercial	Large Commercial (OR)	New	0.23
Windows - High Efficiency	Commercial	Small Commercial (OR)	Existing	0.12
Windows - High Efficiency	Commercial	Small Commercial (OR)	New	0.09
Windows - ENERGY STAR	Residential	Mobile Home (OR)	New	0.04
Windows - ENERGY STAR	Residential	Mobile Home (OR)	Existing	0.01
Windows - ENERGY STAR	Residential	Multi Family (OR)	Existing	0.03
Windows - ENERGY STAR	Residential	Multi Family (OR)	New	0.02
Windows - ENERGY STAR	Residential	Single Family (OR)	New	0.04
Windows - ENERGY STAR	Residential	Single Family (OR)	Existing	0.02

Table 2. TRC BCR of non-equipment measures with TRC BCRs between 1.0 and 0.7

Measure	Sector	Segment	Vintage	TRC BCR
Water Heating - Faucet Aerators	Commercial	Large Commercial (OR)	Existing	0.87
Water Heating - Faucet Aerators	Commercial	Large Commercial (OR)	New	0.85
Advanced New Construction Designs	Commercial	Large Commercial (OR)	New	0.77
Energy Management System	Commercial	Large Commercial (OR)	New	0.72
Insulation - Ceiling	Commercial	Large Commercial (OR)	New	0.71
Thermostat - Clock/Programmable	Commercial	Large Commercial (OR)	Existing	0.70
Insulation - Wall Cavity	Commercial	Small Commercial (OR)	Existing	0.84
Insulation - Ceiling	Commercial	Small Commercial (OR)	Existing	0.75
Process - Boiler Hot Water Reset	Industrial	Industrial (OR)	Existing	0.90
Insulation - Wall Cavity	Industrial	Industrial (OR)	New	0.84
Boiler - Pipe Insulation	Residential	Mobile Home (OR)	New	0.88
Insulation - Infiltration Control	Residential	Mobile Home (OR)	Existing	0.72
Thermostat - Clock/Programmable	Residential	Mobile Home (OR)	Existing	0.71
Insulation - Ceiling	Residential	Multi Family (OR)	Existing	0.79
Thermostat - Clock/Programmable	Residential	Single Family (OR)	Existing	0.82
Insulation - Infiltration Control	Residential	Single Family (OR)	Existing	0.82

Table 3. TRC BCRs for non-equipment measures with TRC BCRs between 0.7 and 0.5

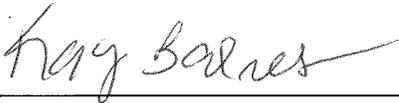
Measure	Sector	Segment	Vintage	TRC BCR
Water Heating - Hot Water Saver	Commercial	Large Commercial (OR)	Existing	0.51
Insulation - Ceiling	Commercial	Large Commercial (OR)	Existing	0.51
Custom Measures	Commercial	Large Commercial (OR)	Existing	0.55
Furnace - Maintenance	Commercial	Large Commercial (OR)	Existing	0.57
Thermostat - Clock/Programmable	Commercial	Small Commercial (OR)	Existing	0.53
Boiler - Maintenance	Commercial	Small Commercial (OR)	New	0.57
Water Heating - Hot Water Saver	Commercial	Small Commercial (OR)	New	0.60
Boiler - Hot Water Reset	Commercial	Small Commercial (OR)	New	0.62
Water Heating - Hot Water Saver	Commercial	Small Commercial (OR)	Existing	0.63
Process - Boiler Hot Water Reset	Industrial	Industrial (OR)	New	0.60
Space Heating - Heat Recovery Ventilator	Industrial	Industrial (OR)	Existing	0.63
Water Heating - Hot Water Saver	Residential	Mobile Home (OR)	Existing	0.53
Insulation - Infiltration Control	Residential	Mobile Home (OR)	New	0.54
Water Heating - Low Flow Showerheads	Residential	Mobile Home (OR)	Existing	0.66
Water Heating - Low Flow Showerheads	Residential	Multi Family (OR)	Existing	0.52
Boiler - Pipe Insulation	Residential	Multi Family (OR)	New	0.59
Insulation - Infiltration Control	Residential	Multi Family (OR)	Existing	0.64
Insulation - Ceiling	Residential	Multi Family (OR)	New	0.69
Home Energy Management System	Residential	Single Family (OR)	Existing	0.53
Thermostat - Clock/Programmable	Residential	Single Family (OR)	New	0.54
Water Heating - Hot Water Saver	Residential	Single Family (OR)	Existing	0.54
Insulation - Infiltration Control	Residential	Single Family (OR)	New	0.63
Water Heating - Low Flow Showerheads	Residential	Single Family (OR)	Existing	0.67

CERTIFICATE OF SERVICE

LC 61

I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 19th day of December, 2014 at Salem, Oregon



Kay Barnes
Public Utility Commission
3930 Fairview Industrial Drive SE
Salem, Oregon 97302
Telephone: (503) 378-5763

LC 61 – SERVICE LIST

EDWARD FINKLEA EXECUTIVE DIRECTOR	326 FIFTH ST LAKE OSWEGO OR 97034 efinklea@nwigu.org
AVISTA UTILITIES	
LINDA GERVAIS SR REGULATORY ANALYST	PO BOX 3727 SPOKANE WA 99220-3727 linda.gervais@avistacorp.com
TOM PARDEE	tom.pardee@avistacorp.com
CABLE HUSTON BENEDICT HAAGENSEN & LLOYD	
TOMMY A BROOKS	1001 SW FIFTH AVE, STE 2000 PORTLAND OR 97204-1136 tbrooks@cablehuston.com
CABLE HUSTON BENEDICT HAAGENSEN & LLOYD LLP	
CHAD M STOKES	1001 SW 5TH - STE 2000 PORTLAND OR 97204-1136 cstokes@cablehuston.com
CITIZENS' UTILITY BOARD OF OREGON	
OPUC DOCKETS	610 SW BROADWAY, STE 400 PORTLAND OR 97205 dockets@oregoncub.org
ROBERT JENKS (C)	610 SW BROADWAY, STE 400 PORTLAND OR 97205 bob@oregoncub.org
G. CATRIONA MCCRACKEN (C)	610 SW BROADWAY, STE 400 PORTLAND OR 97205 catriona@oregoncub.org
PUBLIC UTILITY COMMISSION OF OREGON	
ERIK COLVILLE (C)	PO BOX 1088 SALEM OR 97308-1088 erik.colville@state.or.us
LISA GORSUCH (C)	PO BOX 1088 SALEM OR 97308-1088 lisa.gorsuch@state.or.us
PUC STAFF - DEPARTMENT OF JUSTICE	
JOHANNA RIEMENSCHNEIDER (C)	BUSINESS ACTIVITIES SECTION 1162 COURT ST NE SALEM OR 97301-4796 johanna.riemenschneider@doj.state.or.us