AVISTA

# 2014 Natural Gas Integrated Resource Plan Appendices

August 31, 2014

# Safe Harbor Statement

This document contains forward-looking statements. Such statements are subject to a variety of risks, uncertainties and other factors, most of which are beyond the Company's control, and many of which could have a significant impact on the Company's operations, results of operations and financial condition, and could cause actual results to differ materially from those anticipated.

For a further discussion of these factors and other important factors, please refer to the Company's reports filed with the Securities and Exchange Commission. The forward-looking statements contained in this document speak only as of the date hereof. The Company undertakes no obligation to update any forward-looking statement or statements to reflect events or circumstances that occur after the date on which such statement is made or to reflect the occurrence of unanticipated events. New factors emerge from time to time, and it is not possible for management to predict all of such factors, nor can it assess the impact of each such factor on the Company's business or the extent to which any such factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statement.

# TABLE OF CONTENTS: APPENDICES

# APPENDIX 0.1: TAC MEMBER LIST

| ORGANIZATION | REPRESENTATIVES | |
|---|---|---|
| **Avista** | John Lyons<br>Jon Powell<br>Jason Thackston<br>Kerry Shroy<br>Terrence Brown<br>Annette Brandon<br>Shawn Bonfield<br>Laura Pendergraft | Linda Gervais<br>Lori Hermanson<br>Pat Ehrbar<br>Grant Forsyth<br>Tom Pardee<br>Mike Diedesch<br>Clint Kalich |
| **Cascade Natural Gas Company** | Brian Robertson | Jon Whiting |
| **Fortis BC** | Dana Wong | Ken Ross |
| **Intermountain Gas** | Mike McGrath | Shelli Chase |
| **Idaho Public Utility Commission** | Matt Elam | Rick Sterling<br>Terri Carlock |
| **Northwest Gas Association** | Ben Hemson | Dan Kirschner |
| **Northwest Industrial Gas Users** | Ed Finklea | |
| **Northwest Natural Gas** | Tammy Linver | Mark Thompson |
| **Northwest Pipeline** | Teresa Hagins | Ray Warner |
| **Oregon Public Utility Commission** | Ryan Bracken<br>Erik Colville | Lisa Gorsuch |
| **Oregon CUB** | Nadine Hanhan | |
| **Puget Sound Energy** | Gurvinder Singh | Phillip Popoff |
| **TransCanada** | David White | Jay Story |
| **Washington Attorney General's Office** | Lea Daeschel | Mary Kimball |
| **Washington Utility and Transportation Commission** | David Nightingale<br>Brad Cebulko | Chris McGuire |
| **WA Department of Commerce** | Greg Nothstein | |

## APPENDIX 0.2: COMMENTS AND RESPONSES TO 2014 DRAFT INTEGRATED RESOURCE PLAN

The following table summarizes the significant comments on our DRAFT as submitted by TAC members and Avista's responses. These comments are those not directly incorporated into the primary document. The planning environment in this IRP cycle was especially challenging given some of the most challenging economic volatility seen in decades coupled with industry changing dynamics in natural gas production. We continued our robust, flexible demand forecasting methodology that captured a broad range of demand forecasts fully vetted with our TAC. This IRP produced reduced forecasted demand scenarios and no near term resource needs even in our most robust demand scenario. We appreciate the time and effort invested by all our TAC members throughout the IRP process. Many good suggestions have been made and we have incorporated those that enhance the document.

| Document Reference[1] | Comment/Question | Avista Response |
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| 3 – DEMAND SIDE MANAGEMENT | Avista has a DSM preference adder, but does not quantify many natural gas non-energy benefits (NEBs). In chapter 9 the company has committed to analyzing "non-natural gas benefits" as an action item. Perhaps this is an area the company could work with the Energy Trust of Oregon, the advisory group and other regional actors to quantify NEBs. The Commission's Policy Statement on the Evaluation of the Cost-Effectiveness of Natural Gas Conservation Programs in Docket UG-121207 has a preference for a fully developed Total Resource Cost test, and staff would like to see the company works towards that end. | It is Avista's policy to include all non-natural gas impacts that can be quantified in a manner that is sufficiently rigorous and reasonable to defend to a critical but reasonable audience. Where such degrees of rigor cannot be met the Company is committed to measuring the presence of non-natural gas impacts to the extent possible so as to facilitate the discussion of non-quantifiable non-natural gas impacts. The primary non-natural gas impacts currently quantified by the Company are non-natural gas energy savings (electric, propane and other non-natural gas fuels), water and sewage savings. Additionally, for low-income programs, the Company has a valuation of health and human safety investments and provision of baseline end-use services. The Company treats the importation of funding from outside of the Avista ratepayer population as offsetting the customer incremental cost and not as a non-natural gas impact, but the consequences to the Total Resource Cost test is similar. The Company has a mechanism with the site-specific program to capturing unusual and unique non-natural gas impacts and incorporating them into the cost-effectiveness analysis. |

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| 3 – DEMAND SIDE MANAGEMENT | As staff asked in its acknowledgment letter in Docket UG-111588, Avista should include an analysis and narrative describing the “trigger point” avoided cost value, where the conservation programs of the company become cost-effective. | The Company has committed to monitoring the weighted average cost of gas (WACOG) as a proxy for the avoided cost between Integrated Resource Plans. Though the WACOG and the avoided cost differ in some significant and important ways, a significant upward movement in the WACOG would tend to indicate a similar movement in the avoided cost. This could then trigger an immediate re-evaluation of the potential between IRP cycles. Earlier analysis indicated that an increase of approximately 90% in the avoided cost would be necessary to deliver a portfolio that was cost-effective under the Total Resource Cost test. |
| 3.10 – DEMAND SIDE MANAGEMENT | The targets for 2015 and 2016 for Oregon are substantially lower than 2013 and 2014 (161 and 111 versus 225 and 250). Please provide more information about why there is such a large reduction. OPUC may be interested in the Company continuing current levels of acquisition. Please present a case where that can happen and what measures could fall within the exception criteria in Order 94-590, Docket No. UM 551. | Incremental economic potential in the 2015 and 2016 biennium is 454 and 235 dekatherms. In the previous study, incremental economic potential for 2013 and 2014 was 486 and 642 dekatherms. The lower economic potential in the current study reflects lower avoided cost projections. This flows through to achievable potential and the targets for 2015 and 2016 are lower than they were for 2013 and 2014. See the comparison of avoided costs in the separate tab. |
| 3.12– DEMAND SIDE MANAGEMENT | Good discussion on developing a regional natural gas market transformation organization. Does Avista have a timeline? Can this conversation be expanded? Please update the final draft with the most current information. | The interested regional natural gas utilities are continuing the process of developing a proposal for review by the full Northwest Energy Efficiency Alliance (NEEA) board. The deadline for completing that proposal is the end of the calendar year, but every attempt is being made to expedite that process. The best opportunity for interested parties to contribute to that discussion will be as part of the NEEA board review. |
| 3.2 – DEMAND SIDE MANAGEMENT | Please provide more details about how ramp rates were calculated and how they were or weren’t consistent with assumptions used by the Northwest Power Planning Council. Also, please include a side by side comparison with explanation of differences. | EnerNOC Consulting Services (now AEG) used the Council's Sixth Plan ramp rates as a starting point for the Avista study. Then, we made adjustments to the ramp rates in the early years of the projection to better align with Avista's recent program accomplishments. The ramp rates were also adjusted in the out years for some measures. The resulting Avista ramp rates are presented in the two tabs: Equip_Ramp Rates and Non_Equip_Ramp Rates. |

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| 3.4 – DEMAND SIDE MANAGEMENT | More details are needed about how achievable potential was calculated and how each of the elements mentioned were incorporated in practice. | In each year of the forecast, some number of appliances fail and need to be replaced. If a measure is cost effective, then the ramp rate is applied to determine what fraction of the market installs the cost-effective option. For example, the ramp rate in 2015 for furnaces in the commercial sector, a cost-effective measure, is 20%. Therefore, 20% of the furnaces that fail in 2015 are replaced with the energy-conservation measure (high efficiency furnace) and the remaining furnaces are replaced with the baseline option. |
| 3.6 – DEMAND SIDE MANAGEMENT | Please describe why only 74 percent of economic potential is achievable by 2034. Provide details regarding underlying assumptions and data files. | This 74% is actually a very high share of economic potential and reflects the combination of lost-opportunity and non lost opportunity measures, with ramp rates in the out years of up to 65% and 85% respectively. |
| 3.8 – DEMAND SIDE MANAGEMENT | In the Oregon achievable potential numbers; please explain what assumptions are made about which measures are included. Are only TRC cost effective measures (and those measures required by law) included in projections? How is low income handled relative to cost effectiveness? Please include a sensitivity case and numbers for the occasion where current exceptions to cost effectiveness are continued beyond the current two year window. | A comprehensive measure list was included in the analysis. The total resource cost test (TRC) was used for cost-effectiveness screening with a minimum threshold of 1.0. Only measures that are considered cost-effective are included in economic, and therefore acheivable potential. The residential sector was segmented by housing type. Low income was not specifically considered as part of the CPA. However, the low-income segment is considered in the development of programs. |
| 4.4 – SUPPLY SIDE RESOURCES | The last sentence of first full paragraph mentions a process to acquire value from each transaction. Please identify how that process is carried out and identify who is involved. | The value of a transaction for the purchase of natural gas can encompass many different aspects both financial and non-financial and is assessed at the time the transaction is executed. Our natural gas buyers are actively assessing the most cost effective way to meet customer demand and optimize unutilized resources. Therefore value cannot be necessarily measured from a single transaction. It may be a series of transactions that span across timeframes of a day, week, month or season. |

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| 4.11 – SUPPLY SIDE RESOURCES | Jackson Prairie paragraph mentions that Avista will look for exchange and transportation release opportunities. Please discuss how the opportunities will be monitored and what will be done with the intelligence gathered through such monitoring. | These opportunities can be discovered in a number of ways. For example, buyers may be contacted from marketers or other utility counterparts. When the opportunity presents itself we assess if it makes sense from a financial impact to customers as well as a reliability concerns. |
| 5.20 – INTEGRATED RESOURCE PORTFOLIO | Avista has TF-2 service for its storage at Jackson Prairie. Presumably the company draws down JP during cold events when demand is high. Is TF-2 firm capacity? If not, please explain why the company feels it can rely upon the service for meeting peak demand. | TF2 is a firm service as noted on NWP website: "TF2 allows for contracting a daily amount of firm service for a specified number of days rather than a daily amount on an annual basis as is usually required." |
| 5.23 – INTEGRATED RESOURCE PORTFOLIO | ACTION ITEM discusses routine LDC activities. The action items should not include actions that are “normal” utility activities. The action plan items should be specific and measurable. | With no resource deficiency in our expected case, there are no specific and measurable near term action items. |
| 6.5 – ALTERNATE SCENARIOS | The last paragraph highlights a structural problem with the IRP analysis. The point of calculating PVRR is to be able to compare alternate portfolios (different ways of meeting forecast demand). See Guideline 1.c. Please expand the discussion to explain the intended PVRR calculation value and why in this IRP the value is not there. | Using PVRR analysis to compare various scenarios where some of the assumptions are similar is a very useful analysis. However, looking strictly at PVRR calculations without considering the assumptions of each scenario is not appropriate. For example the PVRR of our Expected scenario is higher than the PVRR of the High Growth scenario. However, there are lower supply costs and demand that remains unserved in the High Growth Scenario so selecting the lowest PVRR scenarios is not applicable. There are also non-economic factors that may make the selection of one scenario over the other based on pure PVRR analysis undesirable. |
| 7 – DISTRIBUTION PLANNING | Will you be describing all projects on Table 7.1 and 7.2? | We only provide detail on specific projects that were driven from IRP analysis. We have provided major capital expenditures for informational purposes only. |

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| 8.2 – ACTION PLAN | There is no action item that speaks to the exception period for non-cost effective measures that will sunset in April 2015, and what action will be taken to address this ongoing situation. | Ongoing situation of Oegon DSM program will be addressed outside of the IRP through its Annual Plan, Year-End Reporting, and tariff filings. IRP Action Plan was updated to reflect the progress made on the 2013/2014 Action Items Ordered by the Commission. |

# APPENDIX 1.1: AVISTA CORPORATION 2014 NATURAL GAS INTEGRATED RESOURCE PLAN WORK PLAN

## IRP WORK PLAN REQUIREMENTS

Section 480-90-238 (4), of the natural gas Integrated Resource Plan ("IRP") rules, specify requirements for the IRP Work Plan:

> Not later than twelve months prior to the due date of a plan, the utility must provide a work plan for informal commission review. The work plan must outline the content of the integrated resource plan to be developed by the utility and the method for assessing potential resources.

Additionally, Section 480-90-238 (5) of the WAC states:

> The work plan must outline the timing and extent of public participation.

## OVERVIEW

This Work Plan outlines the process Avista will follow to complete its 2014 Natural Gas IRP by Aug. 31, 2014. Avista uses a public process to obtain technical expertise and guidance throughout the planning period via Technical Advisory Committee (TAC) meetings. The TAC will be providing input into assumptions, scenarios, and modeling techniques.

## PROCESS

The 2014 IRP process will be similar to that used to produce the previously published plan. Avista will use SENDOUT® (a PC based linear programming model widely used to solve natural gas supply and transportation optimization questions) to develop the risk adjusted least-cost resource mix for the 20 year planning period.

This plan will continue to include demand analysis, demand side management and avoided cost determination, existing and potential supply-side resource analysis, resource integration and alternative sensitivities and scenario analysis.

Additionally, Avista intends to incorporate action plan items identified in the 2012 Natural Gas IRP including more detailed demand analysis regarding use per customer, demand side management results and possible price elastic responses to evolving economic conditions, an updated assessment of conservation potential in our service territories, consideration of alternate forecasting methodologies, and the changing landscape of natural gas supply (i.e. shale gas, Canadian exports, and US LNG exports) and its implications to the planning process. Further details about Avista's process for determining the risk adjusted least-cost resource mix is shown in Exhibit 1.

## TIMELINE

The following is Avista's TENTATIVE 2014 Natural Gas IRP timeline:

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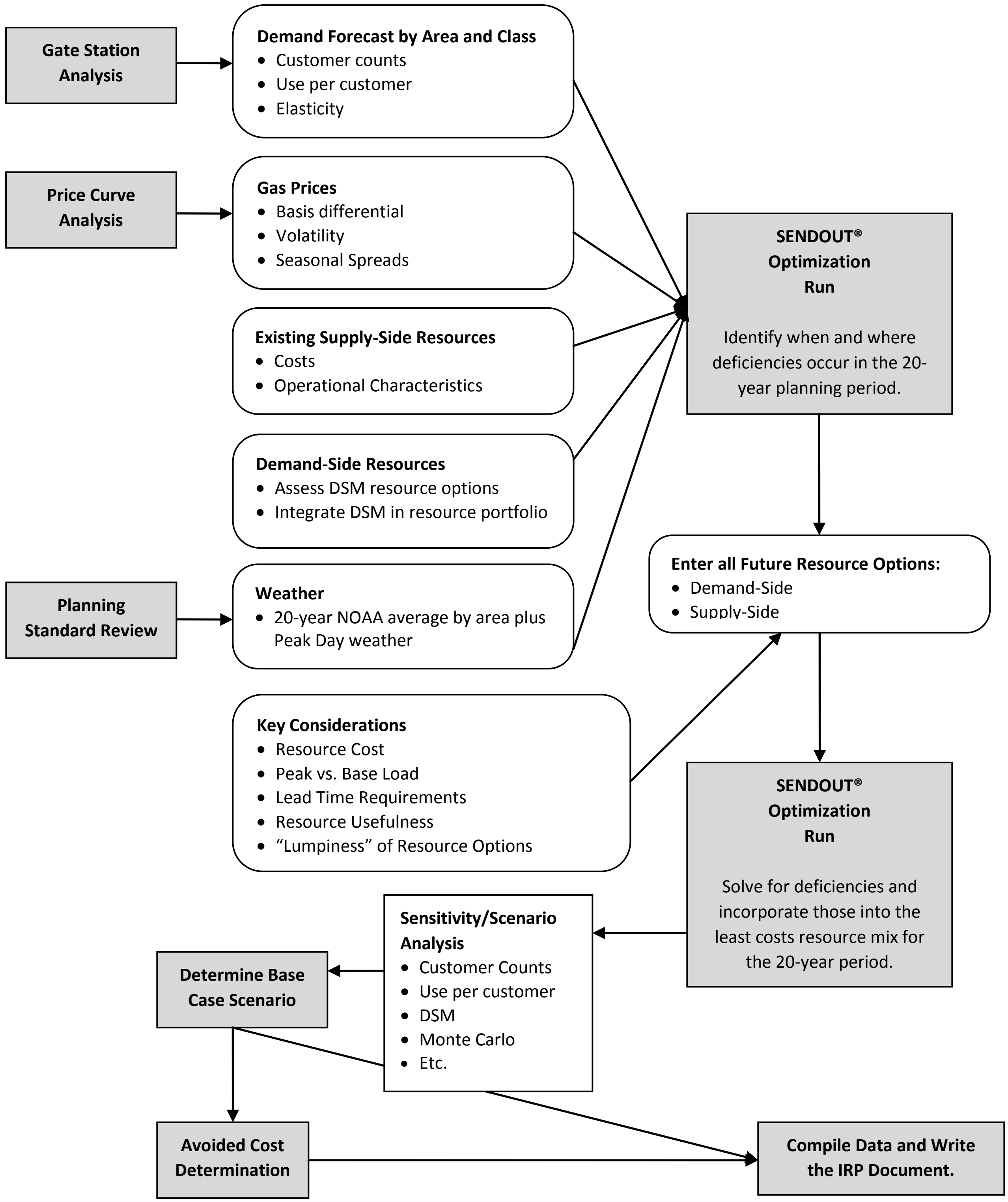
| August 30, 2013 | Work Plan filed with WUTC | |
| January through April 2014 | Technical Advisory Committee meetings (exact meeting dates ***subject to change***). Meeting topics will include: | |
| | January 17 | Demand Forecast & Demand-Side Management |
| | February 21 | Distribution Planning & Supply/Infrastructure and Potential Case Discussion |
| | March 20 | SENDOUT® Preliminary Output Results and Further Case Discussion |
| | April 17 | SENDOUT® results |
| May 11, 2014 | Draft of IRP document to TAC | |
| June 29, 2014 | Comments on draft due back to Avista | |
| July 17, 2014 | TAC final review meeting (if necessary) | |
| August 31, 2014 | File finalized IRP document | |

### EXHIBIT 1: AVISTA'S 2014 NATURAL GAS IRP MODELING PROCESS



# APPENDIX 1.2: WASHINGTON PUBLIC UTILITY COMMISSION IRP POLICIES AND GUIDELINES – WAC 480-90-238

| Rule | Requirement | Plan Citation |
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| WAC 480-90-238(4) | Work plan filed no later than 12 months before next IRP due date. | Work plan submitted to the WUTC on August 31, 2011, See attachment to this Appendix 1.1. |
| WAC 480-90-238(4) | Work plan outlines content of IRP. | See workplan attached to this Appendix 0.1. |
| WAC 480-90-238(4) | Work plan outlines method for assessing potential resources. (See LRC analysis below) | See Appendix 1.1. |
| WAC 480-90-238(5) | Work plan outlines timing and extent of public participation. | See Appendix 1.1. |
| WAC 480-90-238(4) | Integrated resource plan submitted within two years of previous plan. | Last Integrated Resource Plan was submitted on August 31, 2012 |
| WAC 480-90-238(5) | Commission issues notice of public hearing after company files plan for review. | TBD |
| WAC 480-90-238(5) | Commission holds public hearing. | TBD |
| WAC 480-90-238(2)(a) | Plan describes mix of natural gas supply resources. | See Chapter 4 on Supply Side Resources |
| WAC 480-90-238(2)(a) | Plan describes conservation supply. | See Chapter 3 on Demand Side Resources |
| WAC 480-90-238(2)(a) | Plan addresses supply in terms of current and future needs of utility and ratepayers. | See Chapter 4 on Supply Side Resources and Chapter 5 Integrated Resource Portfolio |
| WAC 480-90-238(2)(a)&(b) | Plan uses lowest reasonable cost (LRC) analysis to select mix of resources. | See Chapters 3 and 4 for Demand and Supply Side Resources. Chapter 5 details how Demand and Supply come together to select the least cost/best risk portfolio for ratepayers. |
| WAC 480-90-238(2)(b) | LRC analysis considers resource costs. | See Chapters 3 and 4 for Demand and Supply Side Resources. Chapter 5 details how Demand and Supply come together to select the least cost/best risk portfolio for ratepayers. |
| WAC 480-90-238(2)(b) | LRC analysis considers market-volatility risks. | See Chapter 4 on Supply Side Resources |
| WAC 480-90-238(2)(b) | LRC analysis considers demand side uncertainties. | See Chapter 2 Demand Forecasting |
| WAC 480-90-238(2)(b) | LRC analysis considers resource effect on system operation. | See Chapter 4 and Chapter 5 |
| WAC 480-90-238(2)(b) | LRC analysis considers risks imposed on ratepayers. | See Chapter 4 procurement plan section. We seek to minimize but cannot eliminate price risk for our customers. |
| WAC 480-90-238(2)(b) | LRC analysis considers public policies regarding resource preference adopted by Washington state or federal government. | See Chapter 2 demand scenarios |

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| WAC 480-90-238(2)(b) | LRC analysis considers cost of risks associated with environmental effects including emissions of carbon dioxide. | See Chapter 2 on demand scenarios |
| WAC 480-90-238(2)(b) | LRC analysis considers need for security of supply. | See Chapter 4 on Supply Side Resources |
| **Rule** | **Requirement** | **Plan Citation** |
| WAC 480-90-238(2)(c) | Plan defines conservation as any reduction in natural gas consumption that results from increases in the efficiency of energy use or distribution. | See Chapter 3 on Demand Side Resources |
| WAC 480-90-238(3)(a) | Plan includes a range of forecasts of future demand. | See Chapter 2 on Demand Forecast |
| WAC 480-90-238(3)(a) | Plan develops forecasts using methods that examine the effect of economic forces on the consumption of natural gas. | See Chapter 2 on Demand Forecast |
| WAC 480-90-238(3)(a) | Plan develops forecasts using methods that address changes in the number, type and efficiency of natural gas end-uses. | See Chapter 2 on Demand Forecast |
| WAC 480-90-238(3)(b) | Plan includes an assessment of commercially available conservation, including load management. | See Chapter 3 on Demand Side Management including demand response section. |
| WAC 480-90-238(3)(b) | Plan includes an assessment of currently employed and new policies and programs needed to obtain the conservation improvements. | See Chapter 3 and Appendix 3.1. |
| WAC 480-90-238(3)(c) | Plan includes an assessment of conventional and commercially available nonconventional gas supplies. | See Chapter 4 on Supply Side Resources |
| WAC 480-90-238(3)(d) | Plan includes an assessment of opportunities for using company-owned or contracted storage. | See Chapter 4 on Supply Side Resources |
| WAC 480-90-238(3)(e) | Plan includes an assessment of pipeline transmission capability and reliability and opportunities for additional pipeline transmission resources. | See Chapter 4 on Supply Side Resources |
| WAC 480-90-238(3)(f) | Plan includes a comparative evaluation of the cost of natural gas purchasing strategies, storage options, delivery resources, and improvements in conservation using a consistent method to calculate cost-effectiveness. | See Chapter 3 on Demand Side Resources and Chapter 4 on Supply Side Resources |
| WAC 480-90-238(3)(g) | Plan includes at least a 10 year long-range planning horizon. | Our plan is a comprehensive 20 year plan. |
| WAC 480-90-238(3)(g) | Demand forecasts and resource evaluations are integrated into the long range plan for resource acquisition. | Chapter 5 Integrated Resource Portfolio details how demand and supply come together to form the least cost/best risk portfolio. |
| WAC 480-90-238(3)(h) | Plan includes a two-year action plan that implements the long range plan. | See Section 8 Action Plan |
| WAC 480-90-238(3)(i) | Plan includes a progress report on the implementation of the previously filed plan. | See Section 8 Action Plan |

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| WAC 480-90-238(5) | Plan includes description of consultation with commission staff. (Description not required) | See Section 0 Introduction |
| WAC 480-90-238(5) | Plan includes description of completion of work plan. (Description not required) | See Appendix 1.1. |

# APPENDIX 1.2: IDAHO PUBLIC UTILITY COMMISSION IRP POLICIES AND GUIDELINES – ORDER NO. 2534

| | DESCRIPTION OF REQUIREMENT | FULLFILLMENT OF REQUIREMENT |
|---|---|---|
| 1 | Purpose and Process. Each gas utility regulated by the Idaho Public Utilities Commission with retail sales of more than 10,000,000,000 cubic feet in a calendar year (except gas utilities doing business in Idaho that are regulated by contract with a regulatory commission of another State) has the responsibility to meet system demand at least cost to the utility and its ratepayers. Therefore, an ‘‘integrated resource plan’’ shall be developed by each gas utility subject to this rule. | Avista prepares a comprehensive 20 year Integrated Resource Plan every two years. Avista will be filing its 2014 IRP on or before August 31, 2014. |
| 2 | Definition. Integrated resource planning. ‘‘Integrated resource planning’’ means planning by the use of any standard, regulation, practice, or policy to undertake a systematic comparison between demand-side management measures and the supply of gas by a gas utility to minimize life-cycle costs of adequate and reliable utility services to gas customers. Integrated resource planning shall take into account necessary features for system operation such as diversity, reliability, dispatchability, and other factors of risk and shall treat demand and supply to gas consumers on a consistent and integrated basis. | Avista's IRP brings together dynamic demand forecasts and matches them against demand-side and supply-side resources in order to evaluate the least cost/best risk portfolio for its core customers. While the primary focus has been to ensure customer's needs are met under peak or design weather conditions, this process also evaluates the resource portfolio under normal/average operating conditions. The IRP provides the framework and methodology for evaluating Avista's natural gas demand and resources. |
| 3 | Elements of Plan. Each gas utility shall submit to the Commission on a biennial basis an integrated resource plan that shall include: | 2014 IRP to be filed on or before August 31, 2014. The last IRP was filed on August 31, 2012. |
| | A range of forecasts of future gas demand in firm and interruptible markets for each customer class for one, five, and twenty years using methods that examine the effect of economic forces on the consumption of gas and that address changes in the number, type and efficiency of gas end-uses. | See **Chapter 2 - Demand Forecasts** and **Appendix 2 et. al.** for a detailed discussion of how demand was forecasted for this IRP. |
| | An assessment for each customer class of the technically feasible improvements in the efficient use of gas, including load management, as well as the policies and programs needed to obtain the efficiency improvements. | See **Chapter 3 - Demand Side Management** and **DSM Appendices 3 et.al.** for detailed information on the DSM potential evaluated and selected for this IRP and the operational implementation process. |

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| | An analysis for each customer class of gas supply options, including: (1) a projection of spot market versus long-term purchases for both firm and interruptible markets; (2) an evaluation of the opportunities for using company-owned or contracted storage or production; (3) an analysis of prospects for company participation in a gas futures market; and (4) an assessment of opportunities for access to multiple pipeline suppliers or direct purchases from producers. | See **Chapter 4 - Supply-Side Resources** for details about the market, storage, and pipeline transportation as well as other resource options considered in this IRP. See also the procurement plan section in this same chapter for supply procurement strategies. |
| | A comparative evaluation of gas purchasing options and improvements in the efficient use of gas based on a consistent method for calculating cost-effectiveness. | See Methodology section of **Chapter 3 - Demand-Side Resources** where we describe our process on how demand-side and supply-side resources are compared on par with each other in the SENDOUT® model. Chapter 3 also includes how results from the IRP are then utilized to create operational business plans. Operational implementation may differ from IRP results due to modeling assumptions. |
| | The integration of the demand forecast and resource evaluations into a long-range (e.g., twenty-year) integrated resource plan describing the strategies designed to meet current and future needs at the lowest cost to the utility and its ratepayers. | See **Chapter 5 - Integrated Resource Portfolio** for details on how we model demand and supply coming together to provide the least cost/best risk portfolio of resources. |
| | A short-term (e.g., two-year) plan outlining the specific actions to be taken by the utility in implementing the integrated resource plan. | See **Chapter 8 - Action Plan** for actions to be taken in implementing the IRP. |
| **4** | Relationship Between Plans. All plans following the initial integrated resource plan shall include a progress report that relates the new plan to the previously filed plan. | Avista strives to meet at least bi-annually with Staff and/or Commissioners to discuss the state of the market, procurement planning practices, and any other issues that may impact resource needs or other analysis within the IRP. |
| **5** | Plans to Be Considered in Rate Cases. The integrated resource plan will be considered with other available information to evaluate the performance of the utility in rate proceedings before the Commission. | We prepare and file our plan in part to establish a public record of our plan. |
| **6** | Public Participation. In formulating its plan, the gas utility must provide an opportunity for public participation and comment and must provide methods that will be available to the public of validating predicted performance. | Avista held four Technical Advisory Committee meetings beginning in January and ending in April. See **Chapter 0 - Introduction** for more detail about public participation in the IRP process. |

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| 7 | Legal Effect of Plan. The plan constitutes the base line against which the utility's performance will ordinarily be measured. The requirement for implementation of a plan does not mean that the plan must be followed without deviation. The requirement of implementation of a plan means that a gas utility, having made an integrated resource plan to provide adequate and reliable service to its gas customers at the lowest system cost, may and should deviate from that plan when presented with responsible, reliable opportunities to further lower its planned system cost not anticipated or identified in existing or earlier plans and not undermining the utility's reliability. | See section titled "Avista's Procurement Plan" in **Chapter 4 - Supply-Side Resources**. Among other details we discuss plan revisions in response to changing market conditions. |
| | In order to encourage prudent planning and prudent deviation from past planning when presented with opportunities for improving upon a plan, a gas utility's plan must be on file with the Commission and available for public inspection. But the filing of a plan does not constitute approval or disapproval of the plan having the force and effect of law, and deviation from the plan would not constitute violation of the Commission's Orders or rules. The prudence of a utility's plan and the utility's prudence in following or not following a plan are matters that may be considered in a general rate proceeding or other proceedings in which those issues have been noticed. | See also section titled "Alternate Supply-Side Scenarios" in **Chapter 5 - Integrated Resource Portfolio** where we discuss different supply portfolios that are resonsive to changing assumptions about resource alternatives. |

# APPENDIX 1.2: OREGON PUBLIC UTILITY COMMISSION IRP STANDARD AND GUIDELINES – ORDER 07- 002

| Guideline 1: Substantive Requirements | | |
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| **1.a.1** | All resources must be evaluated on a consistent and comparable basis. | All resource options considered, including demand-side and supply-side are modeled in SENDOUT® utilizing the same common general assumptions, approach and methodology. |
| **1.a.2** | All known resources for meeting the utility's load should be considered, including supply-side options which focus on the generation, purchase and transmission of power – or gas purchases, transportation, and storage – and demand-side options which focus on conservation and demand response. | Avista considered a range of resources including demand-side management, distribution system enhancements, capacity release recalls, interstate pipeline transportation, interruptible customer supply, and storage options including liquefied natural gas. Chapter 3 and Appendix 3.1 documents Avista's demand-side management resources considered. Chapter 4 and Appendix 5.3 documents supply-side resources. Chapter 5 and 6 documents how Avista developed and assessed each of these resources. |
| **1.a.3** | Utilities should compare different resource fuel types, technologies, lead times, in-service dates, durations and locations in portfolio risk modeling. | Avista considered various combinations of technologies, lead times, in-service dates, durations, and locations. Chapter 5 provides details about the modeling methodology and results. Chapter 4 describes resource attributes and Appendix 5.3 summarizes the resources' lead times, in-service dates and locations. |
| **1.a.4** | Consistent assumptions and methods should be used for evaluation of all resources. | Appendix 5.2 documents general assumptions used in Avista's SENDOUT® modeling software. All portfolio resources both demand and supply-side were evaluated within SENDOUT® using the same sets of inputs. |
| **1.a.5** | The after-tax marginal weighted-average cost of capital (WACC) should be used to discount all future resource costs. | Avista applied its after-tax WACC of 4.93% to discount all future resource costs. (See general assumptions at Appendix 5.2) |
| **1.b.1** | Risk and uncertainty must be considered. Electric utilities only | Not Applicable |
| **1.b.2** | Risk and uncertainty must be considered. Natural gas utilities should consider demand (peak, swing and base-load), commodity supply and price, transportation availability and price, and costs to comply with any regulation of greenhouse gas (GHG) emissions. | Risk and uncertainty are key considerations in long term planning. In order to address risk and uncertainties a wide range of sensitivity, scenario and portfolio analysis is completed. A description of risk associated with each scenario is included in Appendix 2.6.<br><br>One of the key risks is the "flat demand" risk as described in Chapter 1. Avista performed 15 sensitivities on demand. From there five demand scenarios were developed (Table 1.1) for SENDOUT® modeling purposes. Monthly demand coefficients were developed for base, heating demand while peak demand was contemplated through modeling a weather planning standard of the coldest day on record (see heating degree day data in Appendix 2.4). |

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| | | Avista evaluated several price forecasts and selected high, medium and low price scenarios for modeling purposes. The annual average prices are then weighted by month using fundamental forecast data. Additionally, the Henry Hub price forecasts are basis adjusted using the same fundamental forecast data.<br><br>Four supply scenarios were also evaluated, see Table 4.3. These supply scenarios were combined with demand scenarios in order to establish portfolios for evaluation. Ultimately 9 portfolios were evaluated (See Table 6.3 for the PVRR results).<br><br>Avista stochastic modeling techniques for price and weather variables to analyze weather sensitivity and to quantify the risk to customers under varying price environments. While there continues to be some uncertainty around GHG emission, Avista considered GHG emissions regulatory compliance costs in Appendix 3.2. As currently modeled, we include a carbon adder to our price curve to capture the costs of emission regulation. |
| | Utilities should identify in their plans any additional sources of risk and uncertainty. | Avista evaluated additional risks and uncertainties. Risks associated with the planning environment are detailed in Chapter 0 Introduction. Avista also analyzed demand risk which is detailed in Chapter 2. Chapter 3 discusses the uncertainty around how much DSM is achievable. Supply-side resource risks are discussed in Chapter 4. Chapter 5 and 6 discusses the variables modeled for scenario and stochastic risk analysis. |
| **1c** | The primary goal must be the selection of a portfolio of resources with the best combination of expected costs and associated risks and uncertainties for the utility and its customers. | Avista evaluated cost/risk tradeoffs for each of the risk analysis portfolios considered. See Chapter 5 and 6 plus supporting information in Appendix 2.6 for Avista's portfolio risk analysis and determination of the preferred portfolio. |
| | The planning horizon for analyzing resource choices should be at least 20 years and account for end effects. Utilities should consider all costs with a reasonable likelihood of being included in rates over the long term, which extends beyond the planning horizon and the life of the resource. | Avista used a 20-year study period for portfolio modeling. Avista contemplated possible costs beyond the planning period that could affect rates including end effects such as infrastructure decommission costs and concluded there were no significant costs reasonably likely to impact rates under different resource selection scenarios. |
| | Utilities should use present value of revenue requirement (PVRR) as the key cost metric. The plan should include analysis of current and estimated future costs of all long-lived resources such as power plants, gas storage facilities and pipelines, as well as all short-lived resources such as gas supply and | Avista's SENDOUT® modeling software utilizes a PVRR cost metric methodology applied to both long and short-lived resources. |

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| | short-term power purchases. | |
| | To address risk, the plan should include at a minimum: 1) Two measures of PVRR risk: one that measures the variability of costs and one that measures the severity of bad outcomes. 2) Discussion of the proposed use and impact on costs and risks of physical and financial hedging. | Avista, through its stochastic analysis, modeled 200 scenarios around varying gas price inputs via Monte Carlo iterations developing a distribution of Total 20 year cost estimates utilizing SENDOUT®'s PVRR methodology. Chapter 6 further describes this analysis. The variability of costs is plotted against the Expected Case while the scenarios beyond the 95$^{th}$ percentile capture the severity of outcomes. Chapter 4 discusses Avista's physical and financial hedging methodology. |
| | The utility should explain in its plan how its resource choices appropriately balance cost and risk. | Chapter 4, 5, and 6 describe various specific resource considerations and related risks, and describes what criteria we used to determine what resource combinations provide an appropriate balance between cost and risk. |
| **1d** | The plan must be consistent with the long-run public interest as expressed in Oregon and federal energy policies. | Avista considered current and expected state and federal energy policies in portfolio modeling. Chapter 5 describes the decision process used to derive portfolios, which includes consideration of state resource policy directions. |
| **Guideline 2: Procedural Requirements** | | |
| **2a** | The public, including other utilities, should be allowed significant involvement in the preparation of the IRP. Involvement includes opportunities to contribute information and ideas, as well as to receive information. Parties must have an opportunity to make relevant inquiries of the utility formulating the plan. | Chapter 0 provides an overview of the public process and documents the details on public meetings held for the 2014 IRP. Avista encourages participation in the development of the plan, as each party brings a unique perspective and the ability to exchange information and ideas makes for a more robust plan. |
| | While confidential information must be protected, the utility should make public, in its plan, any non-confidential information that is relevant to its resource evaluation and action plan. | The entire IRP, as well as the TAC process, includes all of the non-confidential information the company used for portfolio evaluation and selection. Avista also provided stakeholders with non-confidential information to support public meeting discussions via email. The document and appendices will be available on the company website for viewing. |
| | The utility must provide a draft IRP for public review and comment prior to filing a final plan with the Commission. | Avista distributed a draft IRP document for external review to all TAC members on May 25, 2014 and requested comments by July 13, 2014. |
| **Guideline 3: Plan Filing, Review and Updates** | | |
| **3a** | Utility must file an IRP within two years of its previous IRP acknowledgement order. | This Plan complies with this requirement as the 2012 Natural Gas IRP was acknowledged on 4/30/2013. |
| **3b** | Utility must present the results of its filed plan to the Commission at a public meeting prior to the deadline for written public comment. | Avista will work with Staff to fulfill this guideline following filing of the IRP. |
| **3c** | Commission staff and parties should complete their comments and recommendations within six months of IRP filing | Pending |

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| **3d** | The Commission will consider comments and recommendations on a utility's plan at a public meeting before issuing an order on acknowledgment. The Commission may provide the utility an opportunity to revise the plan before issuing an acknowledgment order | Pending |
| **3e** | The Commission may provide direction to a utility regarding any additional analyses or actions that the utility should undertake in its next IRP. | Pending |
| **3f** | Each utility must submit an annual update on its most recently acknowledged plan. The update is due on or before the acknowledgment order anniversary date. Once a utility anticipates a significant deviation from its acknowledged IRP, it must file an update with the Commission, unless the utility is within six months of filing its next IRP. The utility must summarize the update at a Commission public meeting. The utility may request acknowledgment of changes in proposed actions identified in an update | Because the 2012 IRP was not acknowledged until April 30, 2013 the Company did not submit an annual update as the 2014 IRP process was well underway by the anniversary date of the acknowledgement. The Company provided updates and comparisons to its 2012 IRP during its 2014 IRP TAC meetings held on January 24, 2014, February 25, 2014, March 26, 2014, and April 23, 2014, in which Commission Staff and other TAC members were present. In addition the Company provided an update during its Natural Gas Quarterly update meeting held on April 17, 2014. No request for acknowledgement was required as no significant deviation from the 2012 IRP was anticipated. |
| **3g** | Unless the utility requests acknowledgement of changes in proposed actions, the annual update is an informational filing that:<br>• Describes what actions the utility has taken to implement the plan;<br>• Provides an assessment of what has changed since the acknowledgment order that affects the action plan, including changes in such factors as load, expiration of resource contracts, supply-side and demand-side resource acquisitions, resource costs, and transmission availability; and<br>• Justifies any deviations from the acknowledged action plan. | The updates described in 3f above explained changes since acknowledgment of the 2012 IRP and an update of emerging planning issues. The updates did not request acknowledgement of any changes.<br><br>Also, as directed in Order No. 13-159, per the 2013-2014 Action Plan, the Company continued its DSM programs in Oregon with a minimum savings goal of 225,000 therms in 2013 and 250,000 therms in 2014. On April 30, 2014, the Company submitted its 2013 DSM Annual Report to Commission Staff which included updates and progress in meeting the DSM Action Items contained in Order No. 13-159. Lastly, as ordered the Company developed a potential mechanism for allocating funding for a separate low-income energy efficiency program and submitted a report to Commission Staff outlining the mechanism on October 30, 2013. On January 8, 2014 the Company filed a tariff to implement the low-income energy efficiency program, which was approved with an effective date of March 1, 2014. |
| **Guideline 4: Plan Components** | | |
| | At a minimum, the plan must include the following elements: | |
| **4a** | An explanation of how the utility met | This table summarizes guideline compliance by |

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| | each of the substantive and procedural requirements. | providing an overview of how Avista met each of the substantive and procedural requirements for a natural gas IRP. |
| **4b** | Analysis of high and low load growth scenarios in addition to stochastic load risk analysis with an explanation of major assumptions. | Avista developed five demand growth forecasts for scenario analysis. Stochastic variability of demand was also captured in the risk analysis. Chapter 1 describes the demand forecast data and Chapter 5 provides the scenario and risk analysis results. Appendix 5 details major assumptions. |
| **4c** | For electric utilities only | Not Applicable |
| **4d** | A determination of the peaking, swing and base-load gas supply and associated transportation and storage expected for each year of the plan, given existing resources; and identification of gas supplies (peak, swing and base-load), transportation and storage needed to bridge the gap between expected loads and resources. | Figures 0.6 and 0.7summarize graphically projected annual peak day demand and the existing and selected resources by year to meet demand for the expected case. Appendix 6.1 and 6.2 summarizes the peak day demand for the other demand scenarios. |
| **4e** | Identification and estimated costs of all supply-side and demand-side resource options, taking into account anticipated advances in technology | Chapter 3 and Appendix 3.1 identify the demand-side potential included in this IRP. Chapter 4 and 5 and Appendix 5.3 identify the supply-side resources. |
| **4f** | Analysis of measures the utility intends to take to provide reliable service, including cost-risk tradeoffs. | Chapter 5, 6, and 7 discusses the modeling tools, customer growth forecasting and cost-risk considerations used to maintain and plan a reliable gas delivery system. These Chapters also captures a summary of the reliability analysis process demonstrated at the second TAC meeting.<br>Chapter 4 discusses the diversified infrastructure and multiple supply basin approach that acts to mitigate certain reliability risks. Appendix 2.6 highlights key risks associated with each portfolio. |
| **4g** | Identification of key assumptions about the future (e.g. fuel prices and environmental compliance costs) and alternative scenarios considered. | Appendix 5 and Chapter 5 describe the key assumptions and alternative scenarios used in this IRP. |
| **4h** | Construction of a representative set of resource portfolios to test various operating characteristics, resource types, fuels and sources, technologies, lead times, in-service dates, durations and general locations - system-wide or delivered to a specific portion of the system. | This Plan documents the development and results for portfolios evaluated in this IRP (see Table 4.3 for supply scenarios considered). |
| **4i** | Evaluation of the performance of the candidate portfolios over the range of identified risks and uncertainties. | We evaluated our candidate portfolio by performing stochastic analysis using SENDOUT® varying price under 200 different scenarios. Additionally, we test the portfolio of options with the use of SENDOUT® under deterministic scenarios where demand and price vary. For resources selected, we assess other risk factors such as varying lead times required and potential for cost overruns outside of the amounts |

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| | | included in the modeling assumptions. |
| **4j** | Results of testing and rank ordering of the portfolios by cost and risk metric, and interpretation of those results. | Avista's four distinct geographic Oregon service territories limit many resource option synergies which inherently reduces available portfolio options. Feasibility uncertainty, lead time variability and uncertain cost escalation around certain resource options also reduce reasonably viable options. Chapter 4 describes resource options reviewed including discussion on uncertainties in lead times and costs as well as viability and resource availability (e.g. LNG). Appendix 5.3 summarizes the potential resource options identifying investment and variable costs, asset availability and lead time requirements while results of resources selected are identified in Table 5.5 as well as graphically presented in Figure 5.18 and 5.19 for the Expected Case and Appendix 6.1 for the High Growth case. |
| **4k** | Analysis of the uncertainties associated with each portfolio evaluated | See the responses to 1.b above. |
| **4l** | Selection of a portfolio that represents the best combination of cost and risk for the utility and its customers | Avista evaluated cost/risk tradeoffs for each of the risk analysis portfolios considered. Chapter 5 and Appendix 2.6 show the company's portfolio risk analysis, as well as the process and determination of the preferred portfolio. |
| **4m** | Identification and explanation of any inconsistencies of the selected portfolio with any state and federal energy policies that may affect a utility's plan and any barriers to implementation | This IRP is presumed to have no inconsistencies. |
| **4n** | An action plan with resource activities the utility intends to undertake over the next two to four years to acquire the identified resources, regardless of whether the activity was acknowledged in a previous IRP, with the key attributes of each resource specified as in portfolio testing. | Chapter 8 presents the IRP Action Plan with focus on the following areas:<br>ıı Modeling<br>ıı Supply/capacity<br>ıı Forecasting<br>ıı Regulatory communication<br>ıı DSM |
| **Guideline 5: Transmission** | | |
| **5** | Portfolio analysis should include costs to the utility for the fuel transportation and electric transmission required for each resource being considered. In addition, utilities should consider fuel transportation and electric transmission facilities as resource options, taking into account their value for making additional purchases and sales, accessing less costly resources in remote locations, acquiring alternative fuel supplies, and improving reliability. | Not applicable to Avista's gas utility operations. |

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| **Guideline 6: Conservation** | | |
| **6a** | Each utility should ensure that a conservation potential study is conducted periodically for its entire service territory. | EnerNOC performed a conservation potential assessment study for our 2014 IRP. A discussion of the study is included in Chapter 3. The full study document is in Appendix 3.1. Avista incorporates a comprehensive assessment of the potential for utility acquisition of energy-efficiency resources into the regularly-scheduled Integrated Resource Planning process. |
| **6b** | To the extent that a utility controls the level of funding for conservation programs in its service territory, the utility should include in its action plan all best cost/risk portfolio conservation resources for meeting projected resource needs, specifying annual savings targets. | A discussion on the treatment of conservation programs is included in Chapter 3 while selection methodology is documented in Chapter 5. The action plan details conservation targets, if any, as developed through the operational business planning process. These targets are updated annually, with the most current avoided costs. Given the challenge of the low cost environment, current operational planning and program evaluation is still underway and targets for Oregon have not yet been set. |
| **6c** | To the extent that an outside party administers conservation programs in a utility's service territory at a level of funding that is beyond the utility's control, the utility should: 1) determine the amount of conservation resources in the best cost/ risk portfolio without regard to any limits on funding of conservation programs; and 2) identify the preferred portfolio and action plan consistent with the outside party's projection of conservation acquisition. | Not applicable. See the response for 5.b above. |
| **Guideline 7: Demand Response** | | |
| **7** | Plans should evaluate demand response resources, including voluntary rate programs, on par with other options for meeting energy, capacity, and transmission needs (for electric utilities) or gas supply and transportation needs (for natural gas utilities). | Avista has periodically evaluated conceptual approaches to meeting capacity constraints using demand-response and similar voluntary programs. Technology, customer characteristics and cost issues are hurdles for developing effective programs. See Chapter 3 Demand Response section for more discussion. |
| **Guideline 8: Environmental Costs** | | |
| **8** | Utilities should include, in their base-case analyses, the regulatory compliance costs they expect for $CO_2$, $NO_x$, $SO_2$, and Hg emissions. Utilities should analyze the range of potential $CO_2$ regulatory costs in Order No. 93-695, from \$0 - \$40 (1990\$). In addition, utilities should perform sensitivity analysis on a range of reasonably possible cost adders for $NO_x$, $SO_2$, and Hg, if applicable. | Avista's current direct gas distribution system infrastructure does not result in any $CO_2$, $NO_x$, $SO_2$, or Hg emissions. Upstream gas system infrastructure (pipelines, storage facilities, and gathering systems) do produce $CO_2$ emissions via compressors used to pressurize and move gas |

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| | | throughout the system. The Environmental Externalities discussion in Appendix 3.2 describes our analysis performed. See also the guidelines addendum reflecting revised guidance for environmental costs per Order 08-339. |
| **Guideline 9: Direct Access Loads** | | |
| **9** | An electric utility's load-resource balance should exclude customer loads that are effectively committed to service by an alternative electricity supplier. | Not applicable to Avista's gas utility operations. |
| **Guideline 10: Multi-state utilities** | | |
| **10** | Multi-state utilities should plan their generation and transmission systems, or gas supply and delivery, on an integrated-system basis that achieves a best cost/risk portfolio for all their retail customers. | The 2014 IRP conforms to the multi-state planning approach. |
| **Guideline 11: Reliability** | | |
| **11** | Electric utilities should analyze reliability within the risk modeling of the actual portfolios being considered. Loss of load probability, expected planning reserve margin, and expected and worst-case unserved energy should be determined by year for top-performing portfolios. Natural gas utilities should analyze, on an integrated basis, gas supply, transportation, and storage, along with demand-side resources, to reliably meet peak, swing, and base-load system requirements. Electric and natural gas utility plans should demonstrate that the utility's chosen portfolio achieves its stated reliability, cost and risk objectives. | Avista's storage and transport resources while planned around meeting a peak day planning standard, also provides opportunities to capture off season pricing while providing system flexibility to meet swing and base-load requirements. Diversity in our transport options enables at least dual fuel source options in event of a transport disruption. For areas with only one fuel source option the cost of duplicative infrastructure is not feasible relative to the risk of generally high reliability infrastructure. |
| **Guideline 12: Distributed Generation** | | |
| **12** | Electric utilities should evaluate distributed generation technologies on par with other supply-side resources and should consider, and quantify where possible, the additional benefits of distributed generation. | Not applicable to Avista's gas utility operations. |
| **Guideline 13: Resource Acquisition** | | |
| **13a** | An electric utility should: identify its proposed acquisition strategy for each resource in its action plan; Assess the advantages and disadvantages of owning a resource instead of purchasing power from another party; identify any Benchmark Resources it plans to consider in competitive bidding. | Not applicable to Avista's gas utility operations. |

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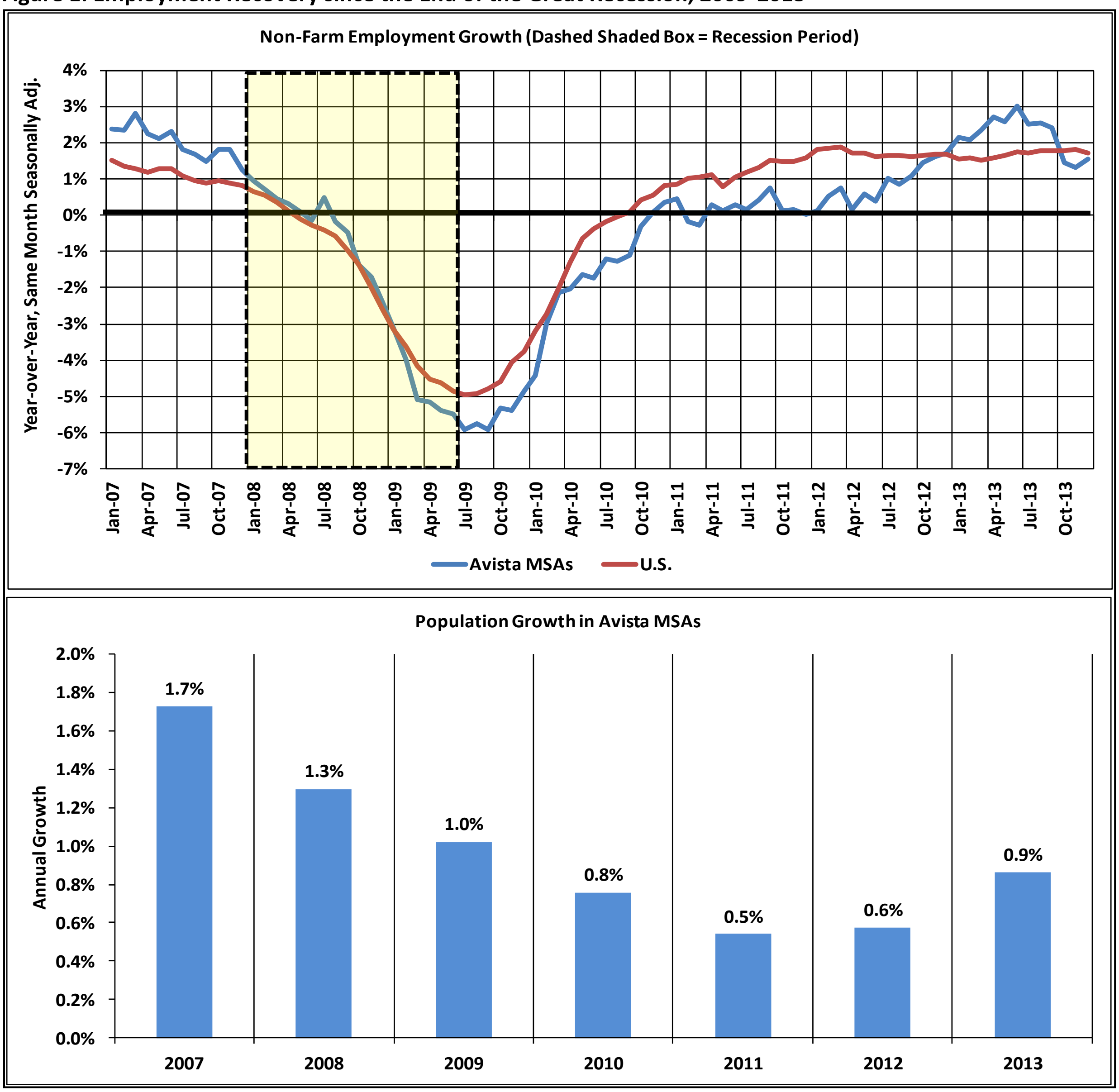
| **13b** | Natural gas utilities should either describe in the IRP their bidding practices for gas supply and transportation, or provide a description of those practices following IRP acknowledgment. | A discussion of Avista's procurement practices is detailed in Chapter 4. |
| **Guideline 8: Environmental Costs** | | |
| **a.** | BASE CASE AND OTHER COMPLIANCE SCENARIOS: The utility should construct a base-case scenario to reflect what it considers to be the most likely regulatory compliance future for carbon dioxide ($CO_2$), nitrogen oxides, sulfur oxides, and mercury emissions. The utility also should develop several compliance scenarios ranging from the present $CO_2$ regulatory level to the upper reaches of credible proposals by governing entities. Each compliance scenario should include a time profile of $CO_2$ compliance requirements. The utility should identify whether the basis of those requirements, or "costs", would be $CO_2$ taxes, a ban on certain types of resources, or $CO_2$ caps (with or without flexibility mechanisms such as allowance or credit trading or a safety valve). The analysis should recognize significant and important upstream emissions that would likely have a significant impact on its resource decisions. Each compliance scenario should maintain logical consistency, to the extent practicable, between the $CO_2$ regulatory requirements and other key inputs. | Avista's current direct gas distribution system infrastructure does not result in any CO2, NOx, SO2, or Hg emissions. Upstream gas system infrastructure (pipelines, storage facilities, and gathering systems) do produce CO2 emissions via compressors used to pressurize and move gas throughout the system.<br><br>The Environmental Externalities discussion in Appendix 3.2 describes our process for addressing these costs. |
| **b.** | TESTING ALTERNATIVE PORTFOLIOS AGAINST THE COMPLIANCE SCENARIOS: The utility should estimate, under each of the compliance scenarios, the present value of revenue requirement (PVRR) costs and risk measures, over at least 20 years, for a set of reasonable alternative portfolios from which the preferred portfolio is selected. The utility should incorporate end-effect considerations in the analyses to allow for comparisons of portfolios containing resources with economic or physical lives that extend beyond the planning period. The utility should also modify projected lifetimes as necessary to be consistent with the compliance scenario under analysis. In addition, the utility should include, if material, sensitivity analyses on a range of reasonably possible regulatory futures for nitrogen oxides, sulfur oxides, and mercury to further inform the preferred portfolio selection. | The Environmental Externalities discussion in Appendix 3.2 describes our process for addressing these costs. |

# APPENDIX 2.1: ECONOMIC OUTLOOK AND CUSTOMER COUNT FORECAST

**I. Service Area Economic Performance and Outlook**

Avista's core service area for natural gas includes Eastern Washington, Northern Idaho, and Southwest Oregon. Smaller service islands are also located in rural South-Central Washington and Northeast Oregon. Our service area is dominated by four metropolitan statistical areas (MSAs): the Spokane-Spokane Valley, WA MSA (Spokane-Stevens counties); the Coeur d'Alene, ID MSA (Kootenai County); the Lewiston-Clarkson ID-WA, MSA (Nez Perce-Asotin counties); and the Medford, OR MSA (Jackson County). These four MSAs represent the primary demand for Avista's natural gas and account for 75% of both customers (i.e., meters) and load. The remaining 25% of customers and load are spread over low density rural areas in all three states.

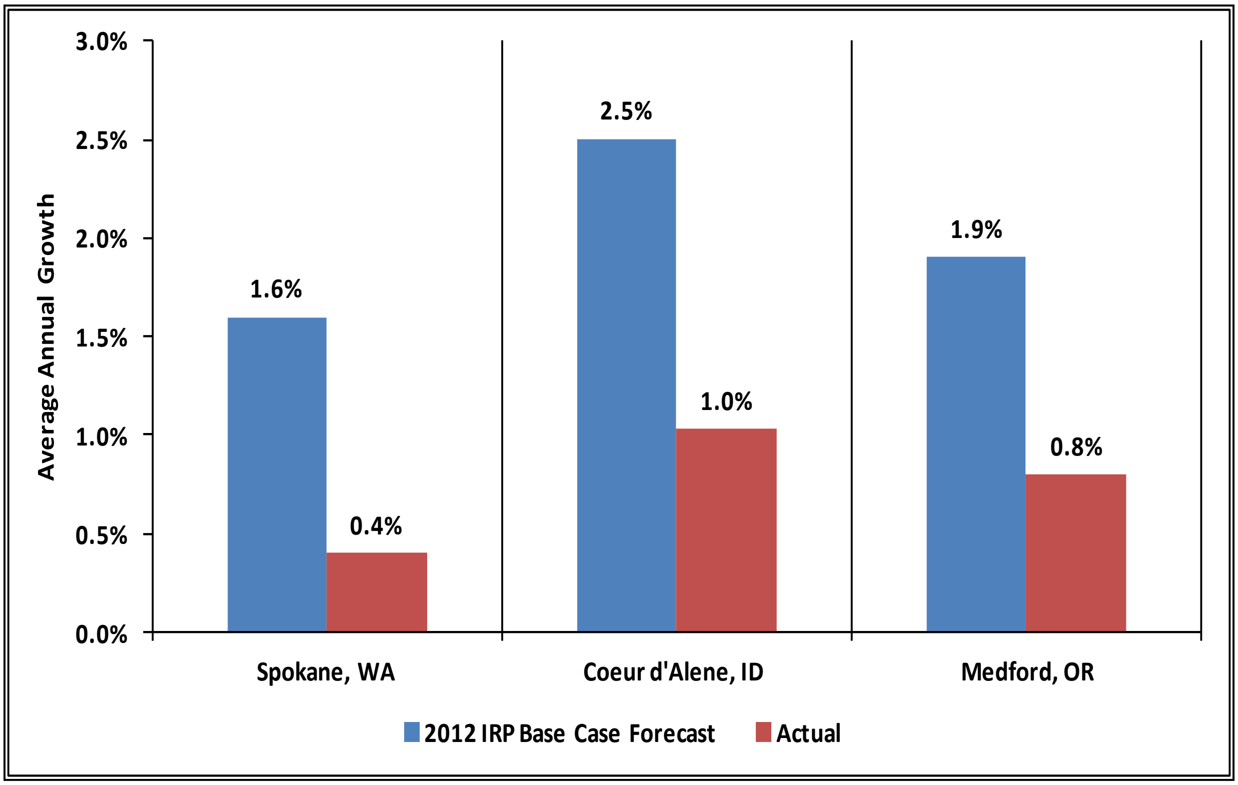
**Figure 1: Employment Recovery since the End of the Great Recession, 2009-2013**




Data source: Employment from the BLS; population from the U.S. Census.

Compared to the U.S. as a whole, our service area has been slow to recover from the Great Recession. Although the U.S. recession officially ended in June 2009 (dated by the National Bureau of Economic Research), our service area did not start a significant employment recovery until the second half of 2012 (Figure 1, top graph). As a result, service area population growth, which is significantly influenced by in-migration through employment opportunities, remains much lower than pre-recession levels (Figure 1, bottom graph) and has recovered at a much slower rate than anticipated in the 2012 IRP (Figure 2). In 2011, Avista's MSA population growth fell to around 0.5%, the lowest since the late 1980s. Since population growth is a long-run proxy for residential and commercial customer growth, this IRP shows a significant downward revision in total forecasted customers in WA-ID and OR compared to the 2012 IRP (Figure 3). Industrial customer growth, which is not significantly correlated with population growth, has been close to zero since the end of Great Recession. Over the same time period, our rural service areas have seen very little growth in total customers.

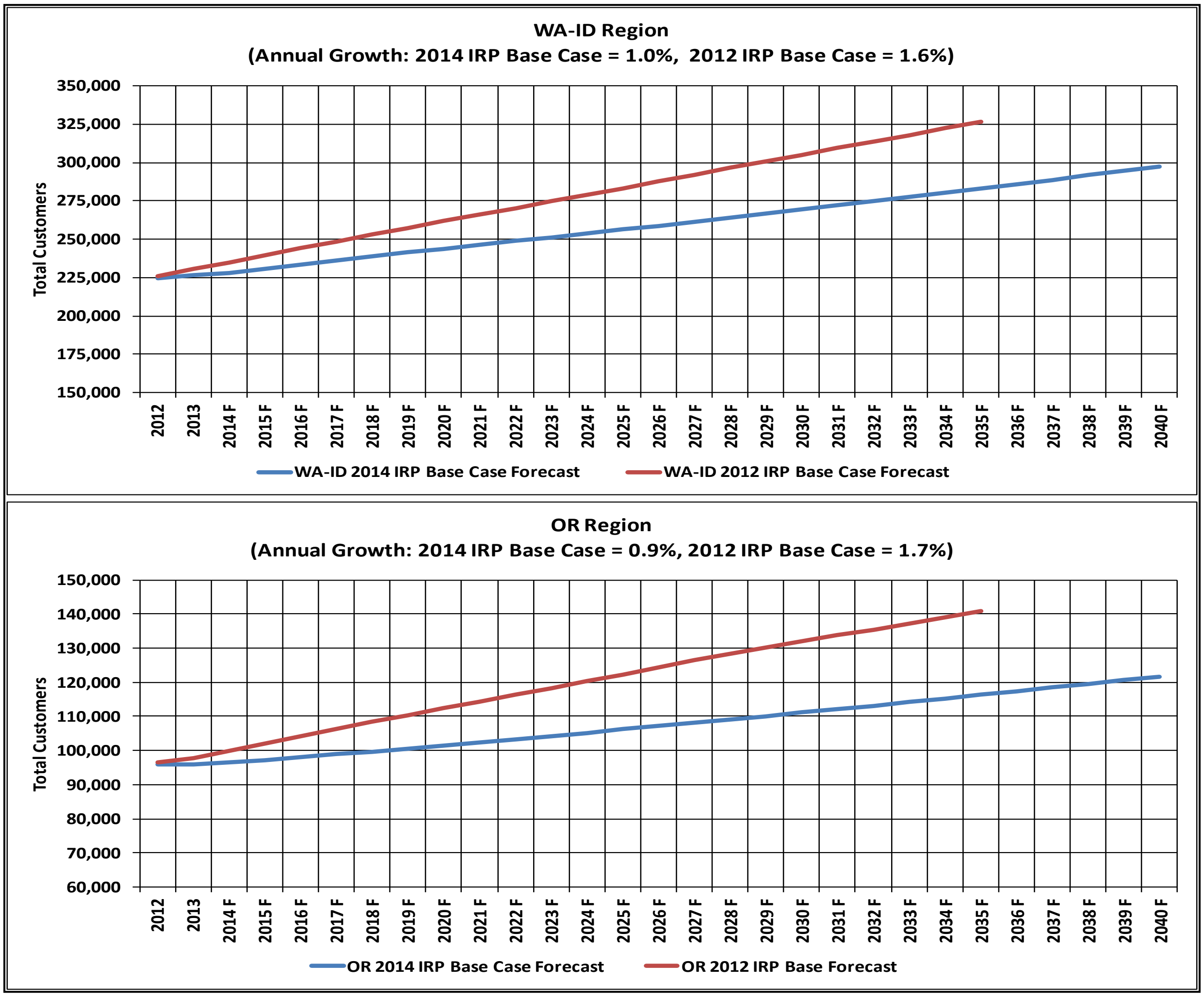
**Figure 2: Comparison of Average Annual Population Growth from 2011 to 2012**




Data source: Actual population growth calculated U.S. Census data.

In large part, the downward revision in this IRP reflects an assumed lower long-run GDP growth in the U.S., which filters down to our service area as lower employment growth relative to the U.S. In turn, this translates into lower population growth due to slower in-migration. The current assumption for long-run GDP growth is 2.5%, significantly lower than the to 3% assumption in the 2012 IRP. Based on demographic and productivity trends, the 2.5% growth assumption is consistent with a growing consensus that long-run GDP growth with be in the 2.2-2.7% range. For example, the Energy Information Administration's (EIA) 2014 Annual Energy Outlook forecast assumes a 2.4% annual average growth rate out to 2040. Finally, since GDP is both a measure of output and income, the lower GDP growth assumption also implies slower industrial production growth and household income growth compared to the 2012 IRP.

**Figure 3: Comparison of Forecasted Customer Growth WA-ID and OR, 2014-2040**

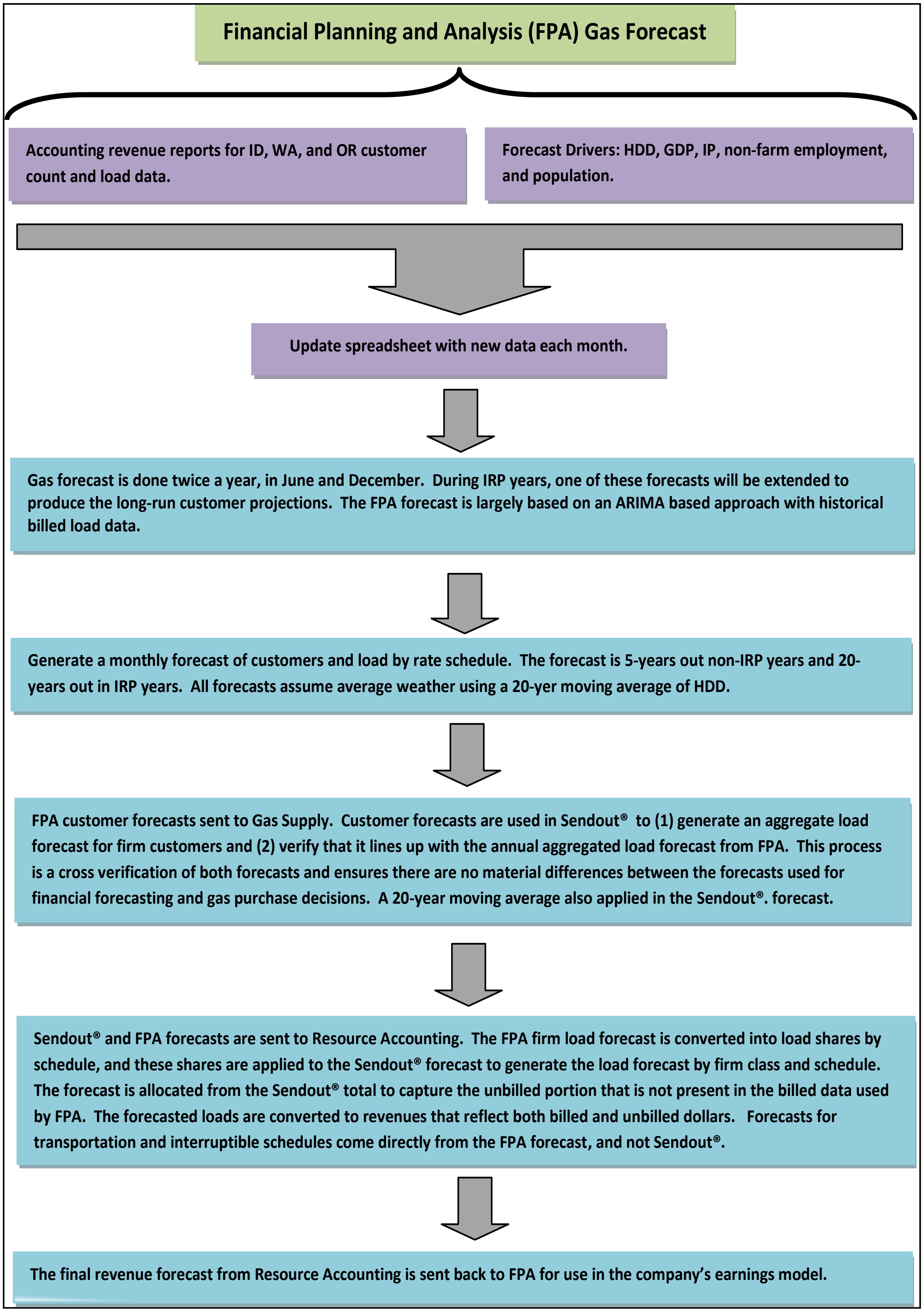



## II. Forecast Process and Methodology

Figure 4 summarizes the forecast process for natural gas. In non-IRP periods, the forecast from Financial Planning and Analysis (FPA) is generated by schedule for each class (residential, commercial, and industrial) out five years. For schedules with the most load and customers, forecasts are generated from regression models that are either pure ARIMA models or ARIMA transfer function models. Pure ARIMA models use only past values of therm use per customer (UPC) or customers to forecast future UPC or customers. ARIMA transfer function models are based on weather, non-weather seasonal factors, long-run time trends, economic drivers, and ARIMA error correction terms. These are standard time-series models that are estimated using SAS/ETS software.

The FPA customer forecasts are used as input into Sendout® to generate the IRP load forecasts for gas purchase decisions. Sendout® forecasts are compared against FRP forecasts to ensure that there are no significant deviations between the two forecasts. Over five year forecast horizon, the deviations are not typically material on an aggregate annual basis.

**Figure 4: Avista's Forecast Process for Natural Gas**

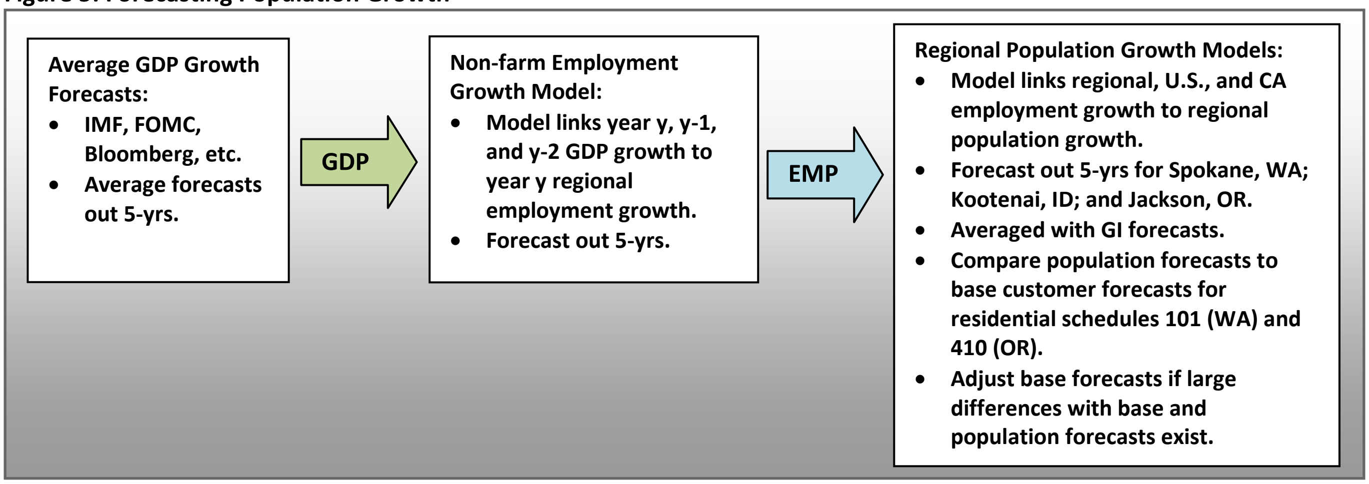


***Economic Drivers in Five Year Customer Forecasts***

Population growth is the key driver for the residential customer forecast. Because of the high historic correlation between residential and customer forecasts, population is also an indirect driver in forecast for commercial customers. As will be discussed below, the implicit assumption is that commercial customer growth tends to follow along with residential growth.

Population growth forecast is one of the key drivers behind the customer forecast for residential schedules 101 in WA-ID and 410 in OR. These two schedules represent the majority of customers and, therefore, drive overall residential customer growth. Because of their size and growth potential, a multi-step forecasting process has been developed for the Spokane-Spokane Valley-Coeur d'Alene combined MSAs and the Medford MSA. Figure 5 describes the forecasting process for population growth for these MSAs.

**Figure 5: Forecasting Population Growth**




The forecasting models for regional employment growth are:

[1] $GEMP_{y,SPK+KOOT} = \vartheta_0 + \vartheta_1 GGDP_{y,US} + \vartheta_2 GGDP_{y-1,US} + \vartheta_3 GGDP_{y-2,US} + \omega_{SC} D_{KC,1998-2000=1} + \omega_{SC} D_{HB,2005-2007=1} + \epsilon_{t,y}$

[2] $GEMP_{y,JACK} = \phi_0 + \phi_1 GGDP_{y,US} + \phi_2 GGDP_{y-1,US} + \phi_3 GGDP_{y-2,US} + \omega_{SC} D_{HB,2004-2005=1} + ARIMA\epsilon_{t,y}\,(1,0,0)(0,0,0)_{12}$

SPK+KOOT is for the combined area of Spokane, WA (Spokane MSA) and Kootenai, ID (Coeur d'Alene MSA), and JACK is for Jackson County, OR (Medford MSA). $GEMP_y$ is employment growth in year y, $GGDP_{y,US}$ is U.S. real GDP growth in year y. $D_{KC}$ is a dummy variable for the collapse of Kaiser Aluminum in Spokane, and $D_{HB}$ is a dummy for the housing bubble, specific to each region. The average GDP forecasts are used in the estimated model to generate five-year employment growth forecasts. Averaging the GDP forecasts reduces the systematic errors of a single-source forecast. Discussed below, employment growth forecasts are then used to generate population growth forecasts.

The major MSA forecasting models for regional population growth are:

[3] $GPOP_{y,SPK+KOOT} = \kappa_0 + \kappa_1 GEMP_{y-1,SPK+KOOT} + \kappa_2 GEMP_{y-1,US} + \omega_{OL} D_{2001=1} + \epsilon_{t,y}$

[4] $GPOP_{y,JACK} = \psi_0 + \psi_1 GEMP_{y-1,JACK} + \psi_2 GEMP_{y-1,CA} + \omega_{OL} D_{1991=1} + \omega_{SC} D_{HB,2004-2006=1} + \epsilon_{t,y}$

$D_{2001=1}$ and $D_{1991=1}$ are outlier dummy variables for recession impacts. $GEMP_{y-1,US}$ is U.S. employment growth in year y-1 and $GEMP_{y-1}$,CA is California Employment growth in year y-1. Because of its close proximity to CA, CA employment growth is better predictor of Medford's population growth than U.S. growth.

Forecasts generated from [3] and [4] are combined with GI's population (GIPOP) forecasts for the same areas in the form of a simple average. As with the GDP forecasts, averaging with GI's population forecast reduces the systematic errors of a single-source forecast. In the case of Spokane-Kootenai, the forecasted growth rate is broken apart by to generate an individual rate for each MSA:

[5] $F_{Avg}(POP_{y,SPK+KOOT}) = \frac{F(POP_{y,SPK+KOOT})+F(GIPOP_{y,SPK+KOOT})}{2}$

[6] $F_{Avg}(GPOP_{y,JACK}) = \frac{F(POP_{y,JACK})+F(GIPOP_{y,JACK})}{2}$

Forecasts [5] and [6] are applied to base-line residential schedule 101 (WA-ID) and 410 (OR) customer forecasts generated by ARIMA models. If the base-line forecast appears are in line with the population growth forecasts from [5] and [6], then no direct adjustment is made to the base-line ARIMA forecasts. However, if the base-line ARIMA forecasts appear to be too low or too high relative to the population forecast, [5] and [6] are applied to adjust the base-line forecasts so that the final annual growth rate of forecasted customers matches the forecasted population growth rate, $F_{Avg}(GPOP_y)$ for each major MSA.

For La Grande, OR (Union County); Klamath Falls, OR (Klamath County); and Roseburg, OR (Douglas County), GI's forecasts are used in lieu of in-house forecasts. Because of their small size, the WA service areas around Stevenson, WA (Skamania County) and Goldendale, WA (Klickitat County) are not broken out for forecasting purposes. The Lewiston-Clarkston area is aggregated into the Spokane and Kootenai customer count used for forecasting; therefore, it is not considered separately. Given its close proximity to the Medford area, this is also the case for Grants Pass, OR (Josephine County).

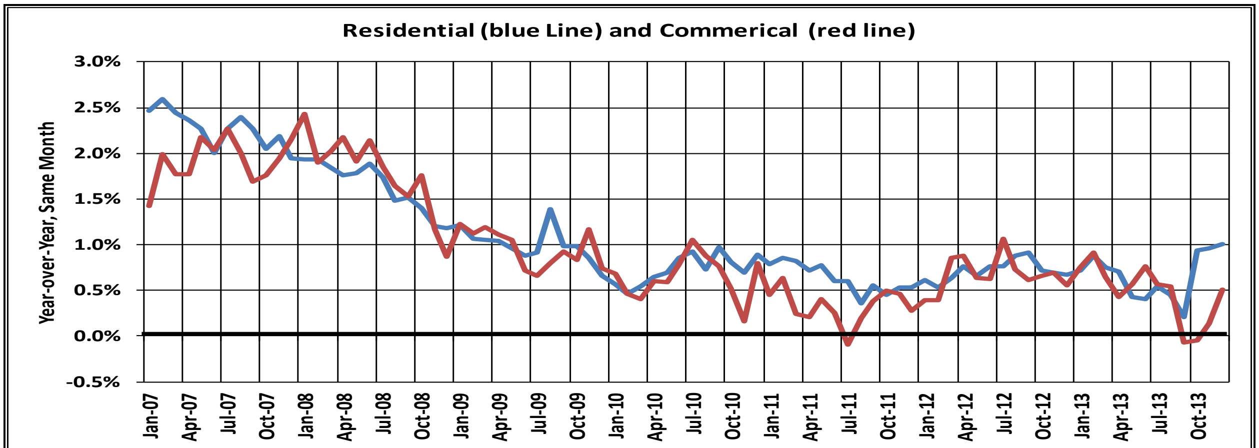
The residential customer forecasts, generated from the process described above, are then used as a driver in the forecasts for commercial schedule 101 (WA-ID) and schedule 420 (OR). The exception is Roseburg, OR, where there is little correlation between residential and commercial customer growth. As with residential schedules 101 and 410, commercial schedules 101 (WA) and 420 (OR) are the main drivers of overall commercial customer growth. This is a three step process. First, historical residential customers are used as an explanatory variable in an ARIMA model for forecasting commercial customers. Second, commercial ARIMA models for WA, ID, and OR are estimated from historical commercial and residential customer data. Third, five year commercial forecasts for schedules 101 or 420 are generated using the 101 or 410 residential customer forecasts in the commercial ARIMA models estimated with historical data. This method assumes this historical high correlation between residential and commercial customer growth continues in the future.

***Long-Run IRP Forecasts after the Five Year Forecast Horizon***

Forecasts for IRP years are extend out from the five year forecasts by first assuming long-run values as inputs into [1] and [2]. As discussed above, the current assumption is a long-run GDP growth rate of 2.5%. This assumption generates long-run growth rate for employment growth, which is used in [3] and [4]. Finally, GI's long-range forecasts are combined with [3] and [4] to produce a base-line residential growth rate for the largest MSAs. As with the 5-year out forecast, the smaller service areas in OR rely on GI's forecasts as a proxy for residential customer growth, which currently extend to the early 2040s.

With the exception of Roseburg, OR, commercial customer growth is assumed to be equal to residential customer growth. This assumption is based on long-run relationship between residential and commercial customer growth after 2018. Figure 6 shows system wide same month, year-over-year residential and commercial customer growth (top graph) and industrial customer growth (bottom graph) for the 2007-2013 period.

**Figure 6: Year-over-Year Customer Growth for the Three Rate Classes, 2007-2013**



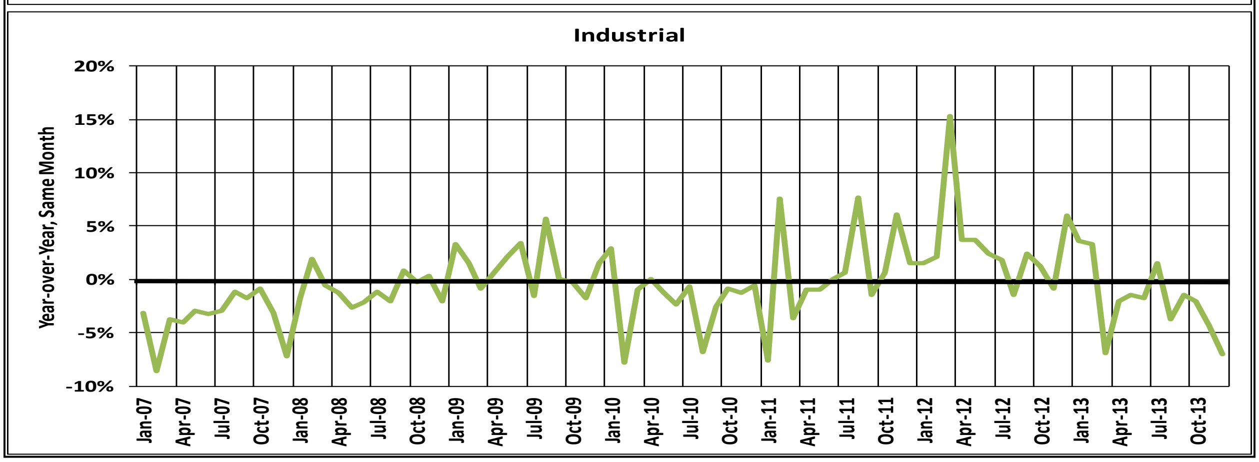




Figure 6 demonstrates that residential and commercial growth rates are highly correlated and maintain similar levels over the long-run—both classes' growth rates averaged about 1% over this period. This growth is slightly higher than population growth because of the housing boom and existing households retrofitting with natural gas. However, by the end of 2009, with the collapse of the housing bubble and increased natural gas saturation, customer growth moved in line with population growth. For Roseburg, OR, it is assumed commercial customer growth will continue at an annual rate 0.02% after 2018, which reflects average commercial growth since 2008.

In contrast, the behavior of Industrial customer growth looks quite different. Customer growth is both lower and more volatile. The average growth rate over this period is -0.4%, reflecting a trend of nearly flat or slowly declining customers, depending on the service area region. In addition, the standard deviation of growth is 3.7% compared to 0.6% for both residential and commercial growth—over five times higher. The current IRP forecast reflects this historical trend of weak growth. Some energy industry analysts believe the U.S.'s increased supply of natural gas and oil will attract industrial production back from overseas locations. However, in this IRP, we do not assume plentiful energy supplies in the U.S. will alter long-run trends in industrial customer growth in our service area.

***Establishing High-Low Cases for IRP Customer Forecast***

The customer forecasts for this IRP include high and low cases that set the expected bounds around the base-case. In the WA-ID area, the high and low cases were set by altering base case assumptions about U.S. and regional employment growth in equation [3] for the Spokane-Coeur d'Alene region. In particular, the high-case reflects more optimistic assumptions about long-run growth and the low case reflects more pessimistic assumptions. The WA-ID high case effectively assumes long-run employment growth of over 2.0% (compared to a base-case of around 1.7%), while the low-case assumes growth under 0.5%.

In the OR area, a similar approach was used for the Medford area using equation [4]. The Medford area high case also assumes long-run employment growth of over 2.0% (compared to a base-case of around 1.5%), while the low-case assumes growth under 0.5%. The range for employment growth was obtained by looking at different scenarios of U.S. GDP growth, as was well as the historical distribution of employment growth rates since the early 1990s for our service area, U.S., and California. The areas of Klamath Falls, Roseburg, and La Grande were considered separately by looking the historical distributions population growth rates since the 1980s. Since the early 1980s, annual population growth as averaged less than 1% in these three areas.

**Table F.1**

| Year | Residential Customers | Commercial Customers | Industrial Customers |
|---|---|---|---|
| 2013 | 203,503 | 22,712 | 229 |
| 2014 | 205,332 | 22,747 | 228 |
| 2015 | 207,565 | 22,969 | 227 |
| 2016 | 209,966 | 23,142 | 226 |
| 2017 | 212,602 | 23,344 | 225 |
| 2018 | 215,266 | 23,551 | 223 |
| 2019 | 217,419 | 23,787 | 222 |
| 2020 | 219,593 | 24,025 | 221 |
| 2021 | 221,789 | 24,265 | 220 |
| 2022 | 224,007 | 24,507 | 219 |
| 2023 | 226,247 | 24,753 | 218 |
| 2024 | 228,509 | 25,000 | 217 |
| 2025 | 230,794 | 25,250 | 216 |
| 2026 | 233,102 | 25,503 | 215 |
| 2027 | 235,433 | 25,758 | 214 |
| 2028 | 237,787 | 26,015 | 213 |
| 2029 | 240,165 | 26,275 | 212 |
| 2030 | 242,567 | 26,538 | 211 |
| 2031 | 244,993 | 26,803 | 210 |
| 2032 | 247,443 | 27,071 | 209 |
| 2033 | 249,917 | 27,342 | 208 |
| | | | |
| 20 yr CGR 2013-2033 | 1.03% | 0.93% | -0.47% |

# Table F.2

| Year | Residential Medford Customers | Commercial Medford Customers | Industiral Medford Customers | Residential Roseburg Customers | Commercial Roseburg Customers | Industiral Roseburg Customers | Residential Klamath Falls Customers | Commercial Klamath Falls Customers | Industiral Klamath Falls Customers | Residential LaGrande Customers | Commercial LaGrande Customers | Industiral LaGrande Customers |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2013 | 51,102 | 6,522 | 16 | 13,140 | 2,129 | 3 | 13,999 | 1,652 | 8 | 6,542 | 897 | 4 |
| 2014 | 51,486 | 6,528 | 16 | 13,181 | 2,131 | 3 | 14,041 | 1,651 | 8 | 6,590 | 898 | 3 |
| 2015 | 51,950 | 6,577 | 16 | 13,256 | 2,133 | 3 | 14,094 | 1,660 | 8 | 6,626 | 901 | 3 |
| 2016 | 52,470 | 6,629 | 16 | 13,347 | 2,135 | 3 | 14,165 | 1,665 | 8 | 6,664 | 904 | 3 |
| 2017 | 52,996 | 6,684 | 16 | 13,449 | 2,137 | 3 | 14,249 | 1,673 | 8 | 6,702 | 906 | 3 |
| 2018 | 53,527 | 6,739 | 16 | 13,559 | 2,138 | 3 | 14,343 | 1,678 | 8 | 6,740 | 909 | 3 |
| 2019 | 54,116 | 6,813 | 16 | 13,662 | 2,139 | 3 | 14,438 | 1,689 | 8 | 6,767 | 913 | 3 |
| 2020 | 54,711 | 6,888 | 16 | 13,766 | 2,139 | 3 | 14,533 | 1,700 | 8 | 6,794 | 917 | 3 |
| 2021 | 55,313 | 6,963 | 16 | 13,871 | 2,140 | 3 | 14,629 | 1,712 | 8 | 6,821 | 920 | 3 |
| 2022 | 55,921 | 7,040 | 16 | 13,976 | 2,140 | 3 | 14,726 | 1,723 | 8 | 6,848 | 924 | 3 |
| 2023 | 56,536 | 7,118 | 16 | 14,082 | 2,141 | 3 | 14,823 | 1,734 | 8 | 6,876 | 928 | 3 |
| 2024 | 57,158 | 7,196 | 16 | 14,189 | 2,141 | 3 | 14,921 | 1,746 | 8 | 6,903 | 931 | 3 |
| 2025 | 57,787 | 7,275 | 16 | 14,297 | 2,141 | 3 | 15,019 | 1,757 | 8 | 6,931 | 935 | 3 |
| 2026 | 58,423 | 7,355 | 16 | 14,406 | 2,142 | 3 | 15,118 | 1,769 | 8 | 6,959 | 939 | 3 |
| 2027 | 59,065 | 7,436 | 16 | 14,515 | 2,142 | 3 | 15,218 | 1,780 | 8 | 6,986 | 943 | 3 |
| 2028 | 59,715 | 7,518 | 16 | 14,625 | 2,143 | 3 | 15,319 | 1,792 | 8 | 7,014 | 946 | 3 |
| 2029 | 60,372 | 7,600 | 16 | 14,737 | 2,143 | 3 | 15,420 | 1,804 | 8 | 7,042 | 950 | 3 |
| 2030 | 61,036 | 7,684 | 16 | 14,849 | 2,144 | 3 | 15,521 | 1,816 | 8 | 7,071 | 954 | 3 |
| 2031 | 61,707 | 7,769 | 16 | 14,961 | 2,144 | 3 | 15,624 | 1,828 | 8 | 7,099 | 958 | 3 |
| 2032 | 62,386 | 7,854 | 16 | 15,075 | 2,144 | 3 | 15,727 | 1,840 | 8 | 7,127 | 962 | 3 |
| 2033 | 63,072 | 7,940 | 16 | 15,190 | 2,145 | 3 | 15,831 | 1,852 | 8 | 7,156 | 965 | 3 |
| | | | | | | | | | | | | |
| 20 yr CGR 2013-2033 | 1.06% | 0.99% | -0.10% | 0.73% | 0.04% | 0.00% | 0.62% | 0.57% | 0.03% | 0.45% | 0.37% | -1.24% |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| Jan-12 | 201,902 | 22,585 | 231 | 201,902 | 22,585 | 231 | 201,902 | 22,585 | 231 |
| Feb-12 | 201,632 | 22,629 | 232 | 201,632 | 22,629 | 232 | 201,632 | 22,629 | 232 |
| Mar-12 | 201,664 | 22,599 | 259 | 201,664 | 22,599 | 259 | 201,664 | 22,599 | 259 |
| Apr-12 | 201,613 | 22,649 | 230 | 201,613 | 22,649 | 230 | 201,613 | 22,649 | 230 |
| May-12 | 201,428 | 22,589 | 235 | 201,428 | 22,589 | 235 | 201,428 | 22,589 | 235 |
| Jun-12 | 201,187 | 22,579 | 234 | 201,187 | 22,579 | 234 | 201,187 | 22,579 | 234 |
| Jul-12 | 201,420 | 22,615 | 230 | 201,420 | 22,615 | 230 | 201,420 | 22,615 | 230 |
| Aug-12 | 201,615 | 22,573 | 233 | 201,615 | 22,573 | 233 | 201,615 | 22,573 | 233 |
| Sep-12 | 202,443 | 22,568 | 231 | 202,443 | 22,568 | 231 | 202,443 | 22,568 | 231 |
| Oct-12 | 202,130 | 22,584 | 231 | 202,130 | 22,584 | 231 | 202,130 | 22,584 | 231 |
| Nov-12 | 202,592 | 22,645 | 229 | 202,592 | 22,645 | 229 | 202,592 | 22,645 | 229 |
| Dec-12 | 203,155 | 22,711 | 231 | 203,155 | 22,711 | 231 | 203,155 | 22,711 | 231 |
| Jan-13 | 203,490 | 22,779 | 231 | 203,490 | 22,779 | 231 | 203,490 | 22,779 | 231 |
| Feb-13 | 203,527 | 22,834 | 230 | 203,527 | 22,834 | 230 | 203,527 | 22,834 | 230 |
| Mar-13 | 203,401 | 22,768 | 231 | 203,401 | 22,768 | 231 | 203,401 | 22,768 | 231 |
| Apr-13 | 203,331 | 22,739 | 229 | 203,331 | 22,739 | 229 | 203,331 | 22,739 | 229 |
| May-13 | 203,011 | 22,743 | 230 | 203,011 | 22,743 | 230 | 203,011 | 22,743 | 230 |
| Jun-13 | 202,672 | 22,756 | 229 | 202,672 | 22,756 | 229 | 202,672 | 22,756 | 229 |
| Jul-13 | 203,193 | 22,753 | 228 | 203,193 | 22,753 | 228 | 203,193 | 22,753 | 228 |
| Aug-13 | 203,095 | 22,698 | 227 | 203,095 | 22,698 | 227 | 203,095 | 22,698 | 227 |
| Sep-13 | 203,205 | 22,535 | 228 | 203,205 | 22,535 | 228 | 203,205 | 22,535 | 228 |
| Oct-13 | 203,842 | 22,529 | 226 | 203,842 | 22,529 | 226 | 203,842 | 22,529 | 226 |
| Nov-13 | 204,286 | 22,665 | 229 | 204,286 | 22,665 | 229 | 204,286 | 22,665 | 229 |
| Dec-13 | 204,989 | 22,740 | 229 | 204,989 | 22,740 | 229 | 204,989 | 22,740 | 229 |
| Jan-14 | 205,228 | 22,772 | 229 | 206,542 | 23,121 | 234 | 204,507 | 22,893 | 228 |
| Feb-14 | 205,168 | 22,760 | 229 | 206,580 | 23,177 | 233 | 204,545 | 22,948 | 227 |
| Mar-14 | 205,104 | 22,713 | 229 | 206,452 | 23,110 | 234 | 204,418 | 22,882 | 228 |
| Apr-14 | 204,985 | 22,741 | 229 | 206,381 | 23,080 | 232 | 204,348 | 22,853 | 226 |
| May-14 | 204,850 | 22,701 | 228 | 206,056 | 23,084 | 233 | 204,026 | 22,857 | 227 |
| Jun-14 | 204,605 | 22,730 | 228 | 205,712 | 23,097 | 232 | 203,685 | 22,870 | 226 |
| Jul-14 | 204,672 | 22,694 | 228 | 206,241 | 23,094 | 231 | 204,209 | 22,867 | 225 |
| Aug-14 | 204,908 | 22,711 | 228 | 206,141 | 23,038 | 230 | 204,110 | 22,811 | 224 |
| Sep-14 | 205,340 | 22,736 | 228 | 206,253 | 22,873 | 231 | 204,221 | 22,648 | 225 |
| Oct-14 | 205,703 | 22,733 | 228 | 206,900 | 22,867 | 229 | 204,861 | 22,642 | 223 |
| Nov-14 | 206,342 | 22,791 | 228 | 207,350 | 23,005 | 232 | 205,307 | 22,779 | 226 |
| Dec-14 | 207,078 | 22,880 | 228 | 208,064 | 23,082 | 232 | 206,014 | 22,854 | 226 |
| Jan-15 | 207,418 | 22,919 | 228 | 209,640 | 23,467 | 237 | 205,530 | 23,007 | 225 |
| Feb-15 | 207,380 | 22,982 | 228 | 209,679 | 23,524 | 236 | 205,567 | 23,063 | 224 |
| Mar-15 | 207,335 | 22,956 | 228 | 209,549 | 23,456 | 237 | 205,440 | 22,996 | 225 |
| Apr-15 | 207,208 | 22,960 | 228 | 209,477 | 23,426 | 235 | 205,369 | 22,967 | 223 |
| May-15 | 206,938 | 22,936 | 228 | 209,147 | 23,430 | 236 | 205,046 | 22,971 | 224 |
| Jun-15 | 206,781 | 22,952 | 227 | 208,798 | 23,444 | 235 | 204,704 | 22,984 | 223 |
| Jul-15 | 206,897 | 22,943 | 227 | 209,335 | 23,441 | 234 | 205,230 | 22,981 | 222 |
| Aug-15 | 207,184 | 22,952 | 227 | 209,234 | 23,384 | 233 | 205,131 | 22,926 | 221 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| Sep-15 | 207,592 | 22,953 | 227 | 209,347 | 23,216 | 234 | 205,242 | 22,761 | 222 |
| Oct-15 | 207,971 | 22,967 | 227 | 210,003 | 23,210 | 232 | 205,886 | 22,755 | 220 |
| Nov-15 | 208,668 | 23,014 | 227 | 210,461 | 23,351 | 235 | 206,334 | 22,893 | 223 |
| Dec-15 | 209,404 | 23,092 | 227 | 211,185 | 23,428 | 235 | 207,044 | 22,968 | 223 |
| Jan-16 | 209,744 | 23,125 | 227 | 212,785 | 23,820 | 240 | 206,558 | 23,122 | 222 |
| Feb-16 | 209,711 | 23,158 | 227 | 212,824 | 23,877 | 239 | 206,595 | 23,178 | 221 |
| Mar-16 | 209,668 | 23,132 | 227 | 212,692 | 23,808 | 240 | 206,467 | 23,111 | 222 |
| Apr-16 | 209,567 | 23,142 | 226 | 212,619 | 23,778 | 238 | 206,396 | 23,082 | 220 |
| May-16 | 209,333 | 23,116 | 226 | 212,284 | 23,782 | 239 | 206,071 | 23,086 | 221 |
| Jun-16 | 209,202 | 23,121 | 226 | 211,930 | 23,795 | 238 | 205,727 | 23,099 | 220 |
| Jul-16 | 209,313 | 23,098 | 226 | 212,475 | 23,792 | 237 | 206,256 | 23,096 | 219 |
| Aug-16 | 209,611 | 23,113 | 226 | 212,372 | 23,735 | 236 | 206,157 | 23,040 | 218 |
| Sep-16 | 210,040 | 23,115 | 226 | 212,487 | 23,564 | 237 | 206,268 | 22,875 | 219 |
| Oct-16 | 210,421 | 23,134 | 226 | 213,153 | 23,558 | 235 | 206,915 | 22,869 | 217 |
| Nov-16 | 211,124 | 23,188 | 226 | 213,617 | 23,701 | 238 | 207,366 | 23,007 | 220 |
| Dec-16 | 211,861 | 23,259 | 226 | 214,353 | 23,779 | 238 | 208,079 | 23,083 | 220 |
| Jan-17 | 212,344 | 23,303 | 225 | 215,977 | 24,177 | 243 | 207,590 | 23,238 | 219 |
| Feb-17 | 212,322 | 23,339 | 225 | 216,016 | 24,235 | 242 | 207,628 | 23,294 | 218 |
| Mar-17 | 212,285 | 23,321 | 225 | 215,882 | 24,165 | 243 | 207,500 | 23,227 | 219 |
| Apr-17 | 212,194 | 23,333 | 225 | 215,808 | 24,134 | 241 | 207,428 | 23,197 | 217 |
| May-17 | 211,961 | 23,311 | 225 | 215,468 | 24,139 | 242 | 207,102 | 23,201 | 218 |
| Jun-17 | 211,837 | 23,332 | 225 | 215,109 | 24,152 | 241 | 206,756 | 23,215 | 217 |
| Jul-17 | 211,956 | 23,307 | 225 | 215,662 | 24,149 | 240 | 207,287 | 23,211 | 216 |
| Aug-17 | 212,258 | 23,322 | 225 | 215,558 | 24,091 | 239 | 207,187 | 23,155 | 215 |
| Sep-17 | 212,692 | 23,331 | 225 | 215,674 | 23,918 | 240 | 207,300 | 22,989 | 216 |
| Oct-17 | 213,075 | 23,341 | 224 | 216,350 | 23,911 | 238 | 207,950 | 22,983 | 214 |
| Nov-17 | 213,781 | 23,402 | 224 | 216,822 | 24,056 | 241 | 208,402 | 23,122 | 217 |
| Dec-17 | 214,524 | 23,479 | 224 | 217,568 | 24,136 | 241 | 209,120 | 23,199 | 217 |
| Jan-18 | 214,990 | 23,515 | 224 | 219,217 | 24,539 | 246 | 208,628 | 23,354 | 216 |
| Feb-18 | 214,974 | 23,556 | 224 | 219,256 | 24,599 | 245 | 208,666 | 23,411 | 215 |
| Mar-18 | 214,939 | 23,529 | 224 | 219,121 | 24,528 | 246 | 208,537 | 23,343 | 216 |
| Apr-18 | 214,853 | 23,543 | 224 | 219,045 | 24,496 | 244 | 208,465 | 23,313 | 214 |
| May-18 | 214,621 | 23,524 | 224 | 218,701 | 24,501 | 245 | 208,137 | 23,317 | 215 |
| Jun-18 | 214,500 | 23,537 | 223 | 218,335 | 24,515 | 244 | 207,790 | 23,331 | 214 |
| Jul-18 | 214,622 | 23,518 | 223 | 218,897 | 24,511 | 243 | 208,324 | 23,328 | 213 |
| Aug-18 | 214,925 | 23,525 | 223 | 218,791 | 24,452 | 242 | 208,223 | 23,271 | 212 |
| Sep-18 | 215,362 | 23,532 | 223 | 218,909 | 24,277 | 243 | 208,336 | 23,104 | 213 |
| Oct-18 | 215,748 | 23,549 | 223 | 219,596 | 24,270 | 241 | 208,989 | 23,098 | 211 |
| Nov-18 | 216,456 | 23,602 | 223 | 220,074 | 24,417 | 244 | 209,444 | 23,238 | 214 |
| Dec-18 | 217,203 | 23,680 | 223 | 220,831 | 24,498 | 244 | 210,165 | 23,315 | 214 |
| Jan-19 | 217,140 | 23,750 | 223 | 222,505 | 24,908 | 249 | 209,672 | 23,471 | 213 |
| Feb-19 | 217,123 | 23,792 | 223 | 222,545 | 24,968 | 248 | 209,710 | 23,528 | 212 |
| Mar-19 | 217,088 | 23,765 | 223 | 222,407 | 24,896 | 249 | 209,580 | 23,460 | 213 |
| Apr-19 | 217,001 | 23,779 | 223 | 222,331 | 24,864 | 247 | 209,508 | 23,430 | 211 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| May-19 | 216,768 | 23,760 | 223 | 221,981 | 24,868 | 248 | 209,178 | 23,434 | 212 |
| Jun-19 | 216,645 | 23,773 | 222 | 221,610 | 24,882 | 247 | 208,829 | 23,447 | 211 |
| Jul-19 | 216,768 | 23,754 | 222 | 222,180 | 24,879 | 246 | 209,365 | 23,444 | 210 |
| Aug-19 | 217,074 | 23,761 | 222 | 222,073 | 24,819 | 245 | 209,265 | 23,388 | 209 |
| Sep-19 | 217,515 | 23,768 | 222 | 222,193 | 24,641 | 246 | 209,378 | 23,220 | 210 |
| Oct-19 | 217,905 | 23,785 | 222 | 222,890 | 24,634 | 244 | 210,034 | 23,213 | 208 |
| Nov-19 | 218,620 | 23,838 | 222 | 223,375 | 24,783 | 247 | 210,492 | 23,354 | 211 |
| Dec-19 | 219,375 | 23,917 | 222 | 224,144 | 24,865 | 247 | 211,216 | 23,431 | 211 |
| Jan-20 | 219,311 | 23,988 | 222 | 225,842 | 25,281 | 252 | 210,720 | 23,588 | 210 |
| Feb-20 | 219,295 | 24,030 | 222 | 225,883 | 25,342 | 251 | 210,758 | 23,645 | 209 |
| Mar-20 | 219,259 | 24,002 | 222 | 225,744 | 25,269 | 252 | 210,628 | 23,577 | 210 |
| Apr-20 | 219,171 | 24,017 | 222 | 225,666 | 25,237 | 250 | 210,555 | 23,547 | 208 |
| May-20 | 218,935 | 23,997 | 222 | 225,311 | 25,241 | 251 | 210,224 | 23,551 | 209 |
| Jun-20 | 218,811 | 24,010 | 221 | 224,934 | 25,256 | 250 | 209,873 | 23,565 | 208 |
| Jul-20 | 218,936 | 23,991 | 221 | 225,513 | 25,252 | 249 | 210,412 | 23,561 | 207 |
| Aug-20 | 219,245 | 23,998 | 221 | 225,404 | 25,191 | 248 | 210,311 | 23,504 | 206 |
| Sep-20 | 219,691 | 24,005 | 221 | 225,526 | 25,010 | 249 | 210,425 | 23,336 | 207 |
| Oct-20 | 220,084 | 24,023 | 221 | 226,233 | 25,004 | 247 | 211,084 | 23,329 | 205 |
| Nov-20 | 220,806 | 24,077 | 221 | 226,726 | 25,155 | 250 | 211,544 | 23,471 | 208 |
| Dec-20 | 221,568 | 24,156 | 221 | 227,506 | 25,238 | 250 | 212,272 | 23,548 | 208 |
| Jan-21 | 221,504 | 24,228 | 221 | 229,230 | 25,660 | 255 | 211,773 | 23,706 | 207 |
| Feb-21 | 221,488 | 24,270 | 221 | 229,272 | 25,722 | 254 | 211,812 | 23,764 | 206 |
| Mar-21 | 221,452 | 24,242 | 221 | 229,130 | 25,648 | 255 | 211,681 | 23,695 | 207 |
| Apr-21 | 221,363 | 24,257 | 221 | 229,051 | 25,615 | 253 | 211,608 | 23,665 | 205 |
| May-21 | 221,125 | 24,237 | 221 | 228,690 | 25,620 | 254 | 211,275 | 23,669 | 206 |
| Jun-21 | 220,999 | 24,251 | 220 | 228,309 | 25,634 | 253 | 210,922 | 23,682 | 205 |
| Jul-21 | 221,125 | 24,231 | 220 | 228,895 | 25,631 | 252 | 211,464 | 23,679 | 204 |
| Aug-21 | 221,437 | 24,238 | 220 | 228,785 | 25,569 | 251 | 211,362 | 23,622 | 203 |
| Sep-21 | 221,887 | 24,245 | 220 | 228,909 | 25,386 | 252 | 211,477 | 23,452 | 204 |
| Oct-21 | 222,285 | 24,263 | 220 | 229,627 | 25,379 | 250 | 212,140 | 23,446 | 202 |
| Nov-21 | 223,014 | 24,318 | 220 | 230,127 | 25,532 | 253 | 212,602 | 23,588 | 205 |
| Dec-21 | 223,784 | 24,398 | 220 | 230,919 | 25,617 | 253 | 213,334 | 23,666 | 205 |
| Jan-22 | 223,719 | 24,470 | 220 | 232,668 | 26,045 | 258 | 212,832 | 23,825 | 204 |
| Feb-22 | 223,703 | 24,513 | 220 | 232,711 | 26,108 | 257 | 212,871 | 23,882 | 203 |
| Mar-22 | 223,666 | 24,485 | 220 | 232,567 | 26,033 | 258 | 212,739 | 23,813 | 204 |
| Apr-22 | 223,577 | 24,499 | 220 | 232,487 | 26,000 | 256 | 212,666 | 23,783 | 202 |
| May-22 | 223,336 | 24,480 | 220 | 232,121 | 26,004 | 257 | 212,331 | 23,787 | 203 |
| Jun-22 | 223,209 | 24,493 | 219 | 231,733 | 26,019 | 256 | 211,977 | 23,801 | 202 |
| Jul-22 | 223,336 | 24,473 | 219 | 232,329 | 26,016 | 255 | 212,522 | 23,798 | 201 |
| Aug-22 | 223,652 | 24,481 | 219 | 232,217 | 25,953 | 254 | 212,419 | 23,740 | 200 |
| Sep-22 | 224,106 | 24,488 | 219 | 232,343 | 25,766 | 255 | 212,534 | 23,570 | 201 |
| Oct-22 | 224,508 | 24,506 | 219 | 233,071 | 25,759 | 253 | 213,201 | 23,563 | 199 |
| Nov-22 | 225,244 | 24,561 | 219 | 233,579 | 25,915 | 256 | 213,665 | 23,706 | 202 |
| Dec-22 | 226,022 | 24,642 | 219 | 234,382 | 26,001 | 256 | 214,400 | 23,784 | 202 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| Jan-23 | 225,956 | 24,715 | 219 | 236,158 | 26,436 | 261 | 213,897 | 23,944 | 201 |
| Feb-23 | 225,940 | 24,758 | 219 | 236,201 | 26,500 | 260 | 213,935 | 24,002 | 200 |
| Mar-23 | 225,903 | 24,730 | 219 | 236,055 | 26,423 | 261 | 213,803 | 23,932 | 201 |
| Apr-23 | 225,812 | 24,744 | 219 | 235,974 | 26,390 | 259 | 213,729 | 23,902 | 199 |
| May-23 | 225,569 | 24,724 | 219 | 235,603 | 26,394 | 260 | 213,393 | 23,906 | 200 |
| Jun-23 | 225,441 | 24,738 | 218 | 235,209 | 26,409 | 259 | 213,037 | 23,920 | 199 |
| Jul-23 | 225,570 | 24,718 | 218 | 235,814 | 26,406 | 258 | 213,584 | 23,917 | 198 |
| Aug-23 | 225,888 | 24,725 | 218 | 235,700 | 26,342 | 257 | 213,481 | 23,859 | 197 |
| Sep-23 | 226,347 | 24,733 | 218 | 235,828 | 26,153 | 258 | 213,597 | 23,687 | 198 |
| Oct-23 | 226,753 | 24,751 | 218 | 236,567 | 26,146 | 256 | 214,267 | 23,681 | 196 |
| Nov-23 | 227,497 | 24,806 | 218 | 237,082 | 26,304 | 259 | 214,733 | 23,825 | 199 |
| Dec-23 | 228,282 | 24,888 | 218 | 237,898 | 26,391 | 259 | 215,472 | 23,903 | 199 |
| Jan-24 | 228,216 | 24,962 | 218 | 239,701 | 26,832 | 264 | 214,966 | 24,064 | 198 |
| Feb-24 | 228,199 | 25,006 | 218 | 239,744 | 26,897 | 263 | 215,005 | 24,122 | 197 |
| Mar-24 | 228,162 | 24,977 | 218 | 239,596 | 26,820 | 264 | 214,872 | 24,052 | 198 |
| Apr-24 | 228,071 | 24,992 | 218 | 239,514 | 26,785 | 262 | 214,798 | 24,021 | 196 |
| May-24 | 227,825 | 24,972 | 218 | 239,137 | 26,790 | 263 | 214,460 | 24,026 | 197 |
| Jun-24 | 227,696 | 24,985 | 217 | 238,737 | 26,805 | 262 | 214,102 | 24,039 | 196 |
| Jul-24 | 227,825 | 24,965 | 217 | 239,351 | 26,802 | 261 | 214,652 | 24,036 | 195 |
| Aug-24 | 228,147 | 24,973 | 217 | 239,236 | 26,737 | 260 | 214,549 | 23,978 | 194 |
| Sep-24 | 228,611 | 24,980 | 217 | 239,365 | 26,545 | 261 | 214,665 | 23,806 | 195 |
| Oct-24 | 229,021 | 24,998 | 217 | 240,115 | 26,538 | 259 | 215,338 | 23,800 | 193 |
| Nov-24 | 229,772 | 25,054 | 217 | 240,638 | 26,699 | 262 | 215,807 | 23,944 | 196 |
| Dec-24 | 230,565 | 25,137 | 217 | 241,467 | 26,787 | 262 | 216,550 | 24,023 | 196 |
| Jan-25 | 230,498 | 25,212 | 217 | 243,296 | 27,235 | 267 | 216,041 | 24,184 | 195 |
| Feb-25 | 230,481 | 25,256 | 217 | 243,341 | 27,301 | 266 | 216,080 | 24,242 | 194 |
| Mar-25 | 230,443 | 25,227 | 217 | 243,190 | 27,222 | 267 | 215,946 | 24,172 | 195 |
| Apr-25 | 230,351 | 25,242 | 217 | 243,106 | 27,187 | 265 | 215,872 | 24,141 | 193 |
| May-25 | 230,103 | 25,221 | 217 | 242,724 | 27,192 | 266 | 215,532 | 24,146 | 194 |
| Jun-25 | 229,973 | 25,235 | 216 | 242,318 | 27,207 | 265 | 215,172 | 24,160 | 193 |
| Jul-25 | 230,104 | 25,215 | 216 | 242,941 | 27,204 | 264 | 215,725 | 24,156 | 192 |
| Aug-25 | 230,429 | 25,222 | 216 | 242,824 | 27,138 | 263 | 215,621 | 24,098 | 191 |
| Sep-25 | 230,897 | 25,230 | 216 | 242,956 | 26,943 | 264 | 215,738 | 23,925 | 192 |
| Oct-25 | 231,311 | 25,248 | 216 | 243,717 | 26,936 | 262 | 216,415 | 23,919 | 190 |
| Nov-25 | 232,070 | 25,305 | 216 | 244,248 | 27,099 | 265 | 216,886 | 24,063 | 193 |
| Dec-25 | 232,871 | 25,389 | 216 | 245,089 | 27,189 | 265 | 217,632 | 24,143 | 193 |
| Jan-26 | 232,803 | 25,464 | 216 | 246,946 | 27,644 | 270 | 217,121 | 24,305 | 192 |
| Feb-26 | 232,786 | 25,508 | 216 | 246,991 | 27,710 | 269 | 217,161 | 24,364 | 191 |
| Mar-26 | 232,748 | 25,479 | 216 | 246,838 | 27,630 | 270 | 217,026 | 24,293 | 192 |
| Apr-26 | 232,655 | 25,494 | 216 | 246,753 | 27,595 | 268 | 216,951 | 24,262 | 190 |
| May-26 | 232,404 | 25,473 | 216 | 246,364 | 27,600 | 269 | 216,610 | 24,266 | 191 |
| Jun-26 | 232,273 | 25,488 | 215 | 245,953 | 27,616 | 268 | 216,248 | 24,280 | 190 |
| Jul-26 | 232,405 | 25,467 | 215 | 246,585 | 27,612 | 267 | 216,804 | 24,277 | 189 |
| Aug-26 | 232,733 | 25,475 | 215 | 246,466 | 27,545 | 266 | 216,700 | 24,218 | 188 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| Sep-26 | 233,206 | 25,482 | 215 | 246,600 | 27,347 | 267 | 216,817 | 24,045 | 189 |
| Oct-26 | 233,624 | 25,501 | 215 | 247,373 | 27,340 | 265 | 217,497 | 24,038 | 187 |
| Nov-26 | 234,390 | 25,558 | 215 | 247,912 | 27,506 | 268 | 217,970 | 24,184 | 190 |
| Dec-26 | 235,199 | 25,642 | 215 | 248,765 | 27,597 | 268 | 218,720 | 24,264 | 190 |
| Jan-27 | 235,131 | 25,718 | 215 | 250,650 | 28,058 | 273 | 218,207 | 24,426 | 189 |
| Feb-27 | 235,114 | 25,763 | 215 | 250,696 | 28,126 | 272 | 218,246 | 24,485 | 188 |
| Mar-27 | 235,075 | 25,734 | 215 | 250,540 | 28,045 | 273 | 218,111 | 24,415 | 189 |
| Apr-27 | 234,981 | 25,749 | 215 | 250,454 | 28,009 | 271 | 218,036 | 24,384 | 187 |
| May-27 | 234,728 | 25,728 | 215 | 250,060 | 28,014 | 272 | 217,693 | 24,388 | 188 |
| Jun-27 | 234,595 | 25,742 | 214 | 249,642 | 28,030 | 271 | 217,329 | 24,402 | 187 |
| Jul-27 | 234,729 | 25,722 | 214 | 250,284 | 28,026 | 270 | 217,888 | 24,399 | 186 |
| Aug-27 | 235,060 | 25,729 | 214 | 250,163 | 27,958 | 269 | 217,783 | 24,340 | 185 |
| Sep-27 | 235,538 | 25,737 | 214 | 250,299 | 27,758 | 270 | 217,901 | 24,165 | 186 |
| Oct-27 | 235,960 | 25,756 | 214 | 251,084 | 27,750 | 268 | 218,584 | 24,158 | 184 |
| Nov-27 | 236,734 | 25,814 | 214 | 251,630 | 27,918 | 271 | 219,060 | 24,305 | 187 |
| Dec-27 | 237,551 | 25,899 | 214 | 252,496 | 28,011 | 271 | 219,814 | 24,385 | 187 |
| Jan-28 | 237,482 | 25,976 | 214 | 254,410 | 28,479 | 276 | 219,298 | 24,549 | 186 |
| Feb-28 | 237,465 | 26,021 | 214 | 254,456 | 28,548 | 275 | 219,338 | 24,608 | 185 |
| Mar-28 | 237,426 | 25,991 | 214 | 254,298 | 28,465 | 276 | 219,202 | 24,537 | 186 |
| Apr-28 | 237,331 | 26,006 | 214 | 254,211 | 28,429 | 274 | 219,126 | 24,505 | 184 |
| May-28 | 237,076 | 25,985 | 214 | 253,811 | 28,434 | 275 | 218,781 | 24,510 | 185 |
| Jun-28 | 236,941 | 26,000 | 213 | 253,387 | 28,450 | 274 | 218,416 | 24,524 | 184 |
| Jul-28 | 237,076 | 25,979 | 213 | 254,038 | 28,447 | 273 | 218,978 | 24,521 | 183 |
| Aug-28 | 237,411 | 25,987 | 213 | 253,916 | 28,378 | 272 | 218,872 | 24,461 | 182 |
| Sep-28 | 237,893 | 25,994 | 213 | 254,053 | 28,174 | 273 | 218,991 | 24,286 | 183 |
| Oct-28 | 238,320 | 26,013 | 213 | 254,850 | 28,166 | 271 | 219,677 | 24,279 | 181 |
| Nov-28 | 239,102 | 26,072 | 213 | 255,405 | 28,337 | 274 | 220,155 | 24,426 | 184 |
| Dec-28 | 239,927 | 26,158 | 213 | 256,284 | 28,431 | 274 | 220,913 | 24,507 | 184 |
| Jan-29 | 239,857 | 26,235 | 213 | 258,226 | 28,906 | 279 | 220,394 | 24,671 | 183 |
| Feb-29 | 239,839 | 26,281 | 213 | 258,273 | 28,976 | 278 | 220,434 | 24,731 | 182 |
| Mar-29 | 239,800 | 26,251 | 213 | 258,113 | 28,892 | 279 | 220,298 | 24,659 | 183 |
| Apr-29 | 239,704 | 26,267 | 213 | 258,024 | 28,855 | 277 | 220,222 | 24,628 | 181 |
| May-29 | 239,446 | 26,245 | 213 | 257,618 | 28,861 | 278 | 219,875 | 24,632 | 182 |
| Jun-29 | 239,311 | 26,260 | 212 | 257,188 | 28,877 | 277 | 219,508 | 24,646 | 181 |
| Jul-29 | 239,447 | 26,239 | 212 | 257,849 | 28,873 | 276 | 220,072 | 24,643 | 180 |
| Aug-29 | 239,785 | 26,246 | 212 | 257,725 | 28,803 | 275 | 219,966 | 24,584 | 179 |
| Sep-29 | 240,272 | 26,254 | 212 | 257,864 | 28,597 | 276 | 220,085 | 24,407 | 180 |
| Oct-29 | 240,703 | 26,273 | 212 | 258,673 | 28,589 | 274 | 220,775 | 24,401 | 178 |
| Nov-29 | 241,493 | 26,332 | 212 | 259,236 | 28,762 | 277 | 221,256 | 24,548 | 181 |
| Dec-29 | 242,326 | 26,419 | 212 | 260,128 | 28,857 | 277 | 222,018 | 24,629 | 181 |
| Jan-30 | 242,256 | 26,498 | 212 | 262,099 | 29,340 | 282 | 221,496 | 24,795 | 180 |
| Feb-30 | 242,238 | 26,544 | 212 | 262,147 | 29,411 | 281 | 221,536 | 24,855 | 179 |
| Mar-30 | 242,198 | 26,513 | 212 | 261,985 | 29,326 | 282 | 221,399 | 24,783 | 180 |
| Apr-30 | 242,101 | 26,529 | 212 | 261,894 | 29,288 | 280 | 221,323 | 24,751 | 178 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# WASHINGTON AND IDAHO

| | Washington and Idaho - Expected Growth | | | Washington and Idaho - High Growth | | | Washington and Idaho - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers | Residential Customers | Commericial Customers | Industrial Customers |
| May-30 | 241,841 | 26,508 | 212 | 261,482 | 29,293 | 281 | 220,975 | 24,755 | 179 |
| Jun-30 | 241,704 | 26,522 | 211 | 261,046 | 29,310 | 280 | 220,606 | 24,770 | 178 |
| Jul-30 | 241,841 | 26,501 | 211 | 261,717 | 29,306 | 279 | 221,173 | 24,766 | 177 |
| Aug-30 | 242,183 | 26,509 | 211 | 261,590 | 29,235 | 278 | 221,066 | 24,706 | 176 |
| Sep-30 | 242,675 | 26,517 | 211 | 261,732 | 29,026 | 279 | 221,186 | 24,529 | 177 |
| Oct-30 | 243,110 | 26,536 | 211 | 262,553 | 29,018 | 277 | 221,879 | 24,523 | 175 |
| Nov-30 | 243,907 | 26,596 | 211 | 263,124 | 29,194 | 280 | 222,363 | 24,671 | 178 |
| Dec-30 | 244,749 | 26,684 | 211 | 264,030 | 29,290 | 280 | 223,128 | 24,753 | 178 |
| Jan-31 | 244,678 | 26,763 | 211 | 266,031 | 29,780 | 285 | 222,604 | 24,919 | 177 |
| Feb-31 | 244,660 | 26,809 | 211 | 266,079 | 29,852 | 284 | 222,644 | 24,979 | 176 |
| Mar-31 | 244,620 | 26,779 | 211 | 265,914 | 29,766 | 285 | 222,506 | 24,907 | 177 |
| Apr-31 | 244,522 | 26,795 | 211 | 265,823 | 29,728 | 283 | 222,430 | 24,875 | 175 |
| May-31 | 244,259 | 26,773 | 211 | 265,405 | 29,733 | 284 | 222,080 | 24,879 | 176 |
| Jun-31 | 244,121 | 26,788 | 210 | 264,961 | 29,750 | 283 | 221,709 | 24,893 | 175 |
| Jul-31 | 244,260 | 26,766 | 210 | 265,642 | 29,746 | 282 | 222,279 | 24,890 | 174 |
| Aug-31 | 244,605 | 26,774 | 210 | 265,514 | 29,674 | 281 | 222,171 | 24,830 | 173 |
| Sep-31 | 245,102 | 26,782 | 210 | 265,658 | 29,461 | 282 | 222,292 | 24,652 | 174 |
| Oct-31 | 245,541 | 26,801 | 210 | 266,491 | 29,453 | 280 | 222,989 | 24,645 | 172 |
| Nov-31 | 246,347 | 26,862 | 210 | 267,071 | 29,631 | 283 | 223,474 | 24,794 | 175 |
| Dec-31 | 247,197 | 26,950 | 210 | 267,990 | 29,729 | 283 | 224,243 | 24,876 | 175 |
| Jan-32 | 247,125 | 27,030 | 210 | 270,021 | 30,227 | 288 | 223,717 | 25,043 | 174 |
| Feb-32 | 247,107 | 27,077 | 210 | 270,070 | 30,300 | 287 | 223,757 | 25,104 | 173 |
| Mar-32 | 247,067 | 27,046 | 210 | 269,903 | 30,212 | 288 | 223,619 | 25,031 | 174 |
| Apr-32 | 246,968 | 27,062 | 210 | 269,810 | 30,174 | 286 | 223,542 | 24,999 | 172 |
| May-32 | 246,702 | 27,041 | 210 | 269,386 | 30,179 | 287 | 223,190 | 25,004 | 173 |
| Jun-32 | 246,562 | 27,056 | 209 | 268,936 | 30,196 | 286 | 222,817 | 25,018 | 172 |
| Jul-32 | 246,702 | 27,034 | 209 | 269,627 | 30,192 | 285 | 223,390 | 25,015 | 171 |
| Aug-32 | 247,051 | 27,042 | 209 | 269,497 | 30,119 | 284 | 223,282 | 24,954 | 170 |
| Sep-32 | 247,553 | 27,050 | 209 | 269,643 | 29,903 | 285 | 223,403 | 24,775 | 171 |
| Oct-32 | 247,997 | 27,069 | 209 | 270,488 | 29,895 | 283 | 224,104 | 24,768 | 169 |
| Nov-32 | 248,810 | 27,130 | 209 | 271,077 | 30,076 | 286 | 224,592 | 24,918 | 172 |
| Dec-32 | 249,669 | 27,220 | 209 | 272,010 | 30,175 | 286 | 225,365 | 25,001 | 172 |
| Jan-33 | 249,596 | 27,301 | 209 | 274,072 | 30,680 | 291 | 224,835 | 25,168 | 171 |
| Feb-33 | 249,578 | 27,348 | 209 | 274,121 | 30,754 | 290 | 224,876 | 25,229 | 170 |
| Mar-33 | 249,537 | 27,317 | 209 | 273,952 | 30,665 | 291 | 224,737 | 25,156 | 171 |
| Apr-33 | 249,437 | 27,333 | 209 | 273,857 | 30,626 | 289 | 224,660 | 25,124 | 169 |
| May-33 | 249,169 | 27,311 | 209 | 273,426 | 30,632 | 290 | 224,306 | 25,129 | 170 |
| Jun-33 | 249,028 | 27,326 | 208 | 272,970 | 30,649 | 289 | 223,931 | 25,143 | 169 |
| Jul-33 | 249,169 | 27,304 | 208 | 273,672 | 30,645 | 288 | 224,507 | 25,140 | 168 |
| Aug-33 | 249,521 | 27,312 | 208 | 273,540 | 30,571 | 287 | 224,399 | 25,079 | 167 |
| Sep-33 | 250,028 | 27,320 | 208 | 273,688 | 30,351 | 288 | 224,520 | 24,899 | 168 |
| Oct-33 | 250,477 | 27,340 | 208 | 274,546 | 30,343 | 286 | 225,224 | 24,892 | 166 |
| Nov-33 | 251,298 | 27,402 | 208 | 275,144 | 30,527 | 289 | 225,715 | 25,043 | 169 |
| Dec-33 | 252,166 | 27,492 | 208 | 276,090 | 30,628 | 289 | 226,491 | 25,126 | 169 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| Jan-12 | 51,331 | 6,513 | 18 | 51,331 | 6,513 | 18 | 51,331 | 6,513 | 18 |
| Feb-12 | 51,255 | 6,532 | 18 | 51,255 | 6,532 | 18 | 51,255 | 6,532 | 18 |
| Mar-12 | 51,317 | 6,549 | 18 | 51,317 | 6,549 | 18 | 51,317 | 6,549 | 18 |
| Apr-12 | 51,292 | 6,508 | 18 | 51,292 | 6,508 | 18 | 51,292 | 6,508 | 18 |
| May-12 | 51,111 | 6,499 | 18 | 51,111 | 6,499 | 18 | 51,111 | 6,499 | 18 |
| Jun-12 | 51,028 | 6,475 | 18 | 51,028 | 6,475 | 18 | 51,028 | 6,475 | 18 |
| Jul-12 | 50,836 | 6,463 | 18 | 50,836 | 6,463 | 18 | 50,836 | 6,463 | 18 |
| Aug-12 | 50,727 | 6,445 | 17 | 50,727 | 6,445 | 17 | 50,727 | 6,445 | 17 |
| Sep-12 | 50,650 | 6,447 | 16 | 50,650 | 6,447 | 16 | 50,650 | 6,447 | 16 |
| Oct-12 | 50,690 | 6,462 | 18 | 50,690 | 6,462 | 18 | 50,690 | 6,462 | 18 |
| Nov-12 | 51,079 | 6,502 | 17 | 51,079 | 6,502 | 17 | 51,079 | 6,502 | 17 |
| Dec-12 | 51,500 | 6,534 | 17 | 51,500 | 6,534 | 17 | 51,500 | 6,534 | 17 |
| Jan-13 | 51,740 | 6,559 | 17 | 51,740 | 6,559 | 17 | 51,740 | 6,559 | 17 |
| Feb-13 | 51,700 | 6,589 | 17 | 51,700 | 6,589 | 17 | 51,700 | 6,589 | 17 |
| Mar-13 | 51,645 | 6,582 | 17 | 51,645 | 6,582 | 17 | 51,645 | 6,582 | 17 |
| Apr-13 | 51,602 | 6,565 | 17 | 51,602 | 6,565 | 17 | 51,602 | 6,565 | 17 |
| May-13 | 50,798 | 6,517 | 16 | 50,798 | 6,517 | 16 | 50,798 | 6,517 | 16 |
| Jun-13 | 50,658 | 6,524 | 16 | 50,658 | 6,524 | 16 | 50,658 | 6,524 | 16 |
| Jul-13 | 50,499 | 6,493 | 16 | 50,499 | 6,493 | 16 | 50,499 | 6,493 | 16 |
| Aug-13 | 50,451 | 6,479 | 16 | 50,451 | 6,479 | 16 | 50,451 | 6,479 | 16 |
| Sep-13 | 50,413 | 6,448 | 16 | 50,413 | 6,448 | 16 | 50,413 | 6,448 | 16 |
| Oct-13 | 51,350 | 6,487 | 16 | 51,350 | 6,487 | 16 | 51,350 | 6,487 | 16 |
| Nov-13 | 51,025 | 6,488 | 16 | 51,025 | 6,488 | 16 | 51,025 | 6,488 | 16 |
| Dec-13 | 51,339 | 6,532 | 16 | 51,339 | 6,532 | 16 | 51,339 | 6,532 | 16 |
| Jan-14 | 51,845 | 6,589 | 16 | 52,594 | 6,667 | 17 | 52,025 | 6,595 | 16 |
| Feb-14 | 51,794 | 6,593 | 16 | 52,553 | 6,698 | 17 | 51,984 | 6,625 | 16 |
| Mar-14 | 51,751 | 6,579 | 16 | 52,497 | 6,691 | 17 | 51,929 | 6,618 | 16 |
| Apr-14 | 51,713 | 6,556 | 16 | 52,453 | 6,673 | 17 | 51,886 | 6,601 | 16 |
| May-14 | 51,491 | 6,536 | 16 | 51,636 | 6,625 | 17 | 51,077 | 6,553 | 16 |
| Jun-14 | 51,333 | 6,518 | 16 | 51,494 | 6,632 | 17 | 50,937 | 6,560 | 16 |
| Jul-14 | 51,141 | 6,484 | 16 | 51,332 | 6,600 | 17 | 50,777 | 6,529 | 16 |
| Aug-14 | 51,032 | 6,474 | 16 | 51,283 | 6,586 | 17 | 50,728 | 6,515 | 16 |
| Sep-14 | 50,982 | 6,456 | 16 | 51,245 | 6,554 | 17 | 50,690 | 6,483 | 16 |
| Oct-14 | 51,234 | 6,470 | 16 | 52,197 | 6,594 | 17 | 51,632 | 6,523 | 16 |
| Nov-14 | 51,598 | 6,519 | 16 | 51,867 | 6,595 | 17 | 51,306 | 6,524 | 16 |
| Dec-14 | 51,914 | 6,562 | 16 | 52,186 | 6,640 | 17 | 51,621 | 6,568 | 16 |
| Jan-15 | 52,311 | 6,610 | 16 | 53,462 | 6,777 | 17 | 52,311 | 6,631 | 16 |
| Feb-15 | 52,260 | 6,625 | 16 | 53,420 | 6,808 | 17 | 52,270 | 6,662 | 16 |
| Mar-15 | 52,217 | 6,616 | 16 | 53,363 | 6,801 | 17 | 52,215 | 6,655 | 16 |
| Apr-15 | 52,178 | 6,598 | 16 | 53,319 | 6,783 | 17 | 52,171 | 6,637 | 16 |
| May-15 | 51,956 | 6,589 | 16 | 52,488 | 6,734 | 17 | 51,358 | 6,589 | 16 |
| Jun-15 | 51,797 | 6,579 | 16 | 52,344 | 6,741 | 17 | 51,217 | 6,596 | 16 |
| Jul-15 | 51,603 | 6,547 | 16 | 52,179 | 6,709 | 17 | 51,056 | 6,565 | 16 |
| Aug-15 | 51,494 | 6,535 | 16 | 52,130 | 6,695 | 17 | 51,007 | 6,550 | 16 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| Sep-15 | 51,443 | 6,514 | 16 | 52,090 | 6,663 | 17 | 50,969 | 6,519 | 16 |
| Oct-15 | 51,696 | 6,524 | 16 | 53,059 | 6,703 | 17 | 51,916 | 6,559 | 16 |
| Nov-15 | 52,064 | 6,572 | 16 | 52,723 | 6,704 | 17 | 51,588 | 6,560 | 16 |
| Dec-15 | 52,381 | 6,616 | 16 | 53,047 | 6,749 | 17 | 51,905 | 6,604 | 16 |
| Jan-16 | 52,834 | 6,670 | 16 | 54,344 | 6,889 | 18 | 52,598 | 6,668 | 15 |
| Feb-16 | 52,782 | 6,682 | 16 | 54,302 | 6,921 | 18 | 52,558 | 6,698 | 15 |
| Mar-16 | 52,738 | 6,671 | 16 | 54,244 | 6,913 | 18 | 52,502 | 6,691 | 15 |
| Apr-16 | 52,700 | 6,652 | 16 | 54,199 | 6,895 | 18 | 52,458 | 6,674 | 15 |
| May-16 | 52,476 | 6,640 | 16 | 53,354 | 6,845 | 18 | 51,641 | 6,625 | 15 |
| Jun-16 | 52,317 | 6,628 | 16 | 53,207 | 6,852 | 18 | 51,498 | 6,632 | 15 |
| Jul-16 | 52,122 | 6,595 | 16 | 53,040 | 6,820 | 18 | 51,337 | 6,601 | 15 |
| Aug-16 | 52,011 | 6,584 | 16 | 52,990 | 6,805 | 18 | 51,288 | 6,586 | 15 |
| Sep-16 | 51,961 | 6,564 | 16 | 52,950 | 6,772 | 18 | 51,249 | 6,555 | 15 |
| Oct-16 | 52,215 | 6,575 | 16 | 53,934 | 6,813 | 18 | 52,202 | 6,595 | 15 |
| Nov-16 | 52,585 | 6,624 | 16 | 53,593 | 6,814 | 18 | 51,872 | 6,596 | 15 |
| Dec-16 | 52,904 | 6,668 | 16 | 53,922 | 6,861 | 18 | 52,191 | 6,640 | 15 |
| Jan-17 | 53,361 | 6,722 | 16 | 55,240 | 7,003 | 18 | 52,888 | 6,704 | 15 |
| Feb-17 | 53,310 | 6,735 | 16 | 55,198 | 7,035 | 18 | 52,847 | 6,735 | 15 |
| Mar-17 | 53,266 | 6,725 | 16 | 55,139 | 7,027 | 18 | 52,791 | 6,728 | 15 |
| Apr-17 | 53,227 | 6,706 | 16 | 55,093 | 7,009 | 18 | 52,747 | 6,711 | 15 |
| May-17 | 53,002 | 6,695 | 16 | 54,235 | 6,958 | 18 | 51,925 | 6,662 | 15 |
| Jun-17 | 52,841 | 6,684 | 16 | 54,085 | 6,965 | 18 | 51,782 | 6,669 | 15 |
| Jul-17 | 52,645 | 6,651 | 16 | 53,915 | 6,932 | 18 | 51,619 | 6,637 | 15 |
| Aug-17 | 52,535 | 6,639 | 16 | 53,864 | 6,917 | 18 | 51,570 | 6,623 | 15 |
| Sep-17 | 52,483 | 6,618 | 16 | 53,824 | 6,884 | 18 | 51,531 | 6,591 | 15 |
| Oct-17 | 52,739 | 6,630 | 16 | 54,824 | 6,926 | 18 | 52,489 | 6,631 | 15 |
| Nov-17 | 53,111 | 6,679 | 16 | 54,477 | 6,927 | 18 | 52,157 | 6,632 | 15 |
| Dec-17 | 53,432 | 6,723 | 16 | 54,812 | 6,974 | 18 | 52,478 | 6,677 | 15 |
| Jan-18 | 53,894 | 6,778 | 16 | 56,152 | 7,118 | 19 | 53,179 | 6,741 | 14 |
| Feb-18 | 53,842 | 6,791 | 16 | 56,108 | 7,151 | 19 | 53,137 | 6,772 | 14 |
| Mar-18 | 53,798 | 6,780 | 16 | 56,049 | 7,143 | 19 | 53,081 | 6,765 | 14 |
| Apr-18 | 53,759 | 6,761 | 16 | 56,002 | 7,125 | 19 | 53,037 | 6,748 | 14 |
| May-18 | 53,532 | 6,749 | 16 | 55,129 | 7,073 | 19 | 52,210 | 6,698 | 14 |
| Jun-18 | 53,372 | 6,738 | 16 | 54,977 | 7,080 | 19 | 52,067 | 6,705 | 14 |
| Jul-18 | 53,175 | 6,705 | 16 | 54,805 | 7,047 | 19 | 51,903 | 6,674 | 14 |
| Aug-18 | 53,062 | 6,693 | 16 | 54,753 | 7,031 | 19 | 51,854 | 6,659 | 14 |
| Sep-18 | 53,012 | 6,673 | 16 | 54,712 | 6,998 | 19 | 51,815 | 6,627 | 14 |
| Oct-18 | 53,268 | 6,684 | 16 | 55,729 | 7,040 | 19 | 52,778 | 6,667 | 14 |
| Nov-18 | 53,643 | 6,734 | 16 | 55,376 | 7,041 | 19 | 52,444 | 6,668 | 14 |
| Dec-18 | 53,966 | 6,778 | 16 | 55,717 | 7,089 | 19 | 52,766 | 6,714 | 14 |
| Jan-19 | 54,487 | 6,853 | 16 | 57,078 | 7,236 | 19 | 53,471 | 6,778 | 14 |
| Feb-19 | 54,435 | 6,866 | 16 | 57,034 | 7,269 | 19 | 53,430 | 6,809 | 14 |
| Mar-19 | 54,390 | 6,855 | 16 | 56,973 | 7,261 | 19 | 53,373 | 6,802 | 14 |
| Apr-19 | 54,350 | 6,835 | 16 | 56,926 | 7,242 | 19 | 53,328 | 6,785 | 14 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| May-19 | 54,121 | 6,823 | 16 | 56,039 | 7,189 | 19 | 52,498 | 6,735 | 14 |
| Jun-19 | 53,959 | 6,812 | 16 | 55,885 | 7,197 | 19 | 52,353 | 6,742 | 14 |
| Jul-19 | 53,760 | 6,779 | 16 | 55,709 | 7,163 | 19 | 52,189 | 6,710 | 14 |
| Aug-19 | 53,646 | 6,767 | 16 | 55,656 | 7,147 | 19 | 52,139 | 6,696 | 14 |
| Sep-19 | 53,595 | 6,746 | 16 | 55,614 | 7,113 | 19 | 52,100 | 6,664 | 14 |
| Oct-19 | 53,854 | 6,758 | 16 | 56,648 | 7,156 | 19 | 53,068 | 6,704 | 14 |
| Nov-19 | 54,233 | 6,808 | 16 | 56,289 | 7,157 | 19 | 52,732 | 6,705 | 14 |
| Dec-19 | 54,560 | 6,853 | 16 | 56,636 | 7,206 | 19 | 53,057 | 6,751 | 14 |
| Jan-20 | 55,086 | 6,928 | 16 | 58,020 | 7,355 | 20 | 53,765 | 6,816 | 13 |
| Feb-20 | 55,033 | 6,941 | 16 | 57,975 | 7,389 | 20 | 53,724 | 6,847 | 13 |
| Mar-20 | 54,988 | 6,930 | 16 | 57,914 | 7,381 | 20 | 53,666 | 6,840 | 13 |
| Apr-20 | 54,948 | 6,911 | 16 | 57,865 | 7,362 | 20 | 53,622 | 6,822 | 13 |
| May-20 | 54,716 | 6,898 | 16 | 56,964 | 7,308 | 20 | 52,786 | 6,772 | 13 |
| Jun-20 | 54,552 | 6,887 | 16 | 56,807 | 7,316 | 20 | 52,641 | 6,779 | 13 |
| Jul-20 | 54,351 | 6,853 | 16 | 56,628 | 7,281 | 20 | 52,476 | 6,747 | 13 |
| Aug-20 | 54,236 | 6,841 | 16 | 56,575 | 7,265 | 20 | 52,426 | 6,733 | 13 |
| Sep-20 | 54,185 | 6,821 | 16 | 56,532 | 7,231 | 20 | 52,386 | 6,700 | 13 |
| Oct-20 | 54,447 | 6,832 | 16 | 57,583 | 7,274 | 20 | 53,360 | 6,741 | 13 |
| Nov-20 | 54,829 | 6,883 | 16 | 57,218 | 7,275 | 20 | 53,022 | 6,742 | 13 |
| Dec-20 | 55,160 | 6,928 | 16 | 57,570 | 7,325 | 20 | 53,348 | 6,788 | 13 |
| Jan-21 | 55,692 | 7,004 | 16 | 58,977 | 7,476 | 20 | 54,061 | 6,853 | 13 |
| Feb-21 | 55,639 | 7,018 | 16 | 58,932 | 7,511 | 20 | 54,019 | 6,885 | 13 |
| Mar-21 | 55,593 | 7,006 | 16 | 58,869 | 7,503 | 20 | 53,962 | 6,877 | 13 |
| Apr-21 | 55,553 | 6,987 | 16 | 58,820 | 7,483 | 20 | 53,917 | 6,859 | 13 |
| May-21 | 55,318 | 6,974 | 16 | 57,904 | 7,429 | 20 | 53,077 | 6,809 | 13 |
| Jun-21 | 55,152 | 6,963 | 16 | 57,744 | 7,437 | 20 | 52,930 | 6,817 | 13 |
| Jul-21 | 54,949 | 6,929 | 16 | 57,563 | 7,401 | 20 | 52,764 | 6,784 | 13 |
| Aug-21 | 54,833 | 6,916 | 16 | 57,508 | 7,385 | 20 | 52,714 | 6,770 | 13 |
| Sep-21 | 54,781 | 6,896 | 16 | 57,465 | 7,350 | 20 | 52,674 | 6,737 | 13 |
| Oct-21 | 55,046 | 6,907 | 16 | 58,533 | 7,394 | 20 | 53,653 | 6,778 | 13 |
| Nov-21 | 55,432 | 6,959 | 16 | 58,162 | 7,396 | 20 | 53,314 | 6,779 | 13 |
| Dec-21 | 55,767 | 7,004 | 16 | 58,520 | 7,446 | 20 | 53,642 | 6,825 | 13 |
| Jan-22 | 56,305 | 7,081 | 16 | 59,951 | 7,600 | 21 | 54,358 | 6,891 | 12 |
| Feb-22 | 56,251 | 7,095 | 16 | 59,904 | 7,635 | 21 | 54,316 | 6,922 | 12 |
| Mar-22 | 56,205 | 7,083 | 16 | 59,840 | 7,626 | 21 | 54,258 | 6,915 | 12 |
| Apr-22 | 56,164 | 7,063 | 16 | 59,791 | 7,607 | 21 | 54,213 | 6,897 | 12 |
| May-22 | 55,927 | 7,051 | 16 | 58,859 | 7,551 | 21 | 53,369 | 6,847 | 12 |
| Jun-22 | 55,759 | 7,039 | 16 | 58,697 | 7,559 | 21 | 53,221 | 6,854 | 12 |
| Jul-22 | 55,553 | 7,005 | 16 | 58,513 | 7,523 | 21 | 53,054 | 6,822 | 12 |
| Aug-22 | 55,436 | 6,992 | 16 | 58,457 | 7,507 | 21 | 53,004 | 6,807 | 12 |
| Sep-22 | 55,383 | 6,971 | 16 | 58,413 | 7,471 | 21 | 52,964 | 6,774 | 12 |
| Oct-22 | 55,651 | 6,983 | 16 | 59,499 | 7,516 | 21 | 53,948 | 6,815 | 12 |
| Nov-22 | 56,042 | 7,035 | 16 | 59,122 | 7,518 | 21 | 53,607 | 6,816 | 12 |
| Dec-22 | 56,380 | 7,081 | 16 | 59,486 | 7,569 | 21 | 53,937 | 6,863 | 12 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| Jan-23 | 56,924 | 7,159 | 16 | 60,940 | 7,725 | 21 | 54,657 | 6,929 | 12 |
| Feb-23 | 56,870 | 7,173 | 16 | 60,893 | 7,761 | 21 | 54,615 | 6,960 | 12 |
| Mar-23 | 56,823 | 7,161 | 16 | 60,828 | 7,752 | 21 | 54,557 | 6,953 | 12 |
| Apr-23 | 56,781 | 7,141 | 16 | 60,777 | 7,732 | 21 | 54,511 | 6,935 | 12 |
| May-23 | 56,542 | 7,128 | 16 | 59,830 | 7,676 | 21 | 53,662 | 6,884 | 12 |
| Jun-23 | 56,372 | 7,117 | 16 | 59,665 | 7,684 | 21 | 53,514 | 6,892 | 12 |
| Jul-23 | 56,164 | 7,082 | 16 | 59,478 | 7,647 | 21 | 53,346 | 6,859 | 12 |
| Aug-23 | 56,046 | 7,069 | 16 | 59,421 | 7,631 | 21 | 53,295 | 6,844 | 12 |
| Sep-23 | 55,992 | 7,048 | 16 | 59,377 | 7,594 | 21 | 53,255 | 6,812 | 12 |
| Oct-23 | 56,263 | 7,060 | 16 | 60,480 | 7,640 | 21 | 54,245 | 6,853 | 12 |
| Nov-23 | 56,658 | 7,113 | 16 | 60,098 | 7,642 | 21 | 53,902 | 6,854 | 12 |
| Dec-23 | 57,000 | 7,159 | 16 | 60,467 | 7,693 | 21 | 54,234 | 6,900 | 12 |
| Jan-24 | 57,550 | 7,238 | 16 | 61,945 | 7,853 | 22 | 54,958 | 6,967 | 11 |
| Feb-24 | 57,495 | 7,252 | 16 | 61,897 | 7,889 | 22 | 54,915 | 6,999 | 11 |
| Mar-24 | 57,448 | 7,240 | 16 | 61,831 | 7,880 | 22 | 54,857 | 6,991 | 11 |
| Apr-24 | 57,406 | 7,220 | 16 | 61,780 | 7,860 | 22 | 54,811 | 6,973 | 11 |
| May-24 | 57,164 | 7,207 | 16 | 60,817 | 7,802 | 22 | 53,957 | 6,922 | 11 |
| Jun-24 | 56,992 | 7,195 | 16 | 60,650 | 7,811 | 22 | 53,808 | 6,930 | 11 |
| Jul-24 | 56,782 | 7,160 | 16 | 60,459 | 7,774 | 22 | 53,640 | 6,897 | 11 |
| Aug-24 | 56,662 | 7,147 | 16 | 60,402 | 7,757 | 22 | 53,589 | 6,882 | 11 |
| Sep-24 | 56,608 | 7,126 | 16 | 60,356 | 7,720 | 22 | 53,548 | 6,849 | 11 |
| Oct-24 | 56,882 | 7,137 | 16 | 61,478 | 7,766 | 22 | 54,544 | 6,890 | 11 |
| Nov-24 | 57,282 | 7,191 | 16 | 61,089 | 7,768 | 22 | 54,198 | 6,891 | 11 |
| Dec-24 | 57,627 | 7,238 | 16 | 61,465 | 7,820 | 22 | 54,532 | 6,938 | 11 |
| Jan-25 | 58,183 | 7,317 | 16 | 62,967 | 7,982 | 22 | 55,260 | 7,005 | 11 |
| Feb-25 | 58,128 | 7,331 | 16 | 62,919 | 8,019 | 22 | 55,217 | 7,037 | 11 |
| Mar-25 | 58,080 | 7,320 | 16 | 62,852 | 8,010 | 22 | 55,159 | 7,030 | 11 |
| Apr-25 | 58,038 | 7,299 | 16 | 62,799 | 7,990 | 22 | 55,113 | 7,012 | 11 |
| May-25 | 57,793 | 7,286 | 16 | 61,821 | 7,931 | 22 | 54,254 | 6,960 | 11 |
| Jun-25 | 57,619 | 7,274 | 16 | 61,651 | 7,940 | 22 | 54,104 | 6,968 | 11 |
| Jul-25 | 57,407 | 7,239 | 16 | 61,457 | 7,902 | 22 | 53,935 | 6,935 | 11 |
| Aug-25 | 57,286 | 7,226 | 16 | 61,399 | 7,885 | 22 | 53,883 | 6,920 | 11 |
| Sep-25 | 57,231 | 7,204 | 16 | 61,352 | 7,847 | 22 | 53,843 | 6,887 | 11 |
| Oct-25 | 57,508 | 7,216 | 16 | 62,493 | 7,895 | 22 | 54,844 | 6,928 | 11 |
| Nov-25 | 57,912 | 7,270 | 16 | 62,097 | 7,896 | 22 | 54,496 | 6,929 | 11 |
| Dec-25 | 58,261 | 7,317 | 16 | 62,479 | 7,949 | 22 | 54,832 | 6,976 | 11 |
| Jan-26 | 58,823 | 7,398 | 16 | 64,006 | 8,114 | 23 | 55,564 | 7,044 | 10 |
| Feb-26 | 58,767 | 7,412 | 16 | 63,957 | 8,151 | 23 | 55,521 | 7,076 | 10 |
| Mar-26 | 58,719 | 7,400 | 16 | 63,889 | 8,142 | 23 | 55,462 | 7,068 | 10 |
| Apr-26 | 58,676 | 7,379 | 16 | 63,836 | 8,121 | 23 | 55,416 | 7,050 | 10 |
| May-26 | 58,429 | 7,366 | 16 | 62,841 | 8,062 | 23 | 54,552 | 6,999 | 10 |
| Jun-26 | 58,253 | 7,354 | 16 | 62,668 | 8,071 | 23 | 54,402 | 7,006 | 10 |
| Jul-26 | 58,038 | 7,318 | 16 | 62,471 | 8,032 | 23 | 54,231 | 6,973 | 10 |
| Aug-26 | 57,916 | 7,305 | 16 | 62,412 | 8,015 | 23 | 54,180 | 6,958 | 10 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| Sep-26 | 57,861 | 7,283 | 16 | 62,365 | 7,977 | 23 | 54,139 | 6,925 | 10 |
| Oct-26 | 58,141 | 7,295 | 16 | 63,524 | 8,025 | 23 | 55,145 | 6,966 | 10 |
| Nov-26 | 58,549 | 7,350 | 16 | 63,122 | 8,026 | 23 | 54,796 | 6,968 | 10 |
| Dec-26 | 58,902 | 7,398 | 16 | 63,510 | 8,081 | 23 | 55,133 | 7,015 | 10 |
| Jan-27 | 59,470 | 7,479 | 16 | 65,062 | 8,248 | 23 | 55,870 | 7,083 | 10 |
| Feb-27 | 59,413 | 7,494 | 16 | 65,012 | 8,286 | 23 | 55,826 | 7,115 | 10 |
| Mar-27 | 59,365 | 7,482 | 16 | 64,943 | 8,277 | 23 | 55,767 | 7,107 | 10 |
| Apr-27 | 59,321 | 7,461 | 16 | 64,889 | 8,255 | 23 | 55,721 | 7,089 | 10 |
| May-27 | 59,071 | 7,447 | 16 | 63,878 | 8,195 | 23 | 54,852 | 7,037 | 10 |
| Jun-27 | 58,894 | 7,435 | 16 | 63,702 | 8,204 | 23 | 54,701 | 7,045 | 10 |
| Jul-27 | 58,677 | 7,399 | 16 | 63,502 | 8,165 | 23 | 54,530 | 7,011 | 10 |
| Aug-27 | 58,553 | 7,386 | 16 | 63,441 | 8,147 | 23 | 54,478 | 6,996 | 10 |
| Sep-27 | 58,497 | 7,363 | 16 | 63,394 | 8,108 | 23 | 54,437 | 6,963 | 10 |
| Oct-27 | 58,780 | 7,376 | 16 | 64,572 | 8,157 | 23 | 55,448 | 7,005 | 10 |
| Nov-27 | 59,193 | 7,431 | 16 | 64,163 | 8,159 | 23 | 55,098 | 7,006 | 10 |
| Dec-27 | 59,550 | 7,479 | 16 | 64,558 | 8,214 | 23 | 55,437 | 7,053 | 10 |
| Jan-28 | 60,125 | 7,562 | 16 | 66,136 | 8,384 | 24 | 56,177 | 7,121 | 9 |
| Feb-28 | 60,067 | 7,576 | 16 | 66,085 | 8,422 | 24 | 56,133 | 7,154 | 9 |
| Mar-28 | 60,018 | 7,564 | 16 | 66,014 | 8,413 | 24 | 56,074 | 7,146 | 9 |
| Apr-28 | 59,974 | 7,543 | 16 | 65,959 | 8,392 | 24 | 56,027 | 7,128 | 9 |
| May-28 | 59,721 | 7,529 | 16 | 64,932 | 8,330 | 24 | 55,154 | 7,076 | 9 |
| Jun-28 | 59,542 | 7,517 | 16 | 64,753 | 8,339 | 24 | 55,002 | 7,083 | 9 |
| Jul-28 | 59,322 | 7,480 | 16 | 64,550 | 8,300 | 24 | 54,829 | 7,050 | 9 |
| Aug-28 | 59,197 | 7,467 | 16 | 64,488 | 8,282 | 24 | 54,777 | 7,035 | 9 |
| Sep-28 | 59,141 | 7,444 | 16 | 64,440 | 8,242 | 24 | 54,736 | 7,001 | 9 |
| Oct-28 | 59,427 | 7,457 | 16 | 65,637 | 8,292 | 24 | 55,753 | 7,043 | 9 |
| Nov-28 | 59,844 | 7,513 | 16 | 65,222 | 8,293 | 24 | 55,401 | 7,044 | 9 |
| Dec-28 | 60,205 | 7,562 | 16 | 65,623 | 8,349 | 24 | 55,741 | 7,092 | 9 |
| Jan-29 | 60,786 | 7,645 | 16 | 67,227 | 8,522 | 24 | 56,486 | 7,161 | 9 |
| Feb-29 | 60,728 | 7,659 | 16 | 67,175 | 8,561 | 24 | 56,442 | 7,193 | 9 |
| Mar-29 | 60,678 | 7,647 | 16 | 67,104 | 8,552 | 24 | 56,382 | 7,186 | 9 |
| Apr-29 | 60,634 | 7,626 | 16 | 67,048 | 8,530 | 24 | 56,335 | 7,167 | 9 |
| May-29 | 60,378 | 7,612 | 16 | 66,003 | 8,468 | 24 | 55,457 | 7,115 | 9 |
| Jun-29 | 60,197 | 7,600 | 16 | 65,821 | 8,477 | 24 | 55,305 | 7,122 | 9 |
| Jul-29 | 59,975 | 7,562 | 16 | 65,615 | 8,437 | 24 | 55,131 | 7,089 | 9 |
| Aug-29 | 59,848 | 7,549 | 16 | 65,552 | 8,418 | 24 | 55,079 | 7,073 | 9 |
| Sep-29 | 59,791 | 7,526 | 16 | 65,503 | 8,378 | 24 | 55,037 | 7,039 | 9 |
| Oct-29 | 60,080 | 7,539 | 16 | 66,720 | 8,429 | 24 | 56,060 | 7,082 | 9 |
| Nov-29 | 60,502 | 7,595 | 16 | 66,298 | 8,430 | 24 | 55,705 | 7,083 | 9 |
| Dec-29 | 60,867 | 7,645 | 16 | 66,706 | 8,487 | 24 | 56,048 | 7,131 | 9 |
| Jan-30 | 61,455 | 7,729 | 16 | 68,336 | 8,663 | 25 | 56,797 | 7,200 | 8 |
| Feb-30 | 61,396 | 7,744 | 16 | 68,284 | 8,703 | 25 | 56,753 | 7,233 | 8 |
| Mar-30 | 61,345 | 7,731 | 16 | 68,211 | 8,693 | 25 | 56,692 | 7,225 | 8 |
| Apr-30 | 61,301 | 7,709 | 16 | 68,154 | 8,671 | 25 | 56,645 | 7,207 | 8 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION MEDFORD

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers | Residential Medford Customers | Commericial Medford Customers | Industrial Medford Customers |
| May-30 | 61,042 | 7,696 | 16 | 67,092 | 8,607 | 25 | 55,762 | 7,154 | 8 |
| Jun-30 | 60,859 | 7,683 | 16 | 66,907 | 8,617 | 25 | 55,609 | 7,162 | 8 |
| Jul-30 | 60,634 | 7,646 | 16 | 66,697 | 8,576 | 25 | 55,434 | 7,128 | 8 |
| Aug-30 | 60,506 | 7,632 | 16 | 66,634 | 8,557 | 25 | 55,382 | 7,112 | 8 |
| Sep-30 | 60,449 | 7,609 | 16 | 66,584 | 8,516 | 25 | 55,340 | 7,078 | 8 |
| Oct-30 | 60,741 | 7,622 | 16 | 67,821 | 8,568 | 25 | 56,368 | 7,121 | 8 |
| Nov-30 | 61,168 | 7,679 | 16 | 67,392 | 8,569 | 25 | 56,012 | 7,122 | 8 |
| Dec-30 | 61,537 | 7,729 | 16 | 67,807 | 8,627 | 25 | 56,356 | 7,170 | 8 |
| Jan-31 | 62,131 | 7,814 | 16 | 69,464 | 8,806 | 25 | 57,109 | 7,240 | 8 |
| Feb-31 | 62,071 | 7,829 | 16 | 69,410 | 8,846 | 25 | 57,065 | 7,273 | 8 |
| Mar-31 | 62,020 | 7,816 | 16 | 69,336 | 8,837 | 25 | 57,004 | 7,265 | 8 |
| Apr-31 | 61,975 | 7,794 | 16 | 69,279 | 8,814 | 25 | 56,957 | 7,246 | 8 |
| May-31 | 61,714 | 7,780 | 16 | 68,199 | 8,749 | 25 | 56,069 | 7,193 | 8 |
| Jun-31 | 61,528 | 7,768 | 16 | 68,011 | 8,759 | 25 | 55,915 | 7,201 | 8 |
| Jul-31 | 61,301 | 7,730 | 16 | 67,798 | 8,717 | 25 | 55,739 | 7,167 | 8 |
| Aug-31 | 61,172 | 7,716 | 16 | 67,733 | 8,698 | 25 | 55,686 | 7,151 | 8 |
| Sep-31 | 61,114 | 7,693 | 16 | 67,682 | 8,657 | 25 | 55,644 | 7,117 | 8 |
| Oct-31 | 61,409 | 7,706 | 16 | 68,940 | 8,709 | 25 | 56,678 | 7,160 | 8 |
| Nov-31 | 61,841 | 7,763 | 16 | 68,504 | 8,711 | 25 | 56,320 | 7,161 | 8 |
| Dec-31 | 62,214 | 7,814 | 16 | 68,926 | 8,770 | 25 | 56,666 | 7,210 | 8 |
| Jan-32 | 62,814 | 7,900 | 16 | 70,610 | 8,951 | 26 | 57,423 | 7,279 | 7 |
| Feb-32 | 62,754 | 7,915 | 16 | 70,555 | 8,992 | 26 | 57,379 | 7,313 | 7 |
| Mar-32 | 62,702 | 7,902 | 16 | 70,480 | 8,983 | 26 | 57,318 | 7,305 | 7 |
| Apr-32 | 62,657 | 7,880 | 16 | 70,422 | 8,959 | 26 | 57,270 | 7,286 | 7 |
| May-32 | 62,392 | 7,866 | 16 | 69,325 | 8,894 | 26 | 56,378 | 7,233 | 7 |
| Jun-32 | 62,205 | 7,853 | 16 | 69,133 | 8,903 | 26 | 56,222 | 7,241 | 7 |
| Jul-32 | 61,976 | 7,815 | 16 | 68,916 | 8,861 | 26 | 56,046 | 7,206 | 7 |
| Aug-32 | 61,845 | 7,801 | 16 | 68,851 | 8,842 | 26 | 55,992 | 7,191 | 7 |
| Sep-32 | 61,786 | 7,777 | 16 | 68,799 | 8,800 | 26 | 55,950 | 7,156 | 7 |
| Oct-32 | 62,085 | 7,790 | 16 | 70,078 | 8,853 | 26 | 56,990 | 7,200 | 7 |
| Nov-32 | 62,521 | 7,849 | 16 | 69,634 | 8,854 | 26 | 56,629 | 7,201 | 7 |
| Dec-32 | 62,898 | 7,900 | 16 | 70,063 | 8,914 | 26 | 56,978 | 7,249 | 7 |
| Jan-33 | 63,505 | 7,987 | 16 | 71,775 | 9,099 | 26 | 57,739 | 7,319 | 7 |
| Feb-33 | 63,444 | 8,002 | 16 | 71,720 | 9,140 | 26 | 57,694 | 7,353 | 7 |
| Mar-33 | 63,392 | 7,989 | 16 | 71,643 | 9,131 | 26 | 57,633 | 7,345 | 7 |
| Apr-33 | 63,346 | 7,967 | 16 | 71,584 | 9,107 | 26 | 57,585 | 7,326 | 7 |
| May-33 | 63,079 | 7,953 | 16 | 70,468 | 9,041 | 26 | 56,688 | 7,273 | 7 |
| Jun-33 | 62,889 | 7,940 | 16 | 70,274 | 9,050 | 26 | 56,531 | 7,280 | 7 |
| Jul-33 | 62,657 | 7,901 | 16 | 70,054 | 9,007 | 26 | 56,354 | 7,246 | 7 |
| Aug-33 | 62,525 | 7,887 | 16 | 69,987 | 8,988 | 26 | 56,300 | 7,230 | 7 |
| Sep-33 | 62,466 | 7,863 | 16 | 69,934 | 8,945 | 26 | 56,258 | 7,196 | 7 |
| Oct-33 | 62,768 | 7,876 | 16 | 71,234 | 8,999 | 26 | 57,304 | 7,239 | 7 |
| Nov-33 | 63,209 | 7,935 | 16 | 70,783 | 9,000 | 26 | 56,941 | 7,240 | 7 |
| Dec-33 | 63,590 | 7,987 | 16 | 71,219 | 9,061 | 26 | 57,291 | 7,289 | 7 |

## APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
## ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| Jan-12 | 13,221 | 2,155 | 2 | 13,221 | 2,155 | 2 | 13,221 | 2,155 | 2 |
| Feb-12 | 13,186 | 2,145 | 2 | 13,186 | 2,145 | 2 | 13,186 | 2,145 | 2 |
| Mar-12 | 13,217 | 2,151 | 2 | 13,217 | 2,151 | 2 | 13,217 | 2,151 | 2 |
| Apr-12 | 13,221 | 2,149 | 3 | 13,221 | 2,149 | 3 | 13,221 | 2,149 | 3 |
| May-12 | 13,137 | 2,145 | 2 | 13,137 | 2,145 | 2 | 13,137 | 2,145 | 2 |
| Jun-12 | 13,080 | 2,132 | 2 | 13,080 | 2,132 | 2 | 13,080 | 2,132 | 2 |
| Jul-12 | 13,037 | 2,125 | 2 | 13,037 | 2,125 | 2 | 13,037 | 2,125 | 2 |
| Aug-12 | 12,928 | 2,112 | 2 | 12,928 | 2,112 | 2 | 12,928 | 2,112 | 2 |
| Sep-12 | 12,976 | 2,120 | 2 | 12,976 | 2,120 | 2 | 12,976 | 2,120 | 2 |
| Oct-12 | 12,964 | 2,116 | 3 | 12,964 | 2,116 | 3 | 12,964 | 2,116 | 3 |
| Nov-12 | 13,086 | 2,130 | 3 | 13,086 | 2,130 | 3 | 13,086 | 2,130 | 3 |
| Dec-12 | 13,200 | 2,133 | 3 | 13,200 | 2,133 | 3 | 13,200 | 2,133 | 3 |
| Jan-13 | 13,233 | 2,133 | 3 | 13,233 | 2,133 | 3 | 13,233 | 2,133 | 3 |
| Feb-13 | 13,266 | 2,141 | 3 | 13,266 | 2,141 | 3 | 13,266 | 2,141 | 3 |
| Mar-13 | 13,227 | 2,146 | 3 | 13,227 | 2,146 | 3 | 13,227 | 2,146 | 3 |
| Apr-13 | 13,191 | 2,138 | 3 | 13,191 | 2,138 | 3 | 13,191 | 2,138 | 3 |
| May-13 | 13,150 | 2,140 | 3 | 13,150 | 2,140 | 3 | 13,150 | 2,140 | 3 |
| Jun-13 | 13,093 | 2,135 | 3 | 13,093 | 2,135 | 3 | 13,093 | 2,135 | 3 |
| Jul-13 | 13,059 | 2,128 | 3 | 13,059 | 2,128 | 3 | 13,059 | 2,128 | 3 |
| Aug-13 | 12,981 | 2,111 | 3 | 12,981 | 2,111 | 3 | 12,981 | 2,111 | 3 |
| Sep-13 | 12,981 | 2,104 | 3 | 12,981 | 2,104 | 3 | 12,981 | 2,104 | 3 |
| Oct-13 | 13,064 | 2,114 | 3 | 13,064 | 2,114 | 3 | 13,064 | 2,114 | 3 |
| Nov-13 | 13,144 | 2,119 | 3 | 13,144 | 2,119 | 3 | 13,144 | 2,119 | 3 |
| Dec-13 | 13,293 | 2,136 | 3 | 13,293 | 2,136 | 3 | 13,293 | 2,136 | 3 |
| Jan-14 | 13,270 | 2,134 | 3 | 13,384 | 2,137 | 3 | 13,283 | 2,133 | 3 |
| Feb-14 | 13,294 | 2,140 | 3 | 13,417 | 2,145 | 3 | 13,316 | 2,141 | 3 |
| Mar-14 | 13,286 | 2,144 | 3 | 13,378 | 2,150 | 3 | 13,277 | 2,146 | 3 |
| Apr-14 | 13,255 | 2,140 | 3 | 13,341 | 2,142 | 3 | 13,241 | 2,138 | 3 |
| May-14 | 13,212 | 2,138 | 3 | 13,300 | 2,144 | 3 | 13,200 | 2,140 | 3 |
| Jun-14 | 13,135 | 2,132 | 3 | 13,242 | 2,139 | 3 | 13,143 | 2,135 | 3 |
| Jul-14 | 13,085 | 2,126 | 3 | 13,208 | 2,132 | 3 | 13,109 | 2,128 | 3 |
| Aug-14 | 13,012 | 2,115 | 3 | 13,129 | 2,115 | 3 | 13,030 | 2,111 | 3 |
| Sep-14 | 13,011 | 2,117 | 3 | 13,129 | 2,108 | 3 | 13,030 | 2,104 | 3 |
| Oct-14 | 13,060 | 2,116 | 3 | 13,213 | 2,118 | 3 | 13,114 | 2,114 | 3 |
| Nov-14 | 13,179 | 2,130 | 3 | 13,294 | 2,123 | 3 | 13,194 | 2,118 | 3 |
| Dec-14 | 13,370 | 2,144 | 3 | 13,445 | 2,140 | 3 | 13,344 | 2,135 | 3 |
| Jan-15 | 13,347 | 2,138 | 3 | 13,536 | 2,142 | 3 | 13,334 | 2,132 | 3 |
| Feb-15 | 13,369 | 2,144 | 3 | 13,570 | 2,150 | 3 | 13,367 | 2,140 | 3 |
| Mar-15 | 13,362 | 2,146 | 3 | 13,530 | 2,155 | 3 | 13,328 | 2,145 | 3 |
| Apr-15 | 13,331 | 2,142 | 3 | 13,493 | 2,147 | 3 | 13,291 | 2,137 | 3 |
| May-15 | 13,287 | 2,139 | 3 | 13,452 | 2,149 | 3 | 13,250 | 2,139 | 3 |
| Jun-15 | 13,210 | 2,132 | 3 | 13,393 | 2,144 | 3 | 13,193 | 2,134 | 3 |
| Jul-15 | 13,160 | 2,127 | 3 | 13,358 | 2,137 | 3 | 13,158 | 2,127 | 3 |
| Aug-15 | 13,087 | 2,116 | 3 | 13,279 | 2,119 | 3 | 13,080 | 2,110 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| Sep-15 | 13,085 | 2,118 | 3 | 13,279 | 2,112 | 3 | 13,080 | 2,103 | 3 |
| Oct-15 | 13,135 | 2,118 | 3 | 13,364 | 2,122 | 3 | 13,163 | 2,113 | 3 |
| Nov-15 | 13,253 | 2,132 | 3 | 13,445 | 2,127 | 3 | 13,244 | 2,118 | 3 |
| Dec-15 | 13,445 | 2,146 | 3 | 13,598 | 2,144 | 3 | 13,394 | 2,135 | 3 |
| Jan-16 | 13,439 | 2,140 | 3 | 13,691 | 2,146 | 3 | 13,384 | 2,132 | 3 |
| Feb-16 | 13,461 | 2,146 | 3 | 13,725 | 2,154 | 3 | 13,418 | 2,140 | 3 |
| Mar-16 | 13,454 | 2,148 | 3 | 13,685 | 2,159 | 3 | 13,378 | 2,145 | 3 |
| Apr-16 | 13,423 | 2,143 | 3 | 13,647 | 2,151 | 3 | 13,342 | 2,137 | 3 |
| May-16 | 13,378 | 2,141 | 3 | 13,605 | 2,153 | 3 | 13,300 | 2,139 | 3 |
| Jun-16 | 13,302 | 2,134 | 3 | 13,546 | 2,148 | 3 | 13,243 | 2,134 | 3 |
| Jul-16 | 13,250 | 2,129 | 3 | 13,511 | 2,141 | 3 | 13,208 | 2,127 | 3 |
| Aug-16 | 13,178 | 2,118 | 3 | 13,430 | 2,124 | 3 | 13,130 | 2,110 | 3 |
| Sep-16 | 13,176 | 2,120 | 3 | 13,430 | 2,117 | 3 | 13,130 | 2,103 | 3 |
| Oct-16 | 13,225 | 2,119 | 3 | 13,516 | 2,127 | 3 | 13,213 | 2,113 | 3 |
| Nov-16 | 13,345 | 2,133 | 3 | 13,599 | 2,132 | 3 | 13,294 | 2,118 | 3 |
| Dec-16 | 13,538 | 2,147 | 3 | 13,753 | 2,149 | 3 | 13,445 | 2,135 | 3 |
| Jan-17 | 13,540 | 2,142 | 3 | 13,847 | 2,150 | 3 | 13,435 | 2,131 | 3 |
| Feb-17 | 13,562 | 2,148 | 3 | 13,881 | 2,158 | 3 | 13,469 | 2,139 | 3 |
| Mar-17 | 13,556 | 2,149 | 3 | 13,841 | 2,163 | 3 | 13,429 | 2,144 | 3 |
| Apr-17 | 13,524 | 2,145 | 3 | 13,803 | 2,155 | 3 | 13,393 | 2,136 | 3 |
| May-17 | 13,479 | 2,143 | 3 | 13,760 | 2,157 | 3 | 13,351 | 2,138 | 3 |
| Jun-17 | 13,402 | 2,136 | 3 | 13,700 | 2,152 | 3 | 13,293 | 2,133 | 3 |
| Jul-17 | 13,352 | 2,130 | 3 | 13,665 | 2,145 | 3 | 13,259 | 2,126 | 3 |
| Aug-17 | 13,279 | 2,119 | 3 | 13,583 | 2,128 | 3 | 13,179 | 2,109 | 3 |
| Sep-17 | 13,277 | 2,122 | 3 | 13,583 | 2,121 | 3 | 13,179 | 2,102 | 3 |
| Oct-17 | 13,326 | 2,121 | 3 | 13,670 | 2,131 | 3 | 13,264 | 2,112 | 3 |
| Nov-17 | 13,447 | 2,135 | 3 | 13,754 | 2,136 | 3 | 13,345 | 2,117 | 3 |
| Dec-17 | 13,640 | 2,149 | 3 | 13,910 | 2,153 | 3 | 13,496 | 2,134 | 3 |
| Jan-18 | 13,651 | 2,144 | 3 | 14,005 | 2,154 | 3 | 13,486 | 2,131 | 3 |
| Feb-18 | 13,674 | 2,150 | 3 | 14,040 | 2,162 | 3 | 13,520 | 2,139 | 3 |
| Mar-18 | 13,666 | 2,151 | 3 | 13,998 | 2,168 | 3 | 13,480 | 2,144 | 3 |
| Apr-18 | 13,635 | 2,147 | 3 | 13,960 | 2,159 | 3 | 13,444 | 2,136 | 3 |
| May-18 | 13,590 | 2,145 | 3 | 13,917 | 2,161 | 3 | 13,402 | 2,138 | 3 |
| Jun-18 | 13,513 | 2,137 | 3 | 13,857 | 2,156 | 3 | 13,344 | 2,133 | 3 |
| Jul-18 | 13,462 | 2,132 | 3 | 13,821 | 2,149 | 3 | 13,309 | 2,126 | 3 |
| Aug-18 | 13,387 | 2,121 | 3 | 13,738 | 2,132 | 3 | 13,230 | 2,109 | 3 |
| Sep-18 | 13,385 | 2,124 | 3 | 13,738 | 2,125 | 3 | 13,230 | 2,102 | 3 |
| Oct-18 | 13,436 | 2,123 | 3 | 13,826 | 2,135 | 3 | 13,314 | 2,112 | 3 |
| Nov-18 | 13,557 | 2,137 | 3 | 13,910 | 2,140 | 3 | 13,396 | 2,117 | 3 |
| Dec-18 | 13,752 | 2,151 | 3 | 14,068 | 2,157 | 3 | 13,548 | 2,134 | 3 |
| Jan-19 | 13,755 | 2,144 | 3 | 14,164 | 2,159 | 3 | 13,538 | 2,130 | 3 |
| Feb-19 | 13,778 | 2,150 | 3 | 14,200 | 2,167 | 3 | 13,571 | 2,138 | 3 |
| Mar-19 | 13,770 | 2,151 | 3 | 14,158 | 2,172 | 3 | 13,531 | 2,143 | 3 |
| Apr-19 | 13,739 | 2,147 | 3 | 14,119 | 2,164 | 3 | 13,495 | 2,135 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| May-19 | 13,693 | 2,145 | 3 | 14,075 | 2,166 | 3 | 13,453 | 2,137 | 3 |
| Jun-19 | 13,615 | 2,137 | 3 | 14,014 | 2,161 | 3 | 13,394 | 2,132 | 3 |
| Jul-19 | 13,564 | 2,132 | 3 | 13,978 | 2,154 | 3 | 13,360 | 2,125 | 3 |
| Aug-19 | 13,489 | 2,121 | 3 | 13,895 | 2,136 | 3 | 13,280 | 2,108 | 3 |
| Sep-19 | 13,487 | 2,124 | 3 | 13,895 | 2,129 | 3 | 13,280 | 2,101 | 3 |
| Oct-19 | 13,538 | 2,123 | 3 | 13,983 | 2,139 | 3 | 13,365 | 2,111 | 3 |
| Nov-19 | 13,660 | 2,137 | 3 | 14,069 | 2,144 | 3 | 13,447 | 2,116 | 3 |
| Dec-19 | 13,856 | 2,151 | 3 | 14,229 | 2,162 | 3 | 13,599 | 2,133 | 3 |
| Jan-20 | 13,860 | 2,145 | 3 | 14,326 | 2,163 | 3 | 13,589 | 2,130 | 3 |
| Feb-20 | 13,882 | 2,151 | 3 | 14,362 | 2,171 | 3 | 13,623 | 2,138 | 3 |
| Mar-20 | 13,875 | 2,152 | 3 | 14,319 | 2,176 | 3 | 13,583 | 2,143 | 3 |
| Apr-20 | 13,843 | 2,148 | 3 | 14,280 | 2,168 | 3 | 13,546 | 2,135 | 3 |
| May-20 | 13,797 | 2,146 | 3 | 14,236 | 2,170 | 3 | 13,504 | 2,137 | 3 |
| Jun-20 | 13,719 | 2,138 | 3 | 14,174 | 2,165 | 3 | 13,445 | 2,132 | 3 |
| Jul-20 | 13,667 | 2,133 | 3 | 14,137 | 2,158 | 3 | 13,410 | 2,125 | 3 |
| Aug-20 | 13,592 | 2,122 | 3 | 14,053 | 2,141 | 3 | 13,330 | 2,108 | 3 |
| Sep-20 | 13,590 | 2,125 | 3 | 14,053 | 2,134 | 3 | 13,330 | 2,101 | 3 |
| Oct-20 | 13,641 | 2,124 | 3 | 14,143 | 2,144 | 3 | 13,415 | 2,111 | 3 |
| Nov-20 | 13,763 | 2,138 | 3 | 14,229 | 2,149 | 3 | 13,498 | 2,116 | 3 |
| Dec-20 | 13,961 | 2,152 | 3 | 14,391 | 2,166 | 3 | 13,651 | 2,133 | 3 |
| Jan-21 | 13,965 | 2,145 | 3 | 14,489 | 2,167 | 3 | 13,641 | 2,130 | 3 |
| Feb-21 | 13,988 | 2,151 | 3 | 14,525 | 2,175 | 3 | 13,675 | 2,138 | 3 |
| Mar-21 | 13,980 | 2,152 | 3 | 14,483 | 2,181 | 3 | 13,634 | 2,143 | 3 |
| Apr-21 | 13,948 | 2,148 | 3 | 14,443 | 2,172 | 3 | 13,597 | 2,135 | 3 |
| May-21 | 13,902 | 2,146 | 3 | 14,398 | 2,174 | 3 | 13,555 | 2,137 | 3 |
| Jun-21 | 13,823 | 2,138 | 3 | 14,336 | 2,169 | 3 | 13,496 | 2,132 | 3 |
| Jul-21 | 13,771 | 2,133 | 3 | 14,299 | 2,162 | 3 | 13,461 | 2,125 | 3 |
| Aug-21 | 13,695 | 2,122 | 3 | 14,213 | 2,145 | 3 | 13,381 | 2,108 | 3 |
| Sep-21 | 13,693 | 2,125 | 3 | 14,213 | 2,138 | 3 | 13,381 | 2,101 | 3 |
| Oct-21 | 13,745 | 2,124 | 3 | 14,304 | 2,148 | 3 | 13,466 | 2,111 | 3 |
| Nov-21 | 13,868 | 2,138 | 3 | 14,392 | 2,153 | 3 | 13,549 | 2,116 | 3 |
| Dec-21 | 14,068 | 2,152 | 3 | 14,555 | 2,170 | 3 | 13,703 | 2,132 | 3 |
| Jan-22 | 14,071 | 2,146 | 3 | 14,654 | 2,172 | 3 | 13,693 | 2,129 | 3 |
| Feb-22 | 14,094 | 2,152 | 3 | 14,691 | 2,180 | 3 | 13,727 | 2,137 | 3 |
| Mar-22 | 14,087 | 2,153 | 3 | 14,648 | 2,185 | 3 | 13,686 | 2,142 | 3 |
| Apr-22 | 14,054 | 2,149 | 3 | 14,608 | 2,177 | 3 | 13,649 | 2,134 | 3 |
| May-22 | 14,008 | 2,147 | 3 | 14,562 | 2,179 | 3 | 13,607 | 2,136 | 3 |
| Jun-22 | 13,928 | 2,139 | 3 | 14,499 | 2,174 | 3 | 13,548 | 2,131 | 3 |
| Jul-22 | 13,876 | 2,134 | 3 | 14,462 | 2,167 | 3 | 13,512 | 2,124 | 3 |
| Aug-22 | 13,799 | 2,123 | 3 | 14,375 | 2,149 | 3 | 13,432 | 2,107 | 3 |
| Sep-22 | 13,797 | 2,126 | 3 | 14,375 | 2,142 | 3 | 13,432 | 2,100 | 3 |
| Oct-22 | 13,850 | 2,125 | 3 | 14,467 | 2,152 | 3 | 13,518 | 2,110 | 3 |
| Nov-22 | 13,973 | 2,139 | 3 | 14,556 | 2,157 | 3 | 13,600 | 2,115 | 3 |
| Dec-22 | 14,175 | 2,153 | 3 | 14,721 | 2,175 | 3 | 13,755 | 2,132 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| Jan-23 | 14,178 | 2,146 | 3 | 14,821 | 2,176 | 3 | 13,745 | 2,129 | 3 |
| Feb-23 | 14,201 | 2,152 | 3 | 14,858 | 2,184 | 3 | 13,779 | 2,137 | 3 |
| Mar-23 | 14,194 | 2,153 | 3 | 14,815 | 2,189 | 3 | 13,738 | 2,142 | 3 |
| Apr-23 | 14,161 | 2,149 | 3 | 14,774 | 2,181 | 3 | 13,701 | 2,134 | 3 |
| May-23 | 14,114 | 2,147 | 3 | 14,728 | 2,183 | 3 | 13,658 | 2,136 | 3 |
| Jun-23 | 14,034 | 2,139 | 3 | 14,665 | 2,178 | 3 | 13,599 | 2,131 | 3 |
| Jul-23 | 13,981 | 2,134 | 3 | 14,626 | 2,171 | 3 | 13,564 | 2,124 | 3 |
| Aug-23 | 13,904 | 2,123 | 3 | 14,539 | 2,154 | 3 | 13,483 | 2,107 | 3 |
| Sep-23 | 13,902 | 2,126 | 3 | 14,539 | 2,146 | 3 | 13,483 | 2,100 | 3 |
| Oct-23 | 13,955 | 2,125 | 3 | 14,632 | 2,157 | 3 | 13,569 | 2,110 | 3 |
| Nov-23 | 14,080 | 2,139 | 3 | 14,722 | 2,162 | 3 | 13,652 | 2,115 | 3 |
| Dec-23 | 14,282 | 2,153 | 3 | 14,889 | 2,179 | 3 | 13,807 | 2,132 | 3 |
| Jan-24 | 14,286 | 2,147 | 3 | 14,990 | 2,180 | 3 | 13,797 | 2,128 | 3 |
| Feb-24 | 14,309 | 2,153 | 3 | 15,028 | 2,189 | 3 | 13,831 | 2,136 | 3 |
| Mar-24 | 14,302 | 2,154 | 3 | 14,984 | 2,194 | 3 | 13,791 | 2,141 | 3 |
| Apr-24 | 14,269 | 2,150 | 3 | 14,943 | 2,186 | 3 | 13,753 | 2,133 | 3 |
| May-24 | 14,222 | 2,148 | 3 | 14,896 | 2,188 | 3 | 13,710 | 2,135 | 3 |
| Jun-24 | 14,141 | 2,140 | 3 | 14,832 | 2,182 | 3 | 13,651 | 2,130 | 3 |
| Jul-24 | 14,087 | 2,135 | 3 | 14,793 | 2,175 | 3 | 13,615 | 2,123 | 3 |
| Aug-24 | 14,010 | 2,123 | 3 | 14,705 | 2,158 | 3 | 13,534 | 2,106 | 3 |
| Sep-24 | 14,008 | 2,126 | 3 | 14,705 | 2,151 | 3 | 13,534 | 2,099 | 3 |
| Oct-24 | 14,061 | 2,125 | 3 | 14,799 | 2,161 | 3 | 13,621 | 2,109 | 3 |
| Nov-24 | 14,187 | 2,140 | 3 | 14,889 | 2,166 | 3 | 13,704 | 2,114 | 3 |
| Dec-24 | 14,391 | 2,154 | 3 | 15,058 | 2,183 | 3 | 13,859 | 2,131 | 3 |
| Jan-25 | 14,394 | 2,147 | 3 | 15,161 | 2,185 | 3 | 13,849 | 2,128 | 3 |
| Feb-25 | 14,418 | 2,153 | 3 | 15,199 | 2,193 | 3 | 13,884 | 2,136 | 3 |
| Mar-25 | 14,410 | 2,154 | 3 | 15,154 | 2,198 | 3 | 13,843 | 2,141 | 3 |
| Apr-25 | 14,377 | 2,150 | 3 | 15,113 | 2,190 | 3 | 13,805 | 2,133 | 3 |
| May-25 | 14,330 | 2,148 | 3 | 15,066 | 2,192 | 3 | 13,762 | 2,135 | 3 |
| Jun-25 | 14,248 | 2,140 | 3 | 15,001 | 2,187 | 3 | 13,703 | 2,130 | 3 |
| Jul-25 | 14,195 | 2,135 | 3 | 14,962 | 2,180 | 3 | 13,667 | 2,123 | 3 |
| Aug-25 | 14,116 | 2,124 | 3 | 14,872 | 2,162 | 3 | 13,585 | 2,106 | 3 |
| Sep-25 | 14,114 | 2,127 | 3 | 14,872 | 2,155 | 3 | 13,585 | 2,099 | 3 |
| Oct-25 | 14,168 | 2,126 | 3 | 14,968 | 2,165 | 3 | 13,672 | 2,109 | 3 |
| Nov-25 | 14,294 | 2,140 | 3 | 15,059 | 2,170 | 3 | 13,756 | 2,114 | 3 |
| Dec-25 | 14,500 | 2,154 | 3 | 15,230 | 2,188 | 3 | 13,912 | 2,131 | 3 |
| Jan-26 | 14,504 | 2,147 | 3 | 15,334 | 2,189 | 3 | 13,902 | 2,127 | 3 |
| Feb-26 | 14,527 | 2,153 | 3 | 15,372 | 2,197 | 3 | 13,936 | 2,135 | 3 |
| Mar-26 | 14,520 | 2,154 | 3 | 15,327 | 2,202 | 3 | 13,896 | 2,140 | 3 |
| Apr-26 | 14,486 | 2,150 | 3 | 15,285 | 2,194 | 3 | 13,858 | 2,132 | 3 |
| May-26 | 14,439 | 2,148 | 3 | 15,238 | 2,196 | 3 | 13,815 | 2,134 | 3 |
| Jun-26 | 14,356 | 2,140 | 3 | 15,172 | 2,191 | 3 | 13,755 | 2,129 | 3 |
| Jul-26 | 14,302 | 2,135 | 3 | 15,132 | 2,184 | 3 | 13,719 | 2,122 | 3 |
| Aug-26 | 14,223 | 2,124 | 3 | 15,042 | 2,167 | 3 | 13,637 | 2,106 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| Sep-26 | 14,221 | 2,127 | 3 | 15,042 | 2,159 | 3 | 13,637 | 2,099 | 3 |
| Oct-26 | 14,275 | 2,126 | 3 | 15,138 | 2,170 | 3 | 13,724 | 2,109 | 3 |
| Nov-26 | 14,403 | 2,140 | 3 | 15,231 | 2,175 | 3 | 13,808 | 2,113 | 3 |
| Dec-26 | 14,610 | 2,154 | 3 | 15,404 | 2,192 | 3 | 13,965 | 2,130 | 3 |
| Jan-27 | 14,614 | 2,148 | 3 | 15,509 | 2,194 | 3 | 13,955 | 2,127 | 3 |
| Feb-27 | 14,638 | 2,154 | 3 | 15,548 | 2,202 | 3 | 13,989 | 2,135 | 3 |
| Mar-27 | 14,630 | 2,155 | 3 | 15,502 | 2,207 | 3 | 13,948 | 2,140 | 3 |
| Apr-27 | 14,596 | 2,151 | 3 | 15,460 | 2,199 | 3 | 13,910 | 2,132 | 3 |
| May-27 | 14,548 | 2,149 | 3 | 15,412 | 2,201 | 3 | 13,867 | 2,134 | 3 |
| Jun-27 | 14,466 | 2,141 | 3 | 15,345 | 2,196 | 3 | 13,807 | 2,129 | 3 |
| Jul-27 | 14,411 | 2,136 | 3 | 15,305 | 2,188 | 3 | 13,771 | 2,122 | 3 |
| Aug-27 | 14,332 | 2,125 | 3 | 15,214 | 2,171 | 3 | 13,689 | 2,105 | 3 |
| Sep-27 | 14,329 | 2,128 | 3 | 15,214 | 2,164 | 3 | 13,689 | 2,098 | 3 |
| Oct-27 | 14,384 | 2,127 | 3 | 15,311 | 2,174 | 3 | 13,776 | 2,108 | 3 |
| Nov-27 | 14,512 | 2,141 | 3 | 15,405 | 2,179 | 3 | 13,861 | 2,113 | 3 |
| Dec-27 | 14,721 | 2,155 | 3 | 15,579 | 2,196 | 3 | 14,018 | 2,130 | 3 |
| Jan-28 | 14,725 | 2,148 | 3 | 15,686 | 2,198 | 3 | 14,008 | 2,127 | 3 |
| Feb-28 | 14,749 | 2,154 | 3 | 15,725 | 2,206 | 3 | 14,043 | 2,135 | 3 |
| Mar-28 | 14,741 | 2,155 | 3 | 15,679 | 2,211 | 3 | 14,001 | 2,140 | 3 |
| Apr-28 | 14,707 | 2,151 | 3 | 15,636 | 2,203 | 3 | 13,963 | 2,132 | 3 |
| May-28 | 14,659 | 2,149 | 3 | 15,587 | 2,205 | 3 | 13,920 | 2,134 | 3 |
| Jun-28 | 14,576 | 2,141 | 3 | 15,520 | 2,200 | 3 | 13,859 | 2,129 | 3 |
| Jul-28 | 14,521 | 2,136 | 3 | 15,479 | 2,193 | 3 | 13,823 | 2,122 | 3 |
| Aug-28 | 14,440 | 2,125 | 3 | 15,387 | 2,175 | 3 | 13,741 | 2,105 | 3 |
| Sep-28 | 14,438 | 2,128 | 3 | 15,387 | 2,168 | 3 | 13,741 | 2,098 | 3 |
| Oct-28 | 14,493 | 2,127 | 3 | 15,485 | 2,178 | 3 | 13,829 | 2,108 | 3 |
| Nov-28 | 14,623 | 2,141 | 3 | 15,580 | 2,183 | 3 | 13,913 | 2,113 | 3 |
| Dec-28 | 14,833 | 2,155 | 3 | 15,757 | 2,201 | 3 | 14,071 | 2,130 | 3 |
| Jan-29 | 14,837 | 2,149 | 3 | 15,864 | 2,202 | 3 | 14,061 | 2,126 | 3 |
| Feb-29 | 14,861 | 2,155 | 3 | 15,904 | 2,211 | 3 | 14,096 | 2,134 | 3 |
| Mar-29 | 14,853 | 2,156 | 3 | 15,857 | 2,216 | 3 | 14,055 | 2,139 | 3 |
| Apr-29 | 14,819 | 2,152 | 3 | 15,814 | 2,207 | 3 | 14,016 | 2,131 | 3 |
| May-29 | 14,770 | 2,150 | 3 | 15,765 | 2,210 | 3 | 13,973 | 2,133 | 3 |
| Jun-29 | 14,686 | 2,142 | 3 | 15,697 | 2,204 | 3 | 13,912 | 2,128 | 3 |
| Jul-29 | 14,631 | 2,137 | 3 | 15,656 | 2,197 | 3 | 13,876 | 2,121 | 3 |
| Aug-29 | 14,550 | 2,126 | 3 | 15,562 | 2,180 | 3 | 13,793 | 2,104 | 3 |
| Sep-29 | 14,548 | 2,129 | 3 | 15,562 | 2,172 | 3 | 13,793 | 2,097 | 3 |
| Oct-29 | 14,603 | 2,128 | 3 | 15,662 | 2,183 | 3 | 13,881 | 2,107 | 3 |
| Nov-29 | 14,734 | 2,142 | 3 | 15,758 | 2,188 | 3 | 13,966 | 2,112 | 3 |
| Dec-29 | 14,946 | 2,156 | 3 | 15,937 | 2,205 | 3 | 14,125 | 2,129 | 3 |
| Jan-30 | 14,950 | 2,149 | 3 | 16,045 | 2,207 | 3 | 14,114 | 2,126 | 3 |
| Feb-30 | 14,974 | 2,155 | 3 | 16,085 | 2,215 | 3 | 14,150 | 2,134 | 3 |
| Mar-30 | 14,966 | 2,156 | 3 | 16,038 | 2,220 | 3 | 14,108 | 2,139 | 3 |
| Apr-30 | 14,932 | 2,152 | 3 | 15,994 | 2,212 | 3 | 14,070 | 2,131 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# ROSEBURG

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers | Residential Roseburg Customers | Commericial Roseburg Customers | Industrial Roseburg Customers |
| May-30 | 14,883 | 2,150 | 3 | 15,945 | 2,214 | 3 | 14,026 | 2,133 | 3 |
| Jun-30 | 14,798 | 2,142 | 3 | 15,876 | 2,209 | 3 | 13,965 | 2,128 | 3 |
| Jul-30 | 14,742 | 2,137 | 3 | 15,834 | 2,202 | 3 | 13,929 | 2,121 | 3 |
| Aug-30 | 14,661 | 2,126 | 3 | 15,740 | 2,184 | 3 | 13,846 | 2,104 | 3 |
| Sep-30 | 14,659 | 2,129 | 3 | 15,740 | 2,177 | 3 | 13,846 | 2,097 | 3 |
| Oct-30 | 14,714 | 2,128 | 3 | 15,840 | 2,187 | 3 | 13,934 | 2,107 | 3 |
| Nov-30 | 14,846 | 2,142 | 3 | 15,937 | 2,192 | 3 | 14,019 | 2,112 | 3 |
| Dec-30 | 15,060 | 2,156 | 3 | 16,118 | 2,210 | 3 | 14,178 | 2,129 | 3 |
| Jan-31 | 15,063 | 2,150 | 3 | 16,228 | 2,211 | 3 | 14,168 | 2,125 | 3 |
| Feb-31 | 15,088 | 2,156 | 3 | 16,269 | 2,219 | 3 | 14,203 | 2,133 | 3 |
| Mar-31 | 15,080 | 2,157 | 3 | 16,221 | 2,225 | 3 | 14,162 | 2,138 | 3 |
| Apr-31 | 15,045 | 2,153 | 3 | 16,177 | 2,216 | 3 | 14,123 | 2,130 | 3 |
| May-31 | 14,996 | 2,151 | 3 | 16,126 | 2,218 | 3 | 14,079 | 2,132 | 3 |
| Jun-31 | 14,910 | 2,143 | 3 | 16,057 | 2,213 | 3 | 14,018 | 2,127 | 3 |
| Jul-31 | 14,854 | 2,137 | 3 | 16,015 | 2,206 | 3 | 13,982 | 2,120 | 3 |
| Aug-31 | 14,772 | 2,126 | 3 | 15,919 | 2,188 | 3 | 13,898 | 2,103 | 3 |
| Sep-31 | 14,770 | 2,129 | 3 | 15,919 | 2,181 | 3 | 13,898 | 2,096 | 3 |
| Oct-31 | 14,826 | 2,128 | 3 | 16,021 | 2,191 | 3 | 13,987 | 2,106 | 3 |
| Nov-31 | 14,959 | 2,143 | 3 | 16,119 | 2,197 | 3 | 14,073 | 2,111 | 3 |
| Dec-31 | 15,174 | 2,157 | 3 | 16,302 | 2,214 | 3 | 14,232 | 2,128 | 3 |
| Jan-32 | 15,178 | 2,150 | 3 | 16,413 | 2,216 | 3 | 14,222 | 2,125 | 3 |
| Feb-32 | 15,203 | 2,156 | 3 | 16,454 | 2,224 | 3 | 14,257 | 2,133 | 3 |
| Mar-32 | 15,195 | 2,157 | 3 | 16,406 | 2,229 | 3 | 14,215 | 2,138 | 3 |
| Apr-32 | 15,160 | 2,153 | 3 | 16,361 | 2,221 | 3 | 14,177 | 2,130 | 3 |
| May-32 | 15,110 | 2,151 | 3 | 16,310 | 2,223 | 3 | 14,133 | 2,132 | 3 |
| Jun-32 | 15,024 | 2,143 | 3 | 16,240 | 2,218 | 3 | 14,071 | 2,127 | 3 |
| Jul-32 | 14,967 | 2,138 | 3 | 16,197 | 2,210 | 3 | 14,035 | 2,120 | 3 |
| Aug-32 | 14,884 | 2,127 | 3 | 16,101 | 2,193 | 3 | 13,951 | 2,103 | 3 |
| Sep-32 | 14,882 | 2,130 | 3 | 16,101 | 2,185 | 3 | 13,951 | 2,096 | 3 |
| Oct-32 | 14,939 | 2,129 | 3 | 16,204 | 2,196 | 3 | 14,040 | 2,106 | 3 |
| Nov-32 | 15,072 | 2,143 | 3 | 16,303 | 2,201 | 3 | 14,126 | 2,111 | 3 |
| Dec-32 | 15,289 | 2,157 | 3 | 16,488 | 2,219 | 3 | 14,286 | 2,128 | 3 |
| Jan-33 | 15,293 | 2,150 | 3 | 16,600 | 2,220 | 3 | 14,276 | 2,124 | 3 |
| Feb-33 | 15,318 | 2,156 | 3 | 16,642 | 2,228 | 3 | 14,311 | 2,132 | 3 |
| Mar-33 | 15,310 | 2,157 | 3 | 16,593 | 2,233 | 3 | 14,269 | 2,137 | 3 |
| Apr-33 | 15,275 | 2,153 | 3 | 16,548 | 2,225 | 3 | 14,231 | 2,129 | 3 |
| May-33 | 15,225 | 2,151 | 3 | 16,496 | 2,227 | 3 | 14,186 | 2,131 | 3 |
| Jun-33 | 15,138 | 2,143 | 3 | 16,425 | 2,222 | 3 | 14,125 | 2,126 | 3 |
| Jul-33 | 15,081 | 2,138 | 3 | 16,382 | 2,215 | 3 | 14,088 | 2,120 | 3 |
| Aug-33 | 14,998 | 2,127 | 3 | 16,284 | 2,197 | 3 | 14,004 | 2,103 | 3 |
| Sep-33 | 14,995 | 2,130 | 3 | 16,284 | 2,190 | 3 | 14,004 | 2,096 | 3 |
| Oct-33 | 15,052 | 2,129 | 3 | 16,388 | 2,200 | 3 | 14,094 | 2,106 | 3 |
| Nov-33 | 15,187 | 2,143 | 3 | 16,489 | 2,205 | 3 | 14,180 | 2,110 | 3 |
| Dec-33 | 15,406 | 2,157 | 3 | 16,676 | 2,223 | 3 | 14,341 | 2,127 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| Jan-12 | 14,067 | 1,636 | 7 | 14,067 | 1,636 | 7 | 14,067 | 1,636 | 7 |
| Feb-12 | 14,047 | 1,635 | 7 | 14,047 | 1,635 | 7 | 14,047 | 1,635 | 7 |
| Mar-12 | 14,044 | 1,643 | 7 | 14,044 | 1,643 | 7 | 14,044 | 1,643 | 7 |
| Apr-12 | 14,063 | 1,640 | 7 | 14,063 | 1,640 | 7 | 14,063 | 1,640 | 7 |
| May-12 | 14,002 | 1,643 | 7 | 14,002 | 1,643 | 7 | 14,002 | 1,643 | 7 |
| Jun-12 | 13,927 | 1,632 | 7 | 13,927 | 1,632 | 7 | 13,927 | 1,632 | 7 |
| Jul-12 | 13,796 | 1,626 | 7 | 13,796 | 1,626 | 7 | 13,796 | 1,626 | 7 |
| Aug-12 | 13,770 | 1,625 | 7 | 13,770 | 1,625 | 7 | 13,770 | 1,625 | 7 |
| Sep-12 | 13,766 | 1,621 | 8 | 13,766 | 1,621 | 8 | 13,766 | 1,621 | 8 |
| Oct-12 | 13,802 | 1,625 | 7 | 13,802 | 1,625 | 7 | 13,802 | 1,625 | 7 |
| Nov-12 | 14,010 | 1,631 | 7 | 14,010 | 1,631 | 7 | 14,010 | 1,631 | 7 |
| Dec-12 | 14,044 | 1,636 | 11 | 14,044 | 1,636 | 11 | 14,044 | 1,636 | 11 |
| Jan-13 | 14,099 | 1,661 | 8 | 14,099 | 1,661 | 8 | 14,099 | 1,661 | 8 |
| Feb-13 | 14,116 | 1,673 | 8 | 14,116 | 1,673 | 8 | 14,116 | 1,673 | 8 |
| Mar-13 | 14,077 | 1,659 | 8 | 14,077 | 1,659 | 8 | 14,077 | 1,659 | 8 |
| Apr-13 | 14,053 | 1,649 | 8 | 14,053 | 1,649 | 8 | 14,053 | 1,649 | 8 |
| May-13 | 13,964 | 1,655 | 8 | 13,964 | 1,655 | 8 | 13,964 | 1,655 | 8 |
| Jun-13 | 13,933 | 1,652 | 8 | 13,933 | 1,652 | 8 | 13,933 | 1,652 | 8 |
| Jul-13 | 13,885 | 1,648 | 8 | 13,885 | 1,648 | 8 | 13,885 | 1,648 | 8 |
| Aug-13 | 13,828 | 1,643 | 8 | 13,828 | 1,643 | 8 | 13,828 | 1,643 | 8 |
| Sep-13 | 13,821 | 1,636 | 7 | 13,821 | 1,636 | 7 | 13,821 | 1,636 | 7 |
| Oct-13 | 14,009 | 1,635 | 9 | 14,009 | 1,635 | 9 | 14,009 | 1,635 | 9 |
| Nov-13 | 14,070 | 1,649 | 8 | 14,070 | 1,649 | 8 | 14,070 | 1,649 | 8 |
| Dec-13 | 14,134 | 1,662 | 8 | 14,134 | 1,662 | 8 | 14,134 | 1,662 | 8 |
| Jan-14 | 14,152 | 1,671 | 8 | 14,239 | 1,677 | 8 | 14,146 | 1,666 | 8 |
| Feb-14 | 14,160 | 1,663 | 8 | 14,256 | 1,690 | 8 | 14,163 | 1,679 | 8 |
| Mar-14 | 14,144 | 1,660 | 8 | 14,216 | 1,675 | 8 | 14,123 | 1,664 | 8 |
| Apr-14 | 14,130 | 1,663 | 8 | 14,192 | 1,665 | 8 | 14,099 | 1,654 | 8 |
| May-14 | 14,078 | 1,657 | 8 | 14,102 | 1,671 | 8 | 14,010 | 1,660 | 8 |
| Jun-14 | 14,004 | 1,652 | 8 | 14,071 | 1,668 | 8 | 13,979 | 1,657 | 8 |
| Jul-14 | 13,929 | 1,641 | 8 | 14,022 | 1,664 | 8 | 13,931 | 1,653 | 8 |
| Aug-14 | 13,846 | 1,630 | 8 | 13,965 | 1,659 | 8 | 13,874 | 1,648 | 8 |
| Sep-14 | 13,847 | 1,629 | 8 | 13,958 | 1,652 | 8 | 13,867 | 1,641 | 8 |
| Oct-14 | 13,936 | 1,638 | 8 | 14,148 | 1,651 | 8 | 14,055 | 1,640 | 8 |
| Nov-14 | 14,095 | 1,651 | 8 | 14,209 | 1,665 | 8 | 14,116 | 1,654 | 8 |
| Dec-14 | 14,175 | 1,656 | 8 | 14,274 | 1,678 | 8 | 14,181 | 1,667 | 8 |
| Jan-15 | 14,207 | 1,665 | 8 | 14,380 | 1,694 | 8 | 14,192 | 1,672 | 8 |
| Feb-15 | 14,222 | 1,675 | 8 | 14,397 | 1,706 | 8 | 14,209 | 1,684 | 8 |
| Mar-15 | 14,200 | 1,678 | 8 | 14,357 | 1,692 | 8 | 14,170 | 1,670 | 8 |
| Apr-15 | 14,171 | 1,671 | 8 | 14,333 | 1,682 | 8 | 14,146 | 1,660 | 8 |
| May-15 | 14,137 | 1,667 | 8 | 14,242 | 1,688 | 8 | 14,056 | 1,666 | 8 |
| Jun-15 | 14,057 | 1,661 | 8 | 14,210 | 1,685 | 8 | 14,025 | 1,663 | 8 |
| Jul-15 | 13,981 | 1,652 | 8 | 14,161 | 1,681 | 8 | 13,977 | 1,659 | 8 |
| Aug-15 | 13,894 | 1,646 | 8 | 14,103 | 1,676 | 8 | 13,919 | 1,654 | 8 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| Sep-15 | 13,897 | 1,645 | 8 | 14,096 | 1,669 | 8 | 13,912 | 1,647 | 8 |
| Oct-15 | 13,996 | 1,647 | 8 | 14,288 | 1,668 | 8 | 14,102 | 1,646 | 8 |
| Nov-15 | 14,144 | 1,654 | 8 | 14,350 | 1,682 | 8 | 14,163 | 1,660 | 8 |
| Dec-15 | 14,226 | 1,662 | 8 | 14,415 | 1,695 | 8 | 14,227 | 1,673 | 8 |
| Jan-16 | 14,278 | 1,680 | 8 | 14,522 | 1,711 | 8 | 14,239 | 1,677 | 8 |
| Feb-16 | 14,295 | 1,686 | 8 | 14,539 | 1,723 | 8 | 14,256 | 1,690 | 8 |
| Mar-16 | 14,273 | 1,679 | 8 | 14,499 | 1,709 | 8 | 14,217 | 1,675 | 8 |
| Apr-16 | 14,236 | 1,672 | 8 | 14,475 | 1,698 | 8 | 14,193 | 1,665 | 8 |
| May-16 | 14,209 | 1,669 | 8 | 14,383 | 1,705 | 8 | 14,103 | 1,671 | 8 |
| Jun-16 | 14,128 | 1,665 | 8 | 14,351 | 1,702 | 8 | 14,071 | 1,668 | 8 |
| Jul-16 | 14,051 | 1,657 | 8 | 14,301 | 1,697 | 8 | 14,023 | 1,664 | 8 |
| Aug-16 | 13,964 | 1,647 | 8 | 14,243 | 1,692 | 8 | 13,965 | 1,659 | 8 |
| Sep-16 | 13,965 | 1,642 | 8 | 14,236 | 1,685 | 8 | 13,958 | 1,652 | 8 |
| Oct-16 | 14,070 | 1,646 | 8 | 14,429 | 1,684 | 8 | 14,148 | 1,651 | 8 |
| Nov-16 | 14,213 | 1,659 | 8 | 14,492 | 1,698 | 8 | 14,210 | 1,665 | 8 |
| Dec-16 | 14,296 | 1,672 | 8 | 14,558 | 1,712 | 8 | 14,274 | 1,679 | 8 |
| Jan-17 | 14,363 | 1,686 | 8 | 14,666 | 1,728 | 9 | 14,286 | 1,683 | 7 |
| Feb-17 | 14,379 | 1,688 | 8 | 14,683 | 1,740 | 9 | 14,303 | 1,695 | 7 |
| Mar-17 | 14,359 | 1,686 | 8 | 14,643 | 1,726 | 9 | 14,264 | 1,681 | 7 |
| Apr-17 | 14,319 | 1,683 | 8 | 14,618 | 1,715 | 9 | 14,239 | 1,671 | 7 |
| May-17 | 14,295 | 1,680 | 8 | 14,525 | 1,722 | 9 | 14,149 | 1,677 | 7 |
| Jun-17 | 14,213 | 1,674 | 8 | 14,493 | 1,718 | 9 | 14,118 | 1,674 | 7 |
| Jul-17 | 14,135 | 1,663 | 8 | 14,443 | 1,714 | 9 | 14,069 | 1,670 | 7 |
| Aug-17 | 14,047 | 1,653 | 8 | 14,384 | 1,709 | 9 | 14,011 | 1,665 | 7 |
| Sep-17 | 14,047 | 1,652 | 8 | 14,376 | 1,702 | 9 | 14,004 | 1,658 | 7 |
| Oct-17 | 14,155 | 1,659 | 8 | 14,572 | 1,701 | 9 | 14,195 | 1,657 | 7 |
| Nov-17 | 14,299 | 1,670 | 8 | 14,636 | 1,715 | 9 | 14,257 | 1,671 | 7 |
| Dec-17 | 14,380 | 1,677 | 8 | 14,702 | 1,729 | 9 | 14,321 | 1,684 | 7 |
| Jan-18 | 14,457 | 1,690 | 8 | 14,811 | 1,745 | 9 | 14,333 | 1,689 | 7 |
| Feb-18 | 14,474 | 1,697 | 8 | 14,829 | 1,757 | 9 | 14,350 | 1,701 | 7 |
| Mar-18 | 14,454 | 1,695 | 8 | 14,788 | 1,743 | 9 | 14,311 | 1,687 | 7 |
| Apr-18 | 14,413 | 1,689 | 8 | 14,763 | 1,732 | 9 | 14,286 | 1,676 | 7 |
| May-18 | 14,388 | 1,684 | 8 | 14,669 | 1,739 | 9 | 14,196 | 1,682 | 7 |
| Jun-18 | 14,307 | 1,677 | 8 | 14,636 | 1,735 | 9 | 14,164 | 1,679 | 7 |
| Jul-18 | 14,229 | 1,668 | 8 | 14,586 | 1,731 | 9 | 14,116 | 1,675 | 7 |
| Aug-18 | 14,141 | 1,661 | 8 | 14,526 | 1,726 | 9 | 14,058 | 1,670 | 7 |
| Sep-18 | 14,140 | 1,659 | 8 | 14,519 | 1,719 | 9 | 14,051 | 1,663 | 7 |
| Oct-18 | 14,249 | 1,663 | 8 | 14,716 | 1,718 | 9 | 14,242 | 1,662 | 7 |
| Nov-18 | 14,393 | 1,672 | 8 | 14,780 | 1,732 | 9 | 14,304 | 1,676 | 7 |
| Dec-18 | 14,474 | 1,682 | 8 | 14,848 | 1,746 | 9 | 14,369 | 1,690 | 7 |
| Jan-19 | 14,553 | 1,701 | 8 | 14,957 | 1,762 | 9 | 14,380 | 1,694 | 7 |
| Feb-19 | 14,570 | 1,708 | 8 | 14,976 | 1,775 | 9 | 14,398 | 1,706 | 7 |
| Mar-19 | 14,549 | 1,706 | 8 | 14,934 | 1,760 | 9 | 14,358 | 1,692 | 7 |
| Apr-19 | 14,508 | 1,700 | 8 | 14,909 | 1,749 | 9 | 14,334 | 1,682 | 7 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| May-19 | 14,483 | 1,695 | 8 | 14,814 | 1,756 | 9 | 14,243 | 1,688 | 7 |
| Jun-19 | 14,401 | 1,688 | 8 | 14,781 | 1,753 | 9 | 14,211 | 1,685 | 7 |
| Jul-19 | 14,323 | 1,679 | 8 | 14,730 | 1,748 | 9 | 14,162 | 1,681 | 7 |
| Aug-19 | 14,235 | 1,672 | 8 | 14,670 | 1,743 | 9 | 14,104 | 1,676 | 7 |
| Sep-19 | 14,233 | 1,670 | 8 | 14,663 | 1,736 | 9 | 14,097 | 1,669 | 7 |
| Oct-19 | 14,343 | 1,674 | 8 | 14,862 | 1,735 | 9 | 14,289 | 1,668 | 7 |
| Nov-19 | 14,488 | 1,683 | 8 | 14,927 | 1,749 | 9 | 14,351 | 1,682 | 7 |
| Dec-19 | 14,570 | 1,693 | 8 | 14,995 | 1,763 | 9 | 14,416 | 1,695 | 7 |
| Jan-20 | 14,649 | 1,712 | 8 | 15,106 | 1,780 | 10 | 14,428 | 1,700 | 6 |
| Feb-20 | 14,666 | 1,719 | 8 | 15,124 | 1,792 | 10 | 14,445 | 1,712 | 6 |
| Mar-20 | 14,646 | 1,717 | 8 | 15,082 | 1,777 | 10 | 14,405 | 1,698 | 6 |
| Apr-20 | 14,604 | 1,711 | 8 | 15,056 | 1,767 | 10 | 14,381 | 1,687 | 6 |
| May-20 | 14,579 | 1,706 | 8 | 14,961 | 1,773 | 10 | 14,290 | 1,694 | 6 |
| Jun-20 | 14,496 | 1,699 | 8 | 14,928 | 1,770 | 10 | 14,258 | 1,691 | 6 |
| Jul-20 | 14,417 | 1,690 | 8 | 14,876 | 1,766 | 10 | 14,209 | 1,686 | 6 |
| Aug-20 | 14,328 | 1,683 | 8 | 14,815 | 1,760 | 10 | 14,151 | 1,681 | 6 |
| Sep-20 | 14,327 | 1,681 | 8 | 14,808 | 1,753 | 10 | 14,143 | 1,674 | 6 |
| Oct-20 | 14,438 | 1,685 | 8 | 15,009 | 1,752 | 10 | 14,336 | 1,673 | 6 |
| Nov-20 | 14,583 | 1,694 | 8 | 15,074 | 1,767 | 10 | 14,398 | 1,687 | 6 |
| Dec-20 | 14,666 | 1,704 | 8 | 15,143 | 1,781 | 10 | 14,464 | 1,701 | 6 |
| Jan-21 | 14,745 | 1,724 | 8 | 15,255 | 1,797 | 10 | 14,476 | 1,705 | 6 |
| Feb-21 | 14,763 | 1,731 | 8 | 15,274 | 1,810 | 10 | 14,493 | 1,718 | 6 |
| Mar-21 | 14,742 | 1,729 | 8 | 15,231 | 1,795 | 10 | 14,453 | 1,703 | 6 |
| Apr-21 | 14,700 | 1,723 | 8 | 15,205 | 1,784 | 10 | 14,428 | 1,693 | 6 |
| May-21 | 14,675 | 1,718 | 8 | 15,109 | 1,791 | 10 | 14,337 | 1,699 | 6 |
| Jun-21 | 14,592 | 1,710 | 8 | 15,075 | 1,787 | 10 | 14,305 | 1,696 | 6 |
| Jul-21 | 14,513 | 1,701 | 8 | 15,024 | 1,783 | 10 | 14,256 | 1,692 | 6 |
| Aug-21 | 14,423 | 1,694 | 8 | 14,962 | 1,778 | 10 | 14,197 | 1,687 | 6 |
| Sep-21 | 14,422 | 1,692 | 8 | 14,954 | 1,770 | 10 | 14,190 | 1,680 | 6 |
| Oct-21 | 14,533 | 1,696 | 8 | 15,158 | 1,769 | 10 | 14,383 | 1,679 | 6 |
| Nov-21 | 14,679 | 1,705 | 8 | 15,224 | 1,784 | 10 | 14,446 | 1,693 | 6 |
| Dec-21 | 14,763 | 1,716 | 8 | 15,293 | 1,798 | 10 | 14,511 | 1,706 | 6 |
| Jan-22 | 14,843 | 1,735 | 8 | 15,406 | 1,815 | 10 | 14,523 | 1,711 | 6 |
| Feb-22 | 14,860 | 1,742 | 8 | 15,425 | 1,828 | 10 | 14,541 | 1,723 | 6 |
| Mar-22 | 14,839 | 1,740 | 8 | 15,382 | 1,813 | 10 | 14,501 | 1,709 | 6 |
| Apr-22 | 14,797 | 1,734 | 8 | 15,356 | 1,802 | 10 | 14,476 | 1,699 | 6 |
| May-22 | 14,772 | 1,729 | 8 | 15,259 | 1,808 | 10 | 14,384 | 1,705 | 6 |
| Jun-22 | 14,688 | 1,722 | 8 | 15,225 | 1,805 | 10 | 14,352 | 1,702 | 6 |
| Jul-22 | 14,608 | 1,712 | 8 | 15,172 | 1,801 | 10 | 14,303 | 1,698 | 6 |
| Aug-22 | 14,518 | 1,705 | 8 | 15,110 | 1,795 | 10 | 14,244 | 1,692 | 6 |
| Sep-22 | 14,517 | 1,703 | 8 | 15,102 | 1,788 | 10 | 14,237 | 1,685 | 6 |
| Oct-22 | 14,629 | 1,707 | 8 | 15,308 | 1,787 | 10 | 14,431 | 1,684 | 6 |
| Nov-22 | 14,776 | 1,717 | 8 | 15,374 | 1,802 | 10 | 14,493 | 1,699 | 6 |
| Dec-22 | 14,860 | 1,727 | 8 | 15,444 | 1,816 | 10 | 14,559 | 1,712 | 6 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
## KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| Jan-23 | 14,941 | 1,747 | 8 | 15,559 | 1,833 | 11 | 14,571 | 1,717 | 5 |
| Feb-23 | 14,958 | 1,754 | 8 | 15,577 | 1,846 | 11 | 14,589 | 1,729 | 5 |
| Mar-23 | 14,937 | 1,752 | 8 | 15,534 | 1,831 | 11 | 14,549 | 1,715 | 5 |
| Apr-23 | 14,895 | 1,745 | 8 | 15,508 | 1,820 | 11 | 14,524 | 1,704 | 5 |
| May-23 | 14,870 | 1,740 | 8 | 15,410 | 1,826 | 11 | 14,432 | 1,710 | 5 |
| Jun-23 | 14,785 | 1,733 | 8 | 15,375 | 1,823 | 11 | 14,400 | 1,707 | 5 |
| Jul-23 | 14,705 | 1,724 | 8 | 15,322 | 1,819 | 11 | 14,350 | 1,703 | 5 |
| Aug-23 | 14,614 | 1,717 | 8 | 15,260 | 1,813 | 11 | 14,291 | 1,698 | 5 |
| Sep-23 | 14,613 | 1,714 | 8 | 15,252 | 1,805 | 11 | 14,284 | 1,691 | 5 |
| Oct-23 | 14,726 | 1,719 | 8 | 15,459 | 1,804 | 11 | 14,478 | 1,690 | 5 |
| Nov-23 | 14,874 | 1,728 | 8 | 15,527 | 1,820 | 11 | 14,541 | 1,704 | 5 |
| Dec-23 | 14,958 | 1,738 | 8 | 15,597 | 1,834 | 11 | 14,607 | 1,718 | 5 |
| Jan-24 | 15,039 | 1,758 | 8 | 15,713 | 1,851 | 11 | 14,619 | 1,722 | 5 |
| Feb-24 | 15,057 | 1,765 | 8 | 15,732 | 1,864 | 11 | 14,637 | 1,735 | 5 |
| Mar-24 | 15,036 | 1,763 | 8 | 15,688 | 1,849 | 11 | 14,597 | 1,720 | 5 |
| Apr-24 | 14,993 | 1,757 | 8 | 15,661 | 1,838 | 11 | 14,572 | 1,710 | 5 |
| May-24 | 14,968 | 1,752 | 8 | 15,562 | 1,844 | 11 | 14,479 | 1,716 | 5 |
| Jun-24 | 14,883 | 1,745 | 8 | 15,528 | 1,841 | 11 | 14,447 | 1,713 | 5 |
| Jul-24 | 14,802 | 1,735 | 8 | 15,474 | 1,837 | 11 | 14,397 | 1,709 | 5 |
| Aug-24 | 14,710 | 1,728 | 8 | 15,411 | 1,831 | 11 | 14,338 | 1,704 | 5 |
| Sep-24 | 14,709 | 1,726 | 8 | 15,403 | 1,823 | 11 | 14,331 | 1,696 | 5 |
| Oct-24 | 14,823 | 1,730 | 8 | 15,612 | 1,822 | 11 | 14,526 | 1,695 | 5 |
| Nov-24 | 14,972 | 1,739 | 8 | 15,680 | 1,838 | 11 | 14,589 | 1,710 | 5 |
| Dec-24 | 15,057 | 1,750 | 8 | 15,752 | 1,852 | 11 | 14,656 | 1,723 | 5 |
| Jan-25 | 15,138 | 1,770 | 8 | 15,868 | 1,869 | 11 | 14,668 | 1,728 | 5 |
| Feb-25 | 15,156 | 1,777 | 8 | 15,887 | 1,883 | 11 | 14,685 | 1,740 | 5 |
| Mar-25 | 15,135 | 1,775 | 8 | 15,843 | 1,867 | 11 | 14,645 | 1,726 | 5 |
| Apr-25 | 15,092 | 1,769 | 8 | 15,816 | 1,856 | 11 | 14,620 | 1,715 | 5 |
| May-25 | 15,067 | 1,763 | 8 | 15,716 | 1,863 | 11 | 14,527 | 1,722 | 5 |
| Jun-25 | 14,981 | 1,756 | 8 | 15,681 | 1,859 | 11 | 14,495 | 1,719 | 5 |
| Jul-25 | 14,900 | 1,747 | 8 | 15,627 | 1,855 | 11 | 14,445 | 1,714 | 5 |
| Aug-25 | 14,808 | 1,739 | 8 | 15,563 | 1,849 | 11 | 14,386 | 1,709 | 5 |
| Sep-25 | 14,807 | 1,737 | 8 | 15,555 | 1,841 | 11 | 14,378 | 1,702 | 5 |
| Oct-25 | 14,921 | 1,741 | 8 | 15,767 | 1,840 | 11 | 14,574 | 1,701 | 5 |
| Nov-25 | 15,071 | 1,751 | 8 | 15,836 | 1,856 | 11 | 14,637 | 1,715 | 5 |
| Dec-25 | 15,156 | 1,761 | 8 | 15,908 | 1,871 | 11 | 14,704 | 1,729 | 5 |
| Jan-26 | 15,238 | 1,781 | 8 | 16,025 | 1,888 | 12 | 14,716 | 1,734 | 4 |
| Feb-26 | 15,256 | 1,789 | 8 | 16,045 | 1,902 | 12 | 14,734 | 1,746 | 4 |
| Mar-26 | 15,235 | 1,787 | 8 | 16,000 | 1,886 | 12 | 14,693 | 1,732 | 4 |
| Apr-26 | 15,192 | 1,780 | 8 | 15,973 | 1,874 | 12 | 14,668 | 1,721 | 4 |
| May-26 | 15,166 | 1,775 | 8 | 15,872 | 1,881 | 12 | 14,575 | 1,727 | 4 |
| Jun-26 | 15,080 | 1,768 | 8 | 15,837 | 1,878 | 12 | 14,543 | 1,724 | 4 |
| Jul-26 | 14,998 | 1,758 | 8 | 15,782 | 1,873 | 12 | 14,493 | 1,720 | 4 |
| Aug-26 | 14,905 | 1,751 | 8 | 15,717 | 1,867 | 12 | 14,433 | 1,715 | 4 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| Sep-26 | 14,904 | 1,749 | 8 | 15,709 | 1,860 | 12 | 14,426 | 1,708 | 4 |
| Oct-26 | 15,019 | 1,753 | 8 | 15,923 | 1,858 | 12 | 14,622 | 1,707 | 4 |
| Nov-26 | 15,170 | 1,762 | 8 | 15,992 | 1,874 | 12 | 14,686 | 1,721 | 4 |
| Dec-26 | 15,256 | 1,773 | 8 | 16,065 | 1,889 | 12 | 14,753 | 1,735 | 4 |
| Jan-27 | 15,339 | 1,793 | 8 | 16,184 | 1,907 | 12 | 14,765 | 1,739 | 4 |
| Feb-27 | 15,357 | 1,801 | 8 | 16,204 | 1,920 | 12 | 14,782 | 1,752 | 4 |
| Mar-27 | 15,336 | 1,798 | 8 | 16,159 | 1,904 | 12 | 14,741 | 1,737 | 4 |
| Apr-27 | 15,292 | 1,792 | 8 | 16,131 | 1,893 | 12 | 14,716 | 1,727 | 4 |
| May-27 | 15,266 | 1,787 | 8 | 16,029 | 1,900 | 12 | 14,623 | 1,733 | 4 |
| Jun-27 | 15,179 | 1,779 | 8 | 15,993 | 1,896 | 12 | 14,591 | 1,730 | 4 |
| Jul-27 | 15,097 | 1,770 | 8 | 15,938 | 1,892 | 12 | 14,540 | 1,726 | 4 |
| Aug-27 | 15,004 | 1,762 | 8 | 15,873 | 1,886 | 12 | 14,481 | 1,721 | 4 |
| Sep-27 | 15,003 | 1,760 | 8 | 15,865 | 1,878 | 12 | 14,473 | 1,713 | 4 |
| Oct-27 | 15,118 | 1,764 | 8 | 16,081 | 1,877 | 12 | 14,670 | 1,712 | 4 |
| Nov-27 | 15,270 | 1,774 | 8 | 16,151 | 1,893 | 12 | 14,734 | 1,727 | 4 |
| Dec-27 | 15,357 | 1,785 | 8 | 16,224 | 1,908 | 12 | 14,801 | 1,740 | 4 |
| Jan-28 | 15,440 | 1,805 | 8 | 16,344 | 1,926 | 12 | 14,813 | 1,745 | 4 |
| Feb-28 | 15,458 | 1,812 | 8 | 16,364 | 1,939 | 12 | 14,831 | 1,758 | 4 |
| Mar-28 | 15,437 | 1,810 | 8 | 16,319 | 1,923 | 12 | 14,790 | 1,743 | 4 |
| Apr-28 | 15,393 | 1,804 | 8 | 16,291 | 1,912 | 12 | 14,765 | 1,733 | 4 |
| May-28 | 15,367 | 1,799 | 8 | 16,188 | 1,919 | 12 | 14,671 | 1,739 | 4 |
| Jun-28 | 15,280 | 1,791 | 8 | 16,152 | 1,915 | 12 | 14,639 | 1,736 | 4 |
| Jul-28 | 15,196 | 1,781 | 8 | 16,096 | 1,910 | 12 | 14,588 | 1,731 | 4 |
| Aug-28 | 15,103 | 1,774 | 8 | 16,030 | 1,905 | 12 | 14,529 | 1,726 | 4 |
| Sep-28 | 15,102 | 1,772 | 8 | 16,022 | 1,897 | 12 | 14,521 | 1,719 | 4 |
| Oct-28 | 15,218 | 1,776 | 8 | 16,240 | 1,895 | 12 | 14,719 | 1,718 | 4 |
| Nov-28 | 15,371 | 1,786 | 8 | 16,311 | 1,912 | 12 | 14,783 | 1,733 | 4 |
| Dec-28 | 15,458 | 1,796 | 8 | 16,385 | 1,927 | 12 | 14,850 | 1,746 | 4 |
| Jan-29 | 15,542 | 1,817 | 8 | 16,506 | 1,945 | 13 | 14,862 | 1,751 | 3 |
| Feb-29 | 15,560 | 1,824 | 8 | 16,526 | 1,959 | 13 | 14,880 | 1,764 | 3 |
| Mar-29 | 15,539 | 1,822 | 8 | 16,480 | 1,942 | 13 | 14,839 | 1,749 | 3 |
| Apr-29 | 15,494 | 1,816 | 8 | 16,452 | 1,931 | 13 | 14,814 | 1,738 | 3 |
| May-29 | 15,468 | 1,810 | 8 | 16,348 | 1,938 | 13 | 14,720 | 1,745 | 3 |
| Jun-29 | 15,380 | 1,803 | 8 | 16,312 | 1,934 | 13 | 14,687 | 1,741 | 3 |
| Jul-29 | 15,297 | 1,793 | 8 | 16,255 | 1,929 | 13 | 14,637 | 1,737 | 3 |
| Aug-29 | 15,202 | 1,786 | 8 | 16,189 | 1,923 | 13 | 14,576 | 1,732 | 3 |
| Sep-29 | 15,201 | 1,783 | 8 | 16,181 | 1,915 | 13 | 14,569 | 1,725 | 3 |
| Oct-29 | 15,318 | 1,788 | 8 | 16,401 | 1,914 | 13 | 14,767 | 1,723 | 3 |
| Nov-29 | 15,473 | 1,797 | 8 | 16,472 | 1,931 | 13 | 14,832 | 1,738 | 3 |
| Dec-29 | 15,560 | 1,808 | 8 | 16,547 | 1,946 | 13 | 14,899 | 1,752 | 3 |
| Jan-30 | 15,645 | 1,829 | 8 | 16,669 | 1,964 | 13 | 14,911 | 1,757 | 3 |
| Feb-30 | 15,663 | 1,836 | 8 | 16,690 | 1,978 | 13 | 14,929 | 1,769 | 3 |
| Mar-30 | 15,641 | 1,834 | 8 | 16,643 | 1,961 | 13 | 14,888 | 1,755 | 3 |
| Apr-30 | 15,597 | 1,828 | 8 | 16,615 | 1,950 | 13 | 14,863 | 1,744 | 3 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# KLAMATH FALLS

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers | Residential Klamath Falls Customers | Commericial Klamath Falls Customers | Industrial Klamath Falls Customers |
| May-30 | 15,570 | 1,822 | 8 | 16,510 | 1,957 | 13 | 14,768 | 1,750 | 3 |
| Jun-30 | 15,482 | 1,815 | 8 | 16,473 | 1,953 | 13 | 14,736 | 1,747 | 3 |
| Jul-30 | 15,398 | 1,805 | 8 | 16,416 | 1,948 | 13 | 14,685 | 1,743 | 3 |
| Aug-30 | 15,303 | 1,797 | 8 | 16,349 | 1,943 | 13 | 14,625 | 1,738 | 3 |
| Sep-30 | 15,302 | 1,795 | 8 | 16,341 | 1,934 | 13 | 14,617 | 1,730 | 3 |
| Oct-30 | 15,420 | 1,800 | 8 | 16,563 | 1,933 | 13 | 14,816 | 1,729 | 3 |
| Nov-30 | 15,575 | 1,809 | 8 | 16,635 | 1,950 | 13 | 14,881 | 1,744 | 3 |
| Dec-30 | 15,663 | 1,820 | 8 | 16,711 | 1,965 | 13 | 14,948 | 1,758 | 3 |
| Jan-31 | 15,748 | 1,841 | 8 | 16,834 | 1,983 | 13 | 14,960 | 1,762 | 3 |
| Feb-31 | 15,767 | 1,849 | 8 | 16,855 | 1,998 | 13 | 14,978 | 1,775 | 3 |
| Mar-31 | 15,745 | 1,846 | 8 | 16,808 | 1,981 | 13 | 14,937 | 1,760 | 3 |
| Apr-31 | 15,699 | 1,840 | 8 | 16,780 | 1,969 | 13 | 14,912 | 1,750 | 3 |
| May-31 | 15,673 | 1,834 | 8 | 16,673 | 1,976 | 13 | 14,817 | 1,756 | 3 |
| Jun-31 | 15,584 | 1,827 | 8 | 16,636 | 1,973 | 13 | 14,784 | 1,753 | 3 |
| Jul-31 | 15,499 | 1,817 | 8 | 16,579 | 1,968 | 13 | 14,733 | 1,749 | 3 |
| Aug-31 | 15,404 | 1,809 | 8 | 16,511 | 1,962 | 13 | 14,673 | 1,743 | 3 |
| Sep-31 | 15,403 | 1,807 | 8 | 16,503 | 1,953 | 13 | 14,665 | 1,736 | 3 |
| Oct-31 | 15,521 | 1,811 | 8 | 16,727 | 1,952 | 13 | 14,865 | 1,735 | 3 |
| Nov-31 | 15,678 | 1,821 | 8 | 16,800 | 1,969 | 13 | 14,930 | 1,750 | 3 |
| Dec-31 | 15,767 | 1,832 | 8 | 16,876 | 1,984 | 13 | 14,998 | 1,764 | 3 |
| Jan-32 | 15,852 | 1,853 | 8 | 17,001 | 2,003 | 14 | 15,010 | 1,768 | 2 |
| Feb-32 | 15,871 | 1,861 | 8 | 17,022 | 2,017 | 14 | 15,028 | 1,781 | 2 |
| Mar-32 | 15,848 | 1,859 | 8 | 16,975 | 2,000 | 14 | 14,986 | 1,766 | 2 |
| Apr-32 | 15,803 | 1,852 | 8 | 16,946 | 1,988 | 14 | 14,961 | 1,756 | 2 |
| May-32 | 15,777 | 1,846 | 8 | 16,838 | 1,996 | 14 | 14,866 | 1,762 | 2 |
| Jun-32 | 15,687 | 1,839 | 8 | 16,801 | 1,992 | 14 | 14,833 | 1,759 | 2 |
| Jul-32 | 15,602 | 1,829 | 8 | 16,743 | 1,987 | 14 | 14,782 | 1,754 | 2 |
| Aug-32 | 15,505 | 1,821 | 8 | 16,674 | 1,981 | 14 | 14,721 | 1,749 | 2 |
| Sep-32 | 15,504 | 1,819 | 8 | 16,666 | 1,973 | 14 | 14,714 | 1,742 | 2 |
| Oct-32 | 15,624 | 1,823 | 8 | 16,893 | 1,972 | 14 | 14,914 | 1,741 | 2 |
| Nov-32 | 15,781 | 1,833 | 8 | 16,966 | 1,988 | 14 | 14,979 | 1,756 | 2 |
| Dec-32 | 15,871 | 1,844 | 8 | 17,043 | 2,004 | 14 | 15,047 | 1,769 | 2 |
| Jan-33 | 15,956 | 1,865 | 8 | 17,169 | 2,023 | 14 | 15,059 | 1,774 | 2 |
| Feb-33 | 15,975 | 1,873 | 8 | 17,190 | 2,037 | 14 | 15,077 | 1,787 | 2 |
| Mar-33 | 15,953 | 1,871 | 8 | 17,143 | 2,020 | 14 | 15,036 | 1,772 | 2 |
| Apr-33 | 15,907 | 1,864 | 8 | 17,113 | 2,008 | 14 | 15,010 | 1,761 | 2 |
| May-33 | 15,881 | 1,859 | 8 | 17,005 | 2,015 | 14 | 14,915 | 1,768 | 2 |
| Jun-33 | 15,790 | 1,851 | 8 | 16,967 | 2,012 | 14 | 14,882 | 1,765 | 2 |
| Jul-33 | 15,705 | 1,841 | 8 | 16,909 | 2,007 | 14 | 14,831 | 1,760 | 2 |
| Aug-33 | 15,608 | 1,833 | 8 | 16,839 | 2,001 | 14 | 14,770 | 1,755 | 2 |
| Sep-33 | 15,607 | 1,831 | 8 | 16,831 | 1,992 | 14 | 14,762 | 1,747 | 2 |
| Oct-33 | 15,727 | 1,835 | 8 | 17,060 | 1,991 | 14 | 14,963 | 1,746 | 2 |
| Nov-33 | 15,885 | 1,845 | 8 | 17,134 | 2,008 | 14 | 15,028 | 1,761 | 2 |
| Dec-33 | 15,975 | 1,856 | 8 | 17,212 | 2,024 | 14 | 15,097 | 1,775 | 2 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| Jan-12 | 6,562 | 892 | 1 | 6,562 | 892 | 1 | 6,562 | 892 | 1 |
| Feb-12 | 6,578 | 893 | 1 | 6,578 | 893 | 1 | 6,578 | 893 | 1 |
| Mar-12 | 6,562 | 899 | 1 | 6,562 | 899 | 1 | 6,562 | 899 | 1 |
| Apr-12 | 6,555 | 898 | 2 | 6,555 | 898 | 2 | 6,555 | 898 | 2 |
| May-12 | 6,559 | 894 | 1 | 6,559 | 894 | 1 | 6,559 | 894 | 1 |
| Jun-12 | 6,492 | 892 | 1 | 6,492 | 892 | 1 | 6,492 | 892 | 1 |
| Jul-12 | 6,479 | 890 | 1 | 6,479 | 890 | 1 | 6,479 | 890 | 1 |
| Aug-12 | 6,478 | 888 | 8 | 6,478 | 888 | 8 | 6,478 | 888 | 8 |
| Sep-12 | 6,452 | 883 | 5 | 6,452 | 883 | 5 | 6,452 | 883 | 5 |
| Oct-12 | 6,465 | 882 | 7 | 6,465 | 882 | 7 | 6,465 | 882 | 7 |
| Nov-12 | 6,557 | 883 | 7 | 6,557 | 883 | 7 | 6,557 | 883 | 7 |
| Dec-12 | 6,585 | 894 | 7 | 6,585 | 894 | 7 | 6,585 | 894 | 7 |
| Jan-13 | 6,595 | 898 | 7 | 6,595 | 898 | 7 | 6,595 | 898 | 7 |
| Feb-13 | 6,607 | 903 | 7 | 6,607 | 903 | 7 | 6,607 | 903 | 7 |
| Mar-13 | 6,602 | 899 | 1 | 6,602 | 899 | 1 | 6,602 | 899 | 1 |
| Apr-13 | 6,589 | 899 | 1 | 6,589 | 899 | 1 | 6,589 | 899 | 1 |
| May-13 | 6,544 | 901 | 1 | 6,544 | 901 | 1 | 6,544 | 901 | 1 |
| Jun-13 | 6,503 | 896 | 3 | 6,503 | 896 | 3 | 6,503 | 896 | 3 |
| Jul-13 | 6,468 | 892 | 3 | 6,468 | 892 | 3 | 6,468 | 892 | 3 |
| Aug-13 | 6,443 | 896 | 5 | 6,443 | 896 | 5 | 6,443 | 896 | 5 |
| Sep-13 | 6,461 | 889 | 7 | 6,461 | 889 | 7 | 6,461 | 889 | 7 |
| Oct-13 | 6,472 | 887 | 6 | 6,472 | 887 | 6 | 6,472 | 887 | 6 |
| Nov-13 | 6,595 | 900 | 4 | 6,595 | 900 | 4 | 6,595 | 900 | 4 |
| Dec-13 | 6,621 | 903 | 2 | 6,621 | 903 | 2 | 6,621 | 903 | 2 |
| Jan-14 | 6,644 | 902 | 4 | 6,635 | 903 | 4 | 6,608 | 900 | 4 |
| Feb-14 | 6,646 | 903 | 2 | 6,647 | 908 | 2 | 6,620 | 905 | 2 |
| Mar-14 | 6,633 | 902 | 1 | 6,642 | 904 | 1 | 6,615 | 901 | 1 |
| Apr-14 | 6,617 | 900 | 1 | 6,629 | 904 | 1 | 6,602 | 901 | 1 |
| May-14 | 6,603 | 899 | 1 | 6,583 | 906 | 1 | 6,557 | 903 | 1 |
| Jun-14 | 6,566 | 896 | 1 | 6,542 | 901 | 1 | 6,516 | 898 | 1 |
| Jul-14 | 6,532 | 894 | 1 | 6,507 | 897 | 1 | 6,481 | 894 | 1 |
| Aug-14 | 6,522 | 893 | 5 | 6,482 | 901 | 5 | 6,456 | 898 | 5 |
| Sep-14 | 6,506 | 893 | 7 | 6,500 | 894 | 7 | 6,474 | 891 | 7 |
| Oct-14 | 6,543 | 895 | 7 | 6,511 | 892 | 7 | 6,485 | 889 | 7 |
| Nov-14 | 6,621 | 900 | 4 | 6,635 | 905 | 4 | 6,608 | 902 | 4 |
| Dec-14 | 6,649 | 902 | 2 | 6,661 | 908 | 2 | 6,634 | 904 | 2 |
| Jan-15 | 6,677 | 904 | 4 | 6,674 | 909 | 4 | 6,621 | 902 | 4 |
| Feb-15 | 6,686 | 905 | 2 | 6,687 | 914 | 2 | 6,633 | 907 | 2 |
| Mar-15 | 6,666 | 904 | 1 | 6,681 | 910 | 1 | 6,628 | 903 | 1 |
| Apr-15 | 6,654 | 903 | 1 | 6,668 | 910 | 1 | 6,615 | 903 | 1 |
| May-15 | 6,637 | 901 | 1 | 6,623 | 912 | 1 | 6,570 | 905 | 1 |
| Jun-15 | 6,603 | 899 | 1 | 6,581 | 907 | 1 | 6,529 | 900 | 1 |
| Jul-15 | 6,568 | 896 | 1 | 6,546 | 903 | 1 | 6,494 | 896 | 1 |
| Aug-15 | 6,556 | 895 | 5 | 6,521 | 907 | 5 | 6,469 | 900 | 5 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| Sep-15 | 6,543 | 895 | 7 | 6,539 | 900 | 7 | 6,487 | 893 | 7 |
| Oct-15 | 6,578 | 898 | 7 | 6,550 | 898 | 7 | 6,498 | 891 | 7 |
| Nov-15 | 6,657 | 903 | 4 | 6,674 | 911 | 4 | 6,621 | 903 | 4 |
| Dec-15 | 6,683 | 905 | 2 | 6,701 | 913 | 2 | 6,648 | 906 | 2 |
| Jan-16 | 6,716 | 907 | 4 | 6,714 | 914 | 4 | 6,635 | 903 | 4 |
| Feb-16 | 6,724 | 908 | 2 | 6,727 | 919 | 2 | 6,647 | 908 | 2 |
| Mar-16 | 6,705 | 907 | 1 | 6,722 | 915 | 1 | 6,642 | 904 | 1 |
| Apr-16 | 6,693 | 906 | 1 | 6,708 | 915 | 1 | 6,629 | 904 | 1 |
| May-16 | 6,675 | 904 | 1 | 6,663 | 917 | 1 | 6,583 | 906 | 1 |
| Jun-16 | 6,642 | 902 | 1 | 6,621 | 912 | 1 | 6,542 | 901 | 1 |
| Jul-16 | 6,605 | 899 | 1 | 6,585 | 908 | 1 | 6,507 | 897 | 1 |
| Aug-16 | 6,596 | 898 | 5 | 6,560 | 912 | 5 | 6,482 | 901 | 5 |
| Sep-16 | 6,581 | 898 | 7 | 6,578 | 905 | 7 | 6,500 | 894 | 7 |
| Oct-16 | 6,616 | 901 | 7 | 6,589 | 903 | 7 | 6,511 | 892 | 7 |
| Nov-16 | 6,696 | 906 | 4 | 6,714 | 916 | 4 | 6,635 | 905 | 4 |
| Dec-16 | 6,722 | 908 | 2 | 6,741 | 919 | 2 | 6,661 | 908 | 2 |
| Jan-17 | 6,755 | 910 | 4 | 6,755 | 920 | 4 | 6,648 | 905 | 4 |
| Feb-17 | 6,762 | 911 | 2 | 6,767 | 925 | 2 | 6,660 | 910 | 2 |
| Mar-17 | 6,744 | 909 | 1 | 6,762 | 921 | 1 | 6,655 | 906 | 1 |
| Apr-17 | 6,731 | 908 | 1 | 6,749 | 921 | 1 | 6,642 | 906 | 1 |
| May-17 | 6,714 | 907 | 1 | 6,702 | 923 | 1 | 6,597 | 908 | 1 |
| Jun-17 | 6,679 | 905 | 1 | 6,660 | 918 | 1 | 6,555 | 903 | 1 |
| Jul-17 | 6,643 | 902 | 1 | 6,625 | 914 | 1 | 6,520 | 899 | 1 |
| Aug-17 | 6,633 | 901 | 5 | 6,599 | 918 | 5 | 6,495 | 903 | 5 |
| Sep-17 | 6,619 | 901 | 7 | 6,617 | 911 | 7 | 6,513 | 896 | 7 |
| Oct-17 | 6,654 | 904 | 7 | 6,629 | 908 | 7 | 6,524 | 894 | 7 |
| Nov-17 | 6,734 | 909 | 4 | 6,755 | 922 | 4 | 6,648 | 907 | 4 |
| Dec-17 | 6,760 | 911 | 2 | 6,781 | 924 | 2 | 6,674 | 910 | 2 |
| Jan-18 | 6,803 | 914 | 4 | 6,795 | 925 | 4 | 6,661 | 907 | 4 |
| Feb-18 | 6,810 | 914 | 2 | 6,808 | 930 | 2 | 6,673 | 912 | 2 |
| Mar-18 | 6,792 | 913 | 1 | 6,802 | 926 | 1 | 6,668 | 908 | 1 |
| Apr-18 | 6,780 | 912 | 1 | 6,789 | 926 | 1 | 6,655 | 908 | 1 |
| May-18 | 6,762 | 911 | 1 | 6,743 | 928 | 1 | 6,610 | 910 | 1 |
| Jun-18 | 6,728 | 908 | 1 | 6,700 | 923 | 1 | 6,568 | 905 | 1 |
| Jul-18 | 6,692 | 906 | 1 | 6,664 | 919 | 1 | 6,533 | 901 | 1 |
| Aug-18 | 6,681 | 905 | 5 | 6,639 | 923 | 5 | 6,508 | 905 | 5 |
| Sep-18 | 6,667 | 905 | 7 | 6,657 | 916 | 7 | 6,526 | 898 | 7 |
| Oct-18 | 6,664 | 904 | 7 | 6,669 | 914 | 7 | 6,537 | 896 | 7 |
| Nov-18 | 6,734 | 909 | 4 | 6,795 | 927 | 4 | 6,661 | 909 | 4 |
| Dec-18 | 6,766 | 911 | 2 | 6,822 | 930 | 2 | 6,687 | 912 | 2 |
| Jan-19 | 6,830 | 918 | 4 | 6,836 | 931 | 4 | 6,675 | 909 | 4 |
| Feb-19 | 6,837 | 918 | 2 | 6,848 | 936 | 2 | 6,687 | 914 | 2 |
| Mar-19 | 6,819 | 917 | 1 | 6,843 | 932 | 1 | 6,682 | 910 | 1 |
| Apr-19 | 6,807 | 916 | 1 | 6,830 | 932 | 1 | 6,668 | 910 | 1 |

## APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
## LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| May-19 | 6,789 | 914 | 1 | 6,783 | 934 | 1 | 6,623 | 912 | 1 |
| Jun-19 | 6,755 | 912 | 1 | 6,741 | 929 | 1 | 6,581 | 907 | 1 |
| Jul-19 | 6,719 | 909 | 1 | 6,704 | 925 | 1 | 6,546 | 903 | 1 |
| Aug-19 | 6,708 | 908 | 5 | 6,678 | 929 | 5 | 6,521 | 907 | 5 |
| Sep-19 | 6,694 | 908 | 7 | 6,697 | 921 | 7 | 6,539 | 900 | 7 |
| Oct-19 | 6,691 | 908 | 7 | 6,709 | 919 | 7 | 6,550 | 898 | 7 |
| Nov-19 | 6,761 | 912 | 4 | 6,836 | 933 | 4 | 6,675 | 911 | 4 |
| Dec-19 | 6,793 | 915 | 2 | 6,863 | 936 | 2 | 6,701 | 913 | 2 |
| Jan-20 | 6,858 | 921 | 4 | 6,877 | 936 | 4 | 6,688 | 911 | 4 |
| Feb-20 | 6,865 | 922 | 2 | 6,890 | 942 | 2 | 6,700 | 916 | 2 |
| Mar-20 | 6,846 | 920 | 1 | 6,884 | 937 | 1 | 6,695 | 912 | 1 |
| Apr-20 | 6,834 | 919 | 1 | 6,871 | 937 | 1 | 6,682 | 912 | 1 |
| May-20 | 6,816 | 918 | 1 | 6,824 | 940 | 1 | 6,636 | 914 | 1 |
| Jun-20 | 6,782 | 916 | 1 | 6,781 | 934 | 1 | 6,595 | 909 | 1 |
| Jul-20 | 6,746 | 913 | 1 | 6,745 | 930 | 1 | 6,559 | 905 | 1 |
| Aug-20 | 6,735 | 912 | 5 | 6,719 | 934 | 5 | 6,534 | 909 | 5 |
| Sep-20 | 6,720 | 912 | 7 | 6,737 | 927 | 7 | 6,552 | 902 | 7 |
| Oct-20 | 6,717 | 912 | 7 | 6,749 | 925 | 7 | 6,563 | 899 | 7 |
| Nov-20 | 6,788 | 916 | 4 | 6,877 | 938 | 4 | 6,688 | 912 | 4 |
| Dec-20 | 6,820 | 918 | 2 | 6,904 | 941 | 2 | 6,714 | 915 | 2 |
| Jan-21 | 6,885 | 925 | 4 | 6,918 | 942 | 4 | 6,701 | 912 | 4 |
| Feb-21 | 6,892 | 925 | 2 | 6,931 | 947 | 2 | 6,713 | 918 | 2 |
| Mar-21 | 6,874 | 924 | 1 | 6,926 | 943 | 1 | 6,708 | 913 | 1 |
| Apr-21 | 6,862 | 923 | 1 | 6,912 | 943 | 1 | 6,695 | 913 | 1 |
| May-21 | 6,843 | 922 | 1 | 6,865 | 945 | 1 | 6,649 | 916 | 1 |
| Jun-21 | 6,809 | 919 | 1 | 6,822 | 940 | 1 | 6,608 | 910 | 1 |
| Jul-21 | 6,773 | 916 | 1 | 6,785 | 936 | 1 | 6,572 | 906 | 1 |
| Aug-21 | 6,762 | 916 | 5 | 6,759 | 940 | 5 | 6,547 | 910 | 5 |
| Sep-21 | 6,747 | 916 | 7 | 6,778 | 933 | 7 | 6,565 | 903 | 7 |
| Oct-21 | 6,744 | 915 | 7 | 6,789 | 930 | 7 | 6,576 | 901 | 7 |
| Nov-21 | 6,816 | 920 | 4 | 6,918 | 944 | 4 | 6,701 | 914 | 4 |
| Dec-21 | 6,847 | 922 | 2 | 6,946 | 947 | 2 | 6,728 | 917 | 2 |
| Jan-22 | 6,913 | 929 | 4 | 6,960 | 948 | 4 | 6,715 | 914 | 4 |
| Feb-22 | 6,920 | 929 | 2 | 6,972 | 953 | 2 | 6,727 | 919 | 2 |
| Mar-22 | 6,901 | 928 | 1 | 6,967 | 949 | 1 | 6,722 | 915 | 1 |
| Apr-22 | 6,889 | 927 | 1 | 6,953 | 949 | 1 | 6,709 | 915 | 1 |
| May-22 | 6,871 | 925 | 1 | 6,906 | 951 | 1 | 6,663 | 917 | 1 |
| Jun-22 | 6,837 | 923 | 1 | 6,863 | 946 | 1 | 6,621 | 912 | 1 |
| Jul-22 | 6,800 | 920 | 1 | 6,826 | 941 | 1 | 6,585 | 908 | 1 |
| Aug-22 | 6,789 | 919 | 5 | 6,799 | 946 | 5 | 6,560 | 912 | 5 |
| Sep-22 | 6,774 | 919 | 7 | 6,818 | 938 | 7 | 6,578 | 905 | 7 |
| Oct-22 | 6,771 | 919 | 7 | 6,830 | 936 | 7 | 6,589 | 903 | 7 |
| Nov-22 | 6,843 | 923 | 4 | 6,960 | 950 | 4 | 6,715 | 916 | 4 |
| Dec-22 | 6,875 | 926 | 2 | 6,987 | 953 | 2 | 6,741 | 919 | 2 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| Jan-23 | 6,940 | 932 | 4 | 7,002 | 953 | 4 | 6,728 | 916 | 4 |
| Feb-23 | 6,947 | 933 | 2 | 7,014 | 959 | 2 | 6,740 | 921 | 2 |
| Mar-23 | 6,929 | 931 | 1 | 7,009 | 954 | 1 | 6,735 | 917 | 1 |
| Apr-23 | 6,917 | 931 | 1 | 6,995 | 954 | 1 | 6,722 | 917 | 1 |
| May-23 | 6,898 | 929 | 1 | 6,947 | 957 | 1 | 6,676 | 919 | 1 |
| Jun-23 | 6,864 | 927 | 1 | 6,904 | 951 | 1 | 6,634 | 914 | 1 |
| Jul-23 | 6,827 | 924 | 1 | 6,867 | 947 | 1 | 6,599 | 910 | 1 |
| Aug-23 | 6,816 | 923 | 5 | 6,840 | 951 | 5 | 6,573 | 914 | 5 |
| Sep-23 | 6,801 | 923 | 7 | 6,859 | 944 | 7 | 6,591 | 907 | 7 |
| Oct-23 | 6,798 | 923 | 7 | 6,871 | 942 | 7 | 6,603 | 905 | 7 |
| Nov-23 | 6,870 | 927 | 4 | 7,002 | 955 | 4 | 6,728 | 918 | 4 |
| Dec-23 | 6,902 | 929 | 2 | 7,029 | 958 | 2 | 6,755 | 921 | 2 |
| Jan-24 | 6,968 | 936 | 4 | 7,044 | 959 | 4 | 6,742 | 918 | 4 |
| Feb-24 | 6,975 | 937 | 2 | 7,056 | 964 | 2 | 6,754 | 923 | 2 |
| Mar-24 | 6,957 | 935 | 1 | 7,051 | 960 | 1 | 6,749 | 919 | 1 |
| Apr-24 | 6,944 | 934 | 1 | 7,037 | 960 | 1 | 6,735 | 919 | 1 |
| May-24 | 6,926 | 933 | 1 | 6,989 | 962 | 1 | 6,689 | 921 | 1 |
| Jun-24 | 6,892 | 930 | 1 | 6,945 | 957 | 1 | 6,648 | 916 | 1 |
| Jul-24 | 6,854 | 928 | 1 | 6,908 | 953 | 1 | 6,612 | 912 | 1 |
| Aug-24 | 6,843 | 927 | 5 | 6,881 | 957 | 5 | 6,586 | 916 | 5 |
| Sep-24 | 6,829 | 927 | 7 | 6,900 | 949 | 7 | 6,605 | 909 | 7 |
| Oct-24 | 6,825 | 926 | 7 | 6,912 | 947 | 7 | 6,616 | 907 | 7 |
| Nov-24 | 6,898 | 931 | 4 | 7,044 | 961 | 4 | 6,742 | 920 | 4 |
| Dec-24 | 6,930 | 933 | 2 | 7,071 | 964 | 2 | 6,768 | 923 | 2 |
| Jan-25 | 6,996 | 940 | 4 | 7,086 | 965 | 4 | 6,755 | 920 | 4 |
| Feb-25 | 7,003 | 940 | 2 | 7,099 | 970 | 2 | 6,767 | 925 | 2 |
| Mar-25 | 6,984 | 939 | 1 | 7,093 | 966 | 1 | 6,762 | 921 | 1 |
| Apr-25 | 6,972 | 938 | 1 | 7,079 | 966 | 1 | 6,749 | 921 | 1 |
| May-25 | 6,953 | 937 | 1 | 7,031 | 968 | 1 | 6,703 | 923 | 1 |
| Jun-25 | 6,919 | 934 | 1 | 6,987 | 963 | 1 | 6,661 | 918 | 1 |
| Jul-25 | 6,882 | 931 | 1 | 6,949 | 958 | 1 | 6,625 | 914 | 1 |
| Aug-25 | 6,870 | 930 | 5 | 6,923 | 963 | 5 | 6,599 | 918 | 5 |
| Sep-25 | 6,856 | 930 | 7 | 6,942 | 955 | 7 | 6,618 | 911 | 7 |
| Oct-25 | 6,853 | 930 | 7 | 6,954 | 953 | 7 | 6,629 | 909 | 7 |
| Nov-25 | 6,925 | 934 | 4 | 7,086 | 967 | 4 | 6,755 | 922 | 4 |
| Dec-25 | 6,957 | 937 | 2 | 7,114 | 970 | 2 | 6,782 | 924 | 2 |
| Jan-26 | 7,024 | 944 | 4 | 7,128 | 971 | 4 | 6,769 | 922 | 4 |
| Feb-26 | 7,031 | 944 | 2 | 7,141 | 976 | 2 | 6,781 | 927 | 2 |
| Mar-26 | 7,012 | 943 | 1 | 7,136 | 972 | 1 | 6,776 | 923 | 1 |
| Apr-26 | 7,000 | 942 | 1 | 7,122 | 972 | 1 | 6,762 | 923 | 1 |
| May-26 | 6,981 | 940 | 1 | 7,073 | 974 | 1 | 6,716 | 925 | 1 |
| Jun-26 | 6,947 | 938 | 1 | 7,029 | 968 | 1 | 6,674 | 920 | 1 |
| Jul-26 | 6,909 | 935 | 1 | 6,991 | 964 | 1 | 6,638 | 915 | 1 |
| Aug-26 | 6,898 | 934 | 5 | 6,964 | 968 | 5 | 6,613 | 920 | 5 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| Sep-26 | 6,883 | 934 | 7 | 6,984 | 961 | 7 | 6,631 | 912 | 7 |
| Oct-26 | 6,880 | 934 | 7 | 6,995 | 959 | 7 | 6,642 | 910 | 7 |
| Nov-26 | 6,953 | 938 | 4 | 7,128 | 972 | 4 | 6,769 | 923 | 4 |
| Dec-26 | 6,985 | 941 | 2 | 7,156 | 976 | 2 | 6,795 | 926 | 2 |
| Jan-27 | 7,052 | 947 | 4 | 7,171 | 976 | 4 | 6,782 | 923 | 4 |
| Feb-27 | 7,059 | 948 | 2 | 7,184 | 982 | 2 | 6,794 | 929 | 2 |
| Mar-27 | 7,040 | 946 | 1 | 7,179 | 978 | 1 | 6,789 | 925 | 1 |
| Apr-27 | 7,028 | 945 | 1 | 7,165 | 978 | 1 | 6,776 | 925 | 1 |
| May-27 | 7,009 | 944 | 1 | 7,116 | 980 | 1 | 6,730 | 927 | 1 |
| Jun-27 | 6,975 | 942 | 1 | 7,071 | 974 | 1 | 6,687 | 921 | 1 |
| Jul-27 | 6,937 | 939 | 1 | 7,033 | 970 | 1 | 6,651 | 917 | 1 |
| Aug-27 | 6,925 | 938 | 5 | 7,006 | 974 | 5 | 6,626 | 921 | 5 |
| Sep-27 | 6,911 | 938 | 7 | 7,025 | 967 | 7 | 6,644 | 914 | 7 |
| Oct-27 | 6,908 | 938 | 7 | 7,037 | 964 | 7 | 6,656 | 912 | 7 |
| Nov-27 | 6,981 | 942 | 4 | 7,171 | 978 | 4 | 6,782 | 925 | 4 |
| Dec-27 | 7,013 | 944 | 2 | 7,199 | 981 | 2 | 6,809 | 928 | 2 |
| Jan-28 | 7,080 | 951 | 4 | 7,214 | 982 | 4 | 6,796 | 925 | 4 |
| Feb-28 | 7,087 | 952 | 2 | 7,227 | 988 | 2 | 6,808 | 930 | 2 |
| Mar-28 | 7,069 | 950 | 1 | 7,222 | 983 | 1 | 6,803 | 926 | 1 |
| Apr-28 | 7,056 | 949 | 1 | 7,208 | 983 | 1 | 6,789 | 926 | 1 |
| May-28 | 7,037 | 948 | 1 | 7,158 | 986 | 1 | 6,743 | 928 | 1 |
| Jun-28 | 7,002 | 945 | 1 | 7,114 | 980 | 1 | 6,701 | 923 | 1 |
| Jul-28 | 6,965 | 942 | 1 | 7,075 | 976 | 1 | 6,665 | 919 | 1 |
| Aug-28 | 6,953 | 942 | 5 | 7,048 | 980 | 5 | 6,639 | 923 | 5 |
| Sep-28 | 6,938 | 942 | 7 | 7,068 | 972 | 7 | 6,658 | 916 | 7 |
| Oct-28 | 6,935 | 941 | 7 | 7,080 | 970 | 7 | 6,669 | 914 | 7 |
| Nov-28 | 7,009 | 946 | 4 | 7,214 | 984 | 4 | 6,796 | 927 | 4 |
| Dec-28 | 7,041 | 948 | 2 | 7,243 | 987 | 2 | 6,822 | 930 | 2 |
| Jan-29 | 7,108 | 955 | 4 | 7,257 | 988 | 4 | 6,809 | 927 | 4 |
| Feb-29 | 7,116 | 955 | 2 | 7,271 | 994 | 2 | 6,822 | 932 | 2 |
| Mar-29 | 7,097 | 954 | 1 | 7,265 | 989 | 1 | 6,816 | 928 | 1 |
| Apr-29 | 7,084 | 953 | 1 | 7,251 | 989 | 1 | 6,803 | 928 | 1 |
| May-29 | 7,065 | 952 | 1 | 7,201 | 991 | 1 | 6,757 | 930 | 1 |
| Jun-29 | 7,030 | 949 | 1 | 7,156 | 986 | 1 | 6,714 | 925 | 1 |
| Jul-29 | 6,993 | 946 | 1 | 7,118 | 982 | 1 | 6,678 | 921 | 1 |
| Aug-29 | 6,981 | 945 | 5 | 7,090 | 986 | 5 | 6,652 | 925 | 5 |
| Sep-29 | 6,966 | 945 | 7 | 7,110 | 978 | 7 | 6,671 | 918 | 7 |
| Oct-29 | 6,963 | 945 | 7 | 7,122 | 976 | 7 | 6,682 | 916 | 7 |
| Nov-29 | 7,037 | 950 | 4 | 7,257 | 990 | 4 | 6,809 | 929 | 4 |
| Dec-29 | 7,069 | 952 | 2 | 7,286 | 993 | 2 | 6,836 | 932 | 2 |
| Jan-30 | 7,137 | 959 | 4 | 7,301 | 994 | 4 | 6,823 | 929 | 4 |
| Feb-30 | 7,144 | 959 | 2 | 7,314 | 1,000 | 2 | 6,835 | 934 | 2 |
| Mar-30 | 7,125 | 958 | 1 | 7,309 | 995 | 1 | 6,830 | 930 | 1 |
| Apr-30 | 7,113 | 957 | 1 | 7,294 | 995 | 1 | 6,817 | 930 | 1 |

# APPENDIX 2.2: CUSTOMER FORECASTS BY REGION
# LA GRANDE

| | Oregon - Expected Growth | | | Oregon - High Growth | | | Oregon - Low Growth | | |
|---|---|---|---|---|---|---|---|---|---|
| | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers | Residential LaGrande Customers | Commericial LaGrande Customers | Industrial LaGrande Customers |
| May-30 | 7,093 | 955 | 1 | 7,245 | 997 | 1 | 6,770 | 932 | 1 |
| Jun-30 | 7,059 | 953 | 1 | 7,199 | 992 | 1 | 6,728 | 927 | 1 |
| Jul-30 | 7,021 | 950 | 1 | 7,160 | 987 | 1 | 6,691 | 923 | 1 |
| Aug-30 | 7,009 | 949 | 5 | 7,133 | 992 | 5 | 6,666 | 927 | 5 |
| Sep-30 | 6,994 | 949 | 7 | 7,153 | 984 | 7 | 6,684 | 920 | 7 |
| Oct-30 | 6,991 | 949 | 7 | 7,165 | 982 | 7 | 6,696 | 918 | 7 |
| Nov-30 | 7,065 | 953 | 4 | 7,301 | 996 | 4 | 6,823 | 931 | 4 |
| Dec-30 | 7,098 | 956 | 2 | 7,330 | 999 | 2 | 6,850 | 934 | 2 |
| Jan-31 | 7,165 | 963 | 4 | 7,345 | 1,000 | 4 | 6,836 | 931 | 4 |
| Feb-31 | 7,173 | 963 | 2 | 7,358 | 1,006 | 2 | 6,849 | 936 | 2 |
| Mar-31 | 7,154 | 962 | 1 | 7,353 | 1,001 | 1 | 6,844 | 932 | 1 |
| Apr-31 | 7,141 | 961 | 1 | 7,338 | 1,001 | 1 | 6,830 | 932 | 1 |
| May-31 | 7,122 | 959 | 1 | 7,288 | 1,003 | 1 | 6,784 | 934 | 1 |
| Jun-31 | 7,087 | 957 | 1 | 7,242 | 998 | 1 | 6,741 | 929 | 1 |
| Jul-31 | 7,049 | 954 | 1 | 7,203 | 993 | 1 | 6,705 | 925 | 1 |
| Aug-31 | 7,037 | 953 | 5 | 7,175 | 998 | 5 | 6,679 | 929 | 5 |
| Sep-31 | 7,022 | 953 | 7 | 7,196 | 990 | 7 | 6,698 | 922 | 7 |
| Oct-31 | 7,019 | 953 | 7 | 7,208 | 988 | 7 | 6,709 | 919 | 7 |
| Nov-31 | 7,093 | 957 | 4 | 7,345 | 1,002 | 4 | 6,836 | 933 | 4 |
| Dec-31 | 7,126 | 960 | 2 | 7,374 | 1,005 | 2 | 6,863 | 936 | 2 |
| Jan-32 | 7,194 | 966 | 4 | 7,389 | 1,006 | 4 | 6,850 | 933 | 4 |
| Feb-32 | 7,202 | 967 | 2 | 7,402 | 1,012 | 2 | 6,863 | 938 | 2 |
| Mar-32 | 7,182 | 966 | 1 | 7,397 | 1,007 | 1 | 6,857 | 934 | 1 |
| Apr-32 | 7,170 | 965 | 1 | 7,382 | 1,007 | 1 | 6,844 | 934 | 1 |
| May-32 | 7,150 | 963 | 1 | 7,332 | 1,009 | 1 | 6,797 | 936 | 1 |
| Jun-32 | 7,115 | 960 | 1 | 7,286 | 1,004 | 1 | 6,755 | 931 | 1 |
| Jul-32 | 7,077 | 958 | 1 | 7,247 | 999 | 1 | 6,718 | 927 | 1 |
| Aug-32 | 7,065 | 957 | 5 | 7,219 | 1,004 | 5 | 6,692 | 931 | 5 |
| Sep-32 | 7,050 | 957 | 7 | 7,239 | 996 | 7 | 6,711 | 923 | 7 |
| Oct-32 | 7,047 | 956 | 7 | 7,251 | 994 | 7 | 6,722 | 921 | 7 |
| Nov-32 | 7,122 | 961 | 4 | 7,389 | 1,008 | 4 | 6,850 | 935 | 4 |
| Dec-32 | 7,155 | 963 | 2 | 7,418 | 1,011 | 2 | 6,877 | 938 | 2 |
| Jan-33 | 7,223 | 970 | 4 | 7,433 | 1,012 | 4 | 6,864 | 935 | 4 |
| Feb-33 | 7,230 | 971 | 2 | 7,447 | 1,018 | 2 | 6,876 | 940 | 2 |
| Mar-33 | 7,211 | 969 | 1 | 7,441 | 1,013 | 1 | 6,871 | 936 | 1 |
| Apr-33 | 7,198 | 968 | 1 | 7,426 | 1,013 | 1 | 6,858 | 936 | 1 |
| May-33 | 7,179 | 967 | 1 | 7,376 | 1,016 | 1 | 6,811 | 938 | 1 |
| Jun-33 | 7,144 | 964 | 1 | 7,329 | 1,010 | 1 | 6,768 | 933 | 1 |
| Jul-33 | 7,105 | 961 | 1 | 7,290 | 1,005 | 1 | 6,732 | 928 | 1 |
| Aug-33 | 7,093 | 961 | 5 | 7,262 | 1,010 | 5 | 6,706 | 933 | 5 |
| Sep-33 | 7,078 | 961 | 7 | 7,282 | 1,002 | 7 | 6,724 | 925 | 7 |
| Oct-33 | 7,075 | 960 | 7 | 7,295 | 1,000 | 7 | 6,736 | 923 | 7 |
| Nov-33 | 7,150 | 965 | 4 | 7,433 | 1,014 | 4 | 6,864 | 936 | 4 |
| Dec-33 | 7,183 | 967 | 2 | 7,462 | 1,017 | 2 | 6,891 | 939 | 2 |

# APPENDIX 2.3: DEMAND COEFFICIENTS

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HEAT COEFFICIENTS** | | | | | | | | | | | | |
| WA/ID Residential | 0.009653 | 0.009544 | 0.009042 | 0.007642 | 0.005096 | 0.003866 | 0.000691 | 0.000768 | 0.002725 | 0.006970 | 0.008833 | 0.009620 |
| WA/ID Commercial | 0.048562 | 0.047053 | 0.043468 | 0.035557 | 0.023406 | 0.020180 | 0.006577 | 0.008521 | 0.016160 | 0.032551 | 0.042232 | 0.047461 |
| WA/ID Industrial | 0.117333 | 0.112057 | 0.105316 | 0.098644 | 0.097972 | 0.136265 | 0.130544 | 0.067139 | 0.119601 | 0.134183 | 0.114920 | 0.126836 |
| | | | | | | | | | | | | |
| Roseburg Residential | 0.010687 | 0.010367 | 0.009721 | 0.007918 | 0.005406 | 0.004600 | 0.001486 | 0.003424 | 0.002799 | 0.006260 | 0.007701 | 0.010748 |
| Roseburg Commercial | 0.042045 | 0.039664 | 0.035551 | 0.030689 | 0.020086 | 0.021323 | 0.010073 | 0.030308 | 0.016645 | 0.032359 | 0.029985 | 0.045113 |
| Roseburg Industrial | 0.134944 | 0.128278 | 0.193123 | 0.250720 | 0.244527 | 0.365646 | 0.871099 | 1.458261 | 1.572231 | 0.765100 | 0.154081 | 0.102736 |
| | | | | | | | | | | | | |
| Medford Residential | 0.011011 | 0.010571 | 0.009769 | 0.008484 | 0.006075 | 0.004465 | 0.000000 | 0.000229 | 0.003441 | 0.007392 | 0.009451 | 0.010665 |
| Medford Commercial | 0.043468 | 0.039906 | 0.036884 | 0.033342 | 0.024208 | 0.021766 | 0.000000 | 0.001982 | 0.021539 | 0.030094 | 0.036756 | 0.043289 |
| Medford Industrial | 0.048846 | 0.022250 | 0.039482 | 0.065815 | 0.068050 | 0.127835 | 0.000000 | 0.000000 | 0.318489 | 0.085234 | 0.056711 | 0.079292 |
| | | | | | | | | | | | | |
| LaGrande Residential | 0.009396 | 0.008731 | 0.008246 | 0.006698 | 0.006580 | 0.003782 | 0.001318 | 0.003200 | 0.000622 | 0.005574 | 0.007952 | 0.008383 |
| LaGrande Commercial | 0.039780 | 0.036526 | 0.033212 | 0.023394 | 0.021045 | 0.012020 | 0.007462 | 0.036060 | 0.005256 | 0.019711 | 0.031028 | 0.035610 |
| LaGrande Industrial | 0.000000 | 0.000000 | 0.014191 | 0.156925 | 0.225875 | 2.103282 | 0.762568 | 18.064739 | 3.936633 | 0.839843 | 0.025550 | 0.007093 |
| | | | | | | | | | | | | |
| Klamath Residential | 0.008051 | 0.007645 | 0.007361 | 0.006111 | 0.003960 | 0.002162 | 0.000125 | 0.000024 | 0.001179 | 0.004770 | 0.006925 | 0.007151 |
| Klamath Commercial | 0.031553 | 0.029541 | 0.027199 | 0.021085 | 0.012997 | 0.012421 | 0.003716 | 0.005496 | 0.009214 | 0.017109 | 0.025669 | 0.026212 |
| Klamath Industrial | 0.033503 | 0.029395 | 0.035901 | 0.044675 | 0.026656 | 0.073581 | 0.043124 | 0.050675 | 0.116683 | 0.043722 | 0.029335 | 0.053690 |
| | | | | | | | | | | | | |
| **BASE COEFFICIENTS** | | | | | | | | | | | | |
| WA/ID Residential | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 | 0.051899 |
| WA/ID Commercial | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 | 0.354193 |
| WA/ID Industrial | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 | 3.941451 |
| | | | | | | | | | | | | |
| Roseburg Residential | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 | 0.053418 |
| Roseburg Commercial | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 | 0.378016 |
| Roseburg Industrial | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 | 16.187912 |
| | | | | | | | | | | | | |
| Medford Residential | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 | 0.044191 |
| Medford Commercial | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 | 0.314099 |
| Medford Industrial | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 | 2.135537 |
| | | | | | | | | | | | | |
| LaGrande Residential | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 | 0.054280 |
| LaGrande Commercial | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 | 0.287460 |
| LaGrande Industrial | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 | 0.869065 |
| | | | | | | | | | | | | |
| Klamath Residential | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 | 0.038598 |
| Klamath Commercial | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 | 0.262845 |
| Klamath Industrial | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 | 2.919956 |
| | | | | | | | | | | | | |
| SUPER PEAK 1/ | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| WA/ID Res | 0.009605614 | 0.009605614 | | | | | | | | | | 0.009605614 |
| WA/ID Com | 0.047692046 | 0.047692046 | | | | | | | | | | 0.047692046 |
| WA/ID Ind | 0.118742005 | 0.118742005 | | | | | | | | | | 0.118742005 |
| | | | | | | | | | | | | |
| Rose Res | 0.010600643 | 0.010600643 | | | | | | | | | | 0.010600643 |
| Rose Com | 0.042273836 | 0.042273836 | | | | | | | | | | 0.042273836 |
| Rose Ind | 0.121986166 | 0.121986166 | | | | | | | | | | 0.121986166 |
| | | | | | | | | | | | | |
| Medford Res | 0.010749125 | 0.010749125 | | | | | | | | | | 0.010749125 |
| Medford Com | 0.042220865 | 0.042220865 | | | | | | | | | | 0.042220865 |
| Medford Ind | 0.050129224 | 0.050129224 | | | | | | | | | | 0.050129224 |
| | | | | | | | | | | | | |
| LaGrande Res | 0.008836594 | 0.008836594 | | | | | | | | | | 0.008836594 |
| LaGrande Com | 0.037305148 | 0.037305148 | | | | | | | | | | 0.037305148 |
| LaGrande Ind | 0.002364178 | 0.002364178 | | | | | | | | | | 0.002364178 |
| | | | | | | | | | | | | |
| Klamath Res | 0.007615622 | 0.007615622 | | | | | | | | | | 0.007615622 |
| Klamath Com | 0.029101928 | 0.029101928 | | | | | | | | | | 0.029101928 |
| Klamath Ind | 0.038862569 | 0.038862569 | | | | | | | | | | 0.038862569 |

1/ Average of DEC JAN FEB heat coefficients

# APPENDIX 2.3: WA/ID BASE COEFFICIENT CALCULATION

## WA-ID

### Average Actual Demand by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Demand | 10,211 |
| | Average of Com Demand | 7,583 |
| | Average of Ind Demand | 774 |
| 2010 | Average of Res Demand | 10,717 |
| | Average of Com Demand | 8,158 |
| | Average of Ind Demand | 1,177 |
| 2011 | Average of Res Demand | 10,772 |
| | Average of Com Demand | 8,383 |
| | Average of Ind Demand | 1,146 |
| 2012 | Average of Res Demand | 10,027 |
| | Average of Com Demand | 8,124 |
| | Average of Ind Demand | 941 |
| 2013 | Average of Res Demand | 10,259 |
| | Average of Com Demand | 7,204 |
| | Average of Ind Demand | 636 |
| Total Average of Res Demand | | 10,397 |
| Total Average of Com Demand | | 7,890 |
| Total Average of Ind Demand | | 935 |

### Average Actual Customer Count by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Cust | 196,276 |
| | Average of Com Cust | 21,928 |
| | Average of Ind Cust | 234 |
| 2010 | Average of Res Cust | 197,541 |
| | Average of Com Cust | 22,126 |
| | Average of Ind Cust | 229 |
| 2011 | Average of Res Cust | 198,492 |
| | Average of Com Cust | 22,218 |
| | Average of Ind Cust | 232 |
| 2012 | Average of Res Cust | 200,290 |
| | Average of Com Cust | 22,315 |
| | Average of Ind Cust | 233 |
| 2013 | Average of Res Cust | 199,628 |
| | Average of Com Cust | 22,410 |
| | Average of Ind Cust | 226 |
| Total Average of Res Cust | | 198,445 |
| Total Average of Com Cust | | 22,199 |
| Total Average of Ind Cust | | 231 |

**Base Coefficients**

*(Actual Average Demand/Customer Count)*

| | |
|---|---|
| 0.051899 | Res Base Usage |
| 0.354193 | Com Base Usage |
| 3.941451 | Ind Base Usage |

# APPENDIX 2.3: MEDFORD BASE COEFFICIENT CALCULATION

## Medford

### Average Actual Demand by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Demand | 2,248 |
| | Average of Com Demand | 2,061 |
| | Average of Ind Demand | 36 |
| 2010 | Average of Res Demand | 2,265 |
| | Average of Com Demand | 2,047 |
| | Average of Ind Demand | 38 |
| 2011 | Average of Res Demand | 2,123 |
| | Average of Com Demand | 1,935 |
| | Average of Ind Demand | 37 |
| 2012 | Average of Res Demand | 2,278 |
| | Average of Com Demand | 2,057 |
| | Average of Ind Demand | 31 |
| 2013 | Average of Res Demand | 2,297 |
| | Average of Com Demand | 2,083 |
| | Average of Ind Demand | 40 |
| Total Average of Res Demand | | 2,242 |
| Total Average of Com Demand | | 2,037 |
| Total Average of Ind Demand | | 36 |

### Average Actual Customer Count by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Cust | 49,868 |
| | Average of Com Cust | 6,301 |
| | Average of Ind Cust | 13 |
| 2010 | Average of Res Cust | 50,420 |
| | Average of Com Cust | 6,417 |
| | Average of Ind Cust | 13 |
| 2011 | Average of Res Cust | 50,367 |
| | Average of Com Cust | 6,403 |
| | Average of Ind Cust | 17 |
| 2012 | Average of Res Cust | 50,727 |
| | Average of Com Cust | 6,445 |
| | Average of Ind Cust | 17 |
| 2013 | Average of Res Cust | 50,499 |
| | Average of Com Cust | 6,493 |
| | Average of Ind Cust | 16 |
| Total Average of Res Cust | | 50,376 |
| Total Average of Com Cust | | 6,412 |
| Total Average of Ind Cust | | 15 |

**Base Coefficients**

*(Actual Average Demand/Customer Count)*

| | |
|---|---|
| 0.044191 | Res Base Usage |
| 0.314099 | Com Base Usage |
| 2.135537 | Ind Base Usage |

# APPENDIX 2.3: ROSEBURG BASE COEFFICIENT CALCULATION

## Roseburg
## Average Actual Demand by Class

| | | Month |
| --- | --- | --- |
| Year | | 7 |
| 2009 | Average of Res Demand | 536 |
| | Average of Com Demand | 680 |
| | Average of Ind Demand | 32 |
| 2010 | Average of Res Demand | 565 |
| | Average of Com Demand | 644 |
| | Average of Ind Demand | 38 |
| 2011 | Average of Res Demand | 841 |
| | Average of Com Demand | 953 |
| | Average of Ind Demand | 33 |
| 2012 | Average of Res Demand | 680 |
| | Average of Com Demand | 820 |
| | Average of Ind Demand | 48 |
| 2013 | Average of Res Demand | 559 |
| | Average of Com Demand | 622 |
| | Average of Ind Demand | 32 |
| Total Average of Res Demand | | 636 |
| Total Average of Com Demand | | 744 |
| Total Average of Ind Demand | | 37 |

## Average Actual Customer Count by Class

| | | Month |
| --- | --- | --- |
| Year | | 7 |
| 2009 | Average of Res Cust | 12,874 |
| | Average of Com Cust | 2,120 |
| | Average of Ind Cust | 1 |
| 2010 | Average of Res Cust | 12,960 |
| | Average of Com Cust | 2,107 |
| | Average of Ind Cust | 2 |
| 2011 | Average of Res Cust | 12,961 |
| | Average of Com Cust | 2,096 |
| | Average of Ind Cust | 2 |
| 2012 | Average of Res Cust | 12,928 |
| | Average of Com Cust | 2,112 |
| | Average of Ind Cust | 2 |
| 2013 | Average of Res Cust | 13,059 |
| | Average of Com Cust | 2,128 |
| | Average of Ind Cust | 3 |
| Total Average of Res Cust | | 12,956 |
| Total Average of Com Cust | | 2,113 |
| Total Average of Ind Cust | | 2 |

**Base Coefficients**

*(Actual Average Demand/Customer Count)*

| | |
| --- | --- |
| 0.053418 | Res Base Usage |
| 0.378016 | Com Base Usage |
| 16.187912 | Ind Base Usage |

# APPENDIX 2.3: KLAMATH FALLS BASE COEFFICIENT CALCULATION

## Klamath Falls
### Average Actual Demand by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Demand | 458 |
| | Average of Com Demand | 426 |
| | Average of Ind Demand | 15 |
| 2010 | Average of Res Demand | 503 |
| | Average of Com Demand | 475 |
| | Average of Ind Demand | 21 |
| 2011 | Average of Res Demand | 531 |
| | Average of Com Demand | 480 |
| | Average of Ind Demand | 21 |
| 2012 | Average of Res Demand | 507 |
| | Average of Com Demand | 424 |
| | Average of Ind Demand | 22 |
| 2013 | Average of Res Demand | 559 |
| | Average of Com Demand | 383 |
| | Average of Ind Demand | 21 |
| Total Average of Res Demand | | 512 |
| Total Average of Com Demand | | 438 |
| Total Average of Ind Demand | | 20 |

### Average Actual Customer Count by Class

| Year | | Month 7 |
|---|---|---|
| 2009 | Average of Res Cust | 13,604 |
| | Average of Com Cust | 1,615 |
| | Average of Ind Cust | 6 |
| 2010 | Average of Res Cust | 13,679 |
| | Average of Com Cust | 1,610 |
| | Average of Ind Cust | 7 |
| 2011 | Average of Res Cust | 13,725 |
| | Average of Com Cust | 1,621 |
| | Average of Ind Cust | 7 |
| 2012 | Average of Res Cust | 13,770 |
| | Average of Com Cust | 1,625 |
| | Average of Ind Cust | 7 |
| 2013 | Average of Res Cust | 13,885 |
| | Average of Com Cust | 1,648 |
| | Average of Ind Cust | 8 |
| Total Average of Res Cust | | 13,733 |
| Total Average of Com Cust | | 1,624 |
| Total Average of Ind Cust | | 7 |

**Base Coefficients**

*(Actual Average Demand/Customer Count)*

| | |
|---|---|
| 0.038598 | Res Base Usage |
| 0.262845 | Com Base Usage |
| 2.919956 | Ind Base Usage |

## APPENDIX 2.3: LA GRANDE BASE COEFFICIENT CALCULATION

### LaGrande
### Average Actual Demand by Class

| | | Month | | |
|---|---|---|---|---|
| Year | Values | 7 | 8 | Grand Total |
| 2009 | Average of Res Demand | 286 | 409 | 347 |
| | Average of Com Demand | 234 | 323 | 279 |
| | Average of Ind Demand | 9 | 665 | 337 |
| 2010 | Average of Res Demand | 299 | 477 | 388 |
| | Average of Com Demand | 225 | 357 | 291 |
| | Average of Ind Demand | 21 | 557 | 289 |
| 2011 | Average of Res Demand | 310 | 384 | 347 |
| | Average of Com Demand | 237 | 380 | 308 |
| | Average of Ind Demand | 13 | 659 | 336 |
| 2012 | Average of Res Demand | 416 | 413 | 414 |
| | Average of Com Demand | 307 | 404 | 356 |
| | Average of Ind Demand | (6) | 691 | 343 |
| 2013 | Average of Res Demand | 326 | 734 | 530 |
| | Average of Com Demand | 219 | 541 | 380 |
| | Average of Ind Demand | 14 | 113 | 63 |
| Total Average of Res Demand | | 327 | 483 | 405 |
| Total Average of Com Demand | | 244 | 401 | 323 |
| Total Average of Ind Demand | | 10 | 537 | 274 |

### Average Actual Customer Count by Class

| | | Month | | |
|---|---|---|---|---|
| Year | Values | 7 | 8 | Grand Total |
| 2009 | Average of Res Cust | 6,362 | 6,338 | 6,350 |
| | Average of Com Cust | 891 | 887 | 889 |
| | Average of Ind Cust | 2 | 7 | 5 |
| 2010 | Average of Res Cust | 6,401 | 6,392 | 6,397 |
| | Average of Com Cust | 885 | 882 | 884 |
| | Average of Ind Cust | 1 | 6 | 4 |
| 2011 | Average of Res Cust | 6,427 | 6,400 | 6,414 |
| | Average of Com Cust | 873 | 875 | 874 |
| | Average of Ind Cust | 13 | 7 | 10 |
| 2012 | Average of Res Cust | 6,478 | 6,452 | 6,465 |
| | Average of Com Cust | 888 | 883 | 886 |
| | Average of Ind Cust | 8 | 7 | 8 |
| 2013 | Average of Res Cust | 6,468 | 6,443 | 6,456 |
| | Average of Com Cust | 892 | 896 | 894 |
| | Average of Ind Cust | 3 | 5 | 4 |
| Total Average of Res Cust | | 6,427 | 6,405 | 6,416 |
| Total Average of Com Cust | | 886 | 885 | 885 |
| Total Average of Ind Cust | | 5 | 6 | 6 |

**Base Coefficients**

*(Actual Average Demand/Customer Count)*

| | |
|---|---|
| 0.054280 | Res Base Usage |
| 0.287460 | Com Base Usage |
| 0.869065 | Ind Base Usage |

# APPENDIX 2.4: HEATING DEGREE DAY DATA MONTHLY TABLES

| Temp Pattern | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA/ID | 2014 | 1,122 | 844 | 777 | 490 | 280 | 138 | - | 49 | 82 | 558 | 1,132 | 1,210 | 6,681 |
| WA/ID | 2015 | 1,346 | 1,008 | 769 | 570 | 224 | 206 | 88 | 2 | 147 | 692 | 1,011 | 1,158 | 7,221 |
| WA/ID | 2016 | 1,128 | 918 | 871 | 512 | 311 | 142 | 7 | 34 | 218 | 507 | 1,039 | 1,163 | 6,849 |
| WA/ID | 2017 | 1,164 | 1,085 | 735 | 530 | 322 | 162 | 31 | 36 | 124 | 648 | 805 | 1,050 | 6,692 |
| WA/ID | 2018 | 1,102 | 930 | 861 | 584 | 346 | 195 | 38 | 46 | 272 | 490 | 1,132 | 1,131 | 7,128 |
| WA/ID | 2019 | 1,250 | 965 | 903 | 598 | 285 | 155 | 45 | 21 | 237 | 470 | 779 | 1,191 | 6,899 |
| WA/ID | 2020 | 1,219 | 857 | 959 | 581 | 361 | 128 | 25 | 28 | 139 | 685 | 859 | 1,190 | 7,031 |
| WA/ID | 2021 | 1,141 | 901 | 861 | 547 | 486 | 161 | 83 | 2 | 200 | 603 | 887 | 1,221 | 7,094 |
| WA/ID | 2022 | 1,111 | 784 | 871 | 599 | 399 | 95 | 38 | 19 | 219 | 692 | 709 | 1,313 | 6,847 |
| WA/ID | 2023 | 1,034 | 887 | 738 | 607 | 244 | 123 | 29 | 24 | 247 | 482 | 821 | 1,190 | 6,426 |
| WA/ID | 2024 | 1,187 | 859 | 862 | 518 | 352 | 126 | 90 | 8 | 228 | 535 | 915 | 1,119 | 6,800 |
| WA/ID | 2025 | 1,072 | 962 | 821 | 529 | 275 | 95 | 57 | 13 | 296 | 511 | 937 | 1,313 | 6,881 |
| WA/ID | 2026 | 1,230 | 1,008 | 794 | 541 | 270 | 105 | 4 | 6 | 77 | 642 | 833 | 1,203 | 6,712 |
| WA/ID | 2027 | 1,303 | 999 | 783 | 472 | 435 | 179 | 3 | 2 | 105 | 512 | 1,020 | 1,089 | 6,902 |
| WA/ID | 2028 | 1,197 | 951 | 680 | 557 | 422 | 164 | - | 44 | 178 | 644 | 1,132 | 1,015 | 6,985 |
| WA/ID | 2029 | 1,055 | 806 | 886 | 658 | 258 | 153 | 33 | 47 | 139 | 547 | 800 | 1,170 | 6,552 |
| WA/ID | 2030 | 1,194 | 1,116 | 698 | 558 | 331 | 124 | 8 | 19 | 199 | 545 | 712 | 1,246 | 6,749 |
| WA/ID | 2031 | 1,127 | 995 | 871 | 477 | 445 | 121 | 28 | 40 | 251 | 594 | 893 | 1,097 | 6,938 |
| WA/ID | 2032 | 1,296 | 1,024 | 875 | 515 | 416 | 174 | - | 2 | 167 | 522 | 873 | 1,177 | 7,039 |
| WA/ID | 2033 | 1,118 | 849 | 934 | 581 | 372 | 203 | 9 | 4 | 127 | 655 | 910 | 1,171 | 6,933 |

| Temp Pattern | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klamath Falls | 2014 | 978 | 910 | 825 | 780 | 478 | 178 | 3 | 91 | 120 | 497 | 914 | 1,294 | 7,068 |
| Klamath Falls | 2015 | 918 | 635 | 933 | 497 | 405 | 340 | 67 | 43 | 136 | 400 | 722 | 1,175 | 6,270 |
| Klamath Falls | 2016 | 1,072 | 940 | 830 | 479 | 362 | 158 | 19 | 59 | 219 | 429 | 917 | 1,083 | 6,568 |
| Klamath Falls | 2017 | 1,259 | 826 | 892 | 459 | 510 | 255 | 47 | 83 | 81 | 604 | 836 | 908 | 6,760 |
| Klamath Falls | 2018 | 1,044 | 788 | 776 | 682 | 620 | 232 | - | 125 | 232 | 575 | 946 | 1,074 | 7,094 |
| Klamath Falls | 2019 | 1,107 | 878 | 595 | 691 | 472 | 164 | 39 | 29 | 148 | 463 | 732 | 973 | 6,290 |
| Klamath Falls | 2020 | 776 | 925 | 694 | 780 | 364 | 228 | 25 | 13 | 70 | 605 | 926 | 975 | 6,380 |
| Klamath Falls | 2021 | 973 | 833 | 896 | 664 | 519 | 233 | 80 | 70 | 259 | 440 | 643 | 1,018 | 6,626 |
| Klamath Falls | 2022 | 1,169 | 898 | 816 | 478 | 620 | 205 | 39 | 40 | 393 | 451 | 1,051 | 999 | 7,158 |
| Klamath Falls | 2023 | 914 | 860 | 933 | 702 | 419 | 102 | 76 | 83 | 220 | 356 | 856 | 1,149 | 6,670 |
| Klamath Falls | 2024 | 1,103 | 872 | 988 | 654 | 384 | 219 | 68 | 50 | 251 | 566 | 779 | 1,154 | 7,086 |
| Klamath Falls | 2025 | 1,238 | 1,091 | 780 | 550 | 400 | 206 | 103 | 61 | 276 | 322 | 812 | 956 | 6,795 |
| Klamath Falls | 2026 | 1,163 | 836 | 711 | 561 | 554 | 241 | 13 | 70 | 230 | 510 | 801 | 1,248 | 6,939 |
| Klamath Falls | 2027 | 892 | 846 | 779 | 577 | 309 | 324 | 89 | 13 | 36 | 609 | 1,079 | 1,077 | 6,629 |
| Klamath Falls | 2028 | 1,151 | 801 | 922 | 735 | 259 | 142 | - | 98 | 146 | 419 | 706 | 989 | 6,369 |
| Klamath Falls | 2029 | 1,012 | 811 | 719 | 646 | 392 | 164 | 52 | 31 | 166 | 624 | 848 | 1,132 | 6,598 |
| Klamath Falls | 2030 | 1,042 | 690 | 848 | 656 | 419 | 154 | 53 | 46 | 301 | 636 | 750 | 921 | 6,518 |
| Klamath Falls | 2031 | 998 | 961 | 896 | 605 | 462 | 82 | 19 | 79 | 55 | 324 | 906 | 1,046 | 6,432 |
| Klamath Falls | 2032 | 1,211 | 748 | 791 | 540 | 336 | 152 | 80 | 29 | 393 | 599 | 1,122 | 1,166 | 7,167 |
| Klamath Falls | 2033 | 1,068 | 707 | 719 | 561 | 333 | 272 | 104 | 30 | 187 | 517 | 860 | 1,070 | 6,429 |

| Temp Pattern | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medford | 2014 | 743 | 650 | 580 | 527 | 254 | 51 | - | 33 | 26 | 300 | 652 | 1,111 | 4,927 |
| Medford | 2015 | 704 | 490 | 691 | 316 | 199 | 139 | 8 | - | 32 | 224 | 524 | 919 | 4,248 |
| Medford | 2016 | 804 | 669 | 585 | 304 | 167 | 41 | - | 9 | 66 | 235 | 654 | 821 | 4,354 |
| Medford | 2017 | 923 | 596 | 649 | 290 | 278 | 92 | 4 | 27 | 11 | 401 | 600 | 693 | 4,565 |
| Medford | 2018 | 785 | 572 | 531 | 445 | 343 | 80 | - | 59 | 71 | 374 | 673 | 811 | 4,743 |
| Medford | 2019 | 826 | 629 | 393 | 451 | 249 | 44 | 3 | - | 37 | 267 | 531 | 703 | 4,133 |
| Medford | 2020 | 602 | 660 | 447 | 519 | 168 | 77 | - | - | 6 | 402 | 660 | 705 | 4,245 |
| Medford | 2021 | 740 | 601 | 653 | 433 | 285 | 80 | 11 | 17 | 81 | 245 | 465 | 751 | 4,361 |
| Medford | 2022 | 865 | 642 | 571 | 303 | 343 | 65 | 3 | - | 139 | 256 | 743 | 731 | 4,662 |
| Medford | 2023 | 702 | 618 | 691 | 459 | 210 | 19 | 10 | 27 | 66 | 224 | 614 | 891 | 4,530 |
| Medford | 2024 | 823 | 625 | 773 | 426 | 184 | 72 | 8 | 2 | 78 | 365 | 562 | 897 | 4,816 |
| Medford | 2025 | 910 | 765 | 535 | 353 | 196 | 66 | 15 | 10 | 88 | 224 | 584 | 693 | 4,440 |
| Medford | 2026 | 862 | 602 | 464 | 361 | 312 | 84 | - | 18 | 70 | 312 | 577 | 998 | 4,659 |
| Medford | 2027 | 688 | 609 | 533 | 372 | 127 | 128 | 13 | - | 3 | 406 | 761 | 814 | 4,454 |
| Medford | 2028 | 854 | 580 | 679 | 482 | 89 | 32 | - | 39 | 36 | 226 | 514 | 719 | 4,252 |
| Medford | 2029 | 765 | 586 | 473 | 420 | 190 | 44 | 5 | - | 44 | 420 | 608 | 873 | 4,429 |
| Medford | 2030 | 784 | 510 | 604 | 427 | 210 | 39 | 5 | - | 98 | 431 | 543 | 693 | 4,345 |
| Medford | 2031 | 756 | 682 | 653 | 392 | 242 | 19 | - | 24 | 3 | 224 | 647 | 781 | 4,422 |
| Medford | 2032 | 893 | 546 | 546 | 346 | 147 | 37 | 11 | - | 145 | 397 | 761 | 910 | 4,739 |
| Medford | 2033 | 801 | 520 | 472 | 361 | 145 | 100 | 16 | - | 53 | 319 | 614 | 817 | 4,218 |

# APPENDIX 2.4: HEATING DEGREE DAY DATA MONTHLY TABLES

| Temp Pattern | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Roseburg | 2014 | 684 | 492 | 487 | 277 | 153 | 58 | - | 9 | 26 | 289 | 654 | 740 | 3,868 |
| Roseburg | 2015 | 862 | 606 | 479 | 369 | 99 | 131 | 19 | - | 49 | 356 | 608 | 707 | 4,285 |
| Roseburg | 2016 | 688 | 543 | 581 | 302 | 184 | 61 | 2 | 4 | 74 | 256 | 627 | 710 | 4,032 |
| Roseburg | 2017 | 717 | 645 | 445 | 323 | 195 | 83 | 7 | 5 | 41 | 348 | 473 | 638 | 3,919 |
| Roseburg | 2018 | 668 | 552 | 571 | 385 | 218 | 119 | 8 | 8 | 93 | 245 | 654 | 690 | 4,211 |
| Roseburg | 2019 | 784 | 576 | 613 | 400 | 159 | 76 | 10 | - | 80 | 232 | 456 | 728 | 4,113 |
| Roseburg | 2020 | 760 | 501 | 622 | 381 | 232 | 46 | 6 | 2 | 46 | 356 | 508 | 727 | 4,187 |
| Roseburg | 2021 | 699 | 531 | 571 | 342 | 339 | 82 | 18 | - | 67 | 319 | 527 | 747 | 4,243 |
| Roseburg | 2022 | 675 | 449 | 581 | 402 | 269 | 12 | 8 | - | 74 | 356 | 405 | 806 | 4,037 |
| Roseburg | 2023 | 615 | 521 | 448 | 411 | 119 | 41 | 7 | 1 | 84 | 240 | 484 | 727 | 3,696 |
| Roseburg | 2024 | 735 | 502 | 572 | 309 | 224 | 44 | 20 | - | 77 | 275 | 545 | 683 | 3,985 |
| Roseburg | 2025 | 645 | 574 | 531 | 322 | 149 | 12 | 13 | - | 106 | 259 | 560 | 806 | 3,975 |
| Roseburg | 2026 | 768 | 606 | 504 | 335 | 144 | 21 | 1 | - | 21 | 345 | 491 | 736 | 3,971 |
| Roseburg | 2027 | 825 | 600 | 493 | 234 | 304 | 101 | 1 | - | 34 | 259 | 615 | 663 | 4,129 |
| Roseburg | 2028 | 742 | 566 | 388 | 354 | 292 | 85 | - | 7 | 60 | 346 | 654 | 616 | 4,110 |
| Roseburg | 2029 | 632 | 465 | 596 | 469 | 132 | 73 | 7 | 8 | 46 | 282 | 470 | 715 | 3,895 |
| Roseburg | 2030 | 740 | 645 | 408 | 355 | 203 | 42 | 2 | - | 67 | 281 | 412 | 763 | 3,917 |
| Roseburg | 2031 | 688 | 597 | 581 | 263 | 314 | 38 | 6 | 6 | 85 | 313 | 531 | 668 | 4,090 |
| Roseburg | 2032 | 819 | 617 | 585 | 305 | 286 | 96 | - | - | 56 | 266 | 517 | 719 | 4,266 |
| Roseburg | 2033 | 681 | 495 | 622 | 380 | 243 | 127 | 2 | - | 41 | 353 | 536 | 715 | 4,197 |

| Temp Pattern | Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LaGrande | 2014 | 881 | 847 | 604 | 486 | 478 | 119 | 52 | 74 | 258 | 478 | 935 | 995 | 6,206 |
| LaGrande | 2015 | 909 | 848 | 792 | 563 | 227 | 123 | 24 | 37 | 244 | 505 | 744 | 990 | 6,006 |
| LaGrande | 2016 | 1,105 | 799 | 624 | 574 | 284 | 162 | 13 | 75 | 297 | 613 | 650 | 866 | 6,061 |
| LaGrande | 2017 | 1,015 | 812 | 685 | 518 | 396 | 158 | 28 | 20 | 231 | 537 | 656 | 1,166 | 6,222 |
| LaGrande | 2018 | 1,113 | 712 | 781 | 619 | 324 | 202 | 74 | 42 | 151 | 448 | 781 | 1,082 | 6,329 |
| LaGrande | 2019 | 973 | 711 | 755 | 458 | 396 | 120 | 49 | 56 | 206 | 485 | 633 | 1,156 | 5,997 |
| LaGrande | 2020 | 1,018 | 807 | 636 | 674 | 466 | 196 | 55 | 59 | 251 | 487 | 755 | 1,023 | 6,427 |
| LaGrande | 2021 | 840 | 825 | 727 | 563 | 346 | 84 | 17 | 61 | 190 | 490 | 622 | 1,162 | 5,927 |
| LaGrande | 2022 | 882 | 933 | 843 | 599 | 337 | 121 | 63 | 36 | 169 | 491 | 831 | 910 | 6,215 |
| LaGrande | 2023 | 1,030 | 915 | 748 | 459 | 345 | 172 | 69 | 9 | 97 | 492 | 952 | 1,039 | 6,327 |
| LaGrande | 2024 | 908 | 874 | 764 | 547 | 290 | 167 | - | 56 | 219 | 488 | 899 | 978 | 6,191 |
| LaGrande | 2025 | 913 | 806 | 767 | 513 | 313 | 138 | 59 | 49 | 231 | 560 | 756 | 1,083 | 6,187 |
| LaGrande | 2026 | 965 | 848 | 805 | 502 | 368 | 156 | - | 42 | 174 | 524 | 803 | 1,043 | 6,231 |
| LaGrande | 2027 | 1,058 | 925 | 718 | 589 | 219 | 151 | 53 | 80 | 246 | 614 | 585 | 935 | 6,172 |
| LaGrande | 2028 | 1,003 | 797 | 843 | 637 | 340 | 174 | 44 | 20 | 109 | 581 | 726 | 1,078 | 6,352 |
| LaGrande | 2029 | 1,021 | 788 | 740 | 488 | 362 | 167 | 14 | 57 | 103 | 591 | 695 | 1,012 | 6,037 |
| LaGrande | 2030 | 1,032 | 884 | 777 | 441 | 327 | 158 | 81 | 105 | 181 | 459 | 842 | 1,016 | 6,304 |
| LaGrande | 2031 | 1,030 | 801 | 696 | 496 | 429 | 213 | 39 | 39 | 297 | 584 | 805 | 895 | 6,324 |
| LaGrande | 2032 | 840 | 737 | 744 | 409 | 294 | 101 | - | 26 | 229 | 515 | 760 | 1,121 | 5,775 |
| LaGrande | 2033 | 1,085 | 710 | 811 | 654 | 245 | 154 | 4 | 91 | 209 | 391 | 759 | 1,029 | 6,141 |

# APPENDIX 2.4: HEATING DEGREE DAILY MONTH BY AREA

| Temp Pattern | Day | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA/ID | 1 | 36 | 35 | 29 | 23 | 16 | 4 | 0 | 0 | 0 | 8 | 28 | 32 |
| WA/ID | 2 | 37 | 35 | 28 | 24 | 15 | 6 | 0 | 0 | 0 | 13 | 27 | 33 |
| WA/ID | 3 | 38 | 35 | 29 | 23 | 15 | 4 | 0 | 0 | 0 | 13 | 27 | 36 |
| WA/ID | 4 | 36 | 32 | 29 | 22 | 16 | 4 | 0 | 0 | 0 | 13 | 27 | 37 |
| WA/ID | 5 | 37 | 33 | 29 | 22 | 15 | 7 | 0 | 0 | 2 | 15 | 28 | 37 |
| WA/ID | 6 | 36 | 32 | 29 | 20 | 15 | 9 | 0 | 0 | 3 | 14 | 26 | 38 |
| WA/ID | 7 | 34 | 33 | 28 | 20 | 14 | 8 | 0 | 0 | 3 | 14 | 25 | 39 |
| WA/ID | 8 | 34 | 34 | 29 | 20 | 13 | 9 | 0 | 0 | 2 | 15 | 25 | 39 |
| WA/ID | 9 | 34 | 34 | 27 | 21 | 13 | 8 | 0 | 0 | 3 | 16 | 27 | 39 |
| WA/ID | 10 | 34 | 35 | 27 | 20 | 12 | 7 | 0 | 0 | 3 | 17 | 27 | 37 |
| WA/ID | 11 | 37 | 35 | 25 | 19 | 11 | 7 | 0 | 0 | 2 | 18 | 27 | 36 |
| WA/ID | 12 | 36 | 33 | 25 | 20 | 10 | 5 | 0 | 0 | 1 | 18 | 26 | 35 |
| WA/ID | 13 | 35 | 62 | 24 | 20 | 11 | 4 | 0 | 0 | 1 | 16 | 26 | 35 |
| WA/ID | 14 | 33 | 72 | 24 | 22 | 8 | 5 | 0 | 0 | 0 | 16 | 28 | 35 |
| WA/ID | 15 | 36 | 82 | 24 | 21 | 8 | 4 | 0 | 0 | 1 | 18 | 27 | 35 |
| WA/ID | 16 | 37 | 67 | 24 | 18 | 8 | 3 | 0 | 0 | 3 | 17 | 27 | 35 |
| WA/ID | 17 | 36 | 57 | 25 | 19 | 9 | 4 | 0 | 0 | 5 | 17 | 27 | 36 |
| WA/ID | 18 | 35 | 31 | 25 | 19 | 9 | 5 | 0 | 0 | 5 | 18 | 29 | 51 |
| WA/ID | 19 | 35 | 30 | 25 | 19 | 8 | 6 | 0 | 0 | 6 | 18 | 29 | 56 |
| WA/ID | 20 | 34 | 30 | 24 | 16 | 11 | 4 | 0 | 0 | 9 | 18 | 29 | 61 |
| WA/ID | 21 | 35 | 29 | 25 | 16 | 11 | 1 | 0 | 0 | 10 | 19 | 32 | 58 |
| WA/ID | 22 | 36 | 29 | 24 | 16 | 11 | 1 | 0 | 0 | 8 | 19 | 34 | 53 |
| WA/ID | 23 | 35 | 30 | 24 | 16 | 10 | 2 | 0 | 0 | 6 | 21 | 33 | 38 |
| WA/ID | 24 | 35 | 33 | 24 | 17 | 7 | 2 | 0 | 0 | 6 | 22 | 32 | 38 |
| WA/ID | 25 | 34 | 34 | 24 | 16 | 8 | 1 | 0 | 0 | 5 | 23 | 32 | 37 |
| WA/ID | 26 | 35 | 34 | 24 | 16 | 8 | 1 | 0 | 0 | 7 | 23 | 33 | 37 |
| WA/ID | 27 | 36 | 33 | 24 | 15 | 7 | 0 | 0 | 0 | 7 | 23 | 34 | 36 |
| WA/ID | 28 | 36 | 32 | 24 | 16 | 8 | 0 | 0 | 0 | 7 | 23 | 34 | 35 |
| WA/ID | 29 | 34 | 30 | 23 | 16 | 8 | 0 | 0 | 0 | 7 | 25 | 33 | 36 |
| WA/ID | 30 | 33 | | 21 | 16 | 7 | 0 | 0 | 0 | 8 | 26 | 32 | 38 |
| WA/ID | 31 | 33 | | 22 | | 5 | | 0 | 0 | | 26 | | 37 |

| Temp Pattern | Day | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LaGrande | 1 | 33 | 32 | 27 | 21 | 16 | 5 | 0 | 0 | 2 | 9 | 26 | 29 |
| LaGrande | 2 | 32 | 32 | 25 | 22 | 16 | 5 | 0 | 0 | 3 | 12 | 24 | 31 |
| LaGrande | 3 | 35 | 31 | 27 | 21 | 15 | 6 | 0 | 0 | 2 | 12 | 24 | 33 |
| LaGrande | 4 | 34 | 28 | 27 | 21 | 15 | 4 | 0 | 0 | 0 | 14 | 23 | 34 |
| LaGrande | 5 | 34 | 29 | 26 | 22 | 15 | 7 | 0 | 0 | 2 | 15 | 23 | 36 |
| LaGrande | 6 | 33 | 29 | 26 | 20 | 14 | 8 | 0 | 0 | 3 | 14 | 21 | 34 |
| LaGrande | 7 | 30 | 29 | 25 | 20 | 13 | 7 | 0 | 0 | 5 | 13 | 22 | 35 |
| LaGrande | 8 | 30 | 30 | 26 | 20 | 13 | 7 | 0 | 0 | 4 | 15 | 22 | 35 |
| LaGrande | 9 | 30 | 30 | 23 | 20 | 14 | 8 | 0 | 0 | 5 | 14 | 24 | 36 |
| LaGrande | 10 | 30 | 31 | 23 | 20 | 14 | 8 | 0 | 0 | 3 | 16 | 24 | 32 |
| LaGrande | 11 | 32 | 29 | 23 | 19 | 11 | 7 | 0 | 0 | 3 | 17 | 25 | 33 |
| LaGrande | 12 | 33 | 29 | 22 | 18 | 11 | 6 | 0 | 0 | 1 | 17 | 24 | 31 |
| LaGrande | 13 | 31 | 61 | 21 | 18 | 10 | 4 | 0 | 0 | 3 | 15 | 24 | 29 |
| LaGrande | 14 | 31 | 68 | 22 | 21 | 9 | 4 | 0 | 0 | 3 | 14 | 25 | 31 |
| LaGrande | 15 | 35 | 74 | 22 | 21 | 9 | 4 | 0 | 0 | 3 | 17 | 24 | 31 |
| LaGrande | 16 | 33 | 61 | 22 | 18 | 9 | 4 | 0 | 0 | 5 | 16 | 23 | 33 |
| LaGrande | 17 | 33 | 60 | 23 | 18 | 8 | 4 | 0 | 0 | 6 | 16 | 24 | 34 |
| LaGrande | 18 | 31 | 27 | 22 | 19 | 8 | 6 | 0 | 0 | 7 | 17 | 26 | 51 |
| LaGrande | 19 | 30 | 28 | 22 | 19 | 9 | 7 | 0 | 0 | 6 | 16 | 24 | 58 |
| LaGrande | 20 | 30 | 27 | 22 | 17 | 10 | 4 | 0 | 0 | 9 | 17 | 26 | 64 |
| LaGrande | 21 | 32 | 27 | 23 | 17 | 12 | 3 | 0 | 0 | 10 | 19 | 27 | 58 |
| LaGrande | 22 | 34 | 25 | 22 | 15 | 12 | 1 | 0 | 0 | 10 | 18 | 29 | 51 |
| LaGrande | 23 | 32 | 27 | 22 | 16 | 10 | 2 | 0 | 0 | 8 | 18 | 30 | 34 |
| LaGrande | 24 | 31 | 29 | 22 | 18 | 8 | 2 | 0 | 1 | 7 | 20 | 29 | 34 |
| LaGrande | 25 | 30 | 29 | 22 | 15 | 9 | 2 | 0 | 0 | 8 | 21 | 29 | 34 |
| LaGrande | 26 | 32 | 29 | 23 | 14 | 9 | 1 | 0 | 0 | 10 | 21 | 30 | 34 |
| LaGrande | 27 | 34 | 29 | 24 | 13 | 8 | 1 | 0 | 0 | 9 | 21 | 30 | 33 |
| LaGrande | 28 | 32 | 27 | 23 | 16 | 9 | 0 | 0 | 0 | 9 | 20 | 30 | 31 |
| LaGrande | 29 | 32 | 25 | 22 | 17 | 8 | 0 | 0 | 0 | 8 | 22 | 28 | 32 |
| LaGrande | 30 | 30 | | 21 | 15 | 7 | 0 | 0 | 1 | 6 | 22 | 27 | 34 |
| LaGrande | 31 | 31 | | 20 | | 6 | | 0 | 1 | | 24 | | 32 |

# APPENDIX 2.4: HEATING DEGREE DAILY MONTH BY AREA

| Temp Pattern | Day | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medford | 1 | 26 | 24 | 20 | 16 | 10 | 0 | 0 | 0 | 0 | 3 | 17 | 25 |
| Medford | 2 | 26 | 23 | 21 | 16 | 9 | 1 | 0 | 0 | 0 | 6 | 18 | 24 |
| Medford | 3 | 28 | 22 | 22 | 16 | 9 | 1 | 0 | 0 | 0 | 6 | 17 | 26 |
| Medford | 4 | 27 | 22 | 21 | 15 | 9 | 0 | 0 | 0 | 0 | 7 | 18 | 26 |
| Medford | 5 | 26 | 22 | 21 | 16 | 8 | 2 | 0 | 0 | 0 | 7 | 17 | 27 |
| Medford | 6 | 27 | 21 | 20 | 14 | 8 | 2 | 0 | 0 | 0 | 6 | 16 | 27 |
| Medford | 7 | 24 | 21 | 20 | 15 | 6 | 2 | 0 | 0 | 0 | 7 | 17 | 29 |
| Medford | 8 | 25 | 24 | 19 | 15 | 7 | 3 | 0 | 0 | 0 | 7 | 19 | 28 |
| Medford | 9 | 26 | 22 | 18 | 15 | 9 | 2 | 0 | 0 | 0 | 9 | 21 | 27 |
| Medford | 10 | 25 | 22 | 17 | 14 | 8 | 2 | 0 | 0 | 0 | 9 | 19 | 27 |
| Medford | 11 | 25 | 22 | 17 | 13 | 6 | 2 | 0 | 0 | 0 | 10 | 19 | 27 |
| Medford | 12 | 26 | 21 | 17 | 14 | 6 | 1 | 0 | 0 | 0 | 10 | 18 | 25 |
| Medford | 13 | 27 | 32 | 16 | 15 | 5 | 0 | 0 | 0 | 0 | 8 | 19 | 23 |
| Medford | 14 | 27 | 36 | 17 | 16 | 4 | 0 | 0 | 0 | 0 | 8 | 19 | 25 |
| Medford | 15 | 26 | 38 | 16 | 15 | 3 | 0 | 0 | 0 | 0 | 10 | 18 | 28 |
| Medford | 16 | 26 | 32 | 17 | 14 | 3 | 0 | 0 | 0 | 0 | 8 | 19 | 28 |
| Medford | 17 | 25 | 28 | 18 | 14 | 3 | 0 | 0 | 0 | 0 | 9 | 20 | 27 |
| Medford | 18 | 24 | 20 | 16 | 15 | 4 | 0 | 0 | 0 | 0 | 10 | 21 | 50 |
| Medford | 19 | 23 | 20 | 15 | 13 | 5 | 0 | 0 | 0 | 0 | 9 | 20 | 59 |
| Medford | 20 | 25 | 20 | 16 | 12 | 6 | 0 | 0 | 0 | 0 | 11 | 22 | 61 |
| Medford | 21 | 26 | 20 | 15 | 12 | 6 | 0 | 0 | 0 | 0 | 12 | 24 | 56 |
| Medford | 22 | 25 | 21 | 16 | 11 | 6 | 0 | 0 | 0 | 0 | 11 | 23 | 55 |
| Medford | 23 | 25 | 22 | 16 | 11 | 4 | 0 | 0 | 0 | 0 | 12 | 23 | 28 |
| Medford | 24 | 24 | 21 | 15 | 10 | 4 | 0 | 0 | 0 | 0 | 13 | 23 | 29 |
| Medford | 25 | 23 | 21 | 17 | 9 | 4 | 0 | 0 | 0 | 1 | 14 | 21 | 28 |
| Medford | 26 | 24 | 22 | 17 | 8 | 2 | 0 | 0 | 0 | 1 | 14 | 23 | 28 |
| Medford | 27 | 25 | 21 | 18 | 9 | 4 | 0 | 0 | 0 | 0 | 15 | 24 | 27 |
| Medford | 28 | 24 | 21 | 17 | 10 | 4 | 0 | 0 | 0 | 0 | 15 | 23 | 26 |
| Medford | 29 | 24 | 19 | 16 | 10 | 3 | 0 | 0 | 0 | 1 | 15 | 24 | 26 |
| Medford | 30 | 23 | | 16 | 10 | 0 | 0 | 0 | 0 | 1 | 16 | 24 | 27 |
| Medford | 31 | 23 | | 15 | | 0 | | 0 | 0 | | 16 | | 27 |

| Temp Pattern | Day | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klamath Falls | 1 | 34 | 32 | 29 | 24 | 18 | 7 | 0 | 0 | 3 | 10 | 25 | 31 |
| Klamath Falls | 2 | 34 | 32 | 29 | 24 | 17 | 8 | 0 | 0 | 2 | 13 | 26 | 32 |
| Klamath Falls | 3 | 36 | 30 | 30 | 24 | 17 | 8 | 0 | 0 | 3 | 15 | 25 | 35 |
| Klamath Falls | 4 | 36 | 30 | 30 | 24 | 17 | 8 | 1 | 0 | 4 | 16 | 26 | 35 |
| Klamath Falls | 5 | 35 | 30 | 29 | 24 | 16 | 10 | 0 | 0 | 6 | 15 | 25 | 35 |
| Klamath Falls | 6 | 33 | 29 | 28 | 23 | 15 | 10 | 0 | 0 | 6 | 14 | 24 | 34 |
| Klamath Falls | 7 | 31 | 30 | 28 | 23 | 15 | 10 | 0 | 0 | 5 | 14 | 25 | 36 |
| Klamath Falls | 8 | 32 | 32 | 27 | 24 | 16 | 11 | 0 | 0 | 4 | 15 | 28 | 36 |
| Klamath Falls | 9 | 33 | 31 | 27 | 24 | 18 | 10 | 0 | 0 | 5 | 16 | 30 | 35 |
| Klamath Falls | 10 | 33 | 30 | 27 | 24 | 16 | 10 | 0 | 0 | 5 | 17 | 28 | 36 |
| Klamath Falls | 11 | 33 | 30 | 25 | 22 | 14 | 10 | 0 | 0 | 4 | 18 | 27 | 36 |
| Klamath Falls | 12 | 34 | 29 | 25 | 22 | 14 | 9 | 0 | 0 | 3 | 17 | 24 | 34 |
| Klamath Falls | 13 | 34 | 42 | 25 | 24 | 13 | 8 | 0 | 0 | 4 | 15 | 26 | 33 |
| Klamath Falls | 14 | 34 | 51 | 25 | 25 | 11 | 6 | 0 | 0 | 6 | 15 | 27 | 36 |
| Klamath Falls | 15 | 34 | 54 | 24 | 24 | 11 | 6 | 0 | 0 | 6 | 16 | 26 | 37 |
| Klamath Falls | 16 | 34 | 53 | 25 | 23 | 12 | 6 | 0 | 0 | 9 | 17 | 25 | 35 |
| Klamath Falls | 17 | 33 | 47 | 26 | 23 | 12 | 6 | 0 | 0 | 10 | 17 | 28 | 37 |
| Klamath Falls | 18 | 32 | 29 | 25 | 24 | 13 | 7 | 0 | 0 | 9 | 17 | 28 | 36 |
| Klamath Falls | 19 | 32 | 30 | 24 | 22 | 13 | 8 | 0 | 0 | 8 | 17 | 27 | 63 |
| Klamath Falls | 20 | 33 | 30 | 23 | 21 | 13 | 6 | 0 | 0 | 8 | 18 | 28 | 72 |
| Klamath Falls | 21 | 35 | 28 | 23 | 20 | 13 | 5 | 0 | 1 | 8 | 20 | 29 | 67 |
| Klamath Falls | 22 | 35 | 29 | 24 | 19 | 13 | 6 | 0 | 1 | 8 | 19 | 30 | 58 |
| Klamath Falls | 23 | 34 | 31 | 26 | 19 | 13 | 5 | 0 | 1 | 8 | 20 | 32 | 53.5 |
| Klamath Falls | 24 | 33 | 29 | 24 | 18 | 11 | 4 | 0 | 1 | 8 | 21 | 32 | 37 |
| Klamath Falls | 25 | 32 | 31 | 25 | 17 | 11 | 4 | 0 | 1 | 10 | 22 | 31 | 36 |
| Klamath Falls | 26 | 32 | 31 | 26 | 17 | 10 | 3 | 0 | 2 | 10 | 22 | 33 | 36 |
| Klamath Falls | 27 | 33 | 30 | 26 | 17 | 10 | 1 | 0 | 1 | 8 | 23 | 32 | 34 |
| Klamath Falls | 28 | 33 | 29 | 25 | 19 | 11 | 0 | 0 | 1 | 8 | 21 | 32 | 32 |
| Klamath Falls | 29 | 31 | 30 | 25 | 18 | 10 | 1 | 0 | 0 | 8 | 22 | 33 | 33 |
| Klamath Falls | 30 | 31 | | 24 | 18 | 9 | 1 | 0 | 3 | 9 | 23 | 31 | 35 |
| Klamath Falls | 31 | 32 | | 24 | | 6 | | 0 | 2 | | 24 | | 35 |

# APPENDIX 2.4: HEATING DEGREE DAILY MONTH BY AREA

| Temp Pattern | Day | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Roseburg | 1 | 21 | 20 | 18 | 16 | 9 | 1 | 0 | 0 | 0 | 3 | 14 | 21 |
| Roseburg | 2 | 22 | 20 | 18 | 15 | 9 | 2 | 0 | 0 | 0 | 5 | 14 | 21 |
| Roseburg | 3 | 22 | 20 | 19 | 14 | 9 | 2 | 0 | 0 | 0 | 6 | 15 | 22 |
| Roseburg | 4 | 22 | 19 | 18 | 14 | 9 | 1 | 0 | 0 | 0 | 7 | 15 | 21 |
| Roseburg | 5 | 22 | 19 | 19 | 15 | 8 | 3 | 0 | 0 | 0 | 5 | 15 | 22 |
| Roseburg | 6 | 21 | 18 | 18 | 14 | 8 | 3 | 0 | 0 | 0 | 4 | 13 | 23 |
| Roseburg | 7 | 19 | 20 | 18 | 14 | 7 | 3 | 0 | 0 | 0 | 5 | 15 | 24 |
| Roseburg | 8 | 20 | 21 | 17 | 15 | 8 | 3 | 0 | 0 | 0 | 6 | 17 | 23 |
| Roseburg | 9 | 21 | 21 | 16 | 14 | 10 | 3 | 0 | 0 | 0 | 7 | 17 | 22 |
| Roseburg | 10 | 21 | 20 | 16 | 13 | 9 | 4 | 0 | 0 | 0 | 9 | 17 | 22 |
| Roseburg | 11 | 22 | 19 | 14 | 12 | 7 | 3 | 0 | 0 | 0 | 9 | 16 | 22 |
| Roseburg | 12 | 21 | 18 | 15 | 13 | 7 | 1 | 0 | 0 | 0 | 9 | 14 | 21 |
| Roseburg | 13 | 23 | 32 | 15 | 13 | 6 | 0 | 0 | 0 | 0 | 7 | 14 | 21 |
| Roseburg | 14 | 23 | 37 | 15 | 15 | 4 | 1 | 0 | 0 | 0 | 8 | 15 | 22 |
| Roseburg | 15 | 23 | 42 | 15 | 14 | 5 | 0 | 0 | 0 | 0 | 9 | 15 | 23 |
| Roseburg | 16 | 22 | 34 | 17 | 13 | 5 | 1 | 0 | 0 | 0 | 8 | 16 | 22 |
| Roseburg | 17 | 22 | 28 | 17 | 13 | 4 | 0 | 0 | 0 | 1 | 9 | 17 | 23 |
| Roseburg | 18 | 21 | 18 | 14 | 14 | 4 | 2 | 0 | 0 | 0 | 9 | 17 | 40 |
| Roseburg | 19 | 21 | 18 | 15 | 13 | 5 | 1 | 0 | 0 | 0 | 8 | 16 | 53 |
| Roseburg | 20 | 21 | 19 | 15 | 12 | 6 | 0 | 0 | 0 | 0 | 10 | 20 | 55 |
| Roseburg | 21 | 22 | 18 | 16 | 11 | 7 | 0 | 0 | 0 | 1 | 10 | 21 | 46 |
| Roseburg | 22 | 22 | 18 | 16 | 10 | 6 | 1 | 0 | 0 | 0 | 10 | 20 | 48 |
| Roseburg | 23 | 21 | 19 | 15 | 10 | 5 | 0 | 0 | 0 | 0 | 11 | 21 | 22 |
| Roseburg | 24 | 21 | 19 | 15 | 9 | 4 | 0 | 0 | 0 | 0 | 12 | 19 | 23 |
| Roseburg | 25 | 21 | 20 | 16 | 8 | 3 | 0 | 0 | 0 | 2 | 13 | 20 | 23 |
| Roseburg | 26 | 23 | 19 | 17 | 8 | 2 | 0 | 0 | 0 | 2 | 13 | 20 | 23 |
| Roseburg | 27 | 23 | 18 | 16 | 9 | 4 | 0 | 0 | 0 | 1 | 14 | 21 | 23 |
| Roseburg | 28 | 20 | 18 | 16 | 9 | 5 | 0 | 0 | 0 | 0 | 12 | 20 | 22 |
| Roseburg | 29 | 19 | 18 | 15 | 8 | 3 | 0 | 0 | 0 | 1 | 13 | 20 | 22 |
| Roseburg | 30 | 19 | | 15 | 8 | 2 | 0 | 0 | 0 | 1 | 13 | 20 | 23 |
| Roseburg | 31 | 20 | | 15 | | 1 | | 0 | 0 | | 14 | | 22 |

# APPENDIX 2.5: DEMAND SENSITIVITIES
# SUMMARY OF ASSUMPTIONS – DEMAND SCENARIOS

| | | | DEMAND INFLUENCING - DIRECT | | | | | | | PRICE INFLUENCING - INDIRECT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INPUT ASSUMPTIONS | Reference Case | Reference Plus Peak Case | Low Cust Growth | High Cust Growth | CNG/NGV Vehicles | Alternate Weather Std | DSM Case | Peak plus DSM Case | Alterante Historical UPC Case | Expect Elasticity | Low Prices | High Prices | Carbon Legistlation | Carbon Legistlation | Carbon Legistlation | Exported LNG |
| **Customer Growth Rate** | | | 40% Decrease in Cust Growth Rates | 60% Increase in Cust Growth Rates | | | | | | | | | | | | |
| Residential WA/ID | | | | | | | | | | | | | | | | |
| Residential Medford | | | | | | | | | | | | | | | | |
| Residential Roseburg | | | | | | | | | | | | | | | | |
| Residential Klamath | | | | | | | | | | | | | | | | |
| Residential La Grande | | | | | | | | | | | | | | | | |
| Commercial WA/ID | | | | | | | | | | | | | | | | |
| Commercial Medford | | | | | | | | | | | | | | | | |
| Commercial Roseburg | | | | | | | | | | | | | | | | |
| Commercial Klamath | | | | | | | | | | | | | | | | |
| Commercial La Grande | | | | | | | | | | | | | | | | |
| **Use per Customer** | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 15% Growth Cumulative | 3 Year Historical | 3 Year Historical | 3 Year Historical | 5 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical |
| **Weather** | | | | | | | | | | | | | | | | |
| Planning Standard | Normal plus GW Adj | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest 20yrs | Normal plus GW Adj | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record |
| **Demand Side Management** | | | | | | | | | | | | | | | | |
| Programs Included | No | No | No | No | No | No | Yes | Yes | No | No | No | No | No | No | No | No |
| **Prices** | | | | | | | | | | | | | | | | |
| Price curve | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Low | High | Low | Medium | High | Expected |
| Price curve adder ($/Dth) | None | None | None | None | None | None | None | None | None | | | | | | | $.50 Adder After 5yrs |
| Elasticity | None | None | None | None | None | None | None | None | None | Expected | Expected | Expected | Expected | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | None | None | None | None | None | None | None | None | None | | | | $5 starting in 2021 | $8.32-$14.83 starting in 2021 | $16-$28 starting in 2021 | |
| **RESULTS** | | | | | | | | | | | | | | | | |
| **FIRST YEAR UNSERVED** | | | | | | | | | | | | | | | | |
| WA/ID | N/A | N/A | N/A | 2029 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | N/A | | N/A |
| Medford | N/A | N/A | N/A | 2029 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | N/A | | N/A |
| Roseburg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | N/A | | N/A |
| Klamath | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | N/A | | N/A |
| La Grande | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | N/A | | N/A |

# APPENDIX 2.5: DEMAND SCENARIOS
# PROPOSED SCENARIOS

| INPUT ASSUMPTIONS | Expected Case | High Growth & Low Prices | Low Growth & High Prices | Cold Day 20-yr Weather Std | Average Case |
|---|---|---|---|---|---|
| **Customer Growth Rate** | Reference Case Cust Growth Rates | 60% Increase in Cust Growth Rates | 40% Decrease in Cust Growth Rates | Reference Case Cust Growth Rates | Reference Case Cust Growth Rates |
| **Use per Customer** | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. + CNG/NGV | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. |
| **Demand Side Management** | Yes | Yes | Yes | Yes | Yes |
| **Weather Planning Standard** | Coldest Day | Coldest Day | Coldest Day | Alternate Planning Standard | Normal |
| **Prices** | | | | | |
| Price curve | Expected | Low | High | Expected | Expected |
| Elasticity | Expected | None | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | $8.32-$14.83 | None | $8.32-$14.83 | $8.32-$14.83 | $8.32-$14.83 |
| **RESULTS** | | | | | |
| **First Gas Year Unserved** | | | | | |
| WA/ID | N/A | 2029 | N/A | N/A | N/A |
| Medford | N/A | 2029 | N/A | N/A | N/A |
| Roseburg | N/A | N/A | N/A | N/A | N/A |
| Klamath | N/A | N/A | N/A | N/A | N/A |
| La Grande | N/A | N/A | N/A | N/A | N/A |
| **SCENARIO SUMMARY** | | | | | |
| | Most aggressive peak weather planning case utilizing Average Case assumptions as a starting point and layering in coldest weather on record. The liklihood of occurrence is low. | Aggressive growth assumptions in order to evaluate when our earliest resource shortage could occur. Not likely of occuring. | Stagnant growth assumptions in order to evaluate if a shortage does occur. Not likely to occur. | Evaluates adopting an alternate peak weather standard. Helps provide some bounds around our senstivity to weather. | Case most representative of our average (budget, PGA, rate case, procurement) planning criteria. Most likely to occur. |

**RISK ASSESSMENT**

Higher or lower customer growth rates, which are heavily based on economic recovery. Higher or lower growth rates will lead to accelerated or delayed unserved demand. Looking at various growth assumptions off the Expected Case allows us to capture the risk in terms of the change in demand linked to customer growth.

Higher or lower use per customer will also lead to accelerated or delayed unserved demand. Use per customer can differ in many ways. Direct use per customer influencers, such as demand side management, NGV/CNG usage, and derivation of the use per customer starting point (i.e. one year, three year, etc). Again, varying these assumptions under our forecasting methodology allows us to quantify the change each assumption has to our forecast.

Weather volatility and predictability are a key risk. As the most correlated direct demand influencer, varying weather assumptions is key to understanding the weather related risks.

Indirect influencers including elasticity and price are also important assumptions. The two go hand in hand, as price changes it will influence how much customers consume. If forecasted prices remain relatively stable over the planning horizon our current elasticity assumption will not provide much decreased usage. However, price adders or an overall steepening of the price curve will tirgger a greater decline in usage due to the price elastic response. The maginitude of the elasticity adjustment is also important. We are using a long run elasticity factor as calcuated by the AGA. We continue to evaluate this assumption and are looking to update the study as part of our Action Plan.

# APPENDIX 2.6: DEMAND FORECAST SENSITIVITIES AND SCENARIOS DESCRIPTIONS

## DEFINITIONS

**DYNAMIC DEMAND METHODOLOGY** – Avista's demand forecasting approach wherein we 1) identify key demand drivers behind natural gas consumption, 2) perform sensitivity analysis on each demand driver, and 3) combine demand drivers under various scenarios to develop alternative potential outcomes for forecasted demand.

**DEMAND INFLUENCING FACTORS** – Factors that directly influence the volume of natural gas consumed by our core customers.

**PRICE INFLUENCING FACTORS** – Factors that, through price elasticity response, indirectly influence the volume of natural gas consumed by our core customers.

**REFERENCE CASE** – A baseline point of reference that captures the basic inputs for determining a demand forecast in SENDOUT® which includes number of customers, use per customer, average daily weather temperatures (including an adjustment for global warming) and expected natural gas prices.

**SENSITIVITIES** – Focused analysis of a specific natural gas demand driver and its impact on forecasted demand relative to the Reference Case when underlying input assumptions are modified.

**SCENARIOS** – Combination of natural gas demand drivers that make up a demand forecast.

Avista evaluates each sensitivities impact.

## SENSITIVITIES

The following Sensitivities were performed on identified demand drivers against the reference case for consideration in Scenario development. Note that Sensitivity assumptions reflect incremental adjustments we estimate are not captured in the underlying reference case forecast.

Following are the Demand Influencing (Direct) Sensitivities we evaluated:

**REFERENCE CASE PLUS PEAK** – Same assumptions as in the Reference Case with and adjustment made to normal weather to incorporate peak weather conditions. The peak weather data being the coldest day on record for each weather area.

**LOW & HIGH CUSTOMER GROWTH** – In our low customer growth Sensitivity, annual customer growth rates under perform the reference rate of growth by 40% over our 20 year planning horizon while annual customer growth rates exceed the reference rate by 60% in our high growth Sensitivity.

**NATURAL GAS VEHICLES (NGV) AND/OR COMPRESSED NATURAL GAS (CNG) VEHICLES** – NGV/CNG vehicles assumed to produce a 15% cumulative incremental demand over our 20 year planning horizon. Our assumption utilized market consumption estimates from an independent analysis on NGV/CNG vehicle viability. The analysis indicates significant challenges exist to widespread adoption but did provide a scenario for significant market penetration (10% in 10 years).

**ALTERNATE WEATHER STANDARD (COLDEST DAY 20 YRS)** – Peak Day weather temperature reduced to coldest average daily temperature (HDDs) experienced in the most recent 20 years in each region.

**DSM** – Reference case assumptions including the potential DSM identified by the Conservation Potential Assessment provided by Global Energy Partners. See Appendix 4.1 for full assessment report.

**PEAK PLUS DSM** – Reference plus peak weather assumptions including the potential DSM identified by the Conservation Potential Assessment provided by Global Energy Partners. See Appendix 4.1 for the full assessment report.

**ALTERNATE USE PER CUSTOMER** – Reference case use per customer was based upon 3 years of actual use per customer per heating degree day data. This sensitivity used five years of historical use per customer per heating degree day data.

Following are the Price Influencing (Indirect) Sensitivities we evaluated:

**EXPECTED ELASTICITY** – For our expected elasticity Sensitivity, we incorporate reduced consumption in response to higher natural gas prices utilizing a price elasticity study prepared by the American Gas Association.

**LOW & HIGH PRICES** – To capture a wide band of alternative prices forecasts, we use the Northwest Power and Conservation Council's "very low" and "very high" natural gas price forecast scenarios with first five years modified to include blend of recent market prices (Nymex forward prices) consistent with our Expected price forecast.

**CARBON LEGISLATION LOW CASE** – Utilizes carbon cost adders quantified by independent analysis from Consultant #1. They identify both an adder reflecting carbon allowances as well as an adder to capture the effect of increased natural gas demand as more gas turbines come online to replace coal plants and back up wind generation. The allowance adder escalates from $14/ton in 2022 to $22/ton by 2033.

**CARBON LEGISLATION MEDIUM CASE** –Utilizes carbon cost adders quantified by independent analysis from Consultant #1. They identify both an adder reflecting carbon allowances as well as an adder to capture the effect of increased natural gas demand as more gas turbines come online to replace coal plants and back up wind generation. The allowance adder escalates from $8.32/ton in 2021 to $14.83/ton by 2033. This is the expected carbon adder utilized in our carbon case sensitivities.

**CARBON LEGISLATION HIGH CASE** – Utilizes carbon cost adders quantified by independent analysis from Consultant #1. They identify both an adder reflecting carbon allowances as well as an adder to capture the effect of increased natural gas demand as more gas turbines come online to replace coal plants and back up wind generation. The allowance adder escalates from $16/ton in 2021 to $28/ton by 2033.

**EXPORTED LNG** – Beginning in 2017, we apply an estimate of $.50/mmbtu *incremental* adder each year to regional natural gas prices to capture upward price pressure because of exports of LNG to Asian and European counties. There is much uncertainty about the region price impact LNG will have. It is highly dependent on many things including which export facilities get built and the pipeline infrastructure used to serve them. There are several analyses that have been conducted where the price impact can be minimal to $1.00/mmbtu.

## SCENARIOS

After identifying the above demand drivers and analyzing the various Sensitivities, we have developed the following demand forecast Scenarios:

**AVERAGE CASE –** This Scenario we believe represents the most likely average demand forecast modeled. We assume service territory customer growth rates consistent with the reference case, rolling 30 year normal weather in each service territory, our expected natural gas price forecast (Consultant #1), expected price elasticity, and the CO2 cost adders from our **Carbon Legislation Medium Case** Sensitivity, and DSM. The Scenario does not include incremental cost adders for declining Canadian imports or drilling restrictions beyond what is incorporated in the selected price forecast.

**EXPECTED CASE –** This Scenario represents the peak demand forecast. We assume service territory customer growth rates consistent with the reference case, a weather standard of coldest day on record in each service territory, our middle range natural gas price forecast (Consultant #1), expected price elasticity, and the CO2 cost adders from our **Carbon Legislation Medium Case** Sensitivity, and DSM.

**HIGH GROWTH, LOW PRICE** – This Scenario models a rapid return to robust growth in part spurred on by low energy prices. We assume customer growth rates 60% higher than the reference case, coldest day on record weather standard, incremental demand from NGV/CNG, our low natural gas price forecast, no price elasticity, DSM, and no CO2 adders.

**LOW GROWTH, HIGH PRICE** – This Scenario models an extended period of slow economic growth in part resulting from high energy prices. We assume customer growth rates 40% lower than the reference case, coldest day on record weather standard, our high natural gas price forecast, expected price elasticity, and CO2 adders from our **Carbon Legislation Medium Case** Sensitivity.

**ALTERNATE WEATHER STANDARD** – This Scenario models all the same assumptions as the **Expected Case** Scenario except for the change in the weather planning standard from coldest day on record to coldest day in 20 years for each service territory. As noted in the Sensitivity analysis, this change does not affect the Klamath Falls and La Grande service territories which have each experienced their coldest day on record within the last 20 years.

A case incorporating Exported LNG was not included in this IRP's scenario analysis. There is much uncertainty about the location and timing of exported LNG and its potential price impacts. The forecasters we subscribe to have incorporated some level of export LNG into their price forecasts and therefore our expected price curve does include an export LNG assumption. At this time the effects of LNG are minimal given the robust North American supply picture. Avista will closely monitor developments with export LNG for the potential price and infrastructure impacts.

# APPENDIX 2.7: ANNUAL DEMAND, AVERAGE DAY DEMAND AND PEAK DAY DEMAND (NET OF DSM – CASE AVERAGE

| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Average Case | 2013-2014 | 1,257.66 | 3.45 | 6.27 | 720.60 | 1.97 | 3.29 | 6,207.32 | 17.01 | 33.85 |
| Average Case | 2014-2015 | 1,261.98 | 3.46 | 6.27 | 723.27 | 1.98 | 3.31 | 6,252.06 | 17.13 | 34.12 |
| Average Case | 2015-2016 | 1,272.99 | 3.49 | 6.29 | 729.63 | 2.00 | 3.32 | 6,328.05 | 17.34 | 34.38 |
| Average Case | 2016-2017 | 1,265.52 | 3.47 | 6.28 | 725.57 | 1.99 | 3.31 | 6,315.96 | 17.30 | 34.40 |
| Average Case | 2017-2018 | 1,272.48 | 3.49 | 6.31 | 729.40 | 2.00 | 3.33 | 6,368.55 | 17.45 | 34.69 |
| Average Case | 2018-2019 | 1,280.28 | 3.51 | 6.34 | 731.59 | 2.00 | 3.35 | 6,427.02 | 17.61 | 34.99 |
| Average Case | 2019-2020 | 1,294.56 | 3.55 | 6.38 | 737.44 | 2.02 | 3.36 | 6,515.10 | 17.85 | 35.32 |
| Average Case | 2020-2021 | 1,294.13 | 3.55 | 6.41 | 735.69 | 2.02 | 3.36 | 6,536.37 | 17.91 | 35.57 |
| Average Case | 2021-2022 | 1,290.82 | 3.54 | 6.38 | 732.27 | 2.01 | 3.34 | 6,544.39 | 17.93 | 35.53 |
| Average Case | 2022-2023 | 1,298.09 | 3.56 | 6.41 | 734.46 | 2.01 | 3.35 | 6,601.11 | 18.09 | 35.84 |
| Average Case | 2023-2024 | 1,312.52 | 3.60 | 6.46 | 740.33 | 2.03 | 3.37 | 6,691.81 | 18.33 | 36.18 |
| Average Case | 2024-2025 | 1,307.44 | 3.58 | 6.45 | 736.13 | 2.02 | 3.36 | 6,692.29 | 18.34 | 36.29 |
| Average Case | 2025-2026 | 1,308.20 | 3.58 | 6.45 | 734.86 | 2.01 | 3.35 | 6,719.70 | 18.41 | 36.38 |
| Average Case | 2026-2027 | 1,313.43 | 3.60 | 6.47 | 735.96 | 2.02 | 3.35 | 6,768.76 | 18.54 | 36.63 |
| Average Case | 2027-2028 | 1,328.10 | 3.64 | 6.52 | 741.84 | 2.03 | 3.37 | 6,861.81 | 18.80 | 36.98 |
| Average Case | 2028-2029 | 1,330.67 | 3.65 | 6.56 | 741.76 | 2.03 | 3.38 | 6,899.62 | 18.90 | 37.34 |
| Average Case | 2029-2030 | 1,328.02 | 3.64 | 6.53 | 738.69 | 2.02 | 3.36 | 6,911.87 | 18.94 | 37.33 |
| Average Case | 2030-2031 | 1,336.73 | 3.66 | 6.58 | 741.63 | 2.03 | 3.37 | 6,978.53 | 19.12 | 37.69 |
| Average Case | 2031-2032 | 1,347.05 | 3.69 | 6.59 | 745.11 | 2.04 | 3.37 | 7,052.70 | 19.32 | 37.91 |
| Average Case | 2032-2033 | 1,347.00 | 3.69 | 6.62 | 743.57 | 2.04 | 3.38 | 7,078.88 | 19.39 | 38.19 |

| Scenario | Gas Year | Annual Demand Oregon (MDth) | Daily Demand Oregon (MDth/day) | Peak Day Demand Oregon (MDth/day) | Annual Demand WA/ID (MDth) | Daily Demand WA/ID (MDth/day) | Peak Day WA/ID (MDth/day) | Annual Demand Total System (MDth) | Daily Demand Total System (MDth/day) | Peak Day Demand Total System (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Average Case | 2013-2014 | 8,185.58 | 22.43 | 43.41 | 25,157.85 | 68.93 | 114.99 | 33,343.42 | 91.35 | 158.40 |
| Average Case | 2014-2015 | 8,237.30 | 22.57 | 43.70 | 25,396.41 | 69.58 | 116.16 | 33,633.72 | 92.15 | 159.86 |
| Average Case | 2015-2016 | 8,330.67 | 22.82 | 44.00 | 25,762.27 | 70.58 | 117.29 | 34,092.94 | 93.41 | 161.29 |
| Average Case | 2016-2017 | 8,307.06 | 22.76 | 43.99 | 25,744.70 | 70.53 | 117.61 | 34,051.75 | 93.29 | 161.61 |
| Average Case | 2017-2018 | 8,370.42 | 22.93 | 44.33 | 26,025.73 | 71.30 | 118.92 | 34,396.15 | 94.24 | 163.25 |
| Average Case | 2018-2019 | 8,438.90 | 23.12 | 44.67 | 26,286.70 | 72.02 | 120.08 | 34,725.60 | 95.14 | 164.76 |
| Average Case | 2019-2020 | 8,547.10 | 23.42 | 45.07 | 26,660.40 | 73.04 | 121.26 | 35,207.49 | 96.46 | 166.33 |
| Average Case | 2020-2021 | 8,566.19 | 23.47 | 45.34 | 26,738.05 | 73.25 | 122.11 | 35,304.24 | 96.72 | 167.45 |
| Average Case | 2021-2022 | 8,567.49 | 23.47 | 45.26 | 26,752.36 | 73.29 | 122.00 | 35,319.85 | 96.77 | 167.26 |
| Average Case | 2022-2023 | 8,633.66 | 23.65 | 45.60 | 26,986.60 | 73.94 | 123.06 | 35,620.26 | 97.59 | 168.66 |
| Average Case | 2023-2024 | 8,744.67 | 23.96 | 46.01 | 27,370.34 | 74.99 | 124.26 | 36,115.01 | 98.95 | 170.27 |
| Average Case | 2024-2025 | 8,735.86 | 23.93 | 46.10 | 27,352.57 | 74.94 | 124.62 | 36,088.43 | 98.87 | 170.71 |
| Average Case | 2025-2026 | 8,762.76 | 24.01 | 46.18 | 27,453.85 | 75.22 | 124.96 | 36,216.61 | 99.22 | 171.14 |
| Average Case | 2026-2027 | 8,818.15 | 24.16 | 46.45 | 27,650.79 | 75.76 | 125.81 | 36,468.94 | 99.91 | 172.26 |
| Average Case | 2027-2028 | 8,931.74 | 24.47 | 46.86 | 28,044.14 | 76.83 | 127.04 | 36,975.89 | 101.30 | 173.91 |
| Average Case | 2028-2029 | 8,972.05 | 24.58 | 47.28 | 28,192.71 | 77.24 | 128.29 | 37,164.76 | 101.82 | 175.57 |
| Average Case | 2029-2030 | 8,978.58 | 24.60 | 47.22 | 28,223.36 | 77.32 | 128.25 | 37,201.94 | 101.92 | 175.47 |
| Average Case | 2030-2031 | 9,056.89 | 24.81 | 47.64 | 28,498.85 | 78.08 | 129.50 | 37,555.74 | 102.89 | 177.15 |
| Average Case | 2031-2032 | 9,144.86 | 25.05 | 47.88 | 28,804.79 | 78.92 | 130.25 | 37,949.65 | 103.97 | 178.13 |
| Average Case | 2032-2033 | 9,169.44 | 25.12 | 48.19 | 28,900.19 | 79.18 | 131.22 | 38,069.63 | 104.30 | 179.41 |

# APPENDIX 2.7: ANNUAL DEMAND, AVERAGE DAY DEMAND AND PEAK DAY DEMAND (NET OF DSM) – CASE HIGH

| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2013-2014 | 1,299.14 | 3.56 | 11.49 | 746.65 | 2.05 | 7.40 | 6,478.36 | 17.75 | 70.03 |
| High Growth & Low Prices | 2014-2015 | 1,310.90 | 3.59 | 11.54 | 750.58 | 2.06 | 7.45 | 6,566.28 | 17.99 | 70.69 |
| High Growth & Low Prices | 2015-2016 | 1,329.72 | 3.64 | 11.65 | 757.88 | 2.08 | 7.49 | 6,688.55 | 18.32 | 71.72 |
| High Growth & Low Prices | 2016-2017 | 1,337.90 | 3.67 | 11.77 | 759.49 | 2.08 | 7.54 | 6,758.43 | 18.52 | 72.77 |
| High Growth & Low Prices | 2017-2018 | 1,351.30 | 3.70 | 11.89 | 763.87 | 2.09 | 7.58 | 6,857.04 | 18.79 | 73.84 |
| High Growth & Low Prices | 2018-2019 | 1,364.54 | 3.74 | 12.01 | 768.46 | 2.11 | 7.63 | 6,956.69 | 19.06 | 74.92 |
| High Growth & Low Prices | 2019-2020 | 1,385.22 | 3.80 | 12.13 | 776.06 | 2.13 | 7.68 | 7,086.78 | 19.42 | 76.02 |
| High Growth & Low Prices | 2020-2021 | 1,392.83 | 3.82 | 12.25 | 777.54 | 2.13 | 7.72 | 7,161.25 | 19.62 | 77.14 |
| High Growth & Low Prices | 2021-2022 | 1,406.48 | 3.85 | 12.37 | 782.23 | 2.14 | 7.77 | 7,266.36 | 19.91 | 78.28 |
| High Growth & Low Prices | 2022-2023 | 1,421.38 | 3.89 | 12.50 | 786.84 | 2.16 | 7.81 | 7,372.42 | 20.20 | 79.44 |
| High Growth & Low Prices | 2023-2024 | 1,442.01 | 3.95 | 12.63 | 794.53 | 2.18 | 7.86 | 7,510.78 | 20.58 | 80.60 |
| High Growth & Low Prices | 2024-2025 | 1,449.61 | 3.97 | 12.75 | 796.17 | 2.18 | 7.91 | 7,590.23 | 20.80 | 81.79 |
| High Growth & Low Prices | 2025-2026 | 1,465.00 | 4.01 | 12.88 | 800.92 | 2.19 | 7.96 | 7,701.96 | 21.10 | 83.00 |
| High Growth & Low Prices | 2026-2027 | 1,479.57 | 4.05 | 13.01 | 805.62 | 2.21 | 8.00 | 7,815.11 | 21.41 | 84.24 |
| High Growth & Low Prices | 2027-2028 | 1,500.79 | 4.11 | 13.14 | 813.51 | 2.23 | 8.05 | 7,962.11 | 21.81 | 85.48 |
| High Growth & Low Prices | 2028-2029 | 1,509.86 | 4.14 | 13.27 | 815.15 | 2.23 | 8.10 | 8,046.90 | 22.05 | 86.75 |
| High Growth & Low Prices | 2029-2030 | 1,524.87 | 4.18 | 13.40 | 819.98 | 2.25 | 8.15 | 8,165.97 | 22.37 | 88.03 |
| High Growth & Low Prices | 2030-2031 | 1,539.79 | 4.22 | 13.54 | 824.86 | 2.26 | 8.20 | 8,286.24 | 22.70 | 89.35 |
| High Growth & Low Prices | 2031-2032 | 1,562.89 | 4.28 | 13.67 | 833.02 | 2.28 | 8.25 | 8,442.87 | 23.13 | 90.67 |
| High Growth & Low Prices | 2032-2033 | 1,571.39 | 4.31 | 13.81 | 834.67 | 2.29 | 8.30 | 8,533.22 | 23.38 | 92.03 |

| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2013-2014 | 8,524.15 | 23.35 | 88.92 | 26,163.75 | 71.68 | 273.78 | 34,687.90 | 95.04 | 362.70 |
| High Growth & Low Prices | 2014-2015 | 8,627.75 | 23.64 | 89.68 | 26,533.25 | 72.69 | 277.88 | 35,161.01 | 96.33 | 367.55 |
| High Growth & Low Prices | 2015-2016 | 8,776.16 | 24.04 | 90.86 | 27,046.80 | 74.10 | 282.04 | 35,822.96 | 98.15 | 372.90 |
| High Growth & Low Prices | 2016-2017 | 8,855.81 | 24.26 | 92.08 | 27,332.78 | 74.88 | 286.26 | 36,188.59 | 99.15 | 378.34 |
| High Growth & Low Prices | 2017-2018 | 8,972.21 | 24.58 | 93.31 | 27,741.43 | 76.00 | 290.55 | 36,713.64 | 100.59 | 383.86 |
| High Growth & Low Prices | 2018-2019 | 9,089.69 | 24.90 | 94.56 | 28,156.12 | 77.14 | 294.90 | 37,245.82 | 102.04 | 389.46 |
| High Growth & Low Prices | 2019-2020 | 9,248.07 | 25.34 | 95.83 | 28,700.50 | 78.63 | 299.31 | 37,948.57 | 103.97 | 395.13 |
| High Growth & Low Prices | 2020-2021 | 9,331.63 | 25.57 | 97.12 | 29,003.73 | 79.46 | 303.79 | 38,335.36 | 105.03 | 400.91 |
| High Growth & Low Prices | 2021-2022 | 9,455.07 | 25.90 | 98.42 | 29,437.06 | 80.65 | 308.33 | 38,892.13 | 106.55 | 406.75 |
| High Growth & Low Prices | 2022-2023 | 9,580.64 | 26.25 | 99.75 | 29,876.72 | 81.85 | 312.95 | 39,457.36 | 108.10 | 412.69 |
| High Growth & Low Prices | 2023-2024 | 9,747.32 | 26.70 | 101.09 | 30,454.12 | 83.44 | 317.63 | 40,201.45 | 110.14 | 418.71 |
| High Growth & Low Prices | 2024-2025 | 9,836.00 | 26.95 | 102.45 | 30,775.67 | 84.32 | 322.38 | 40,611.68 | 111.26 | 424.84 |
| High Growth & Low Prices | 2025-2026 | 9,967.89 | 27.31 | 103.83 | 31,235.11 | 85.58 | 327.20 | 41,203.00 | 112.88 | 431.04 |
| High Growth & Low Prices | 2026-2027 | 10,100.30 | 27.67 | 105.25 | 31,701.38 | 86.85 | 332.10 | 41,801.68 | 114.53 | 437.35 |
| High Growth & Low Prices | 2027-2028 | 10,276.42 | 28.15 | 106.67 | 32,313.76 | 88.53 | 337.07 | 42,590.18 | 116.69 | 443.73 |
| High Growth & Low Prices | 2028-2029 | 10,371.91 | 28.42 | 108.12 | 32,654.55 | 89.46 | 342.11 | 43,026.46 | 117.88 | 450.23 |
| High Growth & Low Prices | 2029-2030 | 10,510.83 | 28.80 | 109.59 | 33,141.79 | 90.80 | 347.22 | 43,652.62 | 119.60 | 456.81 |
| High Growth & Low Prices | 2030-2031 | 10,650.89 | 29.18 | 111.08 | 33,636.27 | 92.15 | 352.42 | 44,287.16 | 121.33 | 463.50 |
| High Growth & Low Prices | 2031-2032 | 10,838.78 | 29.70 | 112.59 | 34,285.78 | 93.93 | 357.69 | 45,124.57 | 123.63 | 470.28 |
| High Growth & Low Prices | 2032-2033 | 10,939.29 | 29.97 | 114.13 | 34,647.06 | 94.92 | 363.03 | 45,586.34 | 124.89 | 477.17 |

# APPENDIX 2.7: ANNUAL DEMAND, AVERAGE DAY DEMAND AND PEAK DAY DEMAND (NET OF DSM) – CASE LOW

| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2013-2014 | 1,279.53 | 3.51 | 11.45 | 733.03 | 2.01 | 7.34 | 6,357.51 | 17.42 | 69.82 |
| Low Growth & High Prices | 2014-2015 | 1,261.30 | 3.46 | 11.23 | 722.02 | 1.98 | 7.19 | 6,284.24 | 17.22 | 68.58 |
| Low Growth & High Prices | 2015-2016 | 1,260.82 | 3.45 | 11.15 | 720.46 | 1.97 | 7.13 | 6,291.26 | 17.24 | 68.20 |
| Low Growth & High Prices | 2016-2017 | 1,253.20 | 3.43 | 11.13 | 716.29 | 1.96 | 7.11 | 6,272.07 | 17.18 | 68.16 |
| Low Growth & High Prices | 2017-2018 | 1,252.46 | 3.43 | 11.11 | 715.22 | 1.96 | 7.09 | 6,279.85 | 17.21 | 68.16 |
| Low Growth & High Prices | 2018-2019 | 1,250.05 | 3.42 | 11.07 | 713.10 | 1.95 | 7.06 | 6,279.14 | 17.20 | 68.03 |
| Low Growth & High Prices | 2019-2020 | 1,255.22 | 3.44 | 11.07 | 715.40 | 1.96 | 7.05 | 6,317.30 | 17.31 | 68.11 |
| Low Growth & High Prices | 2020-2021 | 1,251.02 | 3.43 | 11.07 | 712.53 | 1.95 | 7.04 | 6,310.55 | 17.29 | 68.26 |
| Low Growth & High Prices | 2021-2022 | 1,250.34 | 3.43 | 11.05 | 711.33 | 1.95 | 7.02 | 6,317.39 | 17.31 | 68.24 |
| Low Growth & High Prices | 2022-2023 | 1,246.58 | 3.42 | 11.01 | 709.02 | 1.94 | 6.99 | 6,315.35 | 17.30 | 68.08 |
| Low Growth & High Prices | 2023-2024 | 1,255.95 | 3.44 | 11.04 | 713.27 | 1.95 | 7.00 | 6,369.69 | 17.45 | 68.41 |
| Low Growth & High Prices | 2024-2025 | 1,248.44 | 3.42 | 11.01 | 708.62 | 1.94 | 6.97 | 6,346.22 | 17.39 | 68.30 |
| Low Growth & High Prices | 2025-2026 | 1,246.11 | 3.41 | 10.98 | 707.04 | 1.94 | 6.95 | 6,350.36 | 17.40 | 68.25 |
| Low Growth & High Prices | 2026-2027 | 1,246.22 | 3.41 | 10.97 | 706.35 | 1.94 | 6.93 | 6,363.01 | 17.43 | 68.30 |
| Low Growth & High Prices | 2027-2028 | 1,253.71 | 3.43 | 10.98 | 709.27 | 1.94 | 6.93 | 6,407.67 | 17.56 | 68.48 |
| Low Growth & High Prices | 2028-2029 | 1,248.76 | 3.42 | 10.99 | 706.60 | 1.94 | 6.93 | 6,400.89 | 17.54 | 68.63 |
| Low Growth & High Prices | 2029-2030 | 1,246.03 | 3.41 | 10.94 | 704.47 | 1.93 | 6.89 | 6,399.78 | 17.53 | 68.49 |
| Low Growth & High Prices | 2030-2031 | 1,245.70 | 3.41 | 10.93 | 703.48 | 1.93 | 6.88 | 6,409.12 | 17.56 | 68.49 |
| Low Growth & High Prices | 2031-2032 | 1,249.84 | 3.42 | 10.91 | 705.19 | 1.93 | 6.86 | 6,443.20 | 17.65 | 68.50 |
| Low Growth & High Prices | 2032-2033 | 1,248.09 | 3.42 | 10.94 | 703.88 | 1.93 | 6.87 | 6,448.10 | 17.67 | 68.82 |

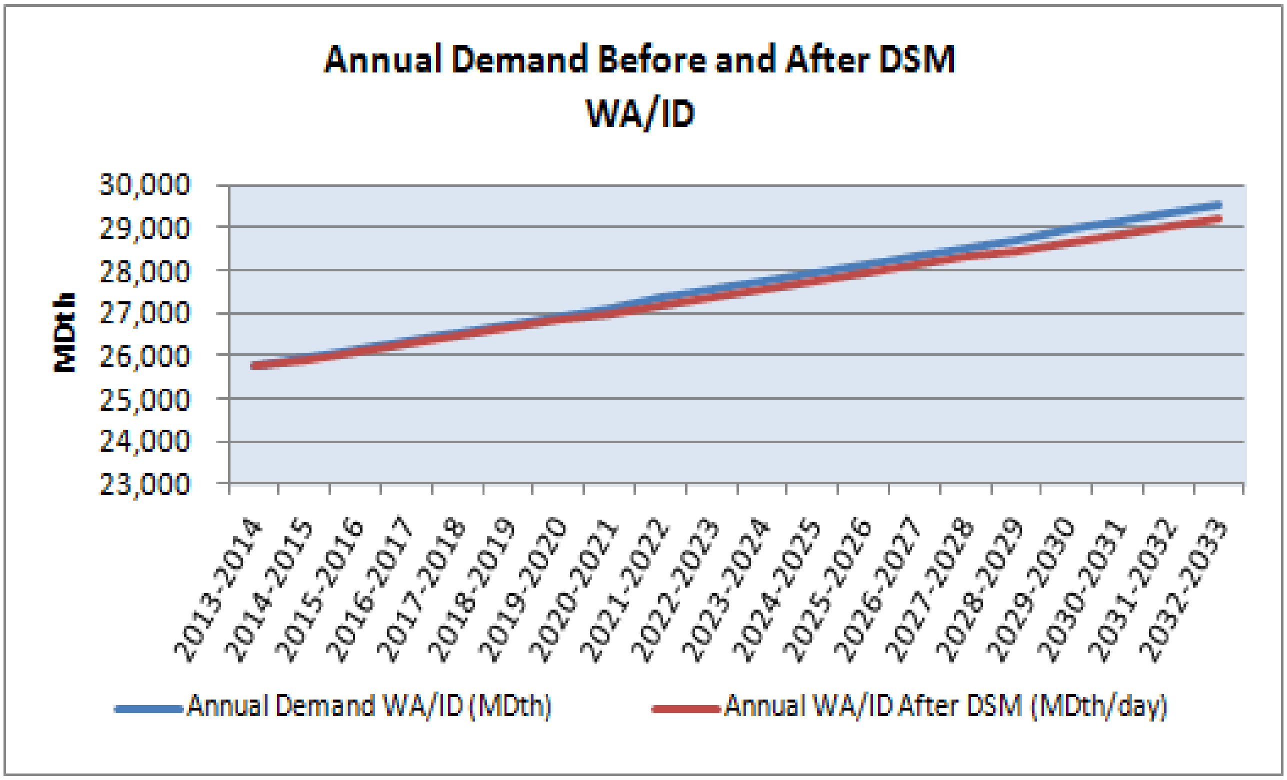
| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2013-2014 | 8,370.06 | 22.93 | 88.62 | 25,726.26 | 70.48 | 270.35 | 34,096.32 | 93.41 | 358.97 |
| Low Growth & High Prices | 2014-2015 | 8,267.56 | 22.65 | 87.01 | 25,388.96 | 69.56 | 265.49 | 33,656.52 | 92.21 | 352.50 |
| Low Growth & High Prices | 2015-2016 | 8,272.54 | 22.66 | 86.48 | 25,407.96 | 69.61 | 263.95 | 33,680.50 | 92.28 | 350.43 |
| Low Growth & High Prices | 2016-2017 | 8,241.57 | 22.58 | 86.40 | 25,312.42 | 69.35 | 263.82 | 33,553.98 | 91.93 | 350.22 |
| Low Growth & High Prices | 2017-2018 | 8,247.53 | 22.60 | 86.36 | 25,336.53 | 69.42 | 263.83 | 33,584.07 | 92.01 | 350.19 |
| Low Growth & High Prices | 2018-2019 | 8,242.29 | 22.58 | 86.16 | 25,321.10 | 69.37 | 263.29 | 33,563.39 | 91.95 | 349.45 |
| Low Growth & High Prices | 2019-2020 | 8,287.92 | 22.71 | 86.22 | 25,477.26 | 69.80 | 263.60 | 33,765.18 | 92.51 | 349.83 |
| Low Growth & High Prices | 2020-2021 | 8,274.10 | 22.67 | 86.37 | 25,435.94 | 69.69 | 264.20 | 33,710.04 | 92.36 | 350.57 |
| Low Growth & High Prices | 2021-2022 | 8,279.07 | 22.68 | 86.32 | 25,456.30 | 69.74 | 264.14 | 33,735.37 | 92.43 | 350.46 |
| Low Growth & High Prices | 2022-2023 | 8,270.95 | 22.66 | 86.08 | 25,433.76 | 69.68 | 263.51 | 33,704.70 | 92.34 | 349.59 |
| Low Growth & High Prices | 2023-2024 | 8,338.91 | 22.85 | 86.45 | 25,662.18 | 70.31 | 264.78 | 34,001.08 | 93.15 | 351.23 |
| Low Growth & High Prices | 2024-2025 | 8,303.29 | 22.75 | 86.28 | 25,546.84 | 69.99 | 264.37 | 33,850.12 | 92.74 | 350.65 |
| Low Growth & High Prices | 2025-2026 | 8,303.52 | 22.75 | 86.18 | 25,554.41 | 70.01 | 264.14 | 33,857.92 | 92.76 | 350.31 |
| Low Growth & High Prices | 2026-2027 | 8,315.59 | 22.78 | 86.21 | 25,596.74 | 70.13 | 264.37 | 33,912.33 | 92.91 | 350.57 |
| Low Growth & High Prices | 2027-2028 | 8,370.66 | 22.93 | 86.39 | 25,781.25 | 70.63 | 265.03 | 34,151.91 | 93.57 | 351.42 |
| Low Growth & High Prices | 2028-2029 | 8,356.25 | 22.89 | 86.54 | 25,739.84 | 70.52 | 265.62 | 34,096.09 | 93.41 | 352.16 |
| Low Growth & High Prices | 2029-2030 | 8,350.28 | 22.88 | 86.32 | 25,723.42 | 70.48 | 265.05 | 34,073.70 | 93.35 | 351.38 |
| Low Growth & High Prices | 2030-2031 | 8,358.30 | 22.90 | 86.30 | 25,751.57 | 70.55 | 265.09 | 34,109.87 | 93.45 | 351.39 |
| Low Growth & High Prices | 2031-2032 | 8,398.23 | 23.01 | 86.27 | 25,888.48 | 70.93 | 265.10 | 34,286.71 | 93.94 | 351.37 |
| Low Growth & High Prices | 2032-2033 | 8,400.07 | 23.01 | 86.64 | 25,898.70 | 70.96 | 266.38 | 34,298.77 | 93.97 | 353.01 |

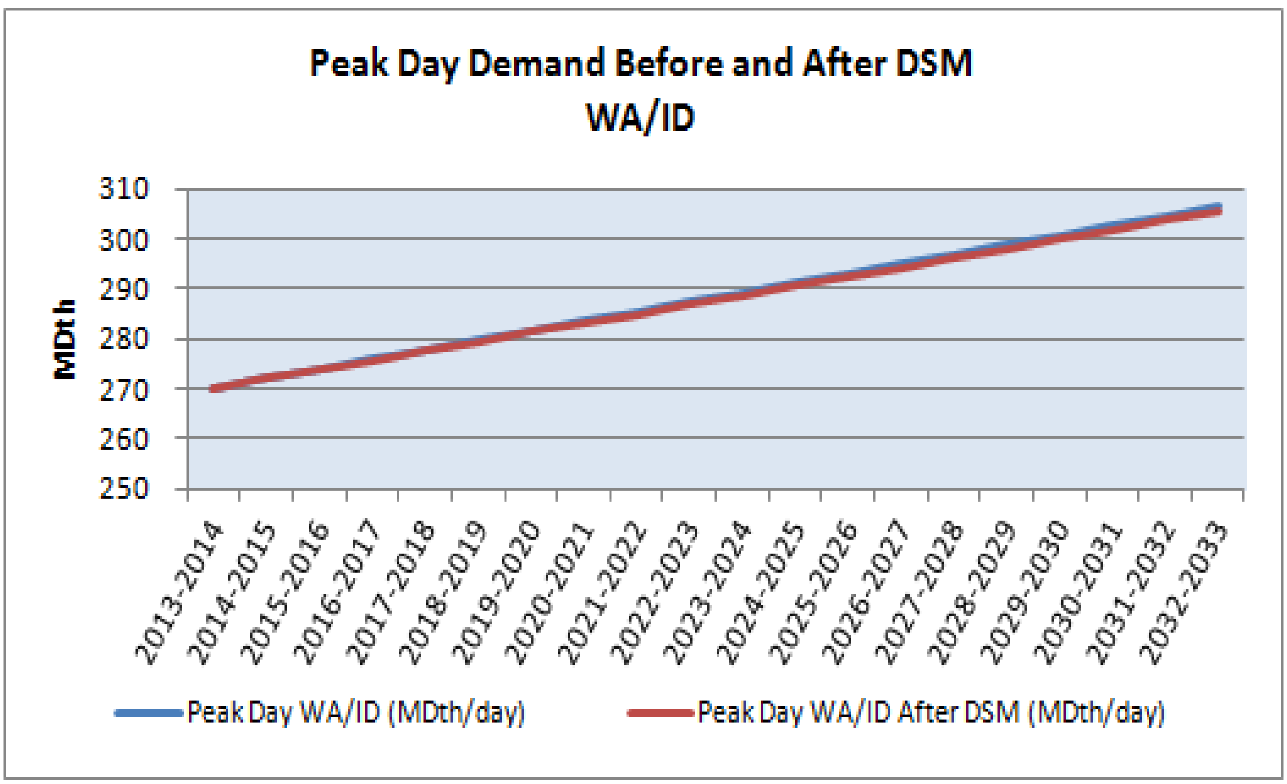
# APPENDIX 2.7: ANNUAL DEMAND, AVERAGE DAY DEMAND AND PEAK DAY DEMAND (NET OF DSM) – CASE COLDEST IN 20

| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Day 20Yr Weather Std | 2013-2014 | 1,290.24 | 3.53 | 11.49 | 746.36 | 2.04 | 7.39 | 6,424.46 | 17.60 | 62.53 |
| Cold Day 20Yr Weather Std | 2014-2015 | 1,294.65 | 3.55 | 11.50 | 749.13 | 2.05 | 7.42 | 6,470.83 | 17.73 | 63.04 |
| Cold Day 20Yr Weather Std | 2015-2016 | 1,305.81 | 3.58 | 11.54 | 755.61 | 2.07 | 7.46 | 6,548.62 | 17.94 | 63.52 |
| Cold Day 20Yr Weather Std | 2016-2017 | 1,298.20 | 3.56 | 11.50 | 751.44 | 2.06 | 7.43 | 6,536.32 | 17.91 | 63.50 |
| Cold Day 20Yr Weather Std | 2017-2018 | 1,305.33 | 3.58 | 11.56 | 755.41 | 2.07 | 7.47 | 6,590.81 | 18.06 | 64.04 |
| Cold Day 20Yr Weather Std | 2018-2019 | 1,313.33 | 3.60 | 11.62 | 757.67 | 2.08 | 7.50 | 6,651.33 | 18.22 | 64.58 |
| Cold Day 20Yr Weather Std | 2019-2020 | 1,327.82 | 3.64 | 11.70 | 763.63 | 2.09 | 7.53 | 6,741.61 | 18.47 | 65.20 |
| Cold Day 20Yr Weather Std | 2020-2021 | 1,327.50 | 3.64 | 11.74 | 761.88 | 2.09 | 7.54 | 6,764.35 | 18.53 | 65.64 |
| Cold Day 20Yr Weather Std | 2021-2022 | 1,323.98 | 3.63 | 11.68 | 758.24 | 2.08 | 7.48 | 6,771.62 | 18.55 | 65.50 |
| Cold Day 20Yr Weather Std | 2022-2023 | 1,331.43 | 3.65 | 11.74 | 760.49 | 2.08 | 7.50 | 6,830.26 | 18.71 | 66.05 |
| Cold Day 20Yr Weather Std | 2023-2024 | 1,346.08 | 3.69 | 11.82 | 766.47 | 2.10 | 7.53 | 6,923.21 | 18.97 | 66.69 |
| Cold Day 20Yr Weather Std | 2024-2025 | 1,340.93 | 3.67 | 11.80 | 762.15 | 2.09 | 7.50 | 6,924.00 | 18.97 | 66.83 |
| Cold Day 20Yr Weather Std | 2025-2026 | 1,341.62 | 3.68 | 11.79 | 760.76 | 2.08 | 7.48 | 6,951.68 | 19.05 | 66.95 |
| Cold Day 20Yr Weather Std | 2026-2027 | 1,346.95 | 3.69 | 11.83 | 761.87 | 2.09 | 7.48 | 7,002.18 | 19.18 | 67.38 |
| Cold Day 20Yr Weather Std | 2027-2028 | 1,361.84 | 3.73 | 11.91 | 767.86 | 2.10 | 7.51 | 7,097.53 | 19.45 | 68.04 |
| Cold Day 20Yr Weather Std | 2028-2029 | 1,364.63 | 3.74 | 11.98 | 767.88 | 2.10 | 7.54 | 7,137.67 | 19.56 | 68.70 |
| Cold Day 20Yr Weather Std | 2029-2030 | 1,361.78 | 3.73 | 11.93 | 764.59 | 2.09 | 7.49 | 7,149.31 | 19.59 | 68.61 |
| Cold Day 20Yr Weather Std | 2030-2031 | 1,370.71 | 3.76 | 12.01 | 767.64 | 2.10 | 7.52 | 7,218.33 | 19.78 | 69.27 |
| Cold Day 20Yr Weather Std | 2031-2032 | 1,381.09 | 3.78 | 12.03 | 771.09 | 2.11 | 7.51 | 7,293.67 | 19.98 | 69.64 |
| Cold Day 20Yr Weather Std | 2032-2033 | 1,381.16 | 3.78 | 12.08 | 769.58 | 2.11 | 7.52 | 7,321.52 | 20.06 | 70.14 |

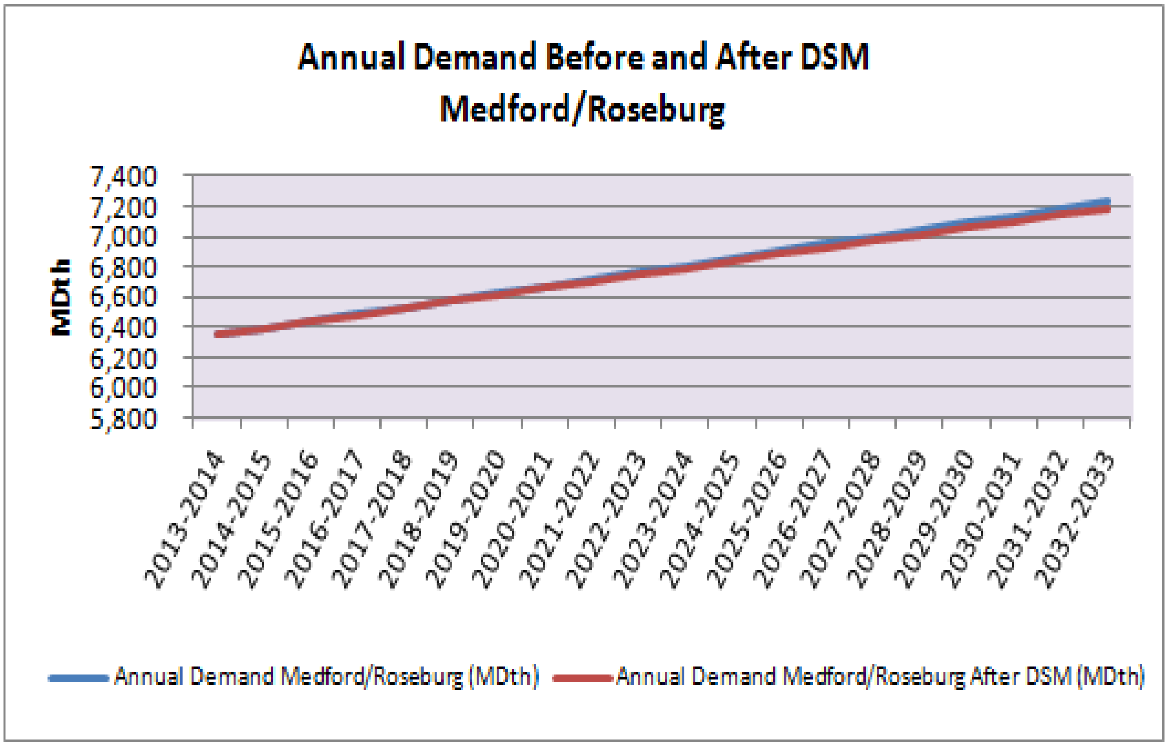
| Scenario | Gas Year | Annual Demand Klam Falls (MDth) | Daily Demand Klamath (MDth/day) | Peak Day Klamath (MDth/day) | Annual Demand La Grande (MDth) | Daily Demand La Grande (MDth/day) | Peak Day La Grande (MDth/day) | Annual Demand Medford/Roseburg (MDth) | Daily Demand Medford/Roseburg (MDth/day) | Peak Day Medford/Roseburg (MDth/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cold Day 20Yr Weather Std | 2013-2014 | 8,461.06 | 23.18 | 81.41 | 25,905.48 | 70.97 | 252.45 | 34,366.54 | 94.15 | 333.86 |
| Cold Day 20Yr Weather Std | 2014-2015 | 8,514.61 | 23.33 | 81.96 | 26,151.29 | 71.65 | 255.04 | 34,665.90 | 94.98 | 337.00 |
| Cold Day 20Yr Weather Std | 2015-2016 | 8,610.04 | 23.59 | 82.51 | 26,524.74 | 72.67 | 257.54 | 35,134.78 | 96.26 | 340.05 |
| Cold Day 20Yr Weather Std | 2016-2017 | 8,585.96 | 23.52 | 82.44 | 26,507.99 | 72.62 | 258.05 | 35,093.95 | 96.15 | 340.48 |
| Cold Day 20Yr Weather Std | 2017-2018 | 8,651.54 | 23.70 | 83.07 | 26,797.62 | 73.42 | 260.93 | 35,449.16 | 97.12 | 344.00 |
| Cold Day 20Yr Weather Std | 2018-2019 | 8,722.34 | 23.90 | 83.70 | 27,066.53 | 74.15 | 263.50 | 35,788.87 | 98.05 | 347.21 |
| Cold Day 20Yr Weather Std | 2019-2020 | 8,833.06 | 24.20 | 84.44 | 27,447.93 | 75.20 | 266.10 | 36,281.00 | 99.40 | 350.53 |
| Cold Day 20Yr Weather Std | 2020-2021 | 8,853.73 | 24.26 | 84.92 | 27,530.74 | 75.43 | 267.90 | 36,384.47 | 99.68 | 352.81 |
| Cold Day 20Yr Weather Std | 2021-2022 | 8,853.85 | 24.26 | 84.66 | 27,542.53 | 75.46 | 267.32 | 36,396.38 | 99.72 | 351.98 |
| Cold Day 20Yr Weather Std | 2022-2023 | 8,922.18 | 24.44 | 85.29 | 27,783.48 | 76.12 | 269.61 | 36,705.65 | 100.56 | 354.91 |
| Cold Day 20Yr Weather Std | 2023-2024 | 9,035.76 | 24.76 | 86.04 | 28,175.10 | 77.19 | 272.27 | 37,210.86 | 101.95 | 358.31 |
| Cold Day 20Yr Weather Std | 2024-2025 | 9,027.08 | 24.73 | 86.14 | 28,158.46 | 77.15 | 272.83 | 37,185.54 | 101.88 | 358.97 |
| Cold Day 20Yr Weather Std | 2025-2026 | 9,054.06 | 24.81 | 86.22 | 28,260.75 | 77.43 | 273.36 | 37,314.82 | 102.23 | 359.58 |
| Cold Day 20Yr Weather Std | 2026-2027 | 9,111.01 | 24.96 | 86.69 | 28,462.70 | 77.98 | 275.13 | 37,573.71 | 102.94 | 361.82 |
| Cold Day 20Yr Weather Std | 2027-2028 | 9,227.22 | 25.28 | 87.46 | 28,864.09 | 79.08 | 277.85 | 38,091.31 | 104.36 | 365.30 |
| Cold Day 20Yr Weather Std | 2028-2029 | 9,270.18 | 25.40 | 88.22 | 29,020.77 | 79.51 | 280.58 | 38,290.95 | 104.91 | 368.81 |
| Cold Day 20Yr Weather Std | 2029-2030 | 9,275.68 | 25.41 | 88.02 | 29,049.33 | 79.59 | 280.16 | 38,325.02 | 105.00 | 368.18 |
| Cold Day 20Yr Weather Std | 2030-2031 | 9,356.68 | 25.63 | 88.80 | 29,332.99 | 80.36 | 282.92 | 38,689.67 | 106.00 | 371.72 |
| Cold Day 20Yr Weather Std | 2031-2032 | 9,445.85 | 25.88 | 89.18 | 29,643.02 | 81.21 | 284.42 | 39,088.87 | 107.09 | 373.60 |
| Cold Day 20Yr Weather Std | 2032-2033 | 9,472.27 | 25.95 | 89.74 | 29,744.29 | 81.49 | 286.47 | 39,216.55 | 107.44 | 376.21 |

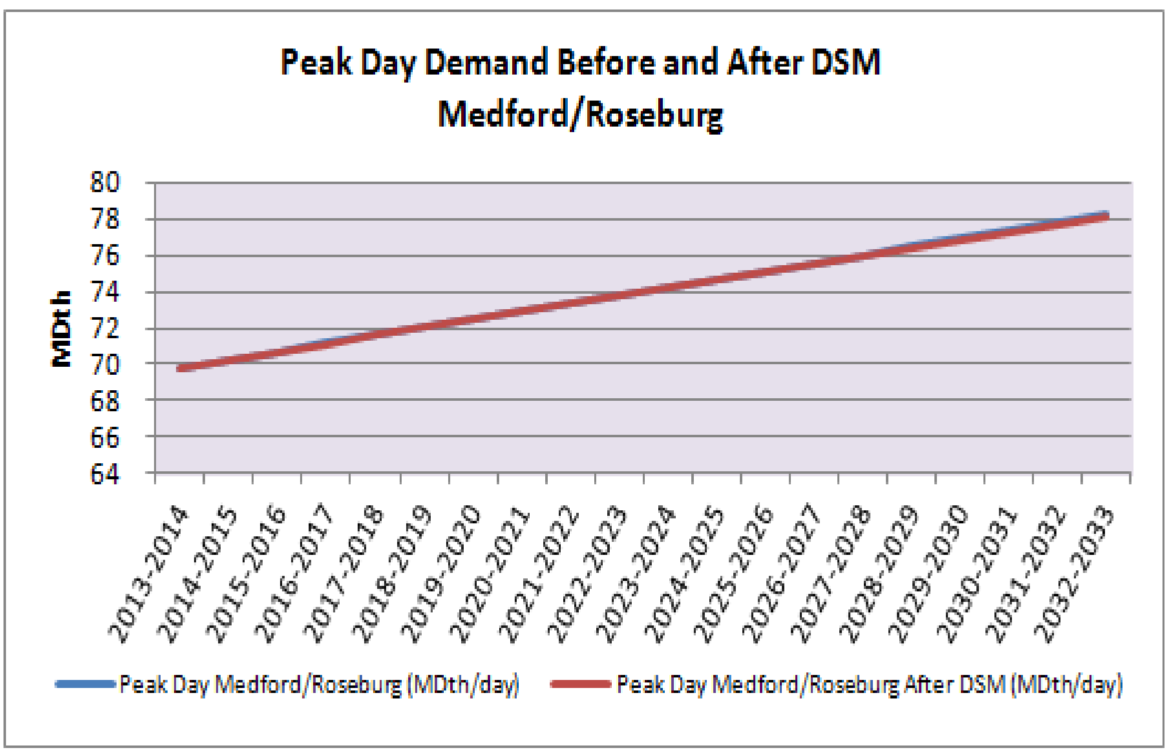
# APPENDIX 2.8: PEAK DAY DEMAND BEFORE AND AFTER DSM WA/ID



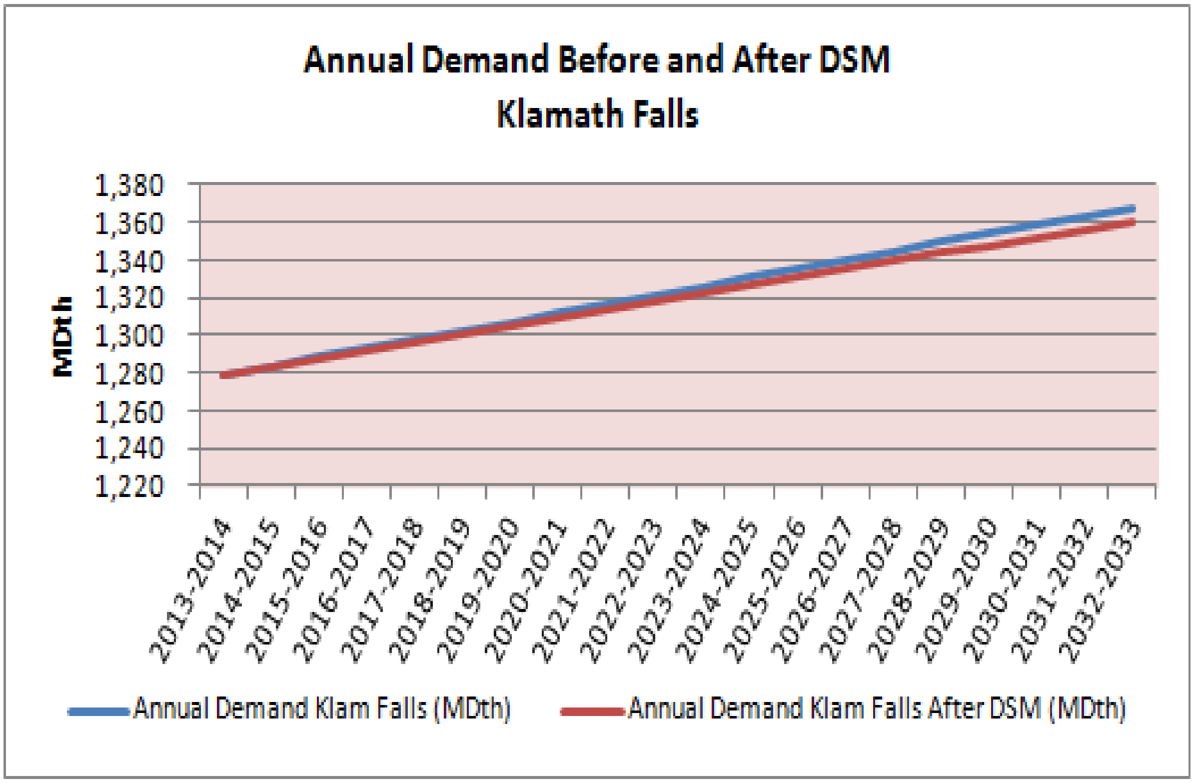



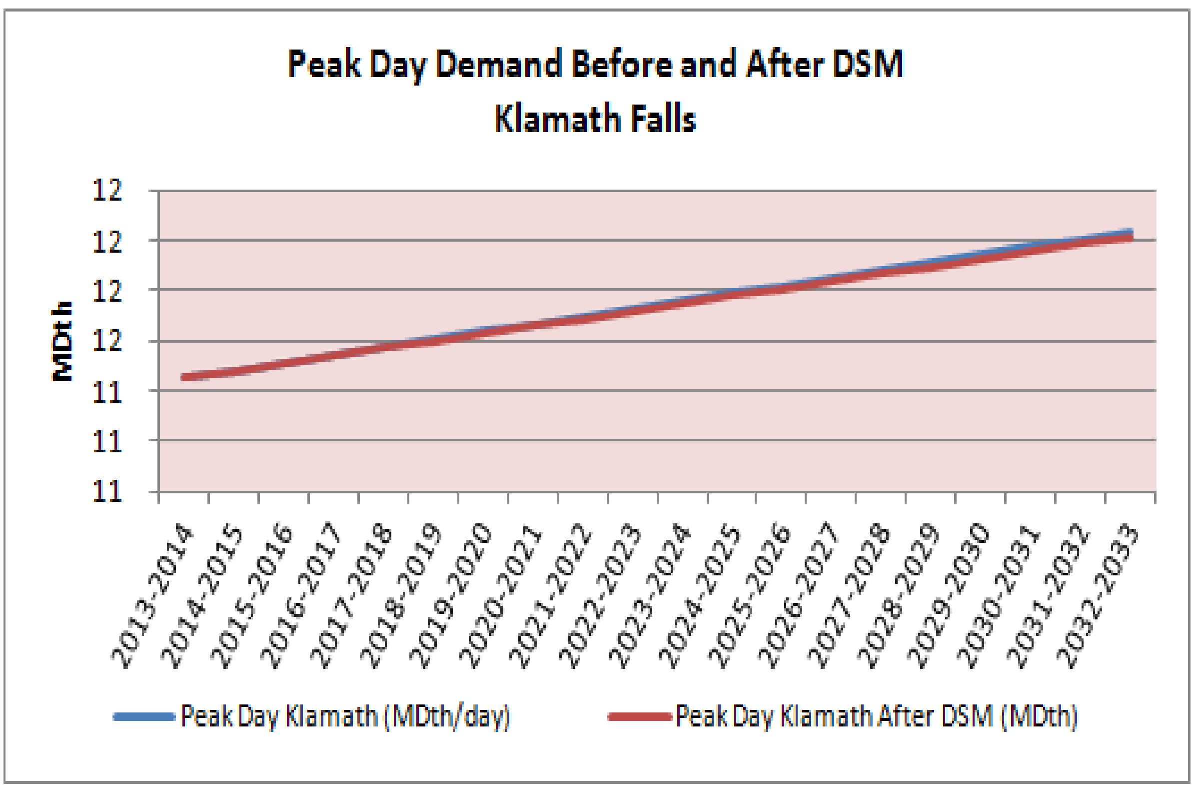
## APPENDIX 2.8: PEAK DAY DEMAND BEFORE AND AFTER DSM MEDFORD/ROSEBURG



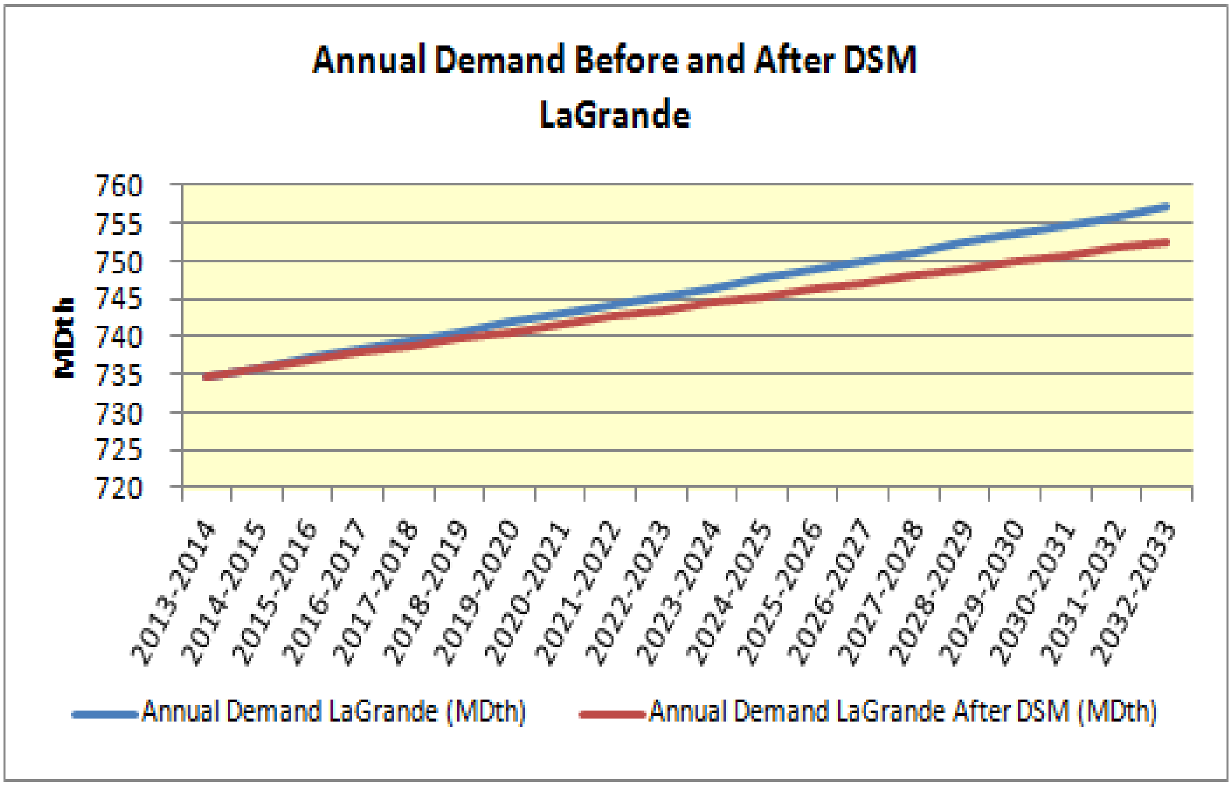



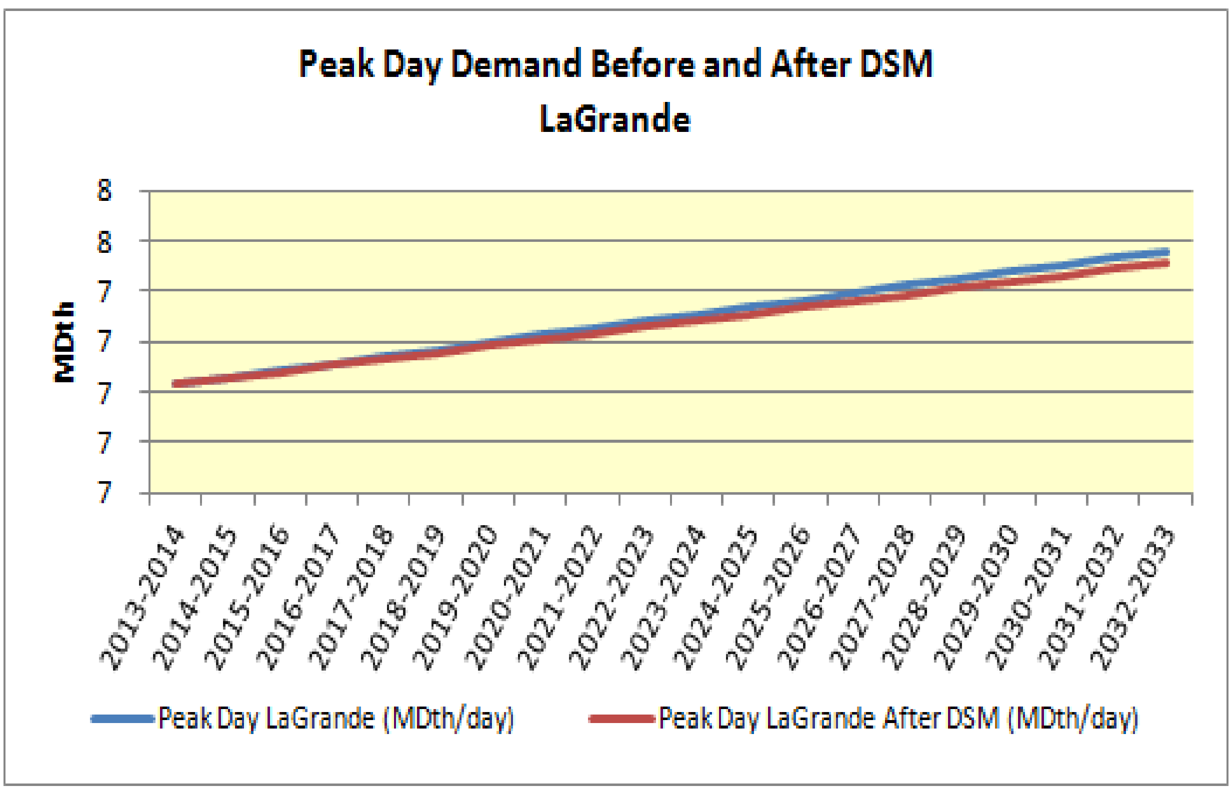
## APPENDIX 2.8: PEAK DAY DEMAND BEFORE AND AFTER DSM KLAMATH FALLS



# APPENDIX 2.8: PEAK DAY DEMAND BEFORE AND AFTER DSM LA GRANDE



# APPENDIX 2.9: DETAILED DEMAND DATA EXPECTED MIX

| Area | 2014: Residential | 2014: Commercial | 2014: Ind FirmSale | 2014 Total | 2015: Residential | 2015: Commercial | 2015: Ind FirmSale | 2015 Total | 2016: Residential | 2016: Commercial | 2016: Ind FirmSale | 2016 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 830.12 | 437.90 | 10.79 | 1,278.81 | 833.01 | 439.37 | 10.79 | 1,283.17 | 840.67 | 442.76 | 10.82 | 1,294.25 |
| La Grande | 454.22 | 271.28 | 9.24 | 734.73 | 456.50 | 271.72 | 9.24 | 737.46 | 460.91 | 273.71 | 9.24 | 743.86 |
| Medford GTN | 2,128.03 | 1,292.49 | 11.40 | 3,431.92 | 2,148.66 | 1,299.90 | 11.40 | 3,459.97 | 2,178.41 | 1,315.57 | 11.43 | 3,505.41 |
| Medford NWP | 956.07 | 580.68 | 5.12 | 1,541.88 | 965.34 | 584.02 | 5.12 | 1,554.48 | 978.71 | 591.05 | 5.14 | 1,574.90 |
| Roseburg | 745.28 | 607.72 | 20.14 | 1,373.14 | 749.33 | 608.89 | 20.14 | 1,378.36 | 757.46 | 611.76 | 20.19 | 1,389.41 |
| **OR Sub-Total** | **5,113.72** | **3,190.07** | **56.69** | **8,360.47** | **5,152.85** | **3,203.91** | **56.69** | **8,413.44** | **5,216.16** | **3,234.86** | **56.81** | **8,507.84** |
| Wa/Id Both | 9,182.14 | 5,449.74 | 294.60 | 14,926.47 | 9,279.41 | 5,495.35 | 293.40 | 15,068.15 | 9,425.86 | 5,564.72 | 292.88 | 15,283.46 |
| Wa/Id GTN | 1,266.50 | 751.69 | 40.63 | 2,058.82 | 1,279.92 | 757.98 | 40.47 | 2,078.37 | 1,300.12 | 767.55 | 40.40 | 2,108.06 |
| Wa/Id NWP | 5,382.63 | 3,194.67 | 172.69 | 8,750.00 | 5,439.65 | 3,221.41 | 171.99 | 8,833.06 | 5,525.50 | 3,262.08 | 171.69 | 8,959.27 |
| **WA/ID Sub-Total** | **15,831.27** | **9,396.10** | **507.93** | **25,735.30** | **15,998.98** | **9,474.74** | **505.86** | **25,979.58** | **16,251.48** | **9,594.35** | **504.97** | **26,350.79** |
| **Case Total** | **20,944.99** | **12,586.17** | **564.61** | **34,095.77** | **21,151.82** | **12,678.64** | **562.54** | **34,393.01** | **21,467.64** | **12,829.21** | **561.78** | **34,858.63** |

| Area | 2017: Residential | 2017: Commercial | 2017: Ind FirmSale | 2017 Total | 2018: Residential | 2018: Commercial | 2018: Ind FirmSale | 2018 Total | 2019: Residential | 2019: Commercial | 2019: Ind FirmSale | 2019 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 835.65 | 440.18 | 10.77 | 1,286.60 | 841.00 | 441.91 | 10.77 | 1,293.68 | 846.55 | 444.29 | 10.77 | 1,301.61 |
| La Grande | 458.69 | 271.82 | 9.16 | 739.67 | 461.61 | 272.81 | 9.16 | 743.58 | 463.01 | 273.64 | 9.16 | 745.81 |
| Medford GTN | 2,176.38 | 1,313.83 | 11.38 | 3,501.58 | 2,198.14 | 1,324.65 | 11.38 | 3,534.16 | 2,221.64 | 1,338.17 | 11.38 | 3,571.18 |
| Medford NWP | 977.79 | 590.27 | 5.11 | 1,573.17 | 987.57 | 595.13 | 5.11 | 1,587.81 | 998.13 | 601.21 | 5.11 | 1,604.44 |
| Roseburg | 755.19 | 606.95 | 20.11 | 1,382.25 | 761.25 | 607.50 | 20.11 | 1,388.87 | 767.17 | 607.65 | 20.11 | 1,394.94 |
| **OR Sub-Total** | **5,203.70** | **3,223.05** | **56.53** | **8,483.28** | **5,249.57** | **3,242.00** | **56.53** | **8,548.10** | **5,296.49** | **3,264.97** | **56.53** | **8,617.99** |
| Wa/Id Both | 9,433.69 | 5,549.89 | 289.17 | 15,272.75 | 9,551.88 | 5,600.55 | 287.30 | 15,439.74 | 9,654.37 | 5,654.36 | 286.02 | 15,594.74 |
| Wa/Id GTN | 1,301.20 | 765.50 | 39.89 | 2,106.59 | 1,317.50 | 772.49 | 39.63 | 2,129.62 | 1,331.64 | 779.91 | 39.45 | 2,151.00 |
| Wa/Id NWP | 5,530.10 | 3,253.38 | 169.51 | 8,952.99 | 5,599.38 | 3,283.08 | 168.42 | 9,050.88 | 5,659.46 | 3,314.62 | 167.67 | 9,141.75 |
| **WA/ID Sub-Total** | **16,264.99** | **9,568.77** | **498.57** | **26,332.33** | **16,468.77** | **9,656.12** | **495.35** | **26,620.23** | **16,645.46** | **9,748.89** | **493.14** | **26,887.49** |
| **Case Total** | **21,468.69** | **12,791.83** | **555.10** | **34,815.61** | **21,718.33** | **12,898.12** | **551.88** | **35,168.33** | **21,941.95** | **13,013.86** | **549.67** | **35,505.47** |

| Area | 2020: Residential | 2020: Commercial | 2020: Ind FirmSale | 2020 Total | 2021: Residential | 2021: Commercial | 2021: Ind FirmSale | 2021 Total | 2022: Residential | 2022: Commercial | 2022: Ind FirmSale | 2022 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 856.04 | 449.14 | 10.80 | 1,315.99 | 855.60 | 449.27 | 10.76 | 1,315.62 | 852.78 | 448.49 | 10.73 | 1,312.00 |
| La Grande | 466.73 | 275.80 | 9.16 | 751.69 | 465.63 | 275.18 | 9.13 | 749.94 | 463.21 | 274.02 | 9.03 | 746.25 |
| Medford GTN | 2,255.30 | 1,357.98 | 11.40 | 3,624.69 | 2,265.30 | 1,365.05 | 11.37 | 3,641.71 | 2,268.63 | 1,369.37 | 11.33 | 3,649.33 |
| Medford NWP | 1,013.25 | 610.11 | 5.12 | 1,628.48 | 1,017.74 | 613.28 | 5.11 | 1,636.13 | 1,019.24 | 615.23 | 5.09 | 1,639.56 |
| Roseburg | 776.30 | 610.20 | 20.17 | 1,406.67 | 777.17 | 606.90 | 20.11 | 1,404.18 | 776.49 | 603.08 | 20.08 | 1,399.64 |
| **OR Sub-Total** | **5,367.63** | **3,303.24** | **56.66** | **8,727.52** | **5,381.43** | **3,309.68** | **56.47** | **8,747.59** | **5,380.34** | **3,310.18** | **56.26** | **8,746.78** |
| Wa/Id Both | 9,793.59 | 5,735.32 | 285.67 | 15,814.59 | 9,823.86 | 5,754.92 | 283.12 | 15,861.91 | 9,825.54 | 5,761.06 | 280.56 | 15,867.16 |
| Wa/Id GTN | 1,350.84 | 791.08 | 39.40 | 2,181.32 | 1,355.02 | 793.78 | 39.05 | 2,187.85 | 1,355.25 | 794.63 | 38.70 | 2,188.57 |
| Wa/Id NWP | 5,741.07 | 3,362.08 | 167.46 | 9,270.62 | 5,758.82 | 3,373.58 | 165.97 | 9,298.36 | 5,759.80 | 3,377.17 | 164.47 | 9,301.44 |
| **WA/ID Sub-Total** | **16,885.51** | **9,888.48** | **492.54** | **27,266.53** | **16,937.70** | **9,922.28** | **488.14** | **27,348.12** | **16,940.58** | **9,932.86** | **483.73** | **27,357.17** |
| **Case Total** | **22,253.14** | **13,191.72** | **549.19** | **35,994.05** | **22,319.13** | **13,231.96** | **544.61** | **36,095.70** | **22,320.93** | **13,243.04** | **539.98** | **36,103.95** |

| Area | 2023: Residential | 2023: Commercial | 2023: Ind FirmSale | 2023 Total | 2024: Residential | 2024: Commercial | 2024: Ind FirmSale | 2024 Total | 2025: Residential | 2025: Commercial | 2025: Ind FirmSale | 2025 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 857.52 | 451.12 | 10.73 | 1,319.36 | 867.12 | 456.02 | 10.76 | 1,333.89 | 863.34 | 454.64 | 10.71 | 1,328.69 |
| La Grande | 464.60 | 274.85 | 9.02 | 748.46 | 468.32 | 277.03 | 9.02 | 754.37 | 465.54 | 275.54 | 8.95 | 750.03 |
| Medford GTN | 2,291.28 | 1,383.30 | 11.33 | 3,685.90 | 2,325.98 | 1,403.82 | 11.36 | 3,741.16 | 2,327.68 | 1,406.85 | 11.30 | 3,745.84 |
| Medford NWP | 1,029.41 | 621.48 | 5.09 | 1,655.98 | 1,045.01 | 630.70 | 5.10 | 1,680.81 | 1,045.77 | 632.07 | 5.08 | 1,682.91 |
| Roseburg | 781.68 | 602.73 | 20.07 | 1,404.48 | 790.99 | 605.20 | 20.13 | 1,416.32 | 789.28 | 600.42 | 20.05 | 1,409.75 |
| **OR Sub-Total** | **5,424.49** | **3,333.47** | **56.23** | **8,814.19** | **5,497.41** | **3,372.77** | **56.36** | **8,926.54** | **5,491.61** | **3,369.52** | **56.09** | **8,917.22** |
| Wa/Id Both | 9,913.51 | 5,813.19 | 279.15 | 16,005.85 | 10,056.41 | 5,896.36 | 278.79 | 16,231.56 | 10,049.06 | 5,896.07 | 275.79 | 16,220.92 |
| Wa/Id GTN | 1,367.38 | 801.82 | 38.50 | 2,207.70 | 1,387.09 | 813.29 | 38.45 | 2,238.84 | 1,386.08 | 813.25 | 38.04 | 2,237.37 |
| Wa/Id NWP | 5,811.37 | 3,407.73 | 163.64 | 9,382.74 | 5,895.14 | 3,456.49 | 163.43 | 9,515.05 | 5,890.83 | 3,456.32 | 161.67 | 9,508.82 |
| **WA/ID Sub-Total** | **17,092.26** | **10,022.74** | **481.30** | **27,596.29** | **17,338.64** | **10,166.14** | **480.67** | **27,985.45** | **17,325.97** | **10,165.64** | **475.50** | **27,967.11** |
| **Case Total** | **22,516.75** | **13,356.21** | **537.53** | **36,410.49** | **22,836.05** | **13,538.91** | **537.03** | **36,911.99** | **22,817.58** | **13,535.16** | **531.60** | **36,884.33** |

# APPENDIX 2.9: DETAILED DEMAND DATA EXPECTED MIX

| Area | 2026: Residential | 2026: Commercial | 2026: Ind FirmSale | 2026 Total | 2027: Residential | 2027: Commercial | 2027: Ind FirmSale | 2027 Total | 2028: Residential | 2028: Commercial | 2028: Ind FirmSale | 2028 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 863.43 | 455.17 | 10.69 | 1,329.28 | 866.74 | 457.10 | 10.68 | 1,334.53 | 876.44 | 462.14 | 10.71 | 1,349.29 |
| La Grande | 464.57 | 275.15 | 8.88 | 748.60 | 465.24 | 275.57 | 8.85 | 749.67 | 468.96 | 277.76 | 8.85 | 755.57 |
| Medford GTN | 2,338.71 | 1,415.10 | 11.28 | 3,765.10 | 2,358.21 | 1,427.66 | 11.27 | 3,797.14 | 2,393.93 | 1,448.77 | 11.30 | 3,854.00 |
| Medford NWP | 1,050.72 | 635.77 | 5.07 | 1,691.56 | 1,059.48 | 641.41 | 5.06 | 1,705.96 | 1,075.53 | 650.90 | 5.08 | 1,731.51 |
| Roseburg | 790.87 | 597.82 | 20.03 | 1,408.71 | 795.01 | 596.92 | 20.02 | 1,411.95 | 804.45 | 599.27 | 20.08 | 1,423.81 |
| **OR Sub-Total** | **5,508.30** | **3,379.01** | **55.95** | **8,943.26** | **5,544.68** | **3,398.66** | **55.89** | **8,999.24** | **5,619.31** | **3,438.85** | **56.02** | **9,114.18** |
| Wa/Id Both | 10,084.65 | 5,920.45 | 273.71 | 16,278.81 | 10,157.79 | 5,964.84 | 272.10 | 16,394.73 | 10,304.11 | 6,050.20 | 271.72 | 16,626.03 |
| Wa/Id GTN | 1,390.99 | 816.61 | 37.75 | 2,245.35 | 1,401.07 | 822.74 | 37.53 | 2,261.34 | 1,421.26 | 834.51 | 37.48 | 2,293.25 |
| Wa/Id NWP | 5,911.69 | 3,470.61 | 160.45 | 9,542.75 | 5,954.56 | 3,496.63 | 159.51 | 9,610.70 | 6,040.34 | 3,546.67 | 159.28 | 9,746.29 |
| **WA/ID Sub-Total** | **17,387.33** | **10,207.68** | **471.92** | **28,066.92** | **17,513.42** | **10,284.21** | **469.14** | **28,266.77** | **17,765.71** | **10,431.37** | **468.48** | **28,665.57** |
| **Case Total** | **22,895.63** | **13,586.68** | **527.87** | **37,010.18** | **23,058.11** | **13,682.87** | **525.03** | **37,266.01** | **23,385.03** | **13,870.22** | **524.51** | **37,779.75** |

| Area | 2029: Residential | 2029: Commercial | 2029: Ind FirmSale | 2029 Total | 2030: Residential | 2030: Commercial | 2030: Ind FirmSale | 2030 Total | 2031: Residential | 2031: Commercial | 2031: Ind FirmSale | 2031 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 878.21 | 463.15 | 10.68 | 1,352.05 | 875.84 | 462.60 | 10.66 | 1,349.09 | 881.62 | 465.67 | 10.66 | 1,357.94 |
| La Grande | 468.97 | 277.76 | 8.85 | 755.59 | 466.78 | 276.72 | 8.75 | 752.25 | 468.65 | 277.84 | 8.75 | 755.25 |
| Medford GTN | 2,410.38 | 1,459.25 | 11.27 | 3,880.90 | 2,415.26 | 1,464.60 | 11.24 | 3,891.09 | 2,441.83 | 1,480.71 | 11.24 | 3,933.78 |
| Medford NWP | 1,082.92 | 655.60 | 5.06 | 1,743.59 | 1,085.12 | 658.01 | 5.05 | 1,748.17 | 1,097.05 | 665.25 | 5.05 | 1,767.35 |
| Roseburg | 807.13 | 597.20 | 20.02 | 1,424.36 | 806.83 | 593.56 | 20.00 | 1,420.39 | 812.96 | 593.71 | 20.00 | 1,426.67 |
| **OR Sub-Total** | **5,647.62** | **3,452.96** | **55.89** | **9,156.48** | **5,649.82** | **3,455.48** | **55.69** | **9,160.99** | **5,702.11** | **3,483.19** | **55.69** | **9,240.99** |
| Wa/Id Both | 10,361.96 | 6,084.76 | 269.57 | 16,716.29 | 10,369.58 | 6,094.42 | 267.17 | 16,731.17 | 10,473.26 | 6,155.43 | 265.91 | 16,894.60 |
| Wa/Id GTN | 1,429.24 | 839.28 | 37.18 | 2,305.69 | 1,430.29 | 840.61 | 36.85 | 2,307.75 | 1,444.59 | 849.03 | 36.68 | 2,330.29 |
| Wa/Id NWP | 6,074.25 | 3,566.93 | 158.02 | 9,799.20 | 6,078.72 | 3,572.59 | 156.62 | 9,807.93 | 6,139.50 | 3,608.36 | 155.88 | 9,903.73 |
| **WA/ID Sub-Total** | **17,865.45** | **10,490.97** | **464.77** | **28,821.18** | **17,878.58** | **10,507.63** | **460.64** | **28,846.85** | **18,057.35** | **10,612.81** | **458.46** | **29,128.62** |
| **Case Total** | **23,513.07** | **13,943.93** | **520.66** | **37,977.66** | **23,528.40** | **13,963.11** | **516.33** | **38,007.84** | **23,759.46** | **14,096.00** | **514.16** | **38,369.62** |

| Area | 2032: Residential | 2032: Commercial | 2032: Ind FirmSale | 2032 Total | 2033: Residential | 2033: Commercial | 2033: Ind FirmSale | 2033 Total |
|---|---|---|---|---|---|---|---|---|
| Klam Falls | 888.17 | 469.34 | 10.68 | 1,368.19 | 888.05 | 469.52 | 10.64 | 1,368.21 |
| La Grande | 470.76 | 279.15 | 8.72 | 758.63 | 469.83 | 278.59 | 8.69 | 757.11 |
| Medford GTN | 2,469.97 | 1,498.24 | 11.25 | 3,979.47 | 2,481.83 | 1,506.57 | 11.22 | 3,999.61 |
| Medford NWP | 1,109.70 | 673.12 | 5.06 | 1,787.88 | 1,115.02 | 676.86 | 5.04 | 1,796.93 |
| Roseburg | 820.02 | 594.62 | 20.04 | 1,434.68 | 821.22 | 591.51 | 19.98 | 1,432.71 |
| **OR Sub-Total** | **5,758.62** | **3,514.48** | **55.74** | **9,328.84** | **5,775.95** | **3,523.05** | **55.57** | **9,354.57** |
| Wa/Id Both | 10,585.02 | 6,222.52 | 265.07 | 17,072.60 | 10,621.78 | 6,246.07 | 262.69 | 17,130.54 |
| Wa/Id GTN | 1,460.00 | 858.28 | 36.56 | 2,354.84 | 1,465.07 | 861.53 | 36.23 | 2,362.83 |
| Wa/Id NWP | 6,205.01 | 3,647.68 | 155.38 | 10,008.08 | 6,226.56 | 3,661.49 | 153.99 | 10,042.04 |
| **WA/ID Sub-Total** | **18,250.03** | **10,728.48** | **457.01** | **29,435.52** | **18,313.41** | **10,769.09** | **452.91** | **29,535.41** |
| **Case Total** | **24,008.65** | **14,242.96** | **512.75** | **38,764.36** | **24,089.36** | **14,292.14** | **508.48** | **38,889.98** |

# APPENDIX 2.9: DETAILED DEMAND DATA
# LOW GROWTH HIGH PRICE

| Area | 2014: Residential | 2014: Commercial | 2014: Ind FirmSale | 2014 Total | 2015: Residential | 2015: Commercial | 2015: Ind FirmSale | 2015 Total | 2016: Residential | 2016: Commercial | 2016: Ind FirmSale | 2016 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 830.06 | 438.68 | 10.79 | 1,279.53 | 817.28 | 433.29 | 10.73 | 1,261.30 | 816.62 | 433.46 | 10.74 | 1,260.82 |
| La Grande | 452.54 | 271.25 | 9.24 | 733.03 | 445.52 | 267.47 | 9.03 | 722.02 | 444.61 | 266.91 | 8.94 | 720.46 |
| Medford GTN | 2,130.77 | 1,296.84 | 11.40 | 3,439.01 | 2,104.13 | 1,284.85 | 11.33 | 3,400.31 | 2,106.85 | 1,288.01 | 10.79 | 3,405.64 |
| Medford NWP | 957.30 | 582.64 | 5.12 | 1,545.06 | 945.33 | 577.25 | 5.09 | 1,527.67 | 946.55 | 578.67 | 4.85 | 1,530.07 |
| Roseburg | 745.71 | 607.58 | 20.14 | 1,373.43 | 736.56 | 599.62 | 20.08 | 1,356.25 | 737.02 | 598.42 | 20.11 | 1,355.55 |
| **OR Sub-Total** | **5,116.38** | **3,196.99** | **56.69** | **8,370.06** | **5,048.81** | **3,162.47** | **56.27** | **8,267.56** | **5,051.65** | **3,165.47** | **55.42** | **8,272.54** |
| Wa/Id Both | 9,159.37 | 5,469.65 | 292.21 | 14,921.23 | 9,035.18 | 5,404.56 | 285.85 | 14,725.60 | 9,042.25 | 5,412.54 | 281.83 | 14,736.62 |
| Wa/Id GTN | 1,263.36 | 754.43 | 40.31 | 2,058.10 | 1,246.23 | 745.46 | 39.43 | 2,031.12 | 1,247.21 | 746.56 | 38.87 | 2,032.64 |
| Wa/Id NWP | 5,369.29 | 3,206.34 | 171.30 | 8,746.93 | 5,296.48 | 3,168.19 | 167.57 | 8,632.25 | 5,300.63 | 3,172.87 | 165.21 | 8,638.71 |
| **WA/ID Sub-Total** | **15,792.02** | **9,430.42** | **503.82** | **25,726.26** | **15,577.90** | **9,318.21** | **492.85** | **25,388.96** | **15,590.08** | **9,331.97** | **485.91** | **25,407.96** |
| **Case Total** | **20,908.40** | **12,627.42** | **560.50** | **34,096.32** | **20,626.71** | **12,480.69** | **549.12** | **33,656.52** | **20,641.73** | **12,497.43** | **541.33** | **33,680.50** |

| Area | 2017: Residential | 2017: Commercial | 2017: Ind FirmSale | 2017 Total | 2018: Residential | 2018: Commercial | 2018: Ind FirmSale | 2018 Total | 2019: Residential | 2019: Commercial | 2019: Ind FirmSale | 2019 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 812.08 | 431.50 | 9.62 | 1,253.20 | 811.59 | 431.52 | 9.35 | 1,252.46 | 809.78 | 430.94 | 9.34 | 1,250.05 |
| La Grande | 441.94 | 265.45 | 8.90 | 716.29 | 441.20 | 265.16 | 8.86 | 715.22 | 439.81 | 264.49 | 8.80 | 713.10 |
| Medford GTN | 2,101.03 | 1,285.86 | 10.58 | 3,397.47 | 2,104.71 | 1,289.00 | 10.03 | 3,403.74 | 2,105.06 | 1,290.48 | 9.85 | 3,405.38 |
| Medford NWP | 943.94 | 577.70 | 4.75 | 1,526.40 | 945.59 | 579.11 | 4.51 | 1,529.21 | 945.75 | 579.78 | 4.42 | 1,529.95 |
| Roseburg | 733.95 | 594.21 | 20.04 | 1,348.20 | 734.29 | 592.58 | 20.03 | 1,346.90 | 733.61 | 590.18 | 20.01 | 1,343.80 |
| **OR Sub-Total** | **5,032.95** | **3,154.72** | **53.89** | **8,241.57** | **5,037.40** | **3,157.37** | **52.76** | **8,247.53** | **5,034.01** | **3,155.87** | **52.41** | **8,242.29** |
| Wa/Id Both | 9,009.27 | 5,395.39 | 276.54 | 14,681.20 | 9,019.48 | 5,403.46 | 272.25 | 14,695.19 | 9,014.95 | 5,403.52 | 267.77 | 14,686.24 |
| Wa/Id GTN | 1,242.66 | 744.19 | 38.14 | 2,024.99 | 1,244.07 | 745.31 | 37.55 | 2,026.92 | 1,243.44 | 745.31 | 36.93 | 2,025.69 |
| Wa/Id NWP | 5,281.30 | 3,162.82 | 162.11 | 8,606.22 | 5,287.28 | 3,167.55 | 159.59 | 8,614.42 | 5,284.62 | 3,167.58 | 156.97 | 8,609.17 |
| **WA/ID Sub-Total** | **15,533.22** | **9,302.40** | **476.80** | **25,312.42** | **15,550.82** | **9,316.32** | **469.40** | **25,336.53** | **15,543.01** | **9,316.41** | **461.67** | **25,321.10** |
| **Case Total** | **20,566.17** | **12,457.12** | **530.69** | **33,553.98** | **20,588.22** | **12,473.69** | **522.16** | **33,584.07** | **20,577.02** | **12,472.28** | **514.09** | **33,563.39** |

| Area | 2020: Residential | 2020: Commercial | 2020: Ind FirmSale | 2020 Total | 2021: Residential | 2021: Commercial | 2021: Ind FirmSale | 2021 Total | 2022: Residential | 2022: Commercial | 2022: Ind FirmSale | 2022 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 813.75 | 433.19 | 8.28 | 1,255.22 | 811.05 | 431.97 | 7.99 | 1,251.02 | 810.43 | 431.93 | 7.98 | 1,250.34 |
| La Grande | 441.23 | 265.40 | 8.77 | 715.40 | 439.49 | 264.29 | 8.75 | 712.53 | 438.73 | 263.90 | 8.70 | 711.33 |
| Medford GTN | 2,119.35 | 1,299.51 | 9.32 | 3,428.18 | 2,118.06 | 1,299.63 | 9.13 | 3,426.82 | 2,121.43 | 1,302.63 | 8.58 | 3,432.64 |
| Medford NWP | 952.17 | 583.84 | 4.19 | 1,540.20 | 951.59 | 583.89 | 4.10 | 1,539.58 | 953.11 | 585.24 | 3.85 | 1,542.20 |
| Roseburg | 737.67 | 591.20 | 20.05 | 1,348.92 | 736.02 | 588.13 | 19.99 | 1,344.15 | 736.27 | 586.29 | 19.98 | 1,342.55 |
| **OR Sub-Total** | **5,064.16** | **3,173.14** | **50.61** | **8,287.92** | **5,056.22** | **3,167.92** | **49.96** | **8,274.10** | **5,059.97** | **3,170.00** | **49.10** | **8,279.07** |
| Wa/Id Both | 9,073.06 | 5,439.26 | 264.49 | 14,776.81 | 9,060.16 | 5,433.10 | 259.59 | 14,752.85 | 9,068.94 | 5,440.38 | 255.34 | 14,764.65 |
| Wa/Id GTN | 1,251.46 | 750.24 | 36.48 | 2,038.18 | 1,249.68 | 749.39 | 35.81 | 2,034.88 | 1,250.89 | 750.40 | 35.22 | 2,036.50 |
| Wa/Id NWP | 5,318.69 | 3,188.53 | 155.04 | 8,662.27 | 5,311.13 | 3,184.92 | 152.17 | 8,648.22 | 5,316.27 | 3,189.19 | 149.68 | 8,655.14 |
| **WA/ID Sub-Total** | **15,643.20** | **9,378.04** | **456.01** | **25,477.26** | **15,620.96** | **9,367.41** | **447.57** | **25,435.94** | **15,636.10** | **9,379.96** | **440.24** | **25,456.30** |
| **Case Total** | **20,707.36** | **12,551.19** | **506.63** | **33,765.18** | **20,677.18** | **12,535.33** | **497.53** | **33,710.04** | **20,696.07** | **12,549.96** | **489.34** | **33,735.37** |

| Area | 2023: Residential | 2023: Commercial | 2023: Ind FirmSale | 2023 Total | 2024: Residential | 2024: Commercial | 2024: Ind FirmSale | 2024 Total | 2025: Residential | 2025: Commercial | 2025: Ind FirmSale | 2025 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 808.37 | 431.31 | 6.90 | 1,246.58 | 814.71 | 434.58 | 6.66 | 1,255.95 | 809.55 | 432.26 | 6.63 | 1,248.44 |
| La Grande | 437.21 | 263.17 | 8.64 | 709.02 | 439.83 | 264.79 | 8.64 | 713.27 | 436.86 | 263.17 | 8.59 | 708.62 |
| Medford GTN | 2,121.19 | 1,303.86 | 8.40 | 3,433.45 | 2,141.60 | 1,315.93 | 7.88 | 3,465.42 | 2,134.06 | 1,312.96 | 7.69 | 3,454.71 |
| Medford NWP | 953.00 | 585.79 | 3.77 | 1,542.56 | 962.17 | 591.22 | 3.54 | 1,556.93 | 958.78 | 589.88 | 3.45 | 1,552.11 |
| Roseburg | 735.38 | 583.99 | 19.96 | 1,339.34 | 741.31 | 586.01 | 20.02 | 1,347.34 | 737.73 | 581.72 | 19.95 | 1,339.40 |
| **OR Sub-Total** | **5,055.14** | **3,168.12** | **47.69** | **8,270.95** | **5,099.63** | **3,192.53** | **46.75** | **8,338.91** | **5,076.98** | **3,179.99** | **46.31** | **8,303.29** |
| Wa/Id Both | 9,061.69 | 5,438.99 | 250.90 | 14,751.58 | 9,146.62 | 5,489.51 | 247.94 | 14,884.06 | 9,106.09 | 5,468.27 | 242.80 | 14,817.17 |
| Wa/Id GTN | 1,249.89 | 750.21 | 34.61 | 2,034.70 | 1,261.60 | 757.17 | 34.20 | 2,052.97 | 1,256.01 | 754.24 | 33.49 | 2,043.75 |
| Wa/Id NWP | 5,312.03 | 3,188.37 | 147.08 | 8,647.48 | 5,361.81 | 3,217.99 | 145.34 | 8,725.14 | 5,338.06 | 3,205.54 | 142.33 | 8,685.93 |
| **WA/ID Sub-Total** | **15,623.61** | **9,377.56** | **432.58** | **25,433.76** | **15,770.04** | **9,464.66** | **427.48** | **25,662.18** | **15,700.16** | **9,428.05** | **418.62** | **25,546.84** |
| **Case Total** | **20,678.76** | **12,545.68** | **480.27** | **33,704.70** | **20,869.66** | **12,657.20** | **474.22** | **34,001.08** | **20,777.14** | **12,608.05** | **464.94** | **33,850.12** |

# APPENDIX 2.9: DETAILED DEMAND DATA LOW GROWTH HIGH PRICE

| Area | 2026: Residential | 2026: Commercial | 2026: Ind FirmSale | 2026 Total | 2027: Residential | 2027: Commercial | 2027: Ind FirmSale | 2027 Total | 2028: Residential | 2028: Commercial | 2028: Ind FirmSale | 2028 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 808.49 | 432.06 | 5.56 | 1,246.11 | 808.59 | 432.34 | 5.30 | 1,246.22 | 813.41 | 434.99 | 5.31 | 1,253.71 |
| La Grande | 435.87 | 262.63 | 8.54 | 707.04 | 435.44 | 262.40 | 8.51 | 706.35 | 437.29 | 263.49 | 8.49 | 709.27 |
| Medford GTN | 2,136.35 | 1,315.47 | 7.14 | 3,458.96 | 2,141.59 | 1,319.51 | 6.97 | 3,468.07 | 2,158.33 | 1,329.75 | 6.45 | 3,494.53 |
| Medford NWP | 959.81 | 591.01 | 3.21 | 1,554.03 | 962.16 | 592.82 | 3.13 | 1,558.12 | 969.69 | 597.42 | 2.90 | 1,570.01 |
| Roseburg | 737.65 | 579.79 | 19.93 | 1,337.37 | 738.44 | 578.46 | 19.93 | 1,336.83 | 743.22 | 579.94 | 19.97 | 1,343.14 |
| **OR Sub-Total** | **5,078.17** | **3,180.96** | **44.39** | **8,303.52** | **5,086.23** | **3,185.52** | **43.84** | **8,315.59** | **5,121.94** | **3,205.59** | **43.12** | **8,370.66** |
| Wa/Id Both | 9,110.02 | 5,472.99 | 238.55 | 14,821.56 | 9,126.87 | 5,484.77 | 234.46 | 14,846.11 | 9,195.41 | 5,526.44 | 231.28 | 14,953.12 |
| Wa/Id GTN | 1,256.55 | 754.89 | 32.90 | 2,044.35 | 1,258.88 | 756.52 | 32.34 | 2,047.74 | 1,268.33 | 762.27 | 31.90 | 2,062.50 |
| Wa/Id NWP | 5,340.36 | 3,208.30 | 139.84 | 8,688.50 | 5,350.24 | 3,215.21 | 137.44 | 8,702.89 | 5,390.41 | 3,239.64 | 135.58 | 8,765.63 |
| **WA/ID Sub-Total** | **15,706.94** | **9,436.18** | **411.29** | **25,554.41** | **15,735.99** | **9,456.50** | **404.25** | **25,596.74** | **15,854.15** | **9,528.35** | **398.75** | **25,781.25** |
| **Case Total** | **20,785.11** | **12,617.14** | **455.68** | **33,857.92** | **20,822.21** | **12,642.03** | **448.08** | **33,912.33** | **20,976.10** | **12,733.94** | **441.87** | **34,151.91** |

| Area | 2029: Residential | 2029: Commercial | 2029: Ind FirmSale | 2029 Total | 2030: Residential | 2030: Commercial | 2030: Ind FirmSale | 2030 Total | 2031: Residential | 2031: Commercial | 2031: Ind FirmSale | 2031 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 810.73 | 433.81 | 4.23 | 1,248.76 | 808.86 | 433.21 | 3.96 | 1,246.03 | 808.47 | 433.27 | 3.96 | 1,245.70 |
| La Grande | 435.58 | 262.55 | 8.47 | 706.60 | 434.18 | 261.87 | 8.41 | 704.47 | 433.53 | 261.58 | 8.38 | 703.48 |
| Medford GTN | 2,157.03 | 1,329.94 | 6.27 | 3,493.24 | 2,157.30 | 1,331.47 | 5.72 | 3,494.49 | 2,161.34 | 1,334.88 | 5.56 | 3,501.78 |
| Medford NWP | 969.10 | 597.51 | 2.82 | 1,569.42 | 969.22 | 598.20 | 2.57 | 1,569.99 | 971.04 | 599.73 | 2.50 | 1,573.26 |
| Roseburg | 741.57 | 576.75 | 19.91 | 1,338.23 | 740.86 | 574.54 | 19.90 | 1,335.30 | 741.28 | 572.91 | 19.89 | 1,334.08 |
| **OR Sub-Total** | **5,114.01** | **3,200.55** | **41.70** | **8,356.25** | **5,110.43** | **3,199.29** | **40.57** | **8,350.28** | **5,115.65** | **3,202.37** | **40.27** | **8,358.30** |
| Wa/Id Both | 9,182.38 | 5,520.16 | 226.57 | 14,929.11 | 9,177.27 | 5,520.04 | 222.27 | 14,919.58 | 9,188.77 | 5,528.96 | 218.18 | 14,935.91 |
| Wa/Id GTN | 1,266.53 | 761.40 | 31.25 | 2,059.19 | 1,265.83 | 761.38 | 30.66 | 2,057.87 | 1,267.42 | 762.62 | 30.09 | 2,060.13 |
| Wa/Id NWP | 5,382.77 | 3,235.96 | 132.82 | 8,751.54 | 5,379.78 | 3,235.88 | 130.30 | 8,745.96 | 5,386.52 | 3,241.12 | 127.90 | 8,755.53 |
| **WA/ID Sub-Total** | **15,831.68** | **9,517.52** | **390.64** | **25,739.84** | **15,822.88** | **9,517.31** | **383.23** | **25,723.42** | **15,842.71** | **9,532.69** | **376.17** | **25,751.57** |
| **Case Total** | **20,945.69** | **12,718.06** | **432.33** | **34,096.09** | **20,933.31** | **12,716.60** | **423.80** | **34,073.70** | **20,958.36** | **12,735.07** | **416.44** | **34,109.87** |

| Area | 2032: Residential | 2032: Commercial | 2032: Ind FirmSale | 2032 Total | 2033: Residential | 2033: Commercial | 2033: Ind FirmSale | 2033 Total |
|---|---|---|---|---|---|---|---|---|
| Klam Falls | 811.70 | 435.24 | 2.90 | 1,249.84 | 810.69 | 434.76 | 2.64 | 1,248.09 |
| La Grande | 434.54 | 262.31 | 8.34 | 705.19 | 433.71 | 261.83 | 8.34 | 703.88 |
| Medford GTN | 2,174.10 | 1,343.25 | 5.03 | 3,522.38 | 2,177.17 | 1,345.59 | 4.86 | 3,527.61 |
| Medford NWP | 976.77 | 603.49 | 2.26 | 1,582.52 | 978.15 | 604.54 | 2.18 | 1,584.87 |
| Roseburg | 744.81 | 573.56 | 19.93 | 1,338.30 | 744.49 | 571.25 | 19.88 | 1,335.62 |
| **OR Sub-Total** | **5,141.92** | **3,217.86** | **38.46** | **8,398.23** | **5,144.21** | **3,217.97** | **37.89** | **8,400.07** |
| Wa/Id Both | 9,239.55 | 5,560.98 | 214.78 | 15,015.32 | 9,245.69 | 5,565.19 | 210.37 | 15,021.24 |
| Wa/Id GTN | 1,274.42 | 767.03 | 29.63 | 2,071.08 | 1,275.27 | 767.61 | 29.02 | 2,071.90 |
| Wa/Id NWP | 5,416.29 | 3,259.89 | 125.91 | 8,802.08 | 5,419.89 | 3,262.35 | 123.32 | 8,805.56 |
| **WA/ID Sub-Total** | **15,930.26** | **9,587.90** | **370.32** | **25,888.48** | **15,940.84** | **9,595.15** | **362.71** | **25,898.70** |
| **Case Total** | **21,072.18** | **12,805.76** | **408.77** | **34,286.71** | **21,085.05** | **12,813.12** | **400.59** | **34,298.77** |

# APPENDIX 2.9: DETAILED DEMAND DATA
# HIGH GROWTH LOW PRICE

| Area | 2014: Residential | 2014: Commercial | 2014: Ind FirmSale | 2014 Total | 2015: Residential | 2015: Commercial | 2015: Ind FirmSale | 2015 Total | 2016: Residential | 2016: Commercial | 2016: Ind FirmSale | 2016 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 841.21 | 446.80 | 11.13 | 1,299.14 | 848.83 | 450.94 | 11.13 | 1,310.90 | 861.14 | 457.42 | 11.16 | 1,329.72 |
| La Grande | 459.92 | 276.32 | 10.40 | 746.65 | 462.31 | 277.87 | 10.40 | 750.58 | 466.93 | 280.55 | 10.40 | 757.88 |
| Medford GTN | 2,167.72 | 1,325.88 | 12.31 | 3,505.91 | 2,201.35 | 1,346.64 | 12.48 | 3,560.47 | 2,246.92 | 1,374.02 | 13.07 | 3,634.01 |
| Medford NWP | 973.90 | 595.68 | 5.53 | 1,575.12 | 989.01 | 605.01 | 5.61 | 1,599.63 | 1,009.49 | 617.31 | 5.87 | 1,632.67 |
| Roseburg | 757.88 | 617.79 | 21.68 | 1,397.34 | 765.84 | 618.66 | 21.67 | 1,406.17 | 777.90 | 622.24 | 21.73 | 1,421.87 |
| **OR Sub-Total** | **5,200.63** | **3,262.47** | **61.05** | **8,524.15** | **5,267.34** | **3,299.12** | **61.28** | **8,627.75** | **5,362.37** | **3,351.54** | **62.24** | **8,776.16** |
| Wa/Id Both | 9,301.50 | 5,568.80 | 304.67 | 15,174.98 | 9,432.92 | 5,647.87 | 308.50 | 15,389.29 | 9,616.39 | 5,757.28 | 313.48 | 15,687.14 |
| Wa/Id GTN | 1,282.97 | 768.11 | 42.02 | 2,093.10 | 1,301.09 | 779.02 | 42.55 | 2,122.66 | 1,326.40 | 794.11 | 43.24 | 2,163.74 |
| Wa/Id NWP | 5,452.60 | 3,264.47 | 178.60 | 8,895.68 | 5,529.64 | 3,310.82 | 180.85 | 9,021.31 | 5,637.19 | 3,374.96 | 183.76 | 9,195.91 |
| **WA/ID Sub-Total** | **16,037.07** | **9,601.38** | **525.30** | **26,163.75** | **16,263.65** | **9,737.70** | **531.90** | **26,533.25** | **16,579.98** | **9,926.34** | **540.48** | **27,046.80** |
| **Case Total** | **21,237.70** | **12,863.85** | **586.35** | **34,687.90** | **21,531.00** | **13,036.82** | **593.19** | **35,161.01** | **21,942.35** | **13,277.88** | **602.73** | **35,822.96** |

| Area | 2017: Residential | 2017: Commercial | 2017: Ind FirmSale | 2017 Total | 2018: Residential | 2018: Commercial | 2018: Ind FirmSale | 2018 Total | 2019: Residential | 2019: Commercial | 2019: Ind FirmSale | 2019 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 865.71 | 459.94 | 12.24 | 1,337.90 | 874.29 | 464.49 | 12.52 | 1,351.30 | 882.94 | 469.09 | 12.52 | 1,364.54 |
| La Grande | 467.87 | 281.21 | 10.40 | 759.49 | 470.67 | 282.80 | 10.40 | 763.87 | 473.49 | 284.57 | 10.40 | 768.46 |
| Medford GTN | 2,274.60 | 1,391.45 | 13.21 | 3,679.26 | 2,312.13 | 1,414.41 | 13.77 | 3,740.31 | 2,350.28 | 1,437.73 | 13.94 | 3,801.95 |
| Medford NWP | 1,021.92 | 625.14 | 5.93 | 1,653.00 | 1,038.78 | 635.46 | 6.19 | 1,680.43 | 1,055.92 | 645.94 | 6.26 | 1,708.12 |
| Roseburg | 783.41 | 621.09 | 21.67 | 1,426.18 | 792.34 | 622.28 | 21.67 | 1,436.30 | 801.36 | 623.58 | 21.67 | 1,446.61 |
| **OR Sub-Total** | **5,413.51** | **3,378.84** | **63.46** | **8,855.81** | **5,488.22** | **3,419.43** | **64.56** | **8,972.21** | **5,563.98** | **3,460.91** | **64.80** | **9,089.69** |
| Wa/Id Both | 9,718.02 | 5,818.59 | 316.40 | 15,853.01 | 9,863.80 | 5,905.88 | 320.35 | 16,090.03 | 10,011.75 | 5,994.51 | 324.29 | 16,330.55 |
| Wa/Id GTN | 1,340.42 | 802.56 | 43.64 | 2,186.62 | 1,360.52 | 814.60 | 44.19 | 2,219.31 | 1,380.93 | 826.83 | 44.73 | 2,252.49 |
| Wa/Id NWP | 5,696.77 | 3,410.90 | 185.48 | 9,293.14 | 5,782.23 | 3,462.07 | 187.79 | 9,432.09 | 5,868.96 | 3,514.02 | 190.10 | 9,573.08 |
| **WA/ID Sub-Total** | **16,755.21** | **10,032.05** | **545.51** | **27,332.78** | **17,006.56** | **10,182.55** | **552.32** | **27,741.43** | **17,261.64** | **10,335.36** | **559.13** | **28,156.12** |
| **Case Total** | **22,168.72** | **13,410.89** | **608.98** | **36,188.59** | **22,494.77** | **13,601.98** | **616.88** | **36,713.64** | **22,825.62** | **13,796.26** | **623.93** | **37,245.82** |

| Area | 2020: Residential | 2020: Commercial | 2020: Ind FirmSale | 2020 Total | 2021: Residential | 2021: Commercial | 2021: Ind FirmSale | 2021 Total | 2022: Residential | 2022: Commercial | 2022: Ind FirmSale | 2022 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 895.76 | 475.79 | 13.67 | 1,385.22 | 900.50 | 478.42 | 13.91 | 1,392.83 | 909.43 | 483.14 | 13.91 | 1,406.48 |
| La Grande | 478.24 | 287.42 | 10.40 | 776.06 | 479.20 | 287.95 | 10.40 | 777.54 | 482.07 | 289.76 | 10.40 | 782.23 |
| Medford GTN | 2,398.92 | 1,466.99 | 14.54 | 3,880.46 | 2,428.47 | 1,485.57 | 14.68 | 3,928.72 | 2,468.54 | 1,510.11 | 15.24 | 3,993.90 |
| Medford NWP | 1,077.78 | 659.08 | 6.53 | 1,743.39 | 1,091.05 | 667.43 | 6.59 | 1,765.08 | 1,109.06 | 678.46 | 6.85 | 1,794.36 |
| Roseburg | 813.98 | 627.22 | 21.73 | 1,462.94 | 819.74 | 626.04 | 21.67 | 1,467.45 | 829.09 | 627.34 | 21.67 | 1,478.10 |
| **OR Sub-Total** | **5,664.68** | **3,516.50** | **66.89** | **9,248.07** | **5,718.96** | **3,545.41** | **67.26** | **9,331.63** | **5,798.19** | **3,588.81** | **68.07** | **9,455.07** |
| Wa/Id Both | 10,206.47 | 6,110.49 | 329.33 | 16,646.29 | 10,314.37 | 6,175.61 | 332.19 | 16,822.16 | 10,469.08 | 6,268.27 | 336.14 | 17,073.49 |
| Wa/Id GTN | 1,407.79 | 842.83 | 45.42 | 2,296.04 | 1,422.67 | 851.81 | 45.82 | 2,320.30 | 1,444.01 | 864.59 | 46.36 | 2,354.96 |
| Wa/Id NWP | 5,983.11 | 3,582.01 | 193.05 | 9,758.17 | 6,046.35 | 3,620.18 | 194.73 | 9,861.27 | 6,137.05 | 3,674.50 | 197.05 | 10,008.60 |
| **WA/ID Sub-Total** | **17,597.37** | **10,535.32** | **567.80** | **28,700.50** | **17,783.39** | **10,647.60** | **572.74** | **29,003.73** | **18,050.14** | **10,807.36** | **579.55** | **29,437.06** |
| **Case Total** | **23,262.05** | **14,051.82** | **634.69** | **37,948.57** | **23,502.35** | **14,193.01** | **640.00** | **38,335.36** | **23,848.33** | **14,396.17** | **647.62** | **38,892.13** |

| Area | 2023: Residential | 2023: Commercial | 2023: Ind FirmSale | 2023 Total | 2024: Residential | 2024: Commercial | 2024: Ind FirmSale | 2024 Total | 2025: Residential | 2025: Commercial | 2025: Ind FirmSale | 2025 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 918.41 | 487.94 | 15.03 | 1,421.38 | 931.75 | 494.92 | 15.35 | 1,442.01 | 936.69 | 497.62 | 15.30 | 1,449.61 |
| La Grande | 484.96 | 291.47 | 10.40 | 786.84 | 489.82 | 294.31 | 10.40 | 794.53 | 490.80 | 294.96 | 10.40 | 796.17 |
| Medford GTN | 2,509.28 | 1,535.02 | 15.41 | 4,059.71 | 2,561.21 | 1,566.24 | 16.02 | 4,143.46 | 2,592.77 | 1,586.08 | 16.15 | 4,194.99 |
| Medford NWP | 1,127.36 | 689.65 | 6.92 | 1,823.93 | 1,150.69 | 703.67 | 7.20 | 1,861.56 | 1,164.87 | 712.59 | 7.25 | 1,884.71 |
| Roseburg | 838.54 | 628.58 | 21.67 | 1,488.78 | 851.74 | 632.29 | 21.73 | 1,505.76 | 857.76 | 631.10 | 21.67 | 1,510.52 |
| **OR Sub-Total** | **5,878.55** | **3,632.65** | **69.44** | **9,580.64** | **5,985.20** | **3,691.43** | **70.69** | **9,747.32** | **6,042.88** | **3,722.35** | **70.78** | **9,836.00** |
| Wa/Id Both | 10,626.10 | 6,362.31 | 340.09 | 17,328.50 | 10,832.78 | 6,485.44 | 345.17 | 17,663.39 | 10,947.29 | 6,554.62 | 347.98 | 17,849.89 |
| Wa/Id GTN | 1,465.67 | 877.56 | 46.91 | 2,390.14 | 1,494.18 | 894.54 | 47.61 | 2,436.33 | 1,509.97 | 904.09 | 48.00 | 2,462.05 |
| Wa/Id NWP | 6,229.10 | 3,729.63 | 199.36 | 10,158.08 | 6,350.25 | 3,801.81 | 202.34 | 10,354.40 | 6,417.37 | 3,842.36 | 203.99 | 10,463.73 |
| **WA/ID Sub-Total** | **18,320.87** | **10,969.49** | **586.36** | **29,876.72** | **18,677.20** | **11,181.80** | **595.12** | **30,454.12** | **18,874.63** | **11,301.07** | **599.97** | **30,775.67** |
| **Case Total** | **24,199.42** | **14,602.14** | **655.79** | **39,457.36** | **24,662.41** | **14,873.23** | **665.81** | **40,201.45** | **24,917.51** | **15,023.42** | **670.75** | **40,611.68** |

# APPENDIX 2.9: DETAILED DEMAND DATA HIGH GROWTH LOW PRICE

| Area | 2026: Residential | 2026: Commercial | 2026: Ind FirmSale | 2026 Total | 2027: Residential | 2027: Commercial | 2027: Ind FirmSale | 2027 Total | 2028: Residential | 2028: Commercial | 2028: Ind FirmSale | 2028 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 945.97 | 502.61 | 16.42 | 1,465.00 | 955.34 | 507.54 | 16.69 | 1,479.57 | 969.21 | 514.85 | 16.74 | 1,500.79 |
| La Grande | 493.74 | 296.78 | 10.40 | 800.92 | 496.70 | 298.51 | 10.40 | 805.62 | 501.68 | 301.43 | 10.40 | 813.51 |
| Medford GTN | 2,635.55 | 1,612.23 | 16.71 | 4,264.49 | 2,679.03 | 1,638.88 | 16.88 | 4,334.79 | 2,734.48 | 1,672.20 | 17.49 | 4,424.17 |
| Medford NWP | 1,184.09 | 724.34 | 7.51 | 1,915.93 | 1,203.62 | 736.31 | 7.58 | 1,947.51 | 1,228.53 | 751.28 | 7.86 | 1,987.67 |
| Roseburg | 867.54 | 632.33 | 21.67 | 1,521.55 | 877.45 | 633.69 | 21.67 | 1,532.81 | 891.24 | 637.29 | 21.73 | 1,550.27 |
| **OR Sub-Total** | **6,126.89** | **3,768.29** | **72.71** | **9,967.89** | **6,212.15** | **3,814.92** | **73.23** | **10,100.30** | **6,325.14** | **3,877.06** | **74.22** | **10,276.42** |
| Wa/Id Both | 11,111.50 | 6,652.93 | 351.93 | 18,116.37 | 11,278.17 | 6,752.75 | 355.88 | 18,386.80 | 11,497.51 | 6,883.46 | 361.01 | 18,741.98 |
| Wa/Id GTN | 1,532.62 | 917.65 | 48.54 | 2,498.81 | 1,555.61 | 931.41 | 49.09 | 2,536.11 | 1,585.86 | 949.44 | 49.79 | 2,585.10 |
| Wa/Id NWP | 6,513.64 | 3,900.00 | 206.30 | 10,619.94 | 6,611.34 | 3,958.51 | 208.62 | 10,778.47 | 6,739.92 | 4,035.13 | 211.63 | 10,986.68 |
| **WA/ID Sub-Total** | **19,157.76** | **11,470.58** | **606.78** | **31,235.11** | **19,445.12** | **11,642.68** | **613.58** | **31,701.38** | **19,823.30** | **11,868.03** | **622.44** | **32,313.76** |
| **Case Total** | **25,284.65** | **15,238.86** | **679.49** | **41,203.00** | **25,657.27** | **15,457.60** | **686.81** | **41,801.68** | **26,148.44** | **15,745.08** | **696.66** | **42,590.18** |

| Area | 2029: Residential | 2029: Commercial | 2029: Ind FirmSale | 2029 Total | 2030: Residential | 2030: Commercial | 2030: Ind FirmSale | 2030 Total | 2031: Residential | 2031: Commercial | 2031: Ind FirmSale | 2031 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 974.35 | 517.70 | 17.81 | 1,509.86 | 983.99 | 522.80 | 18.08 | 1,524.87 | 993.73 | 527.97 | 18.08 | 1,539.79 |
| La Grande | 502.69 | 302.05 | 10.40 | 815.15 | 505.70 | 303.88 | 10.40 | 819.98 | 508.75 | 305.72 | 10.40 | 824.86 |
| Medford GTN | 2,768.17 | 1,693.35 | 17.61 | 4,479.14 | 2,813.84 | 1,721.33 | 18.18 | 4,553.35 | 2,860.27 | 1,749.72 | 18.35 | 4,628.34 |
| Medford NWP | 1,243.67 | 760.78 | 7.91 | 2,012.37 | 1,264.19 | 773.35 | 8.17 | 2,045.71 | 1,285.05 | 786.11 | 8.24 | 2,079.40 |
| Roseburg | 897.55 | 636.18 | 21.67 | 1,555.40 | 907.79 | 637.46 | 21.67 | 1,566.92 | 918.13 | 638.69 | 21.67 | 1,578.50 |
| **OR Sub-Total** | **6,386.43** | **3,910.07** | **75.41** | **10,371.91** | **6,475.51** | **3,958.82** | **76.50** | **10,510.83** | **6,565.93** | **4,008.20** | **76.75** | **10,650.89** |
| Wa/Id Both | 11,619.05 | 6,956.81 | 363.77 | 18,939.64 | 11,793.33 | 7,061.18 | 367.72 | 19,222.24 | 11,970.23 | 7,167.13 | 371.67 | 19,509.04 |
| Wa/Id GTN | 1,602.63 | 959.56 | 50.18 | 2,612.36 | 1,626.67 | 973.96 | 50.72 | 2,651.34 | 1,651.07 | 988.57 | 51.26 | 2,690.90 |
| Wa/Id NWP | 6,811.17 | 4,078.13 | 213.25 | 11,102.55 | 6,913.33 | 4,139.31 | 215.56 | 11,268.21 | 7,017.03 | 4,201.42 | 217.88 | 11,436.33 |
| **WA/ID Sub-Total** | **20,032.85** | **11,994.50** | **627.20** | **32,654.55** | **20,333.33** | **12,174.45** | **634.00** | **33,141.79** | **20,638.33** | **12,357.13** | **640.81** | **33,636.27** |
| **Case Total** | **26,419.28** | **15,904.57** | **702.61** | **43,026.46** | **26,808.84** | **16,133.27** | **710.51** | **43,652.62** | **27,204.26** | **16,365.33** | **717.56** | **44,287.16** |

| Area | 2032: Residential | 2032: Commercial | 2032: Ind FirmSale | 2032 Total | 2033: Residential | 2033: Commercial | 2033: Ind FirmSale | 2033 Total |
|---|---|---|---|---|---|---|---|---|
| Klam Falls | 1,008.16 | 535.48 | 19.25 | 1,562.89 | 1,013.50 | 538.42 | 19.48 | 1,571.39 |
| La Grande | 513.84 | 308.78 | 10.40 | 833.02 | 514.86 | 309.40 | 10.40 | 834.67 |
| Medford GTN | 2,919.48 | 1,785.35 | 18.96 | 4,723.78 | 2,955.44 | 1,807.93 | 19.08 | 4,782.45 |
| Medford NWP | 1,311.65 | 802.11 | 8.52 | 2,122.28 | 1,327.81 | 812.26 | 8.57 | 2,148.64 |
| Roseburg | 932.58 | 642.49 | 21.73 | 1,596.80 | 939.19 | 641.27 | 21.67 | 1,602.13 |
| **OR Sub-Total** | **6,685.70** | **4,074.21** | **78.87** | **10,838.78** | **6,750.80** | **4,109.28** | **79.20** | **10,939.29** |
| Wa/Id Both | 12,203.04 | 7,305.86 | 376.86 | 19,885.75 | 12,332.03 | 7,383.69 | 379.57 | 20,095.29 |
| Wa/Id GTN | 1,683.18 | 1,007.70 | 51.98 | 2,742.86 | 1,700.97 | 1,018.44 | 52.35 | 2,771.76 |
| Wa/Id NWP | 7,153.50 | 4,282.74 | 220.92 | 11,657.17 | 7,229.12 | 4,328.37 | 222.50 | 11,780.00 |
| **WA/ID Sub-Total** | **21,039.72** | **12,596.31** | **649.75** | **34,285.78** | **21,262.13** | **12,730.51** | **654.43** | **34,647.06** |
| **Case Total** | **27,725.42** | **16,670.52** | **728.62** | **45,124.57** | **28,012.93** | **16,839.79** | **733.63** | **45,586.34** |

# APPENDIX 2.9: DETAILED DEMAND DATA AVERAGE MIX

| Area | 2014: Residential | 2014: Commercial | 2014: Ind FirmSale | 2014 Total | 2015: Residential | 2015: Commercial | 2015: Ind FirmSale | 2015 Total | 2016: Residential | 2016: Commercial | 2016: Ind FirmSale | 2016 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 813.35 | 433.25 | 11.05 | 1,257.66 | 816.19 | 434.74 | 11.05 | 1,261.98 | 823.80 | 438.10 | 11.08 | 1,272.99 |
| La Grande | 443.90 | 266.30 | 10.40 | 720.60 | 446.13 | 266.74 | 10.40 | 723.27 | 450.50 | 268.73 | 10.40 | 729.63 |
| Medford GTN | 2,071.71 | 1,272.19 | 11.61 | 3,355.51 | 2,091.73 | 1,279.56 | 11.61 | 3,382.89 | 2,121.02 | 1,295.10 | 11.64 | 3,427.76 |
| Medford NWP | 930.77 | 571.56 | 5.21 | 1,507.55 | 939.76 | 574.87 | 5.21 | 1,519.85 | 952.92 | 581.86 | 5.23 | 1,540.01 |
| Roseburg | 724.44 | 598.21 | 21.61 | 1,344.26 | 728.37 | 599.34 | 21.61 | 1,349.32 | 736.40 | 602.22 | 21.67 | 1,360.29 |
| **OR Sub-Total** | **4,984.18** | **3,141.51** | **59.88** | **8,185.58** | **5,022.18** | **3,155.25** | **59.88** | **8,237.30** | **5,084.64** | **3,186.01** | **60.02** | **8,330.67** |
| Wa/Id Both | 8,953.25 | 5,341.51 | 296.79 | 14,591.55 | 9,048.11 | 5,386.23 | 295.58 | 14,729.92 | 9,192.20 | 5,454.85 | 295.07 | 14,942.12 |
| Wa/Id GTN | 1,234.93 | 736.76 | 40.94 | 2,012.63 | 1,248.02 | 742.93 | 40.77 | 2,031.71 | 1,267.89 | 752.39 | 40.70 | 2,060.98 |
| Wa/Id NWP | 5,248.46 | 3,131.23 | 173.98 | 8,553.67 | 5,304.06 | 3,157.44 | 173.27 | 8,634.78 | 5,388.53 | 3,197.67 | 172.97 | 8,759.17 |
| **WA/ID Sub-Total** | **15,436.64** | **9,209.50** | **511.71** | **25,157.85** | **15,600.19** | **9,286.60** | **509.63** | **25,396.41** | **15,848.61** | **9,404.92** | **508.74** | **25,762.27** |
| **Case Total** | **20,420.83** | **12,351.01** | **571.58** | **33,343.42** | **20,622.37** | **12,441.84** | **569.50** | **33,633.72** | **20,933.26** | **12,590.93** | **568.75** | **34,092.94** |

| Area | 2017: Residential | 2017: Commercial | 2017: Ind FirmSale | 2017 Total | 2018: Residential | 2018: Commercial | 2018: Ind FirmSale | 2018 Total | 2019: Residential | 2019: Commercial | 2019: Ind FirmSale | 2019 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 818.89 | 435.60 | 11.03 | 1,265.52 | 824.15 | 437.30 | 11.03 | 1,272.48 | 829.58 | 439.67 | 11.03 | 1,280.28 |
| La Grande | 448.35 | 266.90 | 10.32 | 725.57 | 451.21 | 267.87 | 10.32 | 729.40 | 452.58 | 268.69 | 10.32 | 731.59 |
| Medford GTN | 2,119.09 | 1,293.52 | 11.58 | 3,424.19 | 2,140.28 | 1,304.17 | 11.58 | 3,456.03 | 2,163.19 | 1,317.54 | 11.58 | 3,492.31 |
| Medford NWP | 952.06 | 581.14 | 5.20 | 1,538.40 | 961.57 | 585.93 | 5.20 | 1,552.71 | 971.87 | 591.94 | 5.20 | 1,569.01 |
| Roseburg | 734.23 | 597.55 | 21.58 | 1,353.37 | 740.13 | 598.10 | 21.58 | 1,359.81 | 745.88 | 598.24 | 21.58 | 1,365.70 |
| **OR Sub-Total** | **5,072.62** | **3,174.71** | **59.72** | **8,307.06** | **5,117.33** | **3,193.37** | **59.72** | **8,370.42** | **5,163.10** | **3,216.07** | **59.72** | **8,438.90** |
| Wa/Id Both | 9,199.90 | 5,440.65 | 291.37 | 14,931.92 | 9,315.17 | 5,490.27 | 289.49 | 15,094.92 | 9,415.06 | 5,543.04 | 288.19 | 15,246.29 |
| Wa/Id GTN | 1,268.95 | 750.43 | 40.19 | 2,059.58 | 1,284.85 | 757.28 | 39.93 | 2,082.06 | 1,298.63 | 764.56 | 39.75 | 2,102.94 |
| Wa/Id NWP | 5,393.05 | 3,189.35 | 170.80 | 8,753.20 | 5,460.62 | 3,218.43 | 169.70 | 8,848.75 | 5,519.17 | 3,249.37 | 168.94 | 8,937.48 |
| **WA/ID Sub-Total** | **15,861.90** | **9,380.43** | **502.37** | **25,744.70** | **16,060.64** | **9,465.98** | **499.12** | **26,025.73** | **16,232.86** | **9,556.96** | **496.89** | **26,286.70** |
| **Case Total** | **20,934.52** | **12,555.14** | **562.09** | **34,051.75** | **21,177.97** | **12,659.34** | **558.84** | **34,396.15** | **21,395.96** | **12,773.03** | **556.61** | **34,725.60** |

| Area | 2020: Residential | 2020: Commercial | 2020: Ind FirmSale | 2020 Total | 2021: Residential | 2021: Commercial | 2021: Ind FirmSale | 2021 Total | 2022: Residential | 2022: Commercial | 2022: Ind FirmSale | 2022 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 838.99 | 444.51 | 11.06 | 1,294.56 | 838.48 | 444.62 | 11.03 | 1,294.13 | 835.88 | 443.95 | 11.00 | 1,290.82 |
| La Grande | 456.27 | 270.84 | 10.33 | 737.44 | 455.17 | 270.22 | 10.30 | 735.69 | 452.93 | 269.16 | 10.19 | 732.27 |
| Medford GTN | 2,196.28 | 1,337.17 | 11.61 | 3,545.06 | 2,205.83 | 1,344.09 | 11.57 | 3,561.50 | 2,209.58 | 1,348.72 | 11.54 | 3,569.84 |
| Medford NWP | 986.73 | 600.76 | 5.22 | 1,592.71 | 991.03 | 603.87 | 5.20 | 1,600.09 | 992.71 | 605.95 | 5.18 | 1,603.84 |
| Roseburg | 754.87 | 600.81 | 21.64 | 1,377.33 | 755.66 | 597.55 | 21.58 | 1,374.78 | 755.20 | 593.97 | 21.55 | 1,370.71 |
| **OR Sub-Total** | **5,233.14** | **3,254.09** | **59.86** | **8,547.10** | **5,246.17** | **3,260.35** | **59.67** | **8,566.19** | **5,246.29** | **3,261.74** | **59.46** | **8,567.49** |
| Wa/Id Both | 9,552.12 | 5,623.06 | 287.85 | 15,463.03 | 9,580.83 | 5,641.95 | 285.29 | 15,508.07 | 9,584.34 | 5,649.26 | 282.77 | 15,516.37 |
| Wa/Id GTN | 1,317.53 | 775.59 | 39.70 | 2,132.83 | 1,321.49 | 778.20 | 39.35 | 2,139.04 | 1,321.98 | 779.21 | 39.00 | 2,140.19 |
| Wa/Id NWP | 5,599.52 | 3,296.28 | 168.74 | 9,064.53 | 5,616.35 | 3,307.35 | 167.24 | 9,090.94 | 5,618.40 | 3,311.63 | 165.76 | 9,095.80 |
| **WA/ID Sub-Total** | **16,469.17** | **9,694.93** | **496.30** | **26,660.40** | **16,518.67** | **9,727.51** | **491.88** | **26,738.05** | **16,524.72** | **9,740.10** | **487.54** | **26,752.36** |
| **Case Total** | **21,702.31** | **12,949.02** | **556.16** | **35,207.49** | **21,764.84** | **12,987.85** | **551.55** | **35,304.24** | **21,771.01** | **13,001.84** | **547.00** | **35,319.85** |

| Area | 2023: Residential | 2023: Commercial | 2023: Ind FirmSale | 2023 Total | 2024: Residential | 2024: Commercial | 2024: Ind FirmSale | 2024 Total | 2025: Residential | 2025: Commercial | 2025: Ind FirmSale | 2025 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 840.54 | 446.56 | 10.99 | 1,298.09 | 850.05 | 451.45 | 11.03 | 1,312.52 | 846.35 | 450.11 | 10.98 | 1,307.44 |
| La Grande | 454.30 | 269.98 | 10.18 | 734.46 | 457.99 | 272.16 | 10.18 | 740.33 | 455.30 | 270.72 | 10.11 | 736.13 |
| Medford GTN | 2,231.69 | 1,362.48 | 11.54 | 3,605.70 | 2,265.81 | 1,382.83 | 11.56 | 3,660.20 | 2,267.48 | 1,385.93 | 11.51 | 3,664.92 |
| Medford NWP | 1,002.64 | 612.13 | 5.18 | 1,619.95 | 1,017.97 | 621.27 | 5.20 | 1,644.44 | 1,018.72 | 622.66 | 5.17 | 1,646.56 |
| Roseburg | 760.27 | 593.63 | 21.54 | 1,375.45 | 769.44 | 596.13 | 21.60 | 1,387.18 | 767.80 | 591.48 | 21.52 | 1,380.81 |
| **OR Sub-Total** | **5,289.44** | **3,284.78** | **59.43** | **8,633.66** | **5,361.26** | **3,323.84** | **59.57** | **8,744.67** | **5,355.65** | **3,320.90** | **59.30** | **8,735.86** |
| Wa/Id Both | 9,670.35 | 5,700.51 | 281.36 | 15,652.23 | 9,811.06 | 5,782.74 | 281.00 | 15,874.80 | 9,803.83 | 5,782.65 | 278.01 | 15,864.49 |
| Wa/Id GTN | 1,333.84 | 786.28 | 38.81 | 2,158.93 | 1,353.25 | 797.62 | 38.76 | 2,189.63 | 1,352.25 | 797.61 | 38.35 | 2,188.21 |
| Wa/Id NWP | 5,668.83 | 3,341.68 | 164.93 | 9,175.44 | 5,751.31 | 3,389.88 | 164.72 | 9,305.91 | 5,747.07 | 3,389.83 | 162.97 | 9,299.87 |
| **WA/ID Sub-Total** | **16,673.02** | **9,828.47** | **485.10** | **26,986.60** | **16,915.62** | **9,970.24** | **484.48** | **27,370.34** | **16,903.16** | **9,970.09** | **479.33** | **27,352.57** |
| **Case Total** | **21,962.47** | **13,113.26** | **544.53** | **35,620.26** | **22,276.88** | **13,294.08** | **544.05** | **36,115.01** | **22,258.81** | **13,290.99** | **538.63** | **36,088.43** |

# APPENDIX 2.9: DETAILED DEMAND DATA
# AVERAGE MIX

| Area | 2026: Residential | 2026: Commercial | 2026: Ind FirmSale | 2026 Total | 2027: Residential | 2027: Commercial | 2027: Ind FirmSale | 2027 Total | 2028: Residential | 2028: Commercial | 2028: Ind FirmSale | 2028 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 846.53 | 450.71 | 10.96 | 1,308.20 | 849.83 | 452.65 | 10.95 | 1,313.43 | 859.43 | 457.68 | 10.98 | 1,328.10 |
| La Grande | 454.43 | 270.38 | 10.04 | 734.86 | 455.12 | 270.82 | 10.01 | 735.96 | 458.82 | 273.00 | 10.02 | 741.84 |
| Medford GTN | 2,278.57 | 1,394.31 | 11.49 | 3,684.38 | 2,297.72 | 1,406.79 | 11.48 | 3,715.99 | 2,332.84 | 1,427.73 | 11.51 | 3,772.09 |
| Medford NWP | 1,023.71 | 626.43 | 5.16 | 1,655.30 | 1,032.31 | 632.03 | 5.16 | 1,669.50 | 1,048.09 | 641.45 | 5.17 | 1,694.71 |
| Roseburg | 769.48 | 589.03 | 21.51 | 1,380.02 | 773.57 | 588.20 | 21.50 | 1,383.27 | 782.88 | 590.58 | 21.56 | 1,395.02 |
| **OR Sub-Total** | **5,372.73** | **3,330.86** | **59.16** | **8,762.76** | **5,408.55** | **3,350.50** | **59.10** | **8,818.15** | **5,482.06** | **3,390.44** | **59.24** | **8,931.74** |
| Wa/Id Both | 9,839.83 | 5,807.45 | 275.95 | 15,923.23 | 9,911.75 | 5,851.37 | 274.34 | 16,037.46 | 10,055.86 | 5,935.77 | 273.97 | 16,265.60 |
| Wa/Id GTN | 1,357.22 | 801.03 | 38.06 | 2,196.31 | 1,367.14 | 807.09 | 37.84 | 2,212.06 | 1,387.02 | 818.73 | 37.79 | 2,243.53 |
| Wa/Id NWP | 5,768.18 | 3,404.37 | 161.76 | 9,334.31 | 5,810.33 | 3,430.11 | 160.82 | 9,401.27 | 5,894.81 | 3,479.59 | 160.60 | 9,535.01 |
| **WA/ID Sub-Total** | **16,965.23** | **10,012.84** | **475.78** | **27,453.85** | **17,089.22** | **10,088.56** | **473.01** | **27,650.79** | **17,337.69** | **10,234.09** | **472.36** | **28,044.14** |
| **Case Total** | **22,337.96** | **13,343.70** | **534.94** | **36,216.61** | **22,497.77** | **13,439.06** | **532.11** | **36,468.94** | **22,819.75** | **13,624.53** | **531.60** | **36,975.89** |

| Area | 2029: Residential | 2029: Commercial | 2029: Ind FirmSale | 2029 Total | 2030: Residential | 2030: Commercial | 2030: Ind FirmSale | 2030 Total | 2031: Residential | 2031: Commercial | 2031: Ind FirmSale | 2031 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 861.07 | 458.65 | 10.95 | 1,330.67 | 858.89 | 458.20 | 10.93 | 1,328.02 | 864.56 | 461.24 | 10.93 | 1,336.73 |
| La Grande | 458.77 | 272.98 | 10.01 | 741.76 | 456.74 | 272.03 | 9.92 | 738.69 | 458.58 | 273.14 | 9.92 | 741.63 |
| Medford GTN | 2,348.55 | 1,437.91 | 11.48 | 3,797.95 | 2,353.82 | 1,443.56 | 11.45 | 3,808.84 | 2,379.72 | 1,459.45 | 11.45 | 3,850.62 |
| Medford NWP | 1,055.15 | 646.02 | 5.16 | 1,706.32 | 1,057.51 | 648.56 | 5.14 | 1,711.22 | 1,069.15 | 655.69 | 5.14 | 1,729.99 |
| Roseburg | 785.37 | 588.48 | 21.50 | 1,395.35 | 785.29 | 585.06 | 21.47 | 1,391.82 | 791.25 | 585.21 | 21.47 | 1,397.93 |
| **OR Sub-Total** | **5,508.92** | **3,404.03** | **59.10** | **8,972.05** | **5,512.26** | **3,407.41** | **58.91** | **8,978.58** | **5,563.26** | **3,434.73** | **58.91** | **9,056.89** |
| Wa/Id Both | 10,110.98 | 5,969.00 | 271.79 | 16,351.77 | 10,120.33 | 5,979.80 | 269.43 | 16,369.55 | 10,221.52 | 6,039.66 | 268.15 | 16,529.33 |
| Wa/Id GTN | 1,394.62 | 823.31 | 37.49 | 2,255.42 | 1,395.91 | 824.80 | 37.16 | 2,257.87 | 1,409.86 | 833.06 | 36.99 | 2,279.91 |
| Wa/Id NWP | 5,927.12 | 3,499.07 | 159.32 | 9,585.52 | 5,932.60 | 3,505.40 | 157.94 | 9,595.94 | 5,991.92 | 3,540.49 | 157.19 | 9,689.61 |
| **WA/ID Sub-Total** | **17,432.72** | **10,291.39** | **468.60** | **28,192.71** | **17,448.84** | **10,310.00** | **464.53** | **28,223.36** | **17,623.30** | **10,413.21** | **462.33** | **28,498.85** |
| **Case Total** | **22,941.63** | **13,695.42** | **527.70** | **37,164.76** | **22,961.09** | **13,717.41** | **523.44** | **37,201.94** | **23,186.56** | **13,847.94** | **521.24** | **37,555.74** |

| Area | 2032: Residential | 2032: Commercial | 2032: Ind FirmSale | 2032 Total | 2033: Residential | 2033: Commercial | 2033: Ind FirmSale | 2033 Total |
|---|---|---|---|---|---|---|---|---|
| Klam Falls | 871.15 | 464.95 | 10.95 | 1,347.05 | 870.97 | 465.12 | 10.91 | 1,347.00 |
| La Grande | 460.74 | 274.49 | 9.88 | 745.11 | 459.80 | 273.91 | 9.86 | 743.57 |
| Medford GTN | 2,407.68 | 1,477.02 | 11.47 | 3,896.17 | 2,419.03 | 1,485.18 | 11.43 | 3,915.65 |
| Medford NWP | 1,081.71 | 663.59 | 5.15 | 1,750.45 | 1,086.81 | 667.25 | 5.14 | 1,759.20 |
| Roseburg | 798.33 | 586.23 | 21.52 | 1,406.08 | 799.43 | 583.15 | 21.45 | 1,404.03 |
| **OR Sub-Total** | **5,619.61** | **3,466.28** | **58.97** | **9,144.86** | **5,636.04** | **3,474.61** | **58.79** | **9,169.44** |
| Wa/Id Both | 10,332.73 | 6,106.71 | 267.33 | 16,706.78 | 10,367.71 | 6,129.46 | 264.94 | 16,762.11 |
| Wa/Id GTN | 1,425.20 | 842.31 | 36.87 | 2,304.38 | 1,430.03 | 845.44 | 36.54 | 2,312.01 |
| Wa/Id NWP | 6,057.12 | 3,579.80 | 156.71 | 9,793.63 | 6,077.63 | 3,593.13 | 155.31 | 9,826.06 |
| **WA/ID Sub-Total** | **17,815.05** | **10,528.81** | **460.92** | **28,804.79** | **17,875.37** | **10,568.03** | **456.79** | **28,900.19** |
| **Case Total** | **23,434.66** | **13,995.09** | **519.89** | **37,949.65** | **23,511.41** | **14,042.64** | **515.58** | **38,069.63** |

# APPENDIX 2.9: DETAILED DEMAND DATA COLDEST IN 20 YEARS

| Area | 2014: Residential | 2014: Commercial | 2014: Ind FirmSale | 2014 Total | 2015: Residential | 2015: Commercial | 2015: Ind FirmSale | 2015 Total | 2016: Residential | 2016: Commercial | 2016: Ind FirmSale | 2016 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 835.92 | 443.20 | 11.13 | 1,290.24 | 838.83 | 444.69 | 11.13 | 1,294.65 | 846.54 | 448.10 | 11.16 | 1,305.81 |
| La Grande | 460.28 | 275.68 | 10.40 | 746.36 | 462.60 | 276.13 | 10.40 | 749.13 | 467.06 | 278.15 | 10.40 | 755.61 |
| Medford GTN | 2,152.19 | 1,312.19 | 11.72 | 3,476.10 | 2,173.01 | 1,319.74 | 11.72 | 3,504.47 | 2,203.07 | 1,335.63 | 11.75 | 3,550.45 |
| Medford NWP | 966.92 | 589.53 | 5.27 | 1,561.72 | 976.28 | 592.93 | 5.27 | 1,574.47 | 989.79 | 600.06 | 5.28 | 1,595.13 |
| Roseburg | 750.21 | 614.75 | 21.67 | 1,386.64 | 754.29 | 615.93 | 21.67 | 1,391.89 | 762.47 | 618.83 | 21.73 | 1,403.04 |
| **OR Sub-Total** | **5,165.53** | **3,235.35** | **60.19** | **8,461.06** | **5,205.00** | **3,249.42** | **60.19** | **8,514.61** | **5,268.94** | **3,280.77** | **60.32** | **8,610.04** |
| Wa/Id Both | 9,231.09 | 5,493.50 | 300.60 | 15,025.18 | 9,328.88 | 5,539.50 | 299.37 | 15,167.75 | 9,476.12 | 5,609.39 | 298.84 | 15,384.35 |
| Wa/Id GTN | 1,273.25 | 757.72 | 41.46 | 2,072.44 | 1,286.74 | 764.07 | 41.29 | 2,092.10 | 1,307.05 | 773.71 | 41.22 | 2,121.98 |
| Wa/Id NWP | 5,411.33 | 3,220.33 | 176.21 | 8,807.86 | 5,468.65 | 3,247.29 | 175.49 | 8,891.44 | 5,554.97 | 3,288.26 | 175.18 | 9,018.41 |
| **WA/ID Sub-Total** | **15,915.66** | **9,471.55** | **518.27** | **25,905.48** | **16,084.27** | **9,550.86** | **516.16** | **26,151.29** | **16,338.14** | **9,671.36** | **515.24** | **26,524.74** |
| **Case Total** | **21,081.19** | **12,706.90** | **578.45** | **34,366.54** | **21,289.28** | **12,800.28** | **576.35** | **34,665.90** | **21,607.08** | **12,952.13** | **575.57** | **35,134.78** |

| Area | 2017: Residential | 2017: Commercial | 2017: Ind FirmSale | 2017 Total | 2018: Residential | 2018: Commercial | 2018: Ind FirmSale | 2018 Total | 2019: Residential | 2019: Commercial | 2019: Ind FirmSale | 2019 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 841.54 | 445.55 | 11.11 | 1,298.20 | 846.94 | 447.29 | 11.11 | 1,305.33 | 852.52 | 449.70 | 11.11 | 1,313.33 |
| La Grande | 464.86 | 276.26 | 10.32 | 751.44 | 467.82 | 277.26 | 10.32 | 755.41 | 469.24 | 278.11 | 10.32 | 757.67 |
| Medford GTN | 2,201.20 | 1,333.98 | 11.69 | 3,546.88 | 2,223.20 | 1,344.97 | 11.69 | 3,579.87 | 2,246.99 | 1,358.74 | 11.69 | 3,617.42 |
| Medford NWP | 988.94 | 599.33 | 5.25 | 1,593.52 | 998.83 | 604.26 | 5.25 | 1,608.35 | 1,009.52 | 610.45 | 5.25 | 1,625.22 |
| Roseburg | 760.25 | 614.02 | 21.65 | 1,395.92 | 766.36 | 614.58 | 21.65 | 1,402.59 | 772.31 | 614.73 | 21.65 | 1,408.69 |
| **OR Sub-Total** | **5,256.80** | **3,269.14** | **60.03** | **8,585.96** | **5,303.15** | **3,288.36** | **60.03** | **8,651.54** | **5,350.59** | **3,311.72** | **60.03** | **8,722.34** |
| Wa/Id Both | 9,484.63 | 5,594.92 | 295.08 | 15,374.64 | 9,603.46 | 5,645.98 | 293.18 | 15,542.62 | 9,706.49 | 5,700.23 | 291.87 | 15,698.59 |
| Wa/Id GTN | 1,308.23 | 771.71 | 40.70 | 2,120.64 | 1,324.62 | 778.76 | 40.44 | 2,143.81 | 1,338.83 | 786.24 | 40.26 | 2,165.32 |
| Wa/Id NWP | 5,559.96 | 3,279.78 | 172.98 | 9,012.72 | 5,629.62 | 3,309.71 | 171.86 | 9,111.19 | 5,690.01 | 3,341.51 | 171.09 | 9,202.62 |
| **WA/ID Sub-Total** | **16,352.81** | **9,646.41** | **508.77** | **26,507.99** | **16,557.70** | **9,734.45** | **505.48** | **26,797.62** | **16,735.34** | **9,827.98** | **503.22** | **27,066.53** |
| **Case Total** | **21,609.61** | **12,915.55** | **568.80** | **35,093.95** | **21,860.84** | **13,022.81** | **565.51** | **35,449.16** | **22,085.92** | **13,139.70** | **563.25** | **35,788.87** |

| Area | 2020: Residential | 2020: Commercial | 2020: Ind FirmSale | 2020 Total | 2021: Residential | 2021: Commercial | 2021: Ind FirmSale | 2021 Total | 2022: Residential | 2022: Commercial | 2022: Ind FirmSale | 2022 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 862.08 | 454.61 | 11.14 | 1,327.82 | 861.65 | 454.75 | 11.10 | 1,327.50 | 858.90 | 454.02 | 11.07 | 1,323.98 |
| La Grande | 473.00 | 280.30 | 10.33 | 763.63 | 471.91 | 279.68 | 10.30 | 761.88 | 469.51 | 278.54 | 10.19 | 758.24 |
| Medford GTN | 2,281.00 | 1,378.82 | 11.72 | 3,671.55 | 2,291.20 | 1,386.06 | 11.69 | 3,688.95 | 2,294.77 | 1,390.60 | 11.65 | 3,697.03 |
| Medford NWP | 1,024.80 | 619.47 | 5.27 | 1,649.54 | 1,029.38 | 622.72 | 5.25 | 1,657.36 | 1,030.98 | 624.76 | 5.23 | 1,660.98 |
| Roseburg | 781.51 | 617.30 | 21.71 | 1,420.52 | 782.41 | 613.99 | 21.64 | 1,418.04 | 781.80 | 610.20 | 21.61 | 1,413.61 |
| **OR Sub-Total** | **5,422.39** | **3,350.51** | **60.17** | **8,833.06** | **5,436.55** | **3,357.21** | **59.97** | **8,853.73** | **5,435.97** | **3,358.12** | **59.76** | **8,853.85** |
| Wa/Id Both | 9,846.47 | 5,781.82 | 291.51 | 15,919.80 | 9,877.14 | 5,801.77 | 288.92 | 15,967.83 | 9,879.74 | 5,808.59 | 286.34 | 15,974.67 |
| Wa/Id GTN | 1,358.13 | 797.49 | 40.21 | 2,195.83 | 1,362.36 | 800.24 | 39.85 | 2,202.46 | 1,362.72 | 801.18 | 39.49 | 2,203.40 |
| Wa/Id NWP | 5,772.07 | 3,389.35 | 170.88 | 9,332.30 | 5,790.05 | 3,401.04 | 169.36 | 9,360.45 | 5,791.57 | 3,405.04 | 167.85 | 9,364.46 |
| **WA/ID Sub-Total** | **16,976.67** | **9,968.66** | **502.60** | **27,447.93** | **17,029.55** | **10,003.05** | **498.13** | **27,530.74** | **17,034.04** | **10,014.81** | **493.68** | **27,542.53** |
| **Case Total** | **22,399.06** | **13,319.17** | **562.77** | **36,281.00** | **22,466.10** | **13,360.26** | **558.11** | **36,384.47** | **22,470.01** | **13,372.93** | **553.44** | **36,396.38** |

| Area | 2023: Residential | 2023: Commercial | 2023: Ind FirmSale | 2023 Total | 2024: Residential | 2024: Commercial | 2024: Ind FirmSale | 2024 Total | 2025: Residential | 2025: Commercial | 2025: Ind FirmSale | 2025 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 863.67 | 456.69 | 11.07 | 1,331.43 | 873.34 | 461.64 | 11.10 | 1,346.08 | 869.59 | 460.28 | 11.05 | 1,340.93 |
| La Grande | 470.93 | 279.38 | 10.18 | 760.49 | 474.69 | 281.60 | 10.18 | 766.47 | 471.92 | 280.11 | 10.11 | 762.15 |
| Medford GTN | 2,317.70 | 1,404.76 | 11.65 | 3,734.11 | 2,352.76 | 1,425.58 | 11.68 | 3,790.01 | 2,354.66 | 1,428.78 | 11.62 | 3,795.06 |
| Medford NWP | 1,041.29 | 631.13 | 5.23 | 1,677.64 | 1,057.04 | 640.48 | 5.25 | 1,702.76 | 1,057.89 | 641.92 | 5.22 | 1,705.03 |
| Roseburg | 787.05 | 609.85 | 21.61 | 1,418.50 | 796.42 | 612.35 | 21.67 | 1,430.44 | 794.75 | 607.57 | 21.59 | 1,423.91 |
| **OR Sub-Total** | **5,480.64** | **3,381.81** | **59.73** | **8,922.18** | **5,554.24** | **3,421.65** | **59.87** | **9,035.76** | **5,548.82** | **3,418.66** | **59.60** | **9,027.08** |
| Wa/Id Both | 9,968.30 | 5,861.22 | 284.90 | 16,114.42 | 10,111.98 | 5,945.05 | 284.53 | 16,341.56 | 10,105.21 | 5,945.21 | 281.49 | 16,331.91 |
| Wa/Id GTN | 1,374.94 | 808.44 | 39.30 | 2,222.68 | 1,394.76 | 820.01 | 39.24 | 2,254.01 | 1,393.82 | 820.03 | 38.83 | 2,252.68 |
| Wa/Id NWP | 5,843.49 | 3,435.89 | 167.01 | 9,446.38 | 5,927.71 | 3,485.03 | 166.79 | 9,579.53 | 5,923.74 | 3,485.12 | 165.01 | 9,573.88 |
| **WA/ID Sub-Total** | **17,186.73** | **10,105.54** | **491.21** | **27,783.48** | **17,434.46** | **10,250.08** | **490.56** | **28,175.10** | **17,422.78** | **10,250.35** | **485.33** | **28,158.46** |
| **Case Total** | **22,667.36** | **13,487.35** | **550.94** | **36,705.65** | **22,988.70** | **13,671.73** | **550.43** | **37,210.86** | **22,971.59** | **13,669.02** | **544.92** | **37,185.54** |

# APPENDIX 2.9: DETAILED DEMAND DATA COLDEST IN 20 YEARS

| Area | 2026: Residential | 2026: Commercial | 2026: Ind FirmSale | 2026 Total | 2027: Residential | 2027: Commercial | 2027: Ind FirmSale | 2027 Total | 2028: Residential | 2028: Commercial | 2028: Ind FirmSale | 2028 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 869.73 | 460.86 | 11.03 | 1,341.62 | 873.10 | 462.83 | 11.02 | 1,346.95 | 882.85 | 467.93 | 11.05 | 1,361.84 |
| La Grande | 470.98 | 279.74 | 10.04 | 760.76 | 471.67 | 280.18 | 10.02 | 761.87 | 475.44 | 282.40 | 10.02 | 767.86 |
| Medford GTN | 2,365.95 | 1,437.26 | 11.60 | 3,814.82 | 2,385.74 | 1,450.06 | 11.59 | 3,847.39 | 2,421.83 | 1,471.48 | 11.62 | 3,904.93 |
| Medford NWP | 1,062.97 | 645.73 | 5.21 | 1,713.90 | 1,071.85 | 651.48 | 5.21 | 1,728.54 | 1,088.07 | 661.10 | 5.22 | 1,754.39 |
| Roseburg | 796.41 | 604.98 | 21.57 | 1,422.96 | 800.60 | 604.10 | 21.56 | 1,426.26 | 810.12 | 606.48 | 21.62 | 1,438.21 |
| **OR Sub-Total** | **5,566.04** | **3,428.57** | **59.46** | **9,054.06** | **5,602.96** | **3,448.65** | **59.40** | **9,111.01** | **5,678.30** | **3,489.38** | **59.53** | **9,227.22** |
| Wa/Id Both | 10,141.63 | 5,970.22 | 279.39 | 16,391.24 | 10,215.45 | 6,015.17 | 277.75 | 16,508.37 | 10,362.60 | 6,101.22 | 277.36 | 16,741.17 |
| Wa/Id GTN | 1,398.85 | 823.48 | 38.54 | 2,260.86 | 1,409.03 | 829.68 | 38.31 | 2,277.02 | 1,429.32 | 841.55 | 38.26 | 2,309.13 |
| Wa/Id NWP | 5,945.09 | 3,499.79 | 163.78 | 9,608.66 | 5,988.37 | 3,526.13 | 162.82 | 9,677.32 | 6,074.63 | 3,576.57 | 162.59 | 9,813.79 |
| **WA/ID Sub-Total** | **17,485.56** | **10,293.49** | **481.70** | **28,260.75** | **17,612.84** | **10,370.98** | **478.88** | **28,462.70** | **17,866.55** | **10,519.34** | **478.21** | **28,864.09** |
| **Case Total** | **23,051.60** | **13,722.06** | **541.15** | **37,314.82** | **23,215.80** | **13,819.63** | **538.28** | **37,573.71** | **23,544.85** | **14,008.72** | **537.74** | **38,091.31** |

| Area | 2029: Residential | 2029: Commercial | 2029: Ind FirmSale | 2029 Total | 2030: Residential | 2030: Commercial | 2030: Ind FirmSale | 2030 Total | 2031: Residential | 2031: Commercial | 2031: Ind FirmSale | 2031 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Klam Falls | 884.65 | 468.96 | 11.02 | 1,364.63 | 882.33 | 468.45 | 11.00 | 1,361.78 | 888.16 | 471.56 | 11.00 | 1,370.71 |
| La Grande | 475.45 | 282.41 | 10.02 | 767.88 | 473.29 | 281.38 | 9.92 | 764.59 | 475.19 | 282.53 | 9.92 | 767.64 |
| Medford GTN | 2,438.52 | 1,482.14 | 11.59 | 3,932.25 | 2,443.66 | 1,487.73 | 11.56 | 3,942.95 | 2,470.54 | 1,504.10 | 11.56 | 3,986.20 |
| Medford NWP | 1,095.57 | 665.89 | 5.21 | 1,766.66 | 1,097.88 | 668.40 | 5.19 | 1,771.47 | 1,109.95 | 675.76 | 5.19 | 1,790.90 |
| Roseburg | 812.81 | 604.38 | 21.56 | 1,438.75 | 812.60 | 600.77 | 21.53 | 1,434.90 | 818.77 | 600.92 | 21.53 | 1,441.22 |
| **OR Sub-Total** | **5,707.01** | **3,503.78** | **59.40** | **9,270.18** | **5,709.75** | **3,506.73** | **59.20** | **9,275.68** | **5,762.62** | **3,534.87** | **59.20** | **9,356.68** |
| Wa/Id Both | 10,420.78 | 6,136.10 | 275.16 | 16,832.04 | 10,429.38 | 6,146.49 | 272.75 | 16,848.61 | 10,533.66 | 6,208.02 | 271.46 | 17,013.14 |
| Wa/Id GTN | 1,437.35 | 846.36 | 37.95 | 2,321.66 | 1,438.53 | 847.79 | 37.62 | 2,323.95 | 1,452.92 | 856.28 | 37.44 | 2,346.64 |
| Wa/Id NWP | 6,108.73 | 3,597.03 | 161.30 | 9,867.06 | 6,113.77 | 3,603.11 | 159.89 | 9,876.77 | 6,174.90 | 3,639.18 | 159.13 | 9,973.22 |
| **WA/ID Sub-Total** | **17,966.86** | **10,579.49** | **474.42** | **29,020.77** | **17,981.69** | **10,597.39** | **470.25** | **29,049.33** | **18,161.48** | **10,703.48** | **468.03** | **29,332.99** |
| **Case Total** | **23,673.87** | **14,083.26** | **533.82** | **38,290.95** | **23,691.44** | **14,104.13** | **529.45** | **38,325.02** | **23,924.10** | **14,238.35** | **527.23** | **38,689.67** |

| Area | 2032: Residential | 2032: Commercial | 2032: Ind FirmSale | 2032 Total | 2033: Residential | 2033: Commercial | 2033: Ind FirmSale | 2033 Total |
|---|---|---|---|---|---|---|---|---|
| Klam Falls | 894.79 | 475.29 | 11.02 | 1,381.09 | 894.69 | 475.49 | 10.98 | 1,381.16 |
| La Grande | 477.34 | 283.87 | 9.88 | 771.09 | 476.41 | 283.31 | 9.86 | 769.58 |
| Medford GTN | 2,499.05 | 1,521.94 | 11.57 | 4,032.57 | 2,511.14 | 1,530.46 | 11.54 | 4,053.14 |
| Medford NWP | 1,122.76 | 683.77 | 5.20 | 1,811.73 | 1,128.20 | 687.60 | 5.18 | 1,820.98 |
| Roseburg | 825.92 | 601.87 | 21.58 | 1,449.37 | 827.15 | 598.74 | 21.51 | 1,447.40 |
| **OR Sub-Total** | **5,819.85** | **3,566.74** | **59.25** | **9,445.85** | **5,837.59** | **3,575.60** | **59.07** | **9,472.27** |
| Wa/Id Both | 10,646.44 | 6,275.91 | 270.61 | 17,192.95 | 10,683.64 | 6,299.86 | 268.18 | 17,251.69 |
| Wa/Id GTN | 1,468.47 | 865.64 | 37.32 | 2,371.44 | 1,473.61 | 868.95 | 36.99 | 2,379.54 |
| Wa/Id NWP | 6,241.01 | 3,678.98 | 158.63 | 10,078.63 | 6,262.83 | 3,693.02 | 157.21 | 10,113.06 |
| **WA/ID Sub-Total** | **18,355.93** | **10,820.53** | **466.56** | **29,643.02** | **18,420.08** | **10,861.82** | **462.39** | **29,744.29** |
| **Case Total** | **24,175.78** | **14,387.28** | **525.82** | **39,088.87** | **24,257.67** | **14,437.42** | **521.46** | **39,216.55** |

# APPENDIX 3.1: AVISTA GAS CPA REPORT 4/23/2014

## Avista Natural Gas Conservation Potential Assessment Results

April 23, 2014

## Topics

- Overview of analysis approach
- Market characterization
- Energy market profile
- Baseline projection
- Conservation potential

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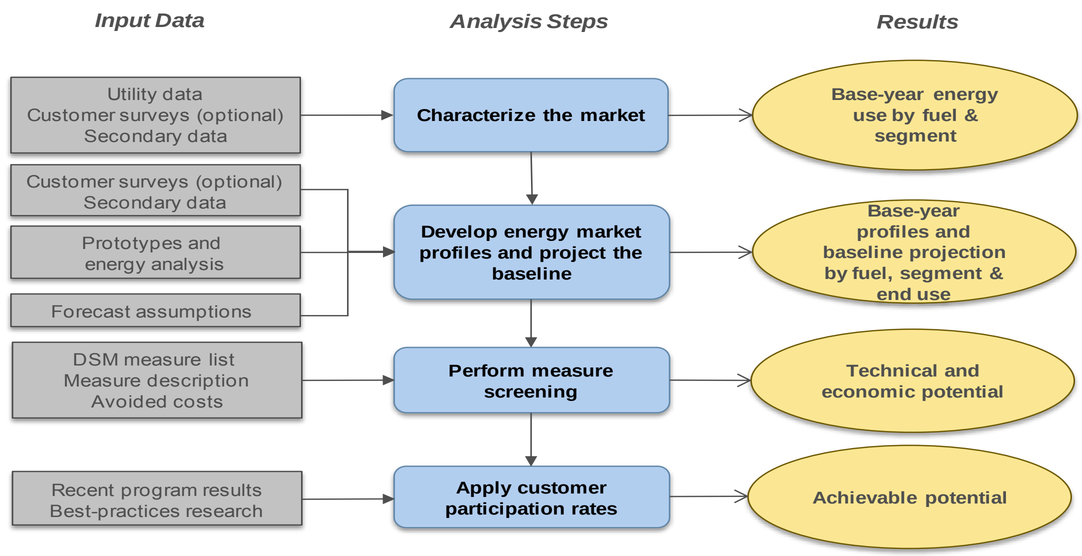
2

# Approach

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3

# Approach

| Market Dimension | Segmentation Variable | Dimension Examples |
|---|---|---|
| 1 | State | Washington, Idaho, and Oregon |
| 2 | Sector | Residential, Commercial, and Industrial |
| 3 | Building type | **Residential**: Single family, Multi Family, and Mobile Home<br>**Commercial**: Small Commercial and Large Commercial<br>**Industrial**: All sectors combined |
| 4 | Vintage | Existing and new construction |
| 5 | End uses | Space heating, water heating, appliances, process, etc. (as appropriate by sector) |
| 6 | Appliances/end uses and technologies | Technologies such as furnaces, boilers, ovens, fryers, etc |
| 7 | Equipment efficiency levels for new purchases | Baseline and higher-efficiency options as appropriate for each technology |

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4

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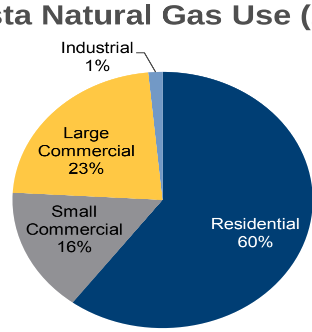
## Market Characterization

## Avista market characterization (All states, 2013)

- Based on 2013 Avista gas sales data
- Excludes transport and Oregon 444

| Avista Total | 2013 Sales (1,000Thrm) | # of Meters | Average Use per Meter (Thrm) |
|---|---|---|---|
| Residential | 199,115 | 288,088 | 691 |
| Small Commercial | 51,825 | 30,410 | 1,704 |
| Large Commercial | 74,664 | 3,875 | 19,266 |
| Industrial | 5,015 | 255 | 19,649 |
| **Total** | **330,619** | **322,628** | **1,025** |

Avista Natural Gas Use (2013)




6

# Avista market characterization (2013)

| Washington | Rate Class | 2013 Sales (1,000Thrm) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Thrm) |
|---|---|---|---|---|---|---|
| Residential | 101 | 102,680 | 59% | 135,792 | 90% | 756 |
| Small Commercial | 101 | 17,267 | 10% | 11,971 | 8% | 1,442 |
| Large Commercial | 111,132 | 51,078 | 29% | 2,469 | 2% | 20,687 |
| Industrial | 101,111,112 | 2,384 | 1% | 134 | 0% | 17,756 |
| **Washington total** | | **173,409** | **100%** | **150,366** | **100%** | **1,153** |

| Idaho | Rate Class | 2013 Sales (1,000Thrm) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Thrm) |
|---|---|---|---|---|---|---|
| Residential | 101 | 46,336 | 61% | 67,415 | 89% | 687 |
| Small Commercial | 101 | 7,725 | 10% | 7,292 | 10% | 1,059 |
| Large Commercial | 111,132 | 19,968 | 26% | 1,335 | 2% | 14,961 |
| Industrial | 101,111,112 | 2,222 | 3% | 94 | 0% | 23,698 |
| **Idaho total** | | **76,250** | **100%** | **76,136** | **100%** | **1,001** |

| Oregon | Rate Class | 2013 Sales (1,000Thrm) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Thrm) |
|---|---|---|---|---|---|---|
| Residential | 410 | 50,099 | 62% | 84,881 | 88% | 590 |
| Small Commercial | 420 | 26,833 | 33% | 11,146 | 12% | 2,407 |
| Large Commercial | 424 | 3,618 | 4% | 72 | 0% | 50,484 |
| Industrial | 420,424 | 410 | 1% | 27 | 0% | 15,044 |
| **Oregon total** | | **80,960** | **100%** | **96,126** | **100%** | **842** |

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7

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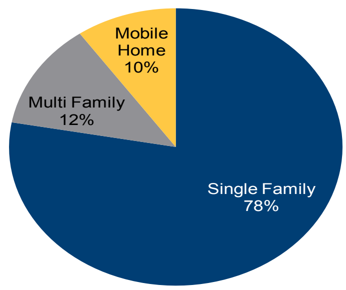
Residential Sector

# Avista residential market characterization (All states, 2013)

| All States Residential | 2013 Sales (1,000 Therms) | # of Meters | Average Use per Household (Therms/HH) |
|---|---|---|---|
| Single Family | 165,435 | 224,253 | 738 |
| Multi Family | 16,935 | 35,706 | 474 |
| Mobile Home | 16,745 | 28,128 | 595 |
| **Total** | **199,115** | **288,088** | **691** |

Avista Residential Natural Gas Use (2013)

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9

# Avista residential market characterization (2013)

| Washington | 2013 Sales (1,000 Therms) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Therms) |
|---|---|---|---|---|---|
| Single Family | 86,211 | 84% | 106,732 | 79% | 808 |
| Multi Family | 9,743 | 9% | 19,147 | 14% | 509 |
| Mobile Home | 6,726 | 7% | 9,913 | 7% | 678 |
| **Washington total** | **102,680** | **100%** | **135,792** | **100%** | **756** |

| Idaho | 2013 Sales (1,000 Therms) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Therms) |
|---|---|---|---|---|---|
| Single Family | 38,758 | 84% | 52,719 | 78% | 735 |
| Multi Family | 4,496 | 10% | 9,708 | 14% | 463 |
| Mobile Home | 3,081 | 7% | 4,989 | 7% | 618 |
| **Idaho total** | **46,336** | **100%** | **67,415** | **100%** | **687** |

| Oregon | 2013 Sales (1,000 Therms) | % of Sales | # of Meters | % of Meters | Average Use/Meter (Therms) |
|---|---|---|---|---|---|
| Single Family | 40,466 | 81% | 64,803 | 76% | 624 |
| Multi Family | 2,695 | 5% | 6,851 | 8% | 393 |
| Mobile Home | 6,938 | 14% | 13,227 | 16% | 525 |
| **Oregon total** | **50,099** | **100%** | **84,881** | **100%** | **590** |

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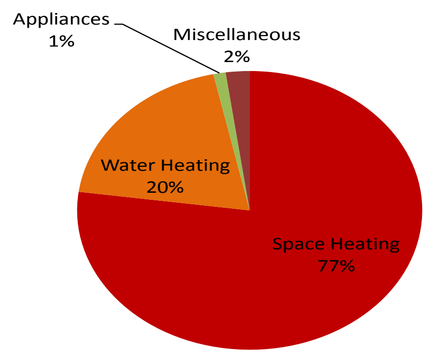
10

# Avista residential market characterization (2013)

- Energy Market Profiles
  - Characterize energy use by sector, segment, end use, and technology
  - Existing, replacement, and new construction
- Accounts for
  - Codes and standards
  - Previous DSM results
  - Equipment saturation and fuel shares

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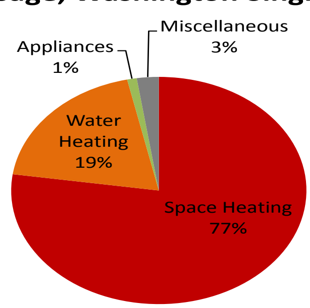
11

# Energy market profile for Washington, single family

| End Use | Technology | Saturation | UEC (Therms) | Intensity (Therms/HH) | Usage (MMThrm) |
|---|---|---|---|---|---|
| Space Heating | Furnace | 87.8% | 623.3 | 547.1 | 58.4 |
| Space Heating | Boiler | 3.6% | 705.8 | 25.5 | 2.7 |
| Space Heating | Other Heating | 8.6% | 600.0 | 51.7 | 5.5 |
| Water Heating | Water Heater | 60.8% | 256.1 | 155.6 | 16.6 |
| Appliances | Clothes Dryer | 8.3% | 30.8 | 2.5 | 0.3 |
| Appliances | Stove/Oven | 10.3% | 57.4 | 5.9 | 0.6 |
| Miscellaneous | Pool Heater | 1.1% | 219.0 | 2.5 | 0.3 |
| Miscellaneous | Miscellaneous | 100.0% | 16.9 | 16.9 | 1.8 |
| **Total** | | | | **807.7** | **86.2** |

**Energy Usage, Washington Single Family**

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12

## Assumptions in the residential baseline projection

- Projection of growth without conservation programs
- Incorporates
  - Customer growth, about 1.5% per year
  - Differences in new homes (i.e., larger than average dwellings)
  - Per capita income growth, about 2.1% per year
  - Retail price forecast
  - Trends in end-use/technology saturations
  - Equipment purchase decisions

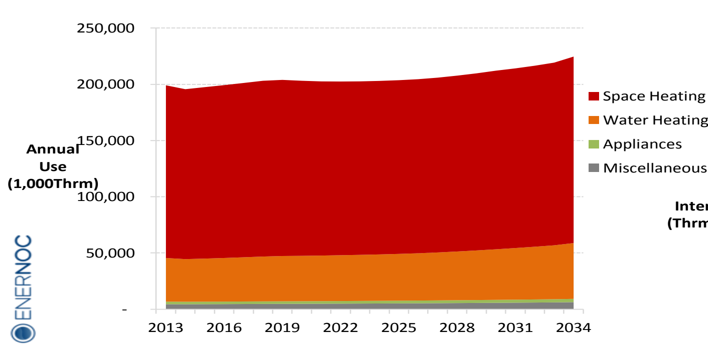
Today's Efficiency or Standard Assumption
Next Standard (relative to today's standard)

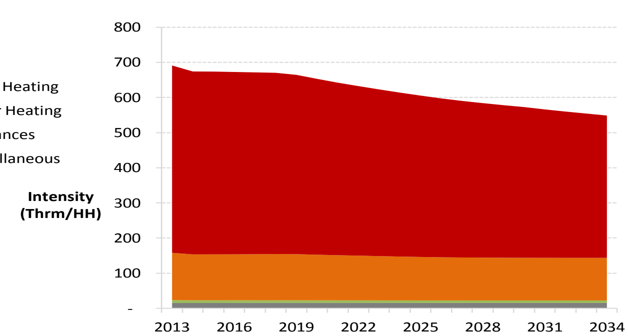
| End Use | Technology | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Space Heating | Furnace | AFUE 90% -Non-weatherized | | AFUE 90% -Weatherized | | | | | | | | | | |
| | Boiler | EF 0.82 | | | | | | | | | | | | |
| Water Heating | Water Heater (<=55 gallons) | EF 0.59 | | EF 0.62 | | | | | | | | | | |
| | Water Heater (>55 gallons) | EF 0.59 | | Condensing Technology | | | | | | | | | | |
| Appliances | Clothes Dryer | Conventional | | 5% more efficient | | | | | | | | | | |
| | Range/Oven | No Standing Pilot Light | | | | | | | | | | | | |
| Miscellaneous | Pool Heater | EF 0.82 | | | | | | | | | | | | |

13

## Residential baseline projection results

- Residential sector use increases 13% from 199 million therms to 224 million therms
- Use per household decreases by 21%
  - Larger home size and income effects are offset by efficiency standards




14

Commercial Sector

# Avista commercial market characterization (2013)

| Washington | 2013 Sales (1,000Thrm) | % of Sales | SqFt | Average Use/SqFt (Thrm) |
|---|---|---|---|---|
| Small Commercial | 17,267 | 25% | 47,567,634 | 0.36 |
| Large Commercial | 51,078 | 75% | 77,391,189 | 0.66 |
| **Washington total** | **68,345** | **100%** | **124,958,823** | **0.55** |

| Idaho | 2013 Sales (1,000Thrm) | % of Sales | SqFt | Average Use/SqFt (Thrm) |
|---|---|---|---|---|
| Small Commercial | 7,725 | 28% | 22,293,951 | 0.35 |
| Large Commercial | 19,968 | 72% | 31,695,198 | 0.63 |
| **Idaho total** | **27,693** | **100%** | **53,989,149** | **0.51** |

| Oregon | 2013 Sales (1,000Thrm) | % of Sales | SqFt | Average Use/SqFt (Thrm) |
|---|---|---|---|---|
| Small Commercial | 26,833 | 88% | 81,311,800 | 0.33 |
| Large Commercial | 3,618 | 12% | 6,030,062 | 0.60 |
| **Oregon total** | **30,451** | **100%** | **87,341,862** | **0.35** |

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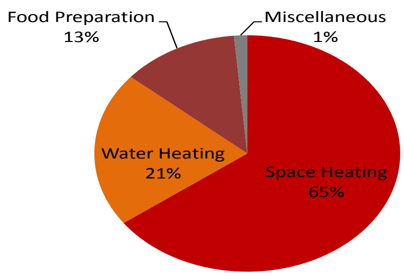
16

# Avista commercial market characterization (2013)

- Energy Market Profiles
  - Characterize energy use by sector, segment, end use, and technology
  - Existing, replacement, and new construction
- Accounts for
  - Codes and standards
  - Previous DSM results
  - Equipment saturation and fuel shares

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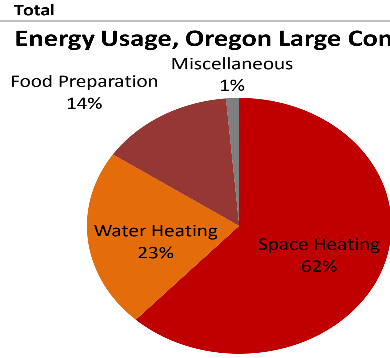
17

# Energy market profile for Oregon, large commercial

| End Use | Technology | Saturation | EUI (Therms) | Intensity (Therms/sqf | Usage (MMThrm) |
|---|---|---|---|---|---|
| Space Heating | Furnace | 45.2% | 0.24 | 0.11 | 0.6 |
| Space Heating | Boiler | 29.8% | 0.77 | 0.23 | 1.4 |
| Space Heating | Other Heating | 16.6% | 0.21 | 0.04 | 0.2 |
| Water Heating | Water Heater | 42.5% | 0.32 | 0.14 | 0.8 |
| Food Preparation | Oven | 16.2% | 0.06 | 0.01 | 0.1 |
| Food Preparation | Fryer | 16.2% | 0.09 | 0.02 | 0.1 |
| Food Preparation | Broiler | 16.2% | 0.09 | 0.02 | 0.1 |
| Food Preparation | Griddle | 16.2% | 0.07 | 0.01 | 0.1 |
| Food Preparation | Range | 16.2% | 0.07 | 0.01 | 0.1 |
| Food Preparation | Steamer | 16.2% | 0.12 | 0.02 | 0.1 |
| Miscellaneous | Pool Heater | 1.2% | 0.09 | 0.00 | 0.0 |
| Miscellaneous | Miscellaneous | 100.0% | 0.01 | 0.01 | 0.1 |
| **Total** | | | | **0.600** | **3.6** |

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18

## Assumptions in the commercial baseline projection

- Projection of growth without conservation programs
- Incorporates
  - Floor space growth, about 1.1% per year
  - Differences in new construction
  - Retail price forecast
  - Trends in end-use/technology saturations
  - Equipment purchase decisions
  - Building codes and appliance standards

Today's Efficiency or Standard Assumption
Next Standard (relative to today's standard)

| End Use | Technology | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Space Heating | Furnace | AFUE 76% | | | | | | | | | | | | |
| | Boiler | EF 0.82 | | | | | | | | | | | | |
| Water Heating | Water Heater | EF 0.80 | | | | | | | | | | | | |
| Miscellaneous | Pool Heater | EF 0.82 | | | | | | | | | | | | |

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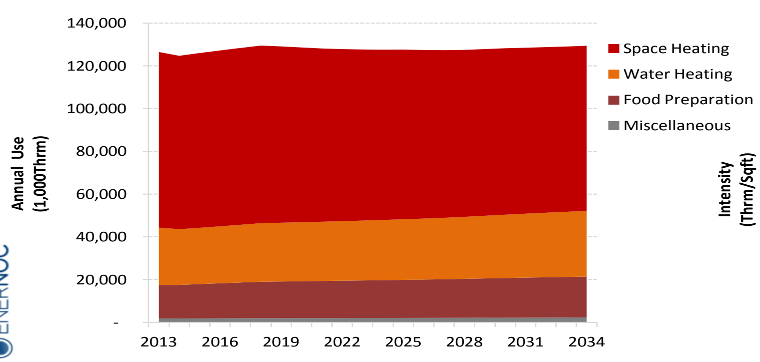
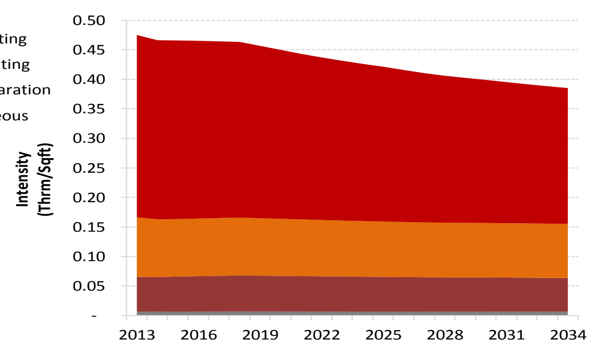
19

## Commercial baseline projection results

- Commercial sector use increases 2% from 127 million therms to 130 million therms
- Use per square footage decreases by 19%
  - Energy consumption stays relatively flat while floor space increases

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20

# Industrial Sector

## Avista industrial market characterization (2013)

| State | 2013 Sales (1,000 Therms) | Square Feet | Average Use/SqFt (Therms) |
|---|---|---|---|
| Washington | 2,384 | 3,009,759 | 0.79 |
| Idaho | 2,222 | 2,927,137 | 0.76 |
| Oregon | 410 | 564,683 | 0.73 |
| **All states total** | **5,015** | **6,501,579** | **0.77** |

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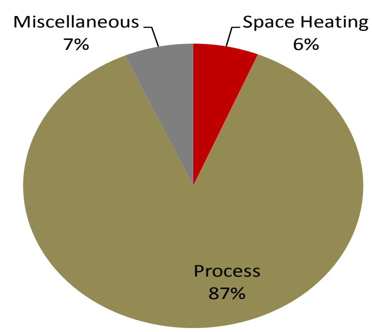
22

# Avista industrial market characterization (2013)

- Energy Market Profiles
  - Characterize energy use by sector, segment, end use, and technology
  - Existing, replacement, and new construction
- Accounts for
  - Codes and standards
  - Previous DSM results
  - Equipment saturation and fuel shares

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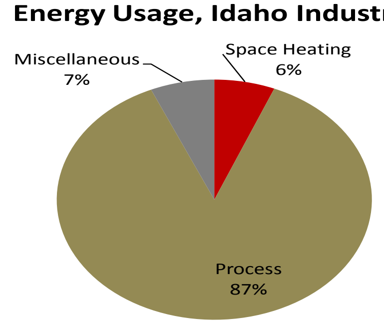
23

# Energy market profile for Idaho, industrial

| End Use | Technology | Saturation | EUI (Therms) | Intensity (Therms/sqft) | Usage (MMThrm) |
|---|---|---|---|---|---|
| Space Heating | Furnace | 9.6% | 0.017 | 0.00 | 0.00 |
| Space Heating | Boiler | 81.3% | 0.055 | 0.04 | 0.13 |
| Space Heating | Other Heating | 4.8% | 0.015 | 0.00 | 0.00 |
| Process | Process Heating | 100.0% | 0.656 | 0.66 | 1.92 |
| Process | Process Cooling | 100.0% | 0.001 | 0.00 | 0.00 |
| Process | Other Process | 100.0% | 0.004 | 0.00 | 0.01 |
| Other | Other Uses | 100.0% | 0.050 | 0.05 | 0.15 |
| **Total** | | | | **0.76** | **2.22** |

**Energy Usage, Idaho Industrial**

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24

## Assumptions in the industrial baseline projection

- Projection of growth without conservation programs
- Incorporates
  - Floor space decline, about 0.5% per year (space consolidation)
  - Differences in new construction
  - Retail price forecast
  - Trends in end-use/technology saturations
  - Equipment purchase decisions
  - Building codes and appliance standards

Today's Efficiency or Standard Assumption
Next Standard (relative to today's standard)

| End Use | Technology | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Space Heating | Furnace | AFUE 76% | | | | | | | | | | | | |
| | Boiler | EF 0.82 | | | | | | | | | | | | |

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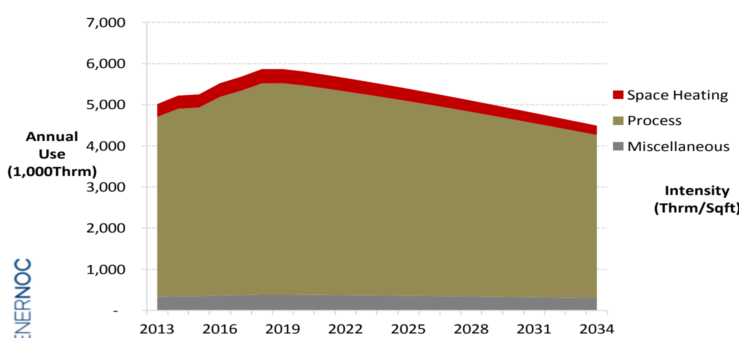
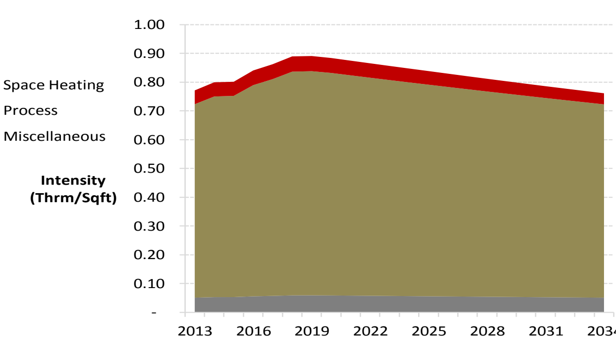
25

## Industrial baseline projection results

- Industrial sector use decreases 10% from 5 million therms to 4.5 million therms
- Use per square footage slightly decreases by 1%

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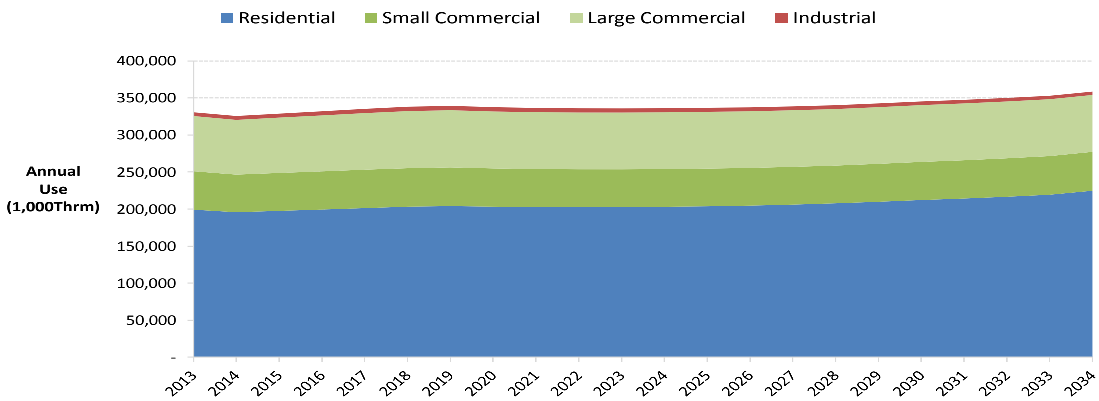
26

## Baseline projection – all sectors

- Overall increase in use 8%
- Average annual growth 0.4%

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27

## Energy conservation measures

- Assessed 1,785 measures
- Measure attributes
  - Average lifetime
  - Energy savings
  - Cost
  - Timing of standards
  - Base-year saturation
  - Applicability / feasibility
- Example: Washington, Single Family, Existing

| Technology | Efficiency Level | Lifetime | Equipment Cost | Energy Usage (Therms/year) | Off Market |
|---|---|---|---|---|---|
| Furnace | 100.0% | 20 | $3,651 | 565 | 2014 |
| Furnace | 97.5% | 20 | $4,056 | 551 | 2014 |
| Furnace | 94.0% | 20 | $4,259 | 531 | 2014 |
| Furnace | 87.7% | 20 | $4,462 | 495 | 2034 |
| Furnace | 81.6% | 20 | $6,084 | 461 | 2034 |

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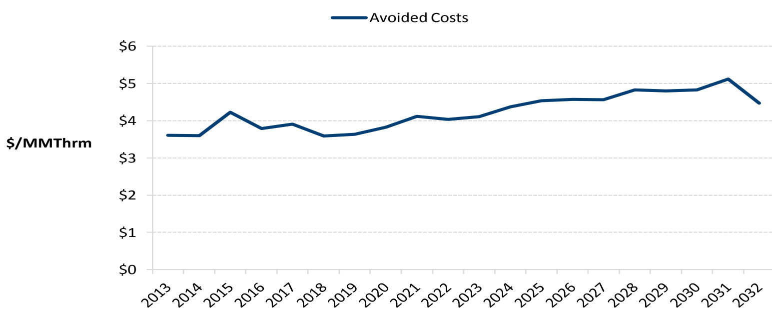
28

## Conservation potential assumptions

- Three levels of potential
  - *Technical potential* – all applicable measures are implemented, regardless of cost
  - *Economic potential* – all cost-effective measures
    - TRC test with B/C ratio ≥ 1.0 (Idaho and Oregon)
    - UCT test with B/C ratio ≥ 1.0 (Washington)
  - *Achievable potential* – accounts for market acceptance and rates at which programs can realistically be implemented
    - Based on Sixth Plan ramp rates

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29

## Summary of CPA results (across all states)

- Achievable potential begins at 40% of economic potential in 2015 and reaches 74% by 2034

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 328,757 | 331,980 | 338,917 | 336,073 | 358,562 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 1,677 | 2,639 | 9,854 | 20,369 | 36,110 |
| Economic Potential | 4,153 | 5,877 | 17,317 | 32,220 | 48,528 |
| Technical Potential | 12,207 | 18,677 | 51,810 | 96,562 | 162,236 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.5% | 0.8% | 2.9% | 6.1% | 10.1% |
| Economic Potential | 1.3% | 1.8% | 5.1% | 9.6% | 13.5% |
| Technical Potential | 3.7% | 5.6% | 15.3% | 28.7% | 45.2% |

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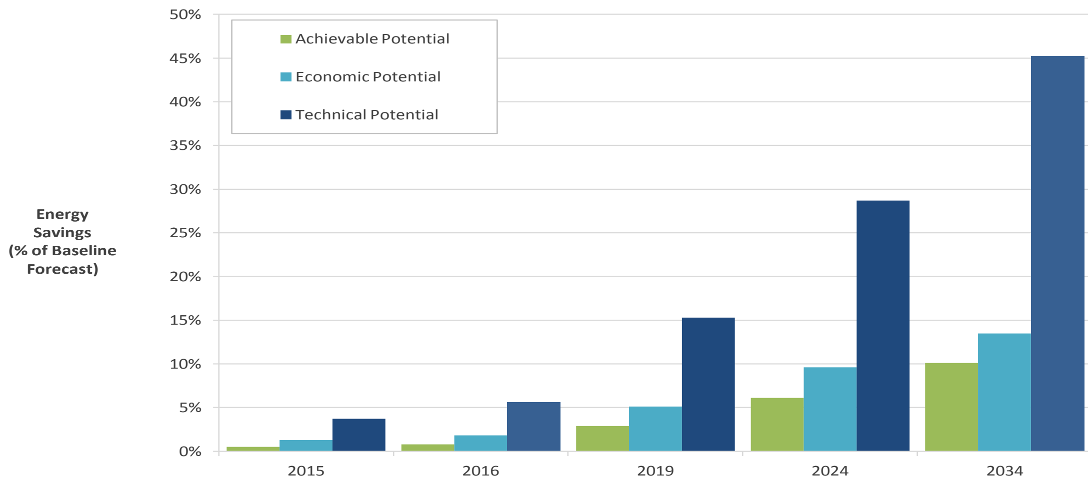
30

## Summary of CPA results (continued)

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31

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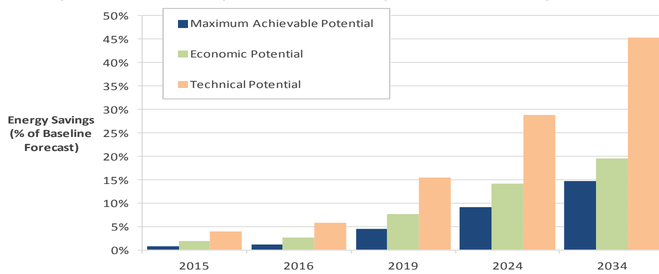
## Savings by State - Washington

## Total potential results, Washington

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 171,422 | 172,719 | 175,548 | 173,273 | 179,456 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 1,287 | 2,024 | 7,742 | 15,656 | 26,259 |
| Economic Potential | 3,127 | 4,385 | 13,330 | 24,445 | 35,042 |
| Technical Potential | 6,620 | 9,963 | 26,953 | 50,035 | 81,431 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.8% | 1.2% | 4.4% | 9.0% | 14.6% |
| Economic Potential | 1.8% | 2.5% | 7.6% | 14.1% | 19.5% |
| Technical Potential | 3.9% | 5.8% | 15.4% | 28.9% | 45.4% |



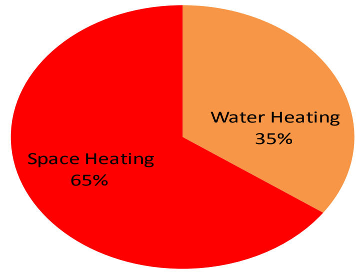



## Residential potential results, Washington

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 101,488 | 102,205 | 104,445 | 103,847 | 112,733 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 370 | 682 | 4,604 | 8,733 | 12,938 |
| Economic Potential | 964 | 1,471 | 7,571 | 13,180 | 16,955 |
| Technical Potential | 3,017 | 4,832 | 15,965 | 28,899 | 49,110 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.4% | 0.7% | 4.4% | 8.4% | 11.5% |
| Economic Potential | 1.0% | 1.4% | 7.2% | 12.7% | 15.0% |
| Technical Potential | 3.0% | 4.7% | 15.3% | 27.8% | 43.6% |

# Residential results – Key measures, Washington

| Measure / Technology | 2024 Cumulative Savings (1,000Thrm) |
|---|---|
| Insulation - Infiltration Control | |
| Water Heating - Low Flow Showerheads | |
| Ducting - Repair and Sealing | |
| Home Energy Management System | |
| Thermostat - Clock/Programmable | |
| Water Heating - Thermostat Setback | |
| Water Heating - Hot Water Saver | |
| Water Heating - Tank Blanket/Insulation | |
| Water Heating - Faucet Aerators | |
| Water Heating - Pipe Insulation | |
| Insulation - Ceiling | 61 |
| Boiler - Pipe Insulation | 58 |
| Insulation - Attic Hatch | 49 |
| Insulation - Wall Cavity | 5 |
| **Total** | **8,733** |




35

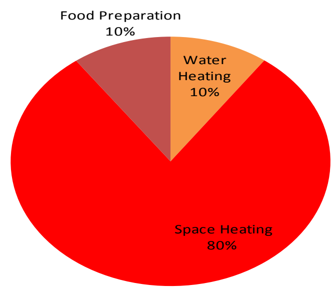
# Commercial potential results, Washington

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 67,462 | 67,947 | 68,368 | 66,870 | 64,746 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 893 | 1,305 | 3,020 | 6,704 | 13,100 |
| Economic Potential | 2,138 | 2,874 | 5,635 | 11,012 | 17,839 |
| Technical Potential | 3,555 | 5,061 | 10,803 | 20,762 | 31,923 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 1.3% | 1.9% | 4.4% | 10.0% | 20.2% |
| Economic Potential | 3.2% | 4.2% | 8.2% | 16.5% | 27.6% |
| Technical Potential | 5.3% | 7.4% | 15.8% | 31.0% | 49.3% |

36

## Commercial results – Key measures, Washington

| Measure / Technology | 2024 Cumulative Savings (1,000Thrm) |
|---|---|
| Space Heating - Heat Recovery Ventilator | 1,545 |
| Energy Management System | |
| Custom Measures | |
| Boiler - Hot Water Reset | |
| Water Heating - Faucet Aerators | |
| Furnace - Maintenance | |
| Boiler - Maintenance | |
| Space Heating - Furnace | |
| Thermostat - Clock/Programmable | |
| Insulation - Ceiling | |
| Advanced New Construction Designs | |
| Insulation - Wall Cavity | |
| Boiler - High Efficiency Hot Water Circulation | |
| Food Preparation - Fryer | |
| Food Preparation - Oven | 129 |
| Food Preparation - Steamer | 113 |
| Food Preparation - Range | 101 |
| Food Preparation - Griddle | 81 |
| Water Heating - Tank Blanket/Insulation | 53 |
| Space Heating - Boiler | 34 |
| Water Heating - Hot Water Saver | 4 |
| **Total** | **6,704** |

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37

## Industrial potential results, Washington

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 2,472 | 2,567 | 2,735 | 2,555 | 1,977 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 24 | 38 | 118 | 220 | 220 |
| Economic Potential | 25 | 39 | 124 | 253 | 248 |
| Technical Potential | 48 | 69 | 184 | 374 | 398 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 1.0% | 1.5% | 4.3% | 8.6% | 11.1% |
| Economic Potential | 1.0% | 1.5% | 4.5% | 9.9% | 12.6% |
| Technical Potential | 1.9% | 2.7% | 6.7% | 14.6% | 20.1% |

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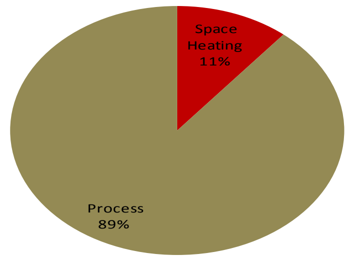
38

# Industrial results – Key measures, Washington

| Measure / Technology | 202 (1 |
|---|---|
| Process - Boiler Hot Water Reset | |
| Insulation - Wall Cavity | |
| Space Heating - Heat Recovery Ventilator | |
| **Total** | |

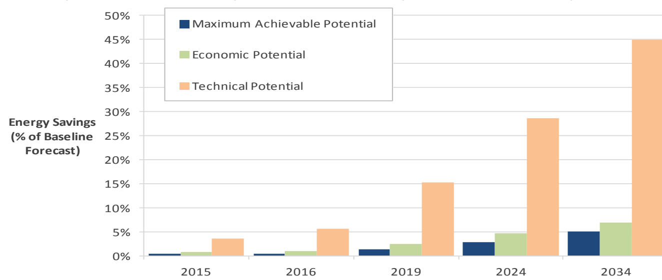



39

## Savings by State - Idaho

## Total potential results, Idaho

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 77,988 | 79,291 | 82,115 | 82,171 | 89,483 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 228 | 342 | 1,031 | 2,320 | 4,503 |
| Economic Potential | 571 | 803 | 1,984 | 3,881 | 6,209 |
| Technical Potential | 2,818 | 4,387 | 12,471 | 23,483 | 40,252 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.3% | 0.4% | 1.3% | 2.8% | 5.0% |
| Economic Potential | 0.7% | 1.0% | 2.4% | 4.7% | 6.9% |
| Technical Potential | 3.6% | 5.5% | 15.2% | 28.6% | 45.0% |

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41

## Residential potential results, Idaho

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 46,978 | 47,633 | 49,132 | 49,102 | 55,990 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 6 | 18 | 263 | 496 | 874 |
| Economic Potential | 10 | 31 | 434 | 756 | 1,117 |
| Technical Potential | 1,239 | 2,065 | 7,276 | 13,308 | 24,129 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.0% | 0.0% | 0.5% | 1.0% | 1.6% |
| Economic Potential | 0.0% | 0.1% | 0.9% | 1.5% | 2.0% |
| Technical Potential | 2.6% | 4.3% | 14.8% | 27.1% | 43.1% |

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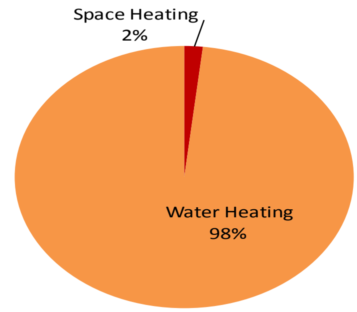
42

# Residential results – Key measures, Idaho

| Measure / Technology | 202 ( |
|---|---|
| Water Heating - Pipe Insulation | |
| Water Heating - Tank Blanket/Insulation | |
| Water Heating - Low Flow Showerheads | |
| Boiler - Pipe Insulation | |
| Insulation - Ceiling | |
| **Total** | |

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43

# Commercial potential results, Idaho

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 28,645 | 29,129 | 30,299 | 30,572 | 31,360 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 220 | 320 | 760 | 1,786 | 3,478 |
| Economic Potential | 559 | 768 | 1,543 | 3,083 | 4,921 |
| Technical Potential | 1,533 | 2,253 | 5,014 | 9,808 | 15,689 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 0.8% | 1.1% | 2.5% | 5.8% | 11.1% |
| Economic Potential | 2.0% | 2.6% | 5.1% | 10.1% | 15.7% |
| Technical Potential | 5.4% | 7.7% | 16.5% | 32.1% | 50.0% |

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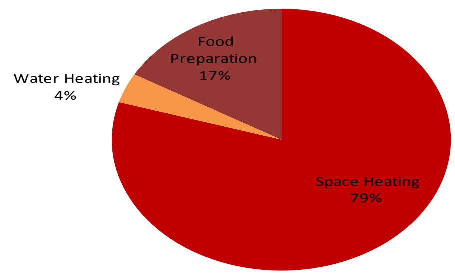
44

## Commercial results – Key measures, Idaho

| Measure / Technology | 2024 Cumulative S (1,0 |
|---|---|
| Space Heating - Heat Recovery Ventilator | |
| Energy Management System | |
| Boiler - Hot Water Reset | |
| Boiler - Maintenance | |
| Space Heating - Furnace | |
| Food Preparation - Fryer | |
| Boiler - High Efficiency Hot Water Circulation | |
| Food Preparation - Oven | |
| Food Preparation - Steamer | |
| Food Preparation - Range | [illegible] |
| Water Heating - Faucet Aerators | 40 |
| Food Preparation - Griddle | 40 |
| Water Heating - Tank Blanket/Insulation | 26 |
| Insulation - Ceiling | 8 |
| **Total** | **1,786** |

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45

## Industrial potential results, Idaho

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 2,365 | 2,530 | 2,684 | 2,497 | 2,133 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 3 | 4 | 7 | 38 | 151 |
| Economic Potential | 3 | 4 | 8 | 43 | 172 |
| Technical Potential | 46 | 69 | 181 | 368 | 434 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 0.1% | 0.1% | 0.3% | 1.5% | 7.1% |
| Economic Potential | 0.1% | 0.1% | 0.3% | 1.7% | 8.1% |
| Technical Potential | 1.9% | 2.7% | 6.8% | 14.7% | 20.3% |

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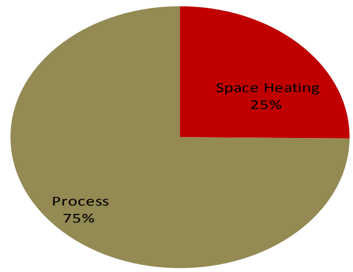
46

# Industrial results – Key measures, Idaho

| Measure / Technology |
| --- |
| Process - Boiler Hot Water Reset |
| Insulation - Wall Cavity |
| **Total** |

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47

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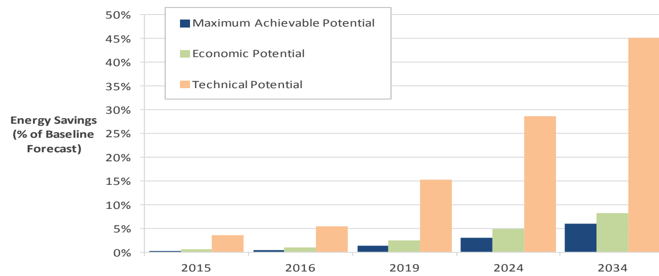
## Savings by State - Oregon

## Total potential results, Oregon

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 79,346 | 79,969 | 81,255 | 80,629 | 89,623 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 161 | 273 | 1,081 | 2,393 | 5,349 |
| Economic Potential | 454 | 690 | 2,004 | 3,894 | 7,276 |
| Technical Potential | 2,769 | 4,327 | 12,387 | 23,043 | 40,553 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.2% | 0.3% | 1.3% | 3.0% | 6.0% |
| Economic Potential | 0.6% | 0.9% | 2.5% | 4.8% | 8.1% |
| Technical Potential | 3.5% | 5.4% | 15.2% | 28.6% | 45.2% |

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49

## Residential potential results, Oregon

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 49,029 | 49,426 | 50,374 | 50,070 | 55,947 |
| **Cumulative Natural Gas Savings (1,000Thrm)** | | | | | |
| Achievable Potential | 8 | 27 | 376 | 679 | 1,368 |
| Economic Potential | 14 | 44 | 595 | 1,006 | 1,690 |
| Technical Potential | 1,326 | 2,218 | 7,699 | 13,823 | 24,244 |
| **Cumulative Natural Gas Savings (% of Baseline)** | | | | | |
| Achievable Potential | 0.0% | 0.1% | 0.7% | 1.4% | 2.4% |
| Economic Potential | 0.0% | 0.1% | 1.2% | 2.0% | 3.0% |
| Technical Potential | 2.7% | 4.5% | 15.3% | 27.6% | 43.3% |

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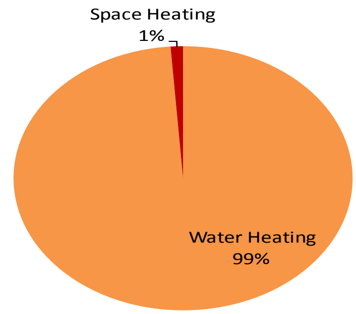
50

## Residential results – Key measures, Oregon

| Measure / Technology | 202 (1 |
|---|---|
| Water Heating - Pipe Insulation | |
| Water Heating - Tank Blanket/Insulation | |
| Water Heating - Faucet Aerators | |
| Water Heating - Low Flow Showerheads | |
| Insulation - Ceiling | |
| Boiler - Pipe Insulation | |
| **Total** | |




51

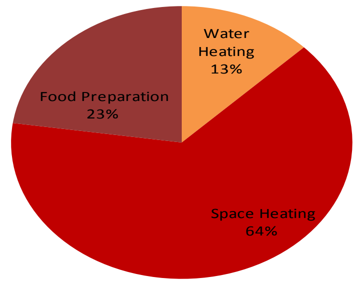
## Commercial potential results, Oregon

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 29,902 | 30,115 | 30,433 | 30,134 | 33,296 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 153 | 245 | 704 | 1,704 | 3,944 |
| Economic Potential | 440 | 645 | 1,407 | 2,876 | 5,545 |
| Technical Potential | 1,434 | 2,097 | 4,657 | 9,158 | 16,232 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 0.5% | 0.8% | 2.3% | 5.7% | 11.8% |
| Economic Potential | 1.5% | 2.1% | 4.6% | 9.5% | 16.7% |
| Technical Potential | 4.8% | 7.0% | 15.3% | 30.4% | 48.7% |

52

# Commercial results – Key measures, Oregon

| Measure / Technology | 202[illegible] |
|---|---|
| Space Heating - Heat Recovery Ventilator | [illegible] |
| Space Heating - Furnace | [illegible] |
| Water Heating - Faucet Aerators | [illegible] |
| Water Heating - Tank Blanket/Insulation | [illegible] |
| Food Preparation - Fryer | [illegible] |
| Food Preparation - Oven | [illegible] |
| Boiler - Maintenance | [illegible] |
| Food Preparation - Steamer | [illegible] |
| Food Preparation - Range | [illegible] |
| Energy Management System | 37 |
| Food Preparation - Griddle | 34 |
| Insulation - Ceiling | 30 |
| Boiler - Hot Water Reset | 29 |
| Boiler - High Efficiency Hot Water Circulation | 13 |
| **Total** | **1,704** |

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53

# Industrial potential results, Oregon

| | 2015 | 2016 | 2019 | 2024 | 2034 |
|---|---|---|---|---|---|
| Baseline Forecast | 415 | 427 | 448 | 425 | 380 |
| Cumulative Natural Gas Savings (1,000Thrm) | | | | | |
| Achievable Potential | 0 | 1 | 1 | 10 | 36 |
| Economic Potential | 0 | 1 | 1 | 11 | 41 |
| Technical Potential | 8 | 12 | 30 | 63 | 77 |
| Cumulative Natural Gas Savings (% of Baseline) | | | | | |
| Achievable Potential | 0.1% | 0.1% | 0.3% | 2.4% | 9.6% |
| Economic Potential | 0.1% | 0.1% | 0.3% | 2.7% | 10.9% |
| Technical Potential | 1.9% | 2.7% | 6.8% | 14.7% | 20.3% |

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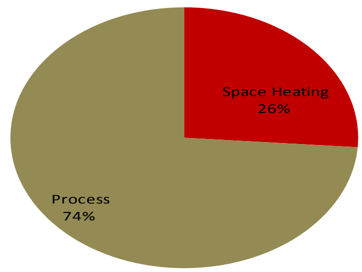
54

## Industrial results – Key measures, Oregon

| Measure / Technology | Cu<br>(1, |
|---|---|
| Process - Boiler Hot Water Reset | |
| Insulation - Wall Cavity | |
| **Total** | |

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55

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# APPENDIX 3.2: ENVIRONMENTAL EXTERNALITIES OVERVIEW (OREGON JURISDICTION ONLY)

The methodology for determining avoided costs from reduced incremental natural gas usage considers commodity and variable transportation costs only. These avoided cost streams do not include environmental externality costs related to the gathering, transmission, distribution or end-use of natural gas.

Per traditional economic theory and industry practice, an environmental externality factor is typically added to the avoided cost when there is an opportunity to displace traditional supply-side resources with an alternative resource with no adverse environmental impact.

## REGULATORY GUIDANCE

The Oregon Public Utility Commission (OPUC) issued Order 93-965 (UM-424) to address how utilities should consider the impact of environmental externalities in planning for future energy resources. The Order required analysis on the potential natural gas cost impacts from emitting carbon dioxide ($CO_2$) and nitric-oxide (NOx).

The OPUC’s Order No. 07-002 in Docket UM 1056 (Investigation Into Integrated Resource Planning) established the following guideline for the treatment of environmental costs used by energy utilities that evaluate demand-side and supply-side energy choices:

> UM 1056, Guideline 8 - Environmental Costs
>
> *“Utilities should include, in their base-case analyses, the regulatory compliance costs they expect for carbon dioxide ($CO_2$), nitrogen oxides (NOx), sulfur oxides ($SO_2$), and mercury (Hg) emissions. Utilities should analyze the range of potential CO2 regulatory costs in Order No. 93-695, from $0 - $40 (1990$). In addition, utilities should perform sensitivity analysis on a range of reasonably possible cost adders for nitrogen oxides (NOx), sulfur dioxide (SO2), and mercury (Hg), if applicable.*

In June 2008, the OPUC issued Order 08-338 (UM1302) which revised UM1056, Guideline 8. The revised guideline requires the utility should construct a base case portfolio to reflect what it considers to be the most likely regulatory compliance future for the various emissions. Additionally the guideline requires the utility to develop several compliance scenarios ranging from the present CO2 regulatory level to the upper reaches of credible proposals and each scenario should include a time profile of CO2 costs. The utility is also required to include a “trigger point” analysis in which the utility must determine at what level of carbon costs its selection of portfolio resources would be significantly different.

## ANALYSIS

Unlike electric utilities, environmental cost issues rarely impact a natural gas utility's supply-side resource options. This is because the only supply-side energy resource is natural gas. The utility cannot choose between say "dirty" coal-fired generation and "clean" wind energy sources. The supply-side implication of environmental externalities generally relates to combustion of fuel to move or compress natural gas. Avista’s direct gas distribution system infrastructure relies solely on the upstream line pressure of the interstate pipeline transportation network to distribute natural gas to its customers and thus does not directly combust fuels that result in any $CO_2$, NOx, SO2, or Hg emissions.

Upstream gas system infrastructure (pipelines, storage facilities, and gathering systems), however, do produce $CO_2$ emissions via compressors used to pressurize and move natural gas. Accessing $CO_2$ emissions data on these upstream activities to perform detailed meaningful analysis is challenging. In the 2009 Natural Gas IRP there was significant momentum regarding GHG legislation and the movement towards the creation of carbon cap and trade markets or tax structure. Since then, the momentum has slowed significantly. Where there is still a focus on reducing GHG emissions and improving the nation's carbon footprint, the timing of implementing a carbon cap and trade/tax framework has been delayed. Additionally, the pricing level of the framework has been greatly reduced.. Whichever structure ultimately gets implemented, Avista believes the cost pass through mechanisms for upstream gas system infrastructure will not make a difference in supply-side resource selection although the amount of cost pass through could differ widely.

Table 3.2.1 summarizes a range of environmental cost adders we believe capture several compliance futures including our expected scenario. The CO2 cost adders reflect outlooks we obtained from one of our consultants, and following discussion and feedback from the TAC, have been incorporated into our Expected, Low Growth/High Price, and Alternate Planning Standard portfolios.

The guidelines also call for a trigger point analysis that reflects a "turning point" at which an alternate resource portfolio would be selected at different carbon cost adders levels. Because natural gas is the only supply resource applicable to LDC's any alternate resource portfolio selection would be a result of delivery methods of natural gas to customers. Conceptually, there could be differing levels of cost adders applicable to pipeline transported supply versus in service territory LNG storage gas. From a practical standpoint however, the differences in these relative cost adders would be very minor and would not change supply-side resource selection regardless of various carbon cost adder levels. We do acknowledge there is influence to the avoided costs which would impact the cost effectiveness of demand-side measures in the DSM business planning process.

## CONSERVATON COST ADVANTAGE

For this IRP, we also incorporated a 10 percent environmental externality factor into our assessment of the cost-effectiveness of existing demand-side management programs. Our assessment of prospective demand-side management opportunities is based on an avoided cost stream that includes this 10 percent factor.

Environmental externalities were evaluated in the IRP by adding the cost per therm equivalent of the externality cost values to supply-side resources as described in OPUC Order No. 93-965. Avista found that the environmental cost adders had no impact on the company's supply-side choices, although they did impact the level of demand-side measures that could be cost-effective to acquire.

## REGULATORY FILING

Avista will file revised cost-effectiveness limits (CELs) based upon the updated avoided costs available from this IRP process within the prescribed regulatory timetable.

# TABLE 3.2.1: ENVIRONMENTAL EXTERNALITIES COST ADDER ANALYSIS (2012$)

| | | | 2020 | 2025 | 2030 | 2035 |
|---|---|---|---|---|---|---|
| Expected Carbon Case | NOx | $/ton | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 |
| | | $/lb | $ 1.25 | $ 1.25 | $ 1.25 | $ 1.25 |
| | | lbs/therm | 0.008 | 0.008 | 0.008 | 0.008 |
| | | NOx Adder $/therm | $ 0.01 | $ 0.01 | $ 0.01 | $ 0.01 |
| | CO2 | $/ton | $ 8.32 | $ 10.59 | $ 12.85 | $ 14.83 |
| | | $/lb | $ 0.0042 | $ 0.0051 | $ 0.0064 | $ 0.0074 |
| | | lbs/therm | 11.64 | 11.64 | 11.64 | 11.64 |
| | | CO2 Adder $/therm | $ 0.05 | $ 0.06 | $ 0.07 | $ 0.09 |
| | Total | **Total Adders $/therm** | **$ 0.06** | **$ 0.07** | **$ 0.08** | **$ 0.10** |
| | | | **2020** | **2025** | **2030** | **2035** |
| High Carbon Case | NOx | $/ton | $ 2,500 | $ 2,500 | $ 2,500 | $ 2,500 |
| | | $/lb | $ 1.25 | $ 1.25 | $ 1.25 | $ 1.25 |
| | | lbs/therm | 0.008 | 0.008 | 0.008 | 0.008 |
| | | NOx Adder $/therm | $ 0.01 | $ 0.01 | $ 0.01 | $ 0.01 |
| | CO2 | $/ton | $ 16.00 | $ 20.00 | $ 25.00 | $ 27.00 |
| | | $/lb | $ 0.0080 | $ 0.0100 | $ 0.0125 | $ 0.0135 |
| | | lbs/therm | 11.64 | 11.64 | 11.64 | 11.64 |
| | | CO2 Adder $/therm | $ 0.09 | $ 0.12 | $ 0.15 | $ 0.16 |
| | Total | **Total Adders $/therm** | **$ 0.10** | **$ 0.13** | **$ 0.16** | **$ 0.17** |
| | | | **2020** | **2025** | **2030** | **2035** |
| Expected Carbon Low Nox | NOx | $/ton | $ 500 | $ 500 | $ 500 | $ 500 |
| | | $/lb | $ 0.25 | $ 0.25 | $ 0.25 | $ 0.25 |
| | | lbs/therm | 0.008 | 0.008 | 0.008 | 0.008 |
| | | NOx Adder $/therm | $ 0.00 | $ 0.00 | $ 0.00 | $ 0.00 |
| | CO2 | $/ton | $ - | $ 5.00 | $ 5.00 | $ 5.00 |
| | | $/lb | $ - | $ 0.0025 | $ 0.0025 | $ 0.0025 |
| | | lbs/therm | 11.64 | 11.64 | 11.64 | 11.64 |
| | | CO2 Adder $/therm | $ - | $ 0.03 | $ 0.03 | $ 0.03 |
| | Total | **Total Adders $/therm** | **$ 0.00** | **$ 0.03** | **$ 0.03** | **$ 0.03** |

# APPENDIX 4.1: CURRENT TRANSPORTATION/STORAGE RATES AND ASSUMPTIONS

**Rates in US$/Dth/Day**

| | Reservation | Commodity | Fuel Rate 3/ | Rate Change Assumptions |
|---|---|---|---|---|
| **TransCanada Alberta System Firm Rates -** | | | | |
| Postage Stamp Rates | | | | |
| AECo/NIT to ABC | 0.1910 | - | 0.00% | Changes every three years |
| AECo/NIT to ABC Winter Only | 0.2388 | | 0.00% | Changes every three years |
| **TransCanada BC System Firm Rates -** | | | | |
| Postage Stamp Rates | | | | |
| ABC to Kingsgate | 0.0897 | 0.0300 | 0.38% | Changes every three years |
| **GTN FTS-1 Rates** | | | | |
| Mileage Based - Representative Example | | | | |
| Kingsgate to Spokane | 0.0949 | 0.0017 | 0.31% | Changes every five years |
| Kingsgate to Medford | 0.3471 | 0.0096 | 1.38% | Changes every five years |
| Meford Lateral | 0.2953 | - | 0.00% | Changes every five years |
| **Spectra Energy/Westcoast System Firm Rates -** | | | | |
| Postage Stamp Rates | | | | |
| Station 2 to Huntington/Sumas | 0.5444 | - | 2.13% | Changes every three years |
| **Williams NWP** | | | | |
| Postage Stamp Rates | | | | |
| TF-1 1/ | 0.4100 | 0.03370 | 1.45% | Changes every five years |
| TF-2 1/ | 0.4100 | 0.03370 | 1.45% | Changes every five years |
| SGS-2F 2/ | 0.0156 | 0.03370 | 1.60% | Changes every five years |

1/ TF-1 based upon annual delivery capability. TF-2 based upon approximately 32 days of delivery capability
2/ Not applicable for WA/ID Customers
3/ Fuel retained in-kind

## APPENDIX 4.2: ALTERNATE SUPPLY SCENARIOS

| | Existing Resources | Existing + Expected Available | GTN Fully Subscribed |
|---|---|---|---|
| **INPUT ASSUMPTIONS** | | | |
| **Resources** | Currently contracted capacity net of long term releases | Currently contracted capacity net of long term releases | Currently contracted capacity net of long term releases |
| | | Currently available GTN | |
| | | Capacity Release Recalls | Capacity Release Recalls |
| | | NWP Expansions | NWP Expansions |
| | | Satellite LNG | Satellite LNG |
| **Rates** | Current Rates | Current Rates | Current Rates |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
# EXPECTED PRICE

| | | | | | | | 2012$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Index | Gas Year | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| Expected Case | AECO | 2013-2014 | $ 3.26 | $ 3.65 | $ 4.18 | $ 3.34 | $ 3.44 | $ 3.42 | $ 3.37 | $ 3.38 | $ 3.37 | $ 3.30 | $ 3.33 | $ 3.18 |
| Expected Case | AECO | 2014-2015 | $ 3.28 | $ 3.26 | $ 3.34 | $ 3.38 | $ 3.48 | $ 3.36 | $ 3.35 | $ 3.39 | $ 3.45 | $ 3.49 | $ 3.54 | $ 3.61 |
| Expected Case | AECO | 2015-2016 | $ 3.78 | $ 3.91 | $ 3.96 | $ 3.88 | $ 3.93 | $ 3.73 | $ 3.60 | $ 3.61 | $ 3.62 | $ 3.45 | $ 3.36 | $ 3.38 |
| Expected Case | AECO | 2016-2017 | $ 3.52 | $ 3.45 | $ 3.45 | $ 3.49 | $ 3.54 | $ 3.40 | $ 3.37 | $ 3.39 | $ 3.40 | $ 3.40 | $ 3.42 | $ 3.46 |
| Expected Case | AECO | 2017-2018 | $ 3.60 | $ 3.61 | $ 3.62 | $ 3.62 | $ 3.59 | $ 3.38 | $ 3.31 | $ 3.28 | $ 3.25 | $ 3.23 | $ 3.25 | $ 3.27 |
| Expected Case | AECO | 2018-2019 | $ 3.48 | $ 3.40 | $ 3.25 | $ 3.28 | $ 3.36 | $ 3.22 | $ 3.18 | $ 3.16 | $ 3.19 | $ 3.18 | $ 3.21 | $ 3.25 |
| Expected Case | AECO | 2019-2020 | $ 3.46 | $ 3.46 | $ 3.24 | $ 3.32 | $ 3.45 | $ 3.32 | $ 3.28 | $ 3.30 | $ 3.31 | $ 3.32 | $ 3.32 | $ 3.39 |
| Expected Case | AECO | 2020-2021 | $ 3.53 | $ 3.47 | $ 3.33 | $ 3.40 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.60 | $ 3.59 | $ 3.62 | $ 3.67 | $ 3.72 |
| Expected Case | AECO | 2021-2022 | $ 3.84 | $ 3.89 | $ 3.96 | $ 3.95 | $ 3.85 | $ 3.60 | $ 3.54 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.63 | $ 3.68 |
| Expected Case | AECO | 2022-2023 | $ 3.95 | $ 3.97 | $ 3.94 | $ 3.93 | $ 3.91 | $ 3.71 | $ 3.58 | $ 3.55 | $ 3.55 | $ 3.56 | $ 3.65 | $ 3.71 |
| Expected Case | AECO | 2023-2024 | $ 4.02 | $ 4.11 | $ 4.22 | $ 4.26 | $ 4.26 | $ 4.04 | $ 3.92 | $ 3.89 | $ 3.88 | $ 3.90 | $ 3.99 | $ 4.05 |
| Expected Case | AECO | 2024-2025 | $ 4.34 | $ 4.43 | $ 4.50 | $ 4.48 | $ 4.45 | $ 4.26 | $ 4.23 | $ 4.22 | $ 4.21 | $ 4.23 | $ 4.30 | $ 4.37 |
| Expected Case | AECO | 2025-2026 | $ 4.61 | $ 4.69 | $ 4.67 | $ 4.70 | $ 4.70 | $ 4.47 | $ 4.40 | $ 4.37 | $ 4.36 | $ 4.38 | $ 4.45 | $ 4.50 |
| Expected Case | AECO | 2026-2027 | $ 4.79 | $ 4.85 | $ 4.73 | $ 4.67 | $ 4.76 | $ 4.45 | $ 4.39 | $ 4.36 | $ 4.36 | $ 4.38 | $ 4.44 | $ 4.49 |
| Expected Case | AECO | 2027-2028 | $ 4.83 | $ 4.86 | $ 4.71 | $ 4.67 | $ 4.71 | $ 4.48 | $ 4.44 | $ 4.42 | $ 4.42 | $ 4.44 | $ 4.52 | $ 4.58 |
| Expected Case | AECO | 2028-2029 | $ 5.05 | $ 5.12 | $ 5.24 | $ 5.32 | $ 5.30 | $ 4.98 | $ 4.92 | $ 4.88 | $ 4.86 | $ 4.87 | $ 4.93 | $ 4.98 |
| Expected Case | AECO | 2029-2030 | $ 5.32 | $ 5.37 | $ 5.36 | $ 5.24 | $ 5.21 | $ 4.84 | $ 4.72 | $ 4.69 | $ 4.68 | $ 4.69 | $ 4.78 | $ 4.85 |
| Expected Case | AECO | 2030-2031 | $ 5.42 | $ 5.50 | $ 5.40 | $ 5.27 | $ 5.30 | $ 5.04 | $ 5.01 | $ 4.98 | $ 5.02 | $ 5.04 | $ 5.12 | $ 5.20 |
| Expected Case | AECO | 2031-2032 | $ 5.67 | $ 5.39 | $ 5.45 | $ 5.47 | $ 5.65 | $ 5.42 | $ 5.39 | $ 5.31 | $ 5.20 | $ 5.20 | $ 5.39 | $ 5.44 |
| Expected Case | AECO | 2032-2033 | $ 5.73 | $ 5.59 | $ 5.70 | $ 5.73 | $ 5.87 | $ 5.67 | $ 5.66 | $ 5.61 | $ 5.53 | $ 5.53 | $ 5.75 | $ 5.80 |
| | | | | | | | | | | | | | | |
| Expected Case | Malin | 2013-2014 | $ 3.62 | $ 4.53 | $ 4.69 | $ 3.81 | $ 3.83 | $ 3.82 | $ 3.78 | $ 3.77 | $ 3.77 | $ 3.71 | $ 3.74 | $ 3.61 |
| Expected Case | Malin | 2014-2015 | $ 3.71 | $ 3.75 | $ 3.79 | $ 3.83 | $ 3.82 | $ 3.76 | $ 3.74 | $ 3.79 | $ 3.86 | $ 3.90 | $ 3.96 | $ 4.03 |
| Expected Case | Malin | 2015-2016 | $ 4.25 | $ 4.43 | $ 4.49 | $ 4.39 | $ 4.30 | $ 4.16 | $ 4.04 | $ 4.01 | $ 4.03 | $ 3.89 | $ 3.85 | $ 3.83 |
| Expected Case | Malin | 2016-2017 | $ 4.04 | $ 3.99 | $ 3.97 | $ 3.97 | $ 3.93 | $ 3.88 | $ 3.91 | $ 3.92 | $ 3.93 | $ 3.96 | $ 4.00 | $ 4.00 |
| Expected Case | Malin | 2017-2018 | $ 4.17 | $ 4.17 | $ 4.16 | $ 4.12 | $ 4.02 | $ 3.92 | $ 3.91 | $ 3.85 | $ 3.83 | $ 3.87 | $ 3.92 | $ 3.90 |
| Expected Case | Malin | 2018-2019 | $ 4.08 | $ 4.00 | $ 3.85 | $ 3.82 | $ 3.83 | $ 3.81 | $ 3.82 | $ 3.81 | $ 3.84 | $ 3.86 | $ 3.92 | $ 3.96 |
| Expected Case | Malin | 2019-2020 | $ 4.09 | $ 4.05 | $ 3.79 | $ 3.79 | $ 3.91 | $ 3.93 | $ 3.89 | $ 3.91 | $ 3.94 | $ 3.98 | $ 4.00 | $ 4.04 |
| Expected Case | Malin | 2020-2021 | $ 4.20 | $ 4.14 | $ 3.83 | $ 3.88 | $ 4.06 | $ 4.22 | $ 4.15 | $ 4.19 | $ 4.24 | $ 4.27 | $ 4.35 | $ 4.40 |
| Expected Case | Malin | 2021-2022 | $ 4.55 | $ 4.49 | $ 4.41 | $ 4.30 | $ 4.27 | $ 4.16 | $ 4.13 | $ 4.11 | $ 4.11 | $ 4.15 | $ 4.29 | $ 4.34 |
| Expected Case | Malin | 2022-2023 | $ 4.63 | $ 4.54 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.35 | $ 4.21 | $ 4.13 | $ 4.14 | $ 4.15 | $ 4.36 | $ 4.42 |
| Expected Case | Malin | 2023-2024 | $ 4.76 | $ 4.68 | $ 4.72 | $ 4.64 | $ 4.79 | $ 4.69 | $ 4.51 | $ 4.49 | $ 4.51 | $ 4.56 | $ 4.66 | $ 4.72 |
| Expected Case | Malin | 2024-2025 | $ 5.05 | $ 5.02 | $ 5.00 | $ 4.83 | $ 4.93 | $ 4.90 | $ 4.86 | $ 4.83 | $ 4.90 | $ 4.92 | $ 5.01 | $ 5.05 |
| Expected Case | Malin | 2025-2026 | $ 5.33 | $ 5.27 | $ 5.22 | $ 5.20 | $ 5.28 | $ 5.14 | $ 5.05 | $ 5.02 | $ 5.08 | $ 5.10 | $ 5.21 | $ 5.24 |
| Expected Case | Malin | 2026-2027 | $ 5.52 | $ 5.53 | $ 5.28 | $ 5.09 | $ 5.24 | $ 5.11 | $ 5.05 | $ 5.03 | $ 5.04 | $ 5.08 | $ 5.15 | $ 5.22 |
| Expected Case | Malin | 2027-2028 | $ 5.56 | $ 5.48 | $ 5.26 | $ 5.16 | $ 5.26 | $ 5.14 | $ 5.08 | $ 5.08 | $ 5.10 | $ 5.17 | $ 5.25 | $ 5.31 |
| Expected Case | Malin | 2028-2029 | $ 5.78 | $ 5.69 | $ 5.80 | $ 5.72 | $ 5.68 | $ 5.54 | $ 5.51 | $ 5.47 | $ 5.52 | $ 5.55 | $ 5.63 | $ 5.68 |
| Expected Case | Malin | 2029-2030 | $ 6.01 | $ 5.94 | $ 5.88 | $ 5.68 | $ 5.64 | $ 5.47 | $ 5.37 | $ 5.34 | $ 5.36 | $ 5.42 | $ 5.52 | $ 5.58 |
| Expected Case | Malin | 2030-2031 | $ 6.14 | $ 6.08 | $ 5.98 | $ 5.75 | $ 5.73 | $ 5.65 | $ 5.64 | $ 5.62 | $ 5.69 | $ 5.75 | $ 5.85 | $ 5.91 |
| Expected Case | Malin | 2031-2032 | $ 6.37 | $ 6.02 | $ 5.95 | $ 5.97 | $ 6.07 | $ 5.90 | $ 5.85 | $ 5.77 | $ 5.65 | $ 5.67 | $ 5.89 | $ 5.99 |
| Expected Case | Malin | 2032-2033 | $ 6.26 | $ 6.12 | $ 6.23 | $ 6.25 | $ 6.29 | $ 6.14 | $ 6.13 | $ 6.06 | $ 5.99 | $ 6.01 | $ 6.26 | $ 6.35 |
| | | | | | | | | | | | | | | |
| Expected Case | Rockies | 2013-2014 | $ 3.53 | $ 4.56 | $ 4.66 | $ 3.77 | $ 3.79 | $ 3.77 | $ 3.75 | $ 3.74 | $ 3.73 | $ 3.67 | $ 3.70 | $ 3.57 |
| Expected Case | Rockies | 2014-2015 | $ 3.67 | $ 3.72 | $ 3.76 | $ 3.80 | $ 3.78 | $ 3.71 | $ 3.71 | $ 3.76 | $ 3.82 | $ 3.86 | $ 3.91 | $ 3.96 |
| Expected Case | Rockies | 2015-2016 | $ 4.17 | $ 4.39 | $ 4.45 | $ 4.36 | $ 4.26 | $ 4.12 | $ 4.01 | $ 3.98 | $ 3.99 | $ 3.85 | $ 3.80 | $ 3.78 |
| Expected Case | Rockies | 2016-2017 | $ 3.95 | $ 3.95 | $ 3.93 | $ 3.93 | $ 3.89 | $ 3.83 | $ 3.83 | $ 3.82 | $ 3.83 | $ 3.85 | $ 3.88 | $ 3.89 |
| Expected Case | Rockies | 2017-2018 | $ 4.07 | $ 4.13 | $ 4.12 | $ 4.08 | $ 3.98 | $ 3.84 | $ 3.81 | $ 3.75 | $ 3.73 | $ 3.72 | $ 3.77 | $ 3.75 |
| Expected Case | Rockies | 2018-2019 | $ 3.92 | $ 3.95 | $ 3.81 | $ 3.77 | $ 3.78 | $ 3.72 | $ 3.69 | $ 3.68 | $ 3.68 | $ 3.71 | $ 3.76 | $ 3.76 |
| Expected Case | Rockies | 2019-2020 | $ 3.84 | $ 3.91 | $ 3.75 | $ 3.75 | $ 3.77 | $ 3.71 | $ 3.70 | $ 3.72 | $ 3.73 | $ 3.75 | $ 3.78 | $ 3.81 |
| Expected Case | Rockies | 2020-2021 | $ 3.90 | $ 3.98 | $ 3.78 | $ 3.80 | $ 3.82 | $ 3.87 | $ 3.94 | $ 3.92 | $ 4.00 | $ 4.03 | $ 4.09 | $ 4.11 |
| Expected Case | Rockies | 2021-2022 | $ 4.15 | $ 4.25 | $ 4.21 | $ 4.12 | $ 3.92 | $ 3.78 | $ 3.75 | $ 3.73 | $ 3.73 | $ 3.75 | $ 3.85 | $ 3.88 |
| Expected Case | Rockies | 2022-2023 | $ 4.13 | $ 4.14 | $ 4.15 | $ 4.11 | $ 4.04 | $ 3.94 | $ 3.83 | $ 3.80 | $ 3.82 | $ 3.84 | $ 3.93 | $ 3.99 |
| Expected Case | Rockies | 2023-2024 | $ 4.22 | $ 4.29 | $ 4.32 | $ 4.30 | $ 4.25 | $ 4.15 | $ 4.03 | $ 3.98 | $ 4.00 | $ 4.01 | $ 4.10 | $ 4.21 |
| Expected Case | Rockies | 2024-2025 | $ 4.43 | $ 4.50 | $ 4.72 | $ 4.72 | $ 4.61 | $ 4.52 | $ 4.53 | $ 4.50 | $ 4.55 | $ 4.57 | $ 4.62 | $ 4.66 |
| Expected Case | Rockies | 2025-2026 | $ 4.85 | $ 4.88 | $ 4.90 | $ 4.90 | $ 4.84 | $ 4.73 | $ 4.67 | $ 4.64 | $ 4.67 | $ 4.69 | $ 4.75 | $ 4.83 |
| Expected Case | Rockies | 2026-2027 | $ 4.97 | $ 5.02 | $ 5.10 | $ 5.00 | $ 4.96 | $ 4.86 | $ 4.83 | $ 4.81 | $ 4.84 | $ 4.85 | $ 4.92 | $ 4.97 |
| Expected Case | Rockies | 2027-2028 | $ 5.19 | $ 5.24 | $ 5.10 | $ 5.07 | $ 4.99 | $ 4.89 | $ 4.88 | $ 4.85 | $ 4.88 | $ 4.91 | $ 4.99 | $ 5.05 |
| Expected Case | Rockies | 2028-2029 | $ 5.39 | $ 5.45 | $ 5.50 | $ 5.43 | $ 5.36 | $ 5.24 | $ 5.22 | $ 5.15 | $ 5.18 | $ 5.21 | $ 5.27 | $ 5.29 |
| Expected Case | Rockies | 2029-2030 | $ 5.54 | $ 5.56 | $ 5.55 | $ 5.44 | $ 5.28 | $ 5.16 | $ 5.05 | $ 5.02 | $ 5.05 | $ 5.08 | $ 5.17 | $ 5.24 |
| Expected Case | Rockies | 2030-2031 | $ 5.58 | $ 5.65 | $ 5.61 | $ 5.52 | $ 5.36 | $ 5.27 | $ 5.26 | $ 5.24 | $ 5.31 | $ 5.36 | $ 5.44 | $ 5.47 |
| Expected Case | Rockies | 2031-2032 | $ 5.81 | $ 5.64 | $ 5.53 | $ 5.55 | $ 5.62 | $ 5.49 | $ 5.44 | $ 5.35 | $ 5.25 | $ 5.26 | $ 5.47 | $ 5.54 |
| Expected Case | Rockies | 2032-2033 | $ 5.76 | $ 5.67 | $ 5.76 | $ 5.78 | $ 5.81 | $ 5.71 | $ 5.69 | $ 5.61 | $ 5.55 | $ 5.56 | $ 5.79 | $ 5.86 |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
# EXPECTED PRICE

| 2012$ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Scenario** | **Index** | **Gas Year** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** |
| Expected Case | Stanfield | 2013-2014 | $ 3.60 | $ 4.56 | $ 4.66 | $ 3.72 | $ 3.76 | $ 3.73 | $ 3.72 | $ 3.73 | $ 3.73 | $ 3.67 | $ 3.69 | $ 3.53 |
| Expected Case | Stanfield | 2014-2015 | $ 3.67 | $ 3.66 | $ 3.72 | $ 3.76 | $ 3.78 | $ 3.67 | $ 3.71 | $ 3.75 | $ 3.81 | $ 3.85 | $ 3.90 | $ 3.94 |
| Expected Case | Stanfield | 2015-2016 | $ 4.17 | $ 4.43 | $ 4.49 | $ 4.39 | $ 4.24 | $ 4.08 | $ 3.96 | $ 3.97 | $ 3.99 | $ 3.82 | $ 3.77 | $ 3.74 |
| Expected Case | Stanfield | 2016-2017 | $ 3.95 | $ 3.99 | $ 3.97 | $ 3.88 | $ 3.85 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.79 | $ 3.81 | $ 3.85 | $ 3.87 |
| Expected Case | Stanfield | 2017-2018 | $ 4.15 | $ 4.18 | $ 4.17 | $ 4.03 | $ 3.94 | $ 3.79 | $ 3.76 | $ 3.69 | $ 3.68 | $ 3.69 | $ 3.73 | $ 3.71 |
| Expected Case | Stanfield | 2018-2019 | $ 4.04 | $ 4.00 | $ 3.85 | $ 3.83 | $ 3.75 | $ 3.76 | $ 3.64 | $ 3.62 | $ 3.65 | $ 3.66 | $ 3.71 | $ 3.85 |
| Expected Case | Stanfield | 2019-2020 | $ 3.91 | $ 4.04 | $ 3.79 | $ 3.70 | $ 3.82 | $ 3.75 | $ 3.71 | $ 3.72 | $ 3.76 | $ 3.78 | $ 3.80 | $ 3.84 |
| Expected Case | Stanfield | 2020-2021 | $ 4.01 | $ 4.07 | $ 3.84 | $ 3.79 | $ 3.96 | $ 4.02 | $ 3.98 | $ 4.01 | $ 4.04 | $ 4.07 | $ 4.15 | $ 4.19 |
| Expected Case | Stanfield | 2021-2022 | $ 4.45 | $ 4.48 | $ 4.46 | $ 4.36 | $ 4.17 | $ 4.00 | $ 3.96 | $ 3.93 | $ 3.93 | $ 3.95 | $ 4.09 | $ 4.13 |
| Expected Case | Stanfield | 2022-2023 | $ 4.56 | $ 4.54 | $ 4.35 | $ 4.35 | $ 4.28 | $ 4.15 | $ 4.03 | $ 4.01 | $ 4.01 | $ 4.02 | $ 4.13 | $ 4.18 |
| Expected Case | Stanfield | 2023-2024 | $ 4.65 | $ 4.68 | $ 4.74 | $ 4.57 | $ 4.64 | $ 4.48 | $ 4.34 | $ 4.31 | $ 4.30 | $ 4.32 | $ 4.45 | $ 4.51 |
| Expected Case | Stanfield | 2024-2025 | $ 4.97 | $ 5.02 | $ 4.90 | $ 4.78 | $ 4.81 | $ 4.70 | $ 4.69 | $ 4.65 | $ 4.67 | $ 4.69 | $ 4.78 | $ 4.83 |
| Expected Case | Stanfield | 2025-2026 | $ 5.24 | $ 5.27 | $ 5.24 | $ 5.10 | $ 5.10 | $ 4.93 | $ 4.85 | $ 4.82 | $ 4.85 | $ 4.86 | $ 4.96 | $ 5.11 |
| Expected Case | Stanfield | 2026-2027 | $ 5.42 | $ 5.47 | $ 5.30 | $ 5.05 | $ 5.13 | $ 5.02 | $ 4.86 | $ 4.83 | $ 4.84 | $ 4.86 | $ 4.92 | $ 5.12 |
| Expected Case | Stanfield | 2027-2028 | $ 5.45 | $ 5.48 | $ 5.27 | $ 5.06 | $ 5.11 | $ 5.05 | $ 4.89 | $ 4.88 | $ 4.90 | $ 4.93 | $ 5.01 | $ 5.20 |
| Expected Case | Stanfield | 2028-2029 | $ 5.67 | $ 5.69 | $ 5.82 | $ 5.79 | $ 5.61 | $ 5.39 | $ 5.34 | $ 5.29 | $ 5.32 | $ 5.34 | $ 5.42 | $ 5.46 |
| Expected Case | Stanfield | 2029-2030 | $ 5.95 | $ 5.96 | $ 5.94 | $ 5.74 | $ 5.54 | $ 5.41 | $ 5.17 | $ 5.14 | $ 5.14 | $ 5.18 | $ 5.28 | $ 5.48 |
| Expected Case | Stanfield | 2030-2031 | $ 6.06 | $ 6.11 | $ 6.00 | $ 5.82 | $ 5.66 | $ 5.59 | $ 5.46 | $ 5.44 | $ 5.48 | $ 5.53 | $ 5.61 | $ 5.68 |
| Expected Case | Stanfield | 2031-2032 | $ 6.31 | $ 6.02 | $ 5.94 | $ 5.97 | $ 6.06 | $ 5.74 | $ 5.69 | $ 5.60 | $ 5.48 | $ 5.48 | $ 5.69 | $ 5.80 |
| Expected Case | Stanfield | 2032-2033 | $ 6.25 | $ 6.11 | $ 6.22 | $ 6.24 | $ 6.29 | $ 5.98 | $ 6.08 | $ 5.89 | $ 5.81 | $ 5.82 | $ 6.07 | $ 6.16 |
| Expected Case | Sumas | 2013-2014 | $ 3.93 | $ 5.31 | $ 4.68 | $ 3.87 | $ 3.83 | $ 3.60 | $ 3.66 | $ 3.60 | $ 3.63 | $ 3.50 | $ 3.56 | $ 3.40 |
| Expected Case | Sumas | 2014-2015 | $ 3.82 | $ 3.97 | $ 3.98 | $ 3.91 | $ 3.82 | $ 3.55 | $ 3.65 | $ 3.61 | $ 3.67 | $ 3.67 | $ 3.78 | $ 3.84 |
| Expected Case | Sumas | 2015-2016 | $ 4.33 | $ 4.65 | $ 4.66 | $ 4.46 | $ 4.30 | $ 3.92 | $ 3.91 | $ 3.83 | $ 3.84 | $ 3.64 | $ 3.61 | $ 3.62 |
| Expected Case | Sumas | 2016-2017 | $ 4.11 | $ 4.21 | $ 4.14 | $ 4.04 | $ 3.93 | $ 3.59 | $ 3.68 | $ 3.64 | $ 3.65 | $ 3.59 | $ 3.67 | $ 3.75 |
| Expected Case | Sumas | 2017-2018 | $ 4.22 | $ 4.39 | $ 4.34 | $ 4.20 | $ 4.03 | $ 3.65 | $ 3.63 | $ 3.54 | $ 3.51 | $ 3.43 | $ 3.50 | $ 3.58 |
| Expected Case | Sumas | 2018-2019 | $ 4.11 | $ 4.22 | $ 4.02 | $ 3.90 | $ 3.84 | $ 3.50 | $ 3.48 | $ 3.43 | $ 3.46 | $ 3.42 | $ 3.45 | $ 3.47 |
| Expected Case | Sumas | 2019-2020 | $ 3.94 | $ 4.26 | $ 3.96 | $ 3.86 | $ 3.79 | $ 3.50 | $ 3.58 | $ 3.56 | $ 3.58 | $ 3.56 | $ 3.56 | $ 3.60 |
| Expected Case | Sumas | 2020-2021 | $ 4.01 | $ 4.29 | $ 4.00 | $ 3.95 | $ 3.95 | $ 3.75 | $ 3.86 | $ 3.86 | $ 3.85 | $ 3.85 | $ 3.90 | $ 3.92 |
| Expected Case | Sumas | 2021-2022 | $ 4.52 | $ 4.70 | $ 4.63 | $ 4.43 | $ 4.22 | $ 3.80 | $ 3.85 | $ 3.79 | $ 3.79 | $ 3.77 | $ 3.88 | $ 3.91 |
| Expected Case | Sumas | 2022-2023 | $ 4.63 | $ 4.76 | $ 4.62 | $ 4.37 | $ 4.18 | $ 3.92 | $ 3.86 | $ 3.79 | $ 3.84 | $ 3.78 | $ 3.90 | $ 3.95 |
| Expected Case | Sumas | 2023-2024 | $ 4.50 | $ 4.90 | $ 4.91 | $ 4.65 | $ 4.58 | $ 4.29 | $ 4.22 | $ 4.16 | $ 4.19 | $ 4.13 | $ 4.26 | $ 4.33 |
| Expected Case | Sumas | 2024-2025 | $ 4.81 | $ 5.23 | $ 5.18 | $ 4.87 | $ 4.76 | $ 4.51 | $ 4.53 | $ 4.48 | $ 4.51 | $ 4.46 | $ 4.57 | $ 4.65 |
| Expected Case | Sumas | 2025-2026 | $ 5.08 | $ 5.49 | $ 5.41 | $ 5.27 | $ 5.05 | $ 4.72 | $ 4.69 | $ 4.63 | $ 4.66 | $ 4.61 | $ 4.72 | $ 4.74 |
| Expected Case | Sumas | 2026-2027 | $ 5.26 | $ 5.69 | $ 5.47 | $ 5.22 | $ 5.07 | $ 4.68 | $ 4.70 | $ 4.63 | $ 4.67 | $ 4.63 | $ 4.72 | $ 4.75 |
| Expected Case | Sumas | 2027-2028 | $ 5.31 | $ 5.70 | $ 5.44 | $ 5.23 | $ 5.05 | $ 4.71 | $ 4.72 | $ 4.67 | $ 4.71 | $ 4.70 | $ 4.78 | $ 4.81 |
| Expected Case | Sumas | 2028-2029 | $ 5.74 | $ 5.91 | $ 5.99 | $ 5.86 | $ 5.68 | $ 5.23 | $ 5.24 | $ 5.14 | $ 5.19 | $ 5.18 | $ 5.24 | $ 5.26 |
| Expected Case | Sumas | 2029-2030 | $ 6.02 | $ 6.25 | $ 6.31 | $ 5.81 | $ 5.64 | $ 5.08 | $ 5.02 | $ 4.94 | $ 4.99 | $ 4.97 | $ 5.06 | $ 5.12 |
| Expected Case | Sumas | 2030-2031 | $ 6.13 | $ 6.39 | $ 6.47 | $ 5.89 | $ 5.76 | $ 5.28 | $ 5.32 | $ 5.24 | $ 5.35 | $ 5.34 | $ 5.42 | $ 5.47 |
| Expected Case | Sumas | 2031-2032 | $ 6.38 | $ 6.41 | $ 6.16 | $ 6.19 | $ 6.11 | $ 5.58 | $ 5.45 | $ 5.19 | $ 5.34 | $ 5.33 | $ 5.50 | $ 5.62 |
| Expected Case | Sumas | 2032-2033 | $ 6.30 | $ 6.43 | $ 6.55 | $ 6.58 | $ 6.34 | $ 5.83 | $ 5.73 | $ 5.49 | $ 5.67 | $ 5.67 | $ 5.87 | $ 5.98 |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
# HIGH GROWTH LOW PRICE

| | | | 2012$ | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Scenario** | **Index** | **Gas Year** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** |
| High Growth & Low Prices | AECo | 2013-2014 | $ 3.44 | $ 3.35 | $ 3.36 | $ 3.38 | $ 3.50 | $ 3.48 | $ 3.44 | $ 3.45 | $ 3.43 | $ 3.42 | $ 3.45 | $ 3.47 |
| High Growth & Low Prices | AECo | 2014-2015 | $ 3.50 | $ 3.43 | $ 3.55 | $ 3.56 | $ 3.70 | $ 3.63 | $ 3.56 | $ 3.55 | $ 3.52 | $ 3.51 | $ 3.55 | $ 3.61 |
| High Growth & Low Prices | AECo | 2015-2016 | $ 3.63 | $ 3.54 | $ 3.45 | $ 3.46 | $ 3.62 | $ 3.55 | $ 3.49 | $ 3.51 | $ 3.48 | $ 3.45 | $ 3.46 | $ 3.50 |
| High Growth & Low Prices | AECo | 2016-2017 | $ 3.54 | $ 3.45 | $ 3.41 | $ 3.43 | $ 3.54 | $ 3.44 | $ 3.37 | $ 3.37 | $ 3.35 | $ 3.34 | $ 3.36 | $ 3.41 |
| High Growth & Low Prices | AECo | 2017-2018 | $ 3.42 | $ 3.31 | $ 3.30 | $ 3.29 | $ 3.40 | $ 3.33 | $ 3.28 | $ 3.28 | $ 3.26 | $ 3.24 | $ 3.25 | $ 3.29 |
| High Growth & Low Prices | AECo | 2018-2019 | $ 3.40 | $ 3.27 | $ 3.11 | $ 3.12 | $ 3.31 | $ 3.22 | $ 3.17 | $ 3.14 | $ 3.12 | $ 3.10 | $ 3.12 | $ 3.17 |
| High Growth & Low Prices | AECo | 2019-2020 | $ 3.30 | $ 3.18 | $ 3.06 | $ 3.11 | $ 3.37 | $ 3.28 | $ 3.21 | $ 3.18 | $ 3.14 | $ 3.13 | $ 3.15 | $ 3.20 |
| High Growth & Low Prices | AECo | 2020-2021 | $ 3.28 | $ 3.13 | $ 3.12 | $ 3.16 | $ 3.38 | $ 3.28 | $ 3.20 | $ 3.16 | $ 3.08 | $ 3.07 | $ 3.13 | $ 3.18 |
| High Growth & Low Prices | AECo | 2021-2022 | $ 3.27 | $ 3.24 | $ 3.32 | $ 3.36 | $ 3.48 | $ 3.38 | $ 3.31 | $ 3.25 | $ 3.22 | $ 3.21 | $ 3.29 | $ 3.34 |
| High Growth & Low Prices | AECo | 2022-2023 | $ 3.39 | $ 3.32 | $ 3.20 | $ 3.19 | $ 3.32 | $ 3.19 | $ 3.05 | $ 2.99 | $ 2.96 | $ 2.94 | $ 3.01 | $ 3.06 |
| High Growth & Low Prices | AECo | 2023-2024 | $ 3.27 | $ 3.25 | $ 3.24 | $ 3.27 | $ 3.43 | $ 3.31 | $ 3.18 | $ 3.11 | $ 3.06 | $ 3.05 | $ 3.14 | $ 3.18 |
| High Growth & Low Prices | AECo | 2024-2025 | $ 3.29 | $ 3.31 | $ 3.39 | $ 3.37 | $ 3.50 | $ 3.39 | $ 3.33 | $ 3.28 | $ 3.22 | $ 3.22 | $ 3.30 | $ 3.35 |
| High Growth & Low Prices | AECo | 2025-2026 | $ 3.44 | $ 3.42 | $ 3.31 | $ 3.33 | $ 3.48 | $ 3.35 | $ 3.24 | $ 3.17 | $ 3.13 | $ 3.12 | $ 3.20 | $ 3.25 |
| High Growth & Low Prices | AECo | 2026-2027 | $ 3.40 | $ 3.39 | $ 3.23 | $ 3.15 | $ 3.45 | $ 3.24 | $ 3.16 | $ 3.08 | $ 3.05 | $ 3.04 | $ 3.13 | $ 3.18 |
| High Growth & Low Prices | AECo | 2027-2028 | $ 3.35 | $ 3.32 | $ 3.07 | $ 3.04 | $ 3.32 | $ 3.16 | $ 3.09 | $ 3.03 | $ 2.98 | $ 2.98 | $ 3.05 | $ 3.11 |
| High Growth & Low Prices | AECo | 2028-2029 | $ 3.33 | $ 3.30 | $ 3.30 | $ 3.36 | $ 3.58 | $ 3.37 | $ 3.31 | $ 3.24 | $ 3.20 | $ 3.18 | $ 3.24 | $ 3.28 |
| High Growth & Low Prices | AECo | 2029-2030 | $ 3.44 | $ 3.44 | $ 3.42 | $ 3.31 | $ 3.63 | $ 3.34 | $ 3.26 | $ 3.19 | $ 3.15 | $ 3.13 | $ 3.19 | $ 3.26 |
| High Growth & Low Prices | AECo | 2030-2031 | $ 3.57 | $ 3.52 | $ 3.32 | $ 3.22 | $ 3.61 | $ 3.41 | $ 3.36 | $ 3.29 | $ 3.28 | $ 3.27 | $ 3.34 | $ 3.39 |
| High Growth & Low Prices | AECo | 2031-2032 | $ 3.55 | $ 3.31 | $ 3.27 | $ 3.28 | $ 3.44 | $ 3.28 | $ 3.27 | $ 3.19 | $ 3.08 | $ 3.07 | $ 3.21 | $ 3.26 |
| High Growth & Low Prices | AECo | 2032-2033 | $ 3.37 | $ 3.31 | $ 3.31 | $ 3.30 | $ 3.45 | $ 3.28 | $ 3.27 | $ 3.22 | $ 3.10 | $ 3.08 | $ 3.24 | $ 3.31 |
| | | | | | | | | | | | | | | |
| High Growth & Low Prices | Malin | 2013-2014 | $ 3.90 | $ 3.87 | $ 3.85 | $ 3.85 | $ 3.88 | $ 3.88 | $ 3.85 | $ 3.84 | $ 3.84 | $ 3.83 | $ 3.86 | $ 3.91 |
| High Growth & Low Prices | Malin | 2014-2015 | $ 3.93 | $ 3.93 | $ 4.00 | $ 4.01 | $ 4.04 | $ 4.03 | $ 3.96 | $ 3.95 | $ 3.93 | $ 3.92 | $ 3.97 | $ 4.02 |
| High Growth & Low Prices | Malin | 2015-2016 | $ 4.09 | $ 4.06 | $ 3.98 | $ 3.97 | $ 3.99 | $ 3.99 | $ 3.93 | $ 3.90 | $ 3.89 | $ 3.89 | $ 3.94 | $ 3.96 |
| High Growth & Low Prices | Malin | 2016-2017 | $ 4.07 | $ 3.98 | $ 3.92 | $ 3.91 | $ 3.93 | $ 3.91 | $ 3.91 | $ 3.89 | $ 3.89 | $ 3.89 | $ 3.94 | $ 3.94 |
| High Growth & Low Prices | Malin | 2017-2018 | $ 3.99 | $ 3.88 | $ 3.84 | $ 3.80 | $ 3.83 | $ 3.87 | $ 3.87 | $ 3.85 | $ 3.84 | $ 3.87 | $ 3.92 | $ 3.92 |
| High Growth & Low Prices | Malin | 2018-2019 | $ 4.01 | $ 3.86 | $ 3.70 | $ 3.66 | $ 3.78 | $ 3.81 | $ 3.81 | $ 3.79 | $ 3.77 | $ 3.79 | $ 3.82 | $ 3.87 |
| High Growth & Low Prices | Malin | 2019-2020 | $ 3.93 | $ 3.77 | $ 3.61 | $ 3.59 | $ 3.83 | $ 3.89 | $ 3.82 | $ 3.79 | $ 3.78 | $ 3.78 | $ 3.82 | $ 3.86 |
| High Growth & Low Prices | Malin | 2020-2021 | $ 3.95 | $ 3.80 | $ 3.63 | $ 3.63 | $ 3.87 | $ 3.93 | $ 3.78 | $ 3.74 | $ 3.73 | $ 3.73 | $ 3.81 | $ 3.86 |
| High Growth & Low Prices | Malin | 2021-2022 | $ 3.98 | $ 3.84 | $ 3.76 | $ 3.71 | $ 3.89 | $ 3.95 | $ 3.90 | $ 3.84 | $ 3.82 | $ 3.84 | $ 3.95 | $ 4.00 |
| High Growth & Low Prices | Malin | 2022-2023 | $ 4.06 | $ 3.88 | $ 3.71 | $ 3.71 | $ 3.86 | $ 3.83 | $ 3.69 | $ 3.57 | $ 3.55 | $ 3.53 | $ 3.72 | $ 3.76 |
| High Growth & Low Prices | Malin | 2023-2024 | $ 4.00 | $ 3.82 | $ 3.75 | $ 3.66 | $ 3.96 | $ 3.96 | $ 3.77 | $ 3.71 | $ 3.69 | $ 3.71 | $ 3.82 | $ 3.85 |
| High Growth & Low Prices | Malin | 2024-2025 | $ 4.01 | $ 3.89 | $ 3.89 | $ 3.72 | $ 3.98 | $ 4.03 | $ 3.96 | $ 3.89 | $ 3.91 | $ 3.91 | $ 4.01 | $ 4.03 |
| High Growth & Low Prices | Malin | 2025-2026 | $ 4.16 | $ 4.00 | $ 3.86 | $ 3.83 | $ 4.06 | $ 4.01 | $ 3.89 | $ 3.83 | $ 3.84 | $ 3.84 | $ 3.96 | $ 4.00 |
| High Growth & Low Prices | Malin | 2026-2027 | $ 4.14 | $ 4.07 | $ 3.77 | $ 3.58 | $ 3.94 | $ 3.90 | $ 3.82 | $ 3.74 | $ 3.74 | $ 3.75 | $ 3.84 | $ 3.91 |
| High Growth & Low Prices | Malin | 2027-2028 | $ 4.09 | $ 3.94 | $ 3.62 | $ 3.52 | $ 3.87 | $ 3.82 | $ 3.74 | $ 3.69 | $ 3.66 | $ 3.70 | $ 3.78 | $ 3.84 |
| High Growth & Low Prices | Malin | 2028-2029 | $ 4.06 | $ 3.88 | $ 3.86 | $ 3.77 | $ 3.97 | $ 3.93 | $ 3.90 | $ 3.84 | $ 3.87 | $ 3.85 | $ 3.93 | $ 3.98 |
| High Growth & Low Prices | Malin | 2029-2030 | $ 4.13 | $ 4.00 | $ 3.94 | $ 3.75 | $ 4.06 | $ 3.97 | $ 3.91 | $ 3.84 | $ 3.83 | $ 3.87 | $ 3.94 | $ 3.98 |
| High Growth & Low Prices | Malin | 2030-2031 | $ 4.29 | $ 4.11 | $ 3.90 | $ 3.70 | $ 4.04 | $ 4.02 | $ 4.00 | $ 3.93 | $ 3.94 | $ 3.98 | $ 4.06 | $ 4.09 |
| High Growth & Low Prices | Malin | 2031-2032 | $ 4.25 | $ 3.95 | $ 3.77 | $ 3.78 | $ 3.86 | $ 3.76 | $ 3.73 | $ 3.65 | $ 3.54 | $ 3.53 | $ 3.71 | $ 3.82 |
| High Growth & Low Prices | Malin | 2032-2033 | $ 3.90 | $ 3.85 | $ 3.83 | $ 3.83 | $ 3.87 | $ 3.75 | $ 3.74 | $ 3.67 | $ 3.56 | $ 3.56 | $ 3.76 | $ 3.86 |
| | | | | | | | | | | | | | | |
| High Growth & Low Prices | Rockies | 2013-2014 | $ 3.86 | $ 3.84 | $ 3.82 | $ 3.81 | $ 3.85 | $ 3.83 | $ 3.82 | $ 3.81 | $ 3.80 | $ 3.79 | $ 3.81 | $ 3.86 |
| High Growth & Low Prices | Rockies | 2014-2015 | $ 3.89 | $ 3.89 | $ 3.97 | $ 3.97 | $ 4.01 | $ 3.97 | $ 3.93 | $ 3.92 | $ 3.89 | $ 3.88 | $ 3.93 | $ 3.95 |
| High Growth & Low Prices | Rockies | 2015-2016 | $ 4.02 | $ 4.02 | $ 3.94 | $ 3.94 | $ 3.95 | $ 3.95 | $ 3.90 | $ 3.87 | $ 3.84 | $ 3.84 | $ 3.89 | $ 3.91 |
| High Growth & Low Prices | Rockies | 2016-2017 | $ 3.98 | $ 3.94 | $ 3.89 | $ 3.87 | $ 3.90 | $ 3.86 | $ 3.83 | $ 3.80 | $ 3.79 | $ 3.78 | $ 3.82 | $ 3.84 |
| High Growth & Low Prices | Rockies | 2017-2018 | $ 3.89 | $ 3.83 | $ 3.80 | $ 3.76 | $ 3.79 | $ 3.79 | $ 3.78 | $ 3.75 | $ 3.74 | $ 3.73 | $ 3.77 | $ 3.77 |
| High Growth & Low Prices | Rockies | 2018-2019 | $ 3.85 | $ 3.81 | $ 3.66 | $ 3.61 | $ 3.73 | $ 3.73 | $ 3.68 | $ 3.65 | $ 3.61 | $ 3.64 | $ 3.67 | $ 3.68 |
| High Growth & Low Prices | Rockies | 2019-2020 | $ 3.68 | $ 3.63 | $ 3.57 | $ 3.54 | $ 3.69 | $ 3.67 | $ 3.62 | $ 3.60 | $ 3.57 | $ 3.56 | $ 3.60 | $ 3.62 |
| High Growth & Low Prices | Rockies | 2020-2021 | $ 3.65 | $ 3.65 | $ 3.57 | $ 3.55 | $ 3.63 | $ 3.58 | $ 3.57 | $ 3.48 | $ 3.49 | $ 3.48 | $ 3.54 | $ 3.57 |
| High Growth & Low Prices | Rockies | 2021-2022 | $ 3.58 | $ 3.61 | $ 3.57 | $ 3.52 | $ 3.54 | $ 3.57 | $ 3.52 | $ 3.46 | $ 3.44 | $ 3.44 | $ 3.52 | $ 3.54 |
| High Growth & Low Prices | Rockies | 2022-2023 | $ 3.56 | $ 3.49 | $ 3.41 | $ 3.37 | $ 3.45 | $ 3.41 | $ 3.30 | $ 3.24 | $ 3.23 | $ 3.22 | $ 3.29 | $ 3.33 |
| High Growth & Low Prices | Rockies | 2023-2024 | $ 3.46 | $ 3.43 | $ 3.35 | $ 3.31 | $ 3.42 | $ 3.42 | $ 3.29 | $ 3.20 | $ 3.18 | $ 3.17 | $ 3.26 | $ 3.34 |
| High Growth & Low Prices | Rockies | 2024-2025 | $ 3.38 | $ 3.38 | $ 3.61 | $ 3.62 | $ 3.66 | $ 3.65 | $ 3.63 | $ 3.56 | $ 3.56 | $ 3.56 | $ 3.62 | $ 3.64 |
| High Growth & Low Prices | Rockies | 2025-2026 | $ 3.68 | $ 3.61 | $ 3.53 | $ 3.52 | $ 3.61 | $ 3.60 | $ 3.51 | $ 3.44 | $ 3.44 | $ 3.43 | $ 3.50 | $ 3.58 |
| High Growth & Low Prices | Rockies | 2026-2027 | $ 3.59 | $ 3.57 | $ 3.59 | $ 3.48 | $ 3.66 | $ 3.65 | $ 3.60 | $ 3.52 | $ 3.53 | $ 3.52 | $ 3.61 | $ 3.65 |
| High Growth & Low Prices | Rockies | 2027-2028 | $ 3.71 | $ 3.70 | $ 3.47 | $ 3.43 | $ 3.60 | $ 3.57 | $ 3.53 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.52 | $ 3.58 |
| High Growth & Low Prices | Rockies | 2028-2029 | $ 3.67 | $ 3.63 | $ 3.56 | $ 3.47 | $ 3.65 | $ 3.64 | $ 3.61 | $ 3.51 | $ 3.52 | $ 3.52 | $ 3.58 | $ 3.59 |
| High Growth & Low Prices | Rockies | 2029-2030 | $ 3.66 | $ 3.63 | $ 3.61 | $ 3.51 | $ 3.70 | $ 3.66 | $ 3.59 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.58 | $ 3.64 |
| High Growth & Low Prices | Rockies | 2030-2031 | $ 3.73 | $ 3.67 | $ 3.53 | $ 3.46 | $ 3.67 | $ 3.64 | $ 3.61 | $ 3.54 | $ 3.56 | $ 3.59 | $ 3.65 | $ 3.66 |
| High Growth & Low Prices | Rockies | 2031-2032 | $ 3.68 | $ 3.56 | $ 3.36 | $ 3.36 | $ 3.42 | $ 3.35 | $ 3.32 | $ 3.23 | $ 3.13 | $ 3.12 | $ 3.29 | $ 3.36 |
| High Growth & Low Prices | Rockies | 2032-2033 | $ 3.40 | $ 3.39 | $ 3.36 | $ 3.36 | $ 3.38 | $ 3.32 | $ 3.30 | $ 3.22 | $ 3.13 | $ 3.11 | $ 3.29 | $ 3.37 |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
## HIGH GROWTH LOW PRICE

| | | | | | | | 2012$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Index | Gas Year | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| High Growth & Low Prices | Stanfield | 2013-2014 | $ 3.82 | $ 3.87 | $ 3.85 | $ 3.76 | $ 3.81 | $ 3.79 | $ 3.80 | $ 3.81 | $ 3.79 | $ 3.79 | $ 3.81 | $ 3.82 |
| High Growth & Low Prices | Stanfield | 2014-2015 | $ 3.89 | $ 3.83 | $ 3.93 | $ 3.94 | $ 4.01 | $ 3.94 | $ 3.92 | $ 3.91 | $ 3.89 | $ 3.87 | $ 3.91 | $ 3.93 |
| High Growth & Low Prices | Stanfield | 2015-2016 | $ 4.02 | $ 4.06 | $ 3.98 | $ 3.98 | $ 3.93 | $ 3.90 | $ 3.85 | $ 3.87 | $ 3.84 | $ 3.81 | $ 3.86 | $ 3.87 |
| High Growth & Low Prices | Stanfield | 2016-2017 | $ 3.97 | $ 3.99 | $ 3.93 | $ 3.82 | $ 3.86 | $ 3.82 | $ 3.77 | $ 3.75 | $ 3.75 | $ 3.75 | $ 3.78 | $ 3.81 |
| High Growth & Low Prices | Stanfield | 2017-2018 | $ 3.97 | $ 3.88 | $ 3.85 | $ 3.70 | $ 3.75 | $ 3.74 | $ 3.73 | $ 3.70 | $ 3.69 | $ 3.69 | $ 3.73 | $ 3.73 |
| High Growth & Low Prices | Stanfield | 2018-2019 | $ 3.97 | $ 3.86 | $ 3.70 | $ 3.67 | $ 3.69 | $ 3.77 | $ 3.63 | $ 3.60 | $ 3.58 | $ 3.59 | $ 3.62 | $ 3.77 |
| High Growth & Low Prices | Stanfield | 2019-2020 | $ 3.75 | $ 3.75 | $ 3.61 | $ 3.50 | $ 3.74 | $ 3.71 | $ 3.63 | $ 3.60 | $ 3.60 | $ 3.58 | $ 3.62 | $ 3.65 |
| High Growth & Low Prices | Stanfield | 2020-2021 | $ 3.76 | $ 3.73 | $ 3.63 | $ 3.54 | $ 3.77 | $ 3.73 | $ 3.61 | $ 3.57 | $ 3.53 | $ 3.53 | $ 3.61 | $ 3.65 |
| High Growth & Low Prices | Stanfield | 2021-2022 | $ 3.88 | $ 3.84 | $ 3.82 | $ 3.76 | $ 3.80 | $ 3.79 | $ 3.73 | $ 3.67 | $ 3.64 | $ 3.63 | $ 3.75 | $ 3.80 |
| High Growth & Low Prices | Stanfield | 2022-2023 | $ 4.00 | $ 3.88 | $ 3.61 | $ 3.61 | $ 3.70 | $ 3.63 | $ 3.51 | $ 3.45 | $ 3.42 | $ 3.41 | $ 3.49 | $ 3.52 |
| High Growth & Low Prices | Stanfield | 2023-2024 | $ 3.89 | $ 3.82 | $ 3.76 | $ 3.59 | $ 3.80 | $ 3.75 | $ 3.59 | $ 3.53 | $ 3.49 | $ 3.48 | $ 3.60 | $ 3.64 |
| High Growth & Low Prices | Stanfield | 2024-2025 | $ 3.92 | $ 3.89 | $ 3.79 | $ 3.68 | $ 3.86 | $ 3.82 | $ 3.79 | $ 3.71 | $ 3.68 | $ 3.68 | $ 3.77 | $ 3.81 |
| High Growth & Low Prices | Stanfield | 2025-2026 | $ 4.07 | $ 4.00 | $ 3.88 | $ 3.72 | $ 3.88 | $ 3.81 | $ 3.69 | $ 3.63 | $ 3.61 | $ 3.60 | $ 3.71 | $ 3.86 |
| High Growth & Low Prices | Stanfield | 2026-2027 | $ 4.03 | $ 4.02 | $ 3.79 | $ 3.53 | $ 3.82 | $ 3.82 | $ 3.63 | $ 3.55 | $ 3.53 | $ 3.53 | $ 3.62 | $ 3.81 |
| High Growth & Low Prices | Stanfield | 2027-2028 | $ 3.98 | $ 3.94 | $ 3.63 | $ 3.43 | $ 3.72 | $ 3.73 | $ 3.55 | $ 3.49 | $ 3.46 | $ 3.46 | $ 3.54 | $ 3.73 |
| High Growth & Low Prices | Stanfield | 2028-2029 | $ 3.95 | $ 3.88 | $ 3.88 | $ 3.83 | $ 3.90 | $ 3.78 | $ 3.73 | $ 3.66 | $ 3.66 | $ 3.65 | $ 3.73 | $ 3.76 |
| High Growth & Low Prices | Stanfield | 2029-2030 | $ 4.07 | $ 4.02 | $ 4.00 | $ 3.81 | $ 3.97 | $ 3.91 | $ 3.72 | $ 3.64 | $ 3.61 | $ 3.63 | $ 3.70 | $ 3.88 |
| High Growth & Low Prices | Stanfield | 2030-2031 | $ 4.21 | $ 4.13 | $ 3.92 | $ 3.76 | $ 3.98 | $ 3.96 | $ 3.81 | $ 3.75 | $ 3.74 | $ 3.75 | $ 3.82 | $ 3.87 |
| High Growth & Low Prices | Stanfield | 2031-2032 | $ 4.18 | $ 3.94 | $ 3.77 | $ 3.78 | $ 3.86 | $ 3.60 | $ 3.56 | $ 3.48 | $ 3.36 | $ 3.35 | $ 3.52 | $ 3.62 |
| High Growth & Low Prices | Stanfield | 2032-2033 | $ 3.88 | $ 3.83 | $ 3.82 | $ 3.82 | $ 3.87 | $ 3.59 | $ 3.69 | $ 3.51 | $ 3.38 | $ 3.37 | $ 3.56 | $ 3.67 |
| | | | | | | | | | | | | | | |
| High Growth & Low Prices | Sumas | 2013-2014 | $ 3.97 | $ 4.09 | $ 4.02 | $ 3.91 | $ 3.88 | $ 3.66 | $ 3.73 | $ 3.68 | $ 3.70 | $ 3.62 | $ 3.68 | $ 3.70 |
| High Growth & Low Prices | Sumas | 2014-2015 | $ 4.04 | $ 4.15 | $ 4.19 | $ 4.09 | $ 4.04 | $ 3.82 | $ 3.87 | $ 3.77 | $ 3.74 | $ 3.69 | $ 3.79 | $ 3.83 |
| High Growth & Low Prices | Sumas | 2015-2016 | $ 4.18 | $ 4.28 | $ 4.15 | $ 4.05 | $ 3.99 | $ 3.74 | $ 3.80 | $ 3.72 | $ 3.69 | $ 3.63 | $ 3.70 | $ 3.75 |
| High Growth & Low Prices | Sumas | 2016-2017 | $ 4.14 | $ 4.21 | $ 4.10 | $ 3.98 | $ 3.93 | $ 3.63 | $ 3.68 | $ 3.62 | $ 3.61 | $ 3.53 | $ 3.60 | $ 3.69 |
| High Growth & Low Prices | Sumas | 2017-2018 | $ 4.04 | $ 4.10 | $ 4.01 | $ 3.87 | $ 3.84 | $ 3.60 | $ 3.59 | $ 3.54 | $ 3.52 | $ 3.43 | $ 3.50 | $ 3.60 |
| High Growth & Low Prices | Sumas | 2018-2019 | $ 4.04 | $ 4.08 | $ 3.87 | $ 3.74 | $ 3.78 | $ 3.50 | $ 3.47 | $ 3.40 | $ 3.39 | $ 3.34 | $ 3.36 | $ 3.39 |
| High Growth & Low Prices | Sumas | 2019-2020 | $ 3.79 | $ 3.97 | $ 3.78 | $ 3.66 | $ 3.71 | $ 3.46 | $ 3.50 | $ 3.44 | $ 3.41 | $ 3.36 | $ 3.38 | $ 3.41 |
| High Growth & Low Prices | Sumas | 2020-2021 | $ 3.76 | $ 3.95 | $ 3.80 | $ 3.71 | $ 3.75 | $ 3.46 | $ 3.49 | $ 3.42 | $ 3.34 | $ 3.30 | $ 3.36 | $ 3.38 |
| High Growth & Low Prices | Sumas | 2021-2022 | $ 3.95 | $ 4.06 | $ 3.99 | $ 3.83 | $ 3.84 | $ 3.59 | $ 3.62 | $ 3.53 | $ 3.50 | $ 3.46 | $ 3.54 | $ 3.57 |
| High Growth & Low Prices | Sumas | 2022-2023 | $ 4.07 | $ 4.10 | $ 3.88 | $ 3.63 | $ 3.60 | $ 3.40 | $ 3.33 | $ 3.23 | $ 3.25 | $ 3.16 | $ 3.27 | $ 3.29 |
| High Growth & Low Prices | Sumas | 2023-2024 | $ 3.74 | $ 4.04 | $ 3.93 | $ 3.66 | $ 3.75 | $ 3.57 | $ 3.48 | $ 3.38 | $ 3.37 | $ 3.29 | $ 3.41 | $ 3.46 |
| High Growth & Low Prices | Sumas | 2024-2025 | $ 3.77 | $ 4.11 | $ 4.07 | $ 3.76 | $ 3.82 | $ 3.63 | $ 3.63 | $ 3.54 | $ 3.53 | $ 3.45 | $ 3.57 | $ 3.62 |
| High Growth & Low Prices | Sumas | 2025-2026 | $ 3.91 | $ 4.22 | $ 4.05 | $ 3.90 | $ 3.82 | $ 3.60 | $ 3.53 | $ 3.43 | $ 3.43 | $ 3.35 | $ 3.47 | $ 3.50 |
| High Growth & Low Prices | Sumas | 2026-2027 | $ 3.88 | $ 4.24 | $ 3.96 | $ 3.70 | $ 3.76 | $ 3.47 | $ 3.47 | $ 3.35 | $ 3.37 | $ 3.29 | $ 3.41 | $ 3.44 |
| High Growth & Low Prices | Sumas | 2027-2028 | $ 3.83 | $ 4.16 | $ 3.80 | $ 3.59 | $ 3.65 | $ 3.39 | $ 3.38 | $ 3.28 | $ 3.27 | $ 3.24 | $ 3.31 | $ 3.34 |
| High Growth & Low Prices | Sumas | 2028-2029 | $ 4.02 | $ 4.10 | $ 4.05 | $ 3.90 | $ 3.97 | $ 3.62 | $ 3.63 | $ 3.50 | $ 3.53 | $ 3.48 | $ 3.54 | $ 3.56 |
| High Growth & Low Prices | Sumas | 2029-2030 | $ 4.14 | $ 4.32 | $ 4.38 | $ 3.88 | $ 4.06 | $ 3.58 | $ 3.56 | $ 3.44 | $ 3.46 | $ 3.41 | $ 3.48 | $ 3.52 |
| High Growth & Low Prices | Sumas | 2030-2031 | $ 4.27 | $ 4.42 | $ 4.39 | $ 3.83 | $ 4.08 | $ 3.65 | $ 3.67 | $ 3.55 | $ 3.60 | $ 3.56 | $ 3.63 | $ 3.66 |
| High Growth & Low Prices | Sumas | 2031-2032 | $ 4.25 | $ 4.34 | $ 3.99 | $ 4.00 | $ 3.90 | $ 3.44 | $ 3.33 | $ 3.07 | $ 3.23 | $ 3.20 | $ 3.33 | $ 3.44 |
| High Growth & Low Prices | Sumas | 2032-2033 | $ 3.93 | $ 4.16 | $ 4.15 | $ 4.16 | $ 3.92 | $ 3.44 | $ 3.33 | $ 3.10 | $ 3.25 | $ 3.22 | $ 3.36 | $ 3.49 |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
# LOW GROWTH HIGH PRICE

| 2012$ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Index | Gas Year | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| Low Growth & High Prices | AECo | 2013-2014 | $ 3.26 | $ 3.65 | $ 4.18 | $ 3.34 | $ 3.90 | $ 3.88 | $ 3.84 | $ 3.85 | $ 3.83 | $ 3.82 | $ 3.85 | $ 3.87 |
| Low Growth & High Prices | AECo | 2014-2015 | $ 3.90 | $ 3.83 | $ 4.15 | $ 4.16 | $ 4.30 | $ 4.23 | $ 4.16 | $ 4.15 | $ 4.12 | $ 4.11 | $ 4.15 | $ 4.21 |
| Low Growth & High Prices | AECo | 2015-2016 | $ 4.23 | $ 4.14 | $ 4.25 | $ 4.26 | $ 4.42 | $ 4.35 | $ 4.29 | $ 4.31 | $ 4.28 | $ 4.25 | $ 4.26 | $ 4.30 |
| Low Growth & High Prices | AECo | 2016-2017 | $ 4.34 | $ 4.25 | $ 4.41 | $ 4.43 | $ 4.54 | $ 4.44 | $ 4.37 | $ 4.37 | $ 4.35 | $ 4.34 | $ 4.36 | $ 4.41 |
| Low Growth & High Prices | AECo | 2017-2018 | $ 4.42 | $ 4.31 | $ 4.60 | $ 4.59 | $ 4.70 | $ 4.63 | $ 4.58 | $ 4.58 | $ 4.56 | $ 4.54 | $ 4.55 | $ 4.59 |
| Low Growth & High Prices | AECo | 2018-2019 | $ 4.70 | $ 4.57 | $ 4.61 | $ 4.62 | $ 4.81 | $ 4.72 | $ 4.67 | $ 4.64 | $ 4.62 | $ 4.60 | $ 4.62 | $ 4.67 |
| Low Growth & High Prices | AECo | 2019-2020 | $ 4.80 | $ 4.68 | $ 4.66 | $ 4.71 | $ 4.97 | $ 4.88 | $ 4.81 | $ 4.78 | $ 4.74 | $ 4.73 | $ 4.75 | $ 4.80 |
| Low Growth & High Prices | AECo | 2020-2021 | $ 4.88 | $ 4.73 | $ 4.84 | $ 4.87 | $ 5.09 | $ 5.00 | $ 4.91 | $ 4.87 | $ 4.79 | $ 4.78 | $ 4.84 | $ 4.89 |
| Low Growth & High Prices | AECo | 2021-2022 | $ 4.99 | $ 4.95 | $ 5.32 | $ 5.36 | $ 5.48 | $ 5.38 | $ 5.31 | $ 5.25 | $ 5.23 | $ 5.21 | $ 5.30 | $ 5.34 |
| Low Growth & High Prices | AECo | 2022-2023 | $ 5.39 | $ 5.32 | $ 5.39 | $ 5.38 | $ 5.51 | $ 5.38 | $ 5.24 | $ 5.18 | $ 5.15 | $ 5.13 | $ 5.20 | $ 5.24 |
| Low Growth & High Prices | AECo | 2023-2024 | $ 5.45 | $ 5.43 | $ 5.71 | $ 5.74 | $ 5.90 | $ 5.78 | $ 5.65 | $ 5.59 | $ 5.54 | $ 5.53 | $ 5.61 | $ 5.66 |
| Low Growth & High Prices | AECo | 2024-2025 | $ 5.76 | $ 5.78 | $ 6.04 | $ 6.03 | $ 6.16 | $ 6.04 | $ 5.99 | $ 5.93 | $ 5.88 | $ 5.87 | $ 5.95 | $ 6.00 |
| Low Growth & High Prices | AECo | 2025-2026 | $ 6.09 | $ 6.08 | $ 6.25 | $ 6.27 | $ 6.42 | $ 6.29 | $ 6.18 | $ 6.11 | $ 6.06 | $ 6.05 | $ 6.14 | $ 6.19 |
| Low Growth & High Prices | AECo | 2026-2027 | $ 6.34 | $ 6.33 | $ 6.45 | $ 6.37 | $ 6.67 | $ 6.46 | $ 6.38 | $ 6.30 | $ 6.27 | $ 6.26 | $ 6.35 | $ 6.40 |
| Low Growth & High Prices | AECo | 2027-2028 | $ 6.57 | $ 6.54 | $ 6.57 | $ 6.54 | $ 6.82 | $ 6.66 | $ 6.59 | $ 6.53 | $ 6.48 | $ 6.48 | $ 6.55 | $ 6.61 |
| Low Growth & High Prices | AECo | 2028-2029 | $ 6.82 | $ 6.80 | $ 7.07 | $ 7.14 | $ 7.36 | $ 7.15 | $ 7.09 | $ 7.02 | $ 6.98 | $ 6.95 | $ 7.02 | $ 7.06 |
| Low Growth & High Prices | AECo | 2029-2030 | $ 7.21 | $ 7.21 | $ 7.47 | $ 7.36 | $ 7.68 | $ 7.39 | $ 7.31 | $ 7.24 | $ 7.20 | $ 7.18 | $ 7.24 | $ 7.31 |
| Low Growth & High Prices | AECo | 2030-2031 | $ 7.62 | $ 7.57 | $ 7.64 | $ 7.54 | $ 7.94 | $ 7.73 | $ 7.68 | $ 7.62 | $ 7.60 | $ 7.59 | $ 7.66 | $ 7.71 |
| Low Growth & High Prices | AECo | 2031-2032 | $ 7.87 | $ 7.64 | $ 7.87 | $ 7.88 | $ 8.04 | $ 7.88 | $ 7.86 | $ 7.79 | $ 7.68 | $ 7.66 | $ 7.81 | $ 7.86 |
| Low Growth & High Prices | AECo | 2032-2033 | $ 7.96 | $ 7.91 | $ 8.28 | $ 8.27 | $ 8.42 | $ 8.25 | $ 8.24 | $ 8.19 | $ 8.07 | $ 8.05 | $ 8.21 | $ 8.28 |
| Low Growth & High Prices | Malin | 2013-2014 | $ 3.62 | $ 4.53 | $ 4.69 | $ 3.81 | $ 4.28 | $ 4.28 | $ 4.25 | $ 4.24 | $ 4.24 | $ 4.23 | $ 4.26 | $ 4.31 |
| Low Growth & High Prices | Malin | 2014-2015 | $ 4.33 | $ 4.33 | $ 4.60 | $ 4.61 | $ 4.64 | $ 4.63 | $ 4.56 | $ 4.55 | $ 4.53 | $ 4.52 | $ 4.57 | $ 4.62 |
| Low Growth & High Prices | Malin | 2015-2016 | $ 4.69 | $ 4.66 | $ 4.78 | $ 4.77 | $ 4.79 | $ 4.79 | $ 4.73 | $ 4.70 | $ 4.69 | $ 4.69 | $ 4.74 | $ 4.76 |
| Low Growth & High Prices | Malin | 2016-2017 | $ 4.87 | $ 4.78 | $ 4.92 | $ 4.91 | $ 4.93 | $ 4.91 | $ 4.91 | $ 4.89 | $ 4.89 | $ 4.89 | $ 4.94 | $ 4.94 |
| Low Growth & High Prices | Malin | 2017-2018 | $ 4.99 | $ 4.88 | $ 5.14 | $ 5.10 | $ 5.13 | $ 5.17 | $ 5.17 | $ 5.15 | $ 5.14 | $ 5.17 | $ 5.22 | $ 5.22 |
| Low Growth & High Prices | Malin | 2018-2019 | $ 5.31 | $ 5.16 | $ 5.20 | $ 5.16 | $ 5.28 | $ 5.31 | $ 5.31 | $ 5.29 | $ 5.27 | $ 5.29 | $ 5.32 | $ 5.37 |
| Low Growth & High Prices | Malin | 2019-2020 | $ 5.43 | $ 5.27 | $ 5.21 | $ 5.19 | $ 5.43 | $ 5.49 | $ 5.42 | $ 5.39 | $ 5.38 | $ 5.38 | $ 5.42 | $ 5.46 |
| Low Growth & High Prices | Malin | 2020-2021 | $ 5.55 | $ 5.40 | $ 5.34 | $ 5.35 | $ 5.58 | $ 5.65 | $ 5.50 | $ 5.46 | $ 5.44 | $ 5.44 | $ 5.52 | $ 5.58 |
| Low Growth & High Prices | Malin | 2021-2022 | $ 5.70 | $ 5.55 | $ 5.76 | $ 5.71 | $ 5.90 | $ 5.95 | $ 5.90 | $ 5.84 | $ 5.82 | $ 5.84 | $ 5.95 | $ 6.00 |
| Low Growth & High Prices | Malin | 2022-2023 | $ 6.07 | $ 5.88 | $ 5.90 | $ 5.89 | $ 6.05 | $ 6.02 | $ 5.87 | $ 5.75 | $ 5.74 | $ 5.72 | $ 5.91 | $ 5.95 |
| Low Growth & High Prices | Malin | 2023-2024 | $ 6.19 | $ 6.01 | $ 6.22 | $ 6.13 | $ 6.43 | $ 6.43 | $ 6.24 | $ 6.18 | $ 6.16 | $ 6.19 | $ 6.29 | $ 6.33 |
| Low Growth & High Prices | Malin | 2024-2025 | $ 6.48 | $ 6.37 | $ 6.55 | $ 6.38 | $ 6.64 | $ 6.68 | $ 6.62 | $ 6.54 | $ 6.57 | $ 6.57 | $ 6.66 | $ 6.68 |
| Low Growth & High Prices | Malin | 2025-2026 | $ 6.82 | $ 6.66 | $ 6.80 | $ 6.76 | $ 6.99 | $ 6.95 | $ 6.83 | $ 6.77 | $ 6.78 | $ 6.78 | $ 6.89 | $ 6.93 |
| Low Growth & High Prices | Malin | 2026-2027 | $ 7.08 | $ 7.01 | $ 6.99 | $ 6.79 | $ 7.16 | $ 7.12 | $ 7.04 | $ 6.96 | $ 6.95 | $ 6.97 | $ 7.06 | $ 7.13 |
| Low Growth & High Prices | Malin | 2027-2028 | $ 7.31 | $ 7.16 | $ 7.12 | $ 7.02 | $ 7.37 | $ 7.32 | $ 7.23 | $ 7.18 | $ 7.16 | $ 7.20 | $ 7.28 | $ 7.33 |
| Low Growth & High Prices | Malin | 2028-2029 | $ 7.56 | $ 7.38 | $ 7.63 | $ 7.54 | $ 7.74 | $ 7.71 | $ 7.67 | $ 7.61 | $ 7.64 | $ 7.63 | $ 7.71 | $ 7.76 |
| Low Growth & High Prices | Malin | 2029-2030 | $ 7.91 | $ 7.78 | $ 8.00 | $ 7.80 | $ 8.11 | $ 8.03 | $ 7.96 | $ 7.89 | $ 7.88 | $ 7.92 | $ 7.99 | $ 8.04 |
| Low Growth & High Prices | Malin | 2030-2031 | $ 8.34 | $ 8.16 | $ 8.23 | $ 8.03 | $ 8.37 | $ 8.34 | $ 8.32 | $ 8.26 | $ 8.27 | $ 8.30 | $ 8.39 | $ 8.42 |
| Low Growth & High Prices | Malin | 2031-2032 | $ 8.57 | $ 8.27 | $ 8.37 | $ 8.38 | $ 8.46 | $ 8.36 | $ 8.33 | $ 8.24 | $ 8.13 | $ 8.13 | $ 8.31 | $ 8.41 |
| Low Growth & High Prices | Malin | 2032-2033 | $ 8.50 | $ 8.44 | $ 8.80 | $ 8.79 | $ 8.83 | $ 8.72 | $ 8.70 | $ 8.64 | $ 8.53 | $ 8.52 | $ 8.72 | $ 8.83 |
| Low Growth & High Prices | Rockies | 2013-2014 | $ 3.53 | $ 4.56 | $ 4.66 | $ 3.77 | $ 4.25 | $ 4.23 | $ 4.22 | $ 4.21 | $ 4.20 | $ 4.19 | $ 4.21 | $ 4.26 |
| Low Growth & High Prices | Rockies | 2014-2015 | $ 4.29 | $ 4.29 | $ 4.57 | $ 4.57 | $ 4.61 | $ 4.57 | $ 4.53 | $ 4.52 | $ 4.49 | $ 4.48 | $ 4.53 | $ 4.55 |
| Low Growth & High Prices | Rockies | 2015-2016 | $ 4.62 | $ 4.62 | $ 4.74 | $ 4.74 | $ 4.75 | $ 4.75 | $ 4.70 | $ 4.67 | $ 4.64 | $ 4.64 | $ 4.69 | $ 4.71 |
| Low Growth & High Prices | Rockies | 2016-2017 | $ 4.78 | $ 4.74 | $ 4.89 | $ 4.87 | $ 4.90 | $ 4.86 | $ 4.83 | $ 4.80 | $ 4.79 | $ 4.78 | $ 4.82 | $ 4.84 |
| Low Growth & High Prices | Rockies | 2017-2018 | $ 4.89 | $ 4.83 | $ 5.10 | $ 5.06 | $ 5.09 | $ 5.09 | $ 5.08 | $ 5.05 | $ 5.04 | $ 5.03 | $ 5.07 | $ 5.07 |
| Low Growth & High Prices | Rockies | 2018-2019 | $ 5.15 | $ 5.11 | $ 5.16 | $ 5.11 | $ 5.23 | $ 5.23 | $ 5.18 | $ 5.15 | $ 5.11 | $ 5.14 | $ 5.17 | $ 5.18 |
| Low Growth & High Prices | Rockies | 2019-2020 | $ 5.18 | $ 5.13 | $ 5.17 | $ 5.14 | $ 5.29 | $ 5.27 | $ 5.22 | $ 5.20 | $ 5.17 | $ 5.16 | $ 5.20 | $ 5.22 |
| Low Growth & High Prices | Rockies | 2020-2021 | $ 5.25 | $ 5.25 | $ 5.28 | $ 5.27 | $ 5.34 | $ 5.29 | $ 5.28 | $ 5.19 | $ 5.21 | $ 5.20 | $ 5.25 | $ 5.28 |
| Low Growth & High Prices | Rockies | 2021-2022 | $ 5.29 | $ 5.32 | $ 5.57 | $ 5.52 | $ 5.55 | $ 5.57 | $ 5.52 | $ 5.47 | $ 5.44 | $ 5.44 | $ 5.52 | $ 5.54 |
| Low Growth & High Prices | Rockies | 2022-2023 | $ 5.57 | $ 5.49 | $ 5.59 | $ 5.56 | $ 5.64 | $ 5.60 | $ 5.49 | $ 5.43 | $ 5.41 | $ 5.41 | $ 5.48 | $ 5.52 |
| Low Growth & High Prices | Rockies | 2023-2024 | $ 5.65 | $ 5.61 | $ 5.82 | $ 5.79 | $ 5.89 | $ 5.89 | $ 5.76 | $ 5.67 | $ 5.65 | $ 5.64 | $ 5.73 | $ 5.81 |
| Low Growth & High Prices | Rockies | 2024-2025 | $ 5.86 | $ 5.85 | $ 6.27 | $ 6.28 | $ 6.32 | $ 6.31 | $ 6.28 | $ 6.21 | $ 6.22 | $ 6.21 | $ 6.28 | $ 6.29 |
| Low Growth & High Prices | Rockies | 2025-2026 | $ 6.33 | $ 6.27 | $ 6.47 | $ 6.46 | $ 6.55 | $ 6.54 | $ 6.45 | $ 6.38 | $ 6.38 | $ 6.37 | $ 6.44 | $ 6.52 |
| Low Growth & High Prices | Rockies | 2026-2027 | $ 6.53 | $ 6.50 | $ 6.81 | $ 6.70 | $ 6.88 | $ 6.87 | $ 6.82 | $ 6.74 | $ 6.75 | $ 6.74 | $ 6.83 | $ 6.87 |
| Low Growth & High Prices | Rockies | 2027-2028 | $ 6.93 | $ 6.92 | $ 6.96 | $ 6.93 | $ 7.09 | $ 7.07 | $ 7.03 | $ 6.95 | $ 6.95 | $ 6.94 | $ 7.02 | $ 7.08 |
| Low Growth & High Prices | Rockies | 2028-2029 | $ 7.17 | $ 7.13 | $ 7.34 | $ 7.25 | $ 7.42 | $ 7.41 | $ 7.38 | $ 7.29 | $ 7.30 | $ 7.30 | $ 7.35 | $ 7.37 |
| Low Growth & High Prices | Rockies | 2029-2030 | $ 7.43 | $ 7.40 | $ 7.66 | $ 7.56 | $ 7.75 | $ 7.72 | $ 7.64 | $ 7.57 | $ 7.57 | $ 7.57 | $ 7.64 | $ 7.70 |
| Low Growth & High Prices | Rockies | 2030-2031 | $ 7.78 | $ 7.72 | $ 7.86 | $ 7.79 | $ 8.00 | $ 7.97 | $ 7.93 | $ 7.87 | $ 7.89 | $ 7.91 | $ 7.98 | $ 7.99 |
| Low Growth & High Prices | Rockies | 2031-2032 | $ 8.01 | $ 7.89 | $ 7.96 | $ 7.96 | $ 8.01 | $ 7.95 | $ 7.92 | $ 7.83 | $ 7.73 | $ 7.72 | $ 7.89 | $ 7.96 |
| Low Growth & High Prices | Rockies | 2032-2033 | $ 8.00 | $ 7.99 | $ 8.33 | $ 8.33 | $ 8.35 | $ 8.29 | $ 8.27 | $ 8.19 | $ 8.09 | $ 8.08 | $ 8.25 | $ 8.34 |

# APPENDIX 5.1: MONTHLY PRICE DATA BY BASIN
# LOW GROWTH HIGH PRICE

| 2012$ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scenario | Index | Gas Year | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct |
| Low Growth & High Prices | Stanfield | 2013-2014 | $ 3.60 | $ 4.56 | $ 4.66 | $ 3.72 | $ 4.21 | $ 4.19 | $ 4.20 | $ 4.21 | $ 4.19 | $ 4.19 | $ 4.21 | $ 4.22 |
| Low Growth & High Prices | Stanfield | 2014-2015 | $ 4.29 | $ 4.23 | $ 4.53 | $ 4.54 | $ 4.61 | $ 4.54 | $ 4.52 | $ 4.51 | $ 4.49 | $ 4.47 | $ 4.51 | $ 4.53 |
| Low Growth & High Prices | Stanfield | 2015-2016 | $ 4.62 | $ 4.66 | $ 4.78 | $ 4.78 | $ 4.73 | $ 4.70 | $ 4.65 | $ 4.67 | $ 4.64 | $ 4.61 | $ 4.66 | $ 4.67 |
| Low Growth & High Prices | Stanfield | 2016-2017 | $ 4.77 | $ 4.79 | $ 4.93 | $ 4.82 | $ 4.86 | $ 4.82 | $ 4.77 | $ 4.75 | $ 4.75 | $ 4.75 | $ 4.78 | $ 4.81 |
| Low Growth & High Prices | Stanfield | 2017-2018 | $ 4.97 | $ 4.88 | $ 5.15 | $ 5.00 | $ 5.05 | $ 5.04 | $ 5.03 | $ 5.00 | $ 4.99 | $ 4.99 | $ 5.03 | $ 5.03 |
| Low Growth & High Prices | Stanfield | 2018-2019 | $ 5.27 | $ 5.16 | $ 5.20 | $ 5.17 | $ 5.19 | $ 5.27 | $ 5.13 | $ 5.10 | $ 5.08 | $ 5.09 | $ 5.12 | $ 5.27 |
| Low Growth & High Prices | Stanfield | 2019-2020 | $ 5.25 | $ 5.25 | $ 5.21 | $ 5.10 | $ 5.34 | $ 5.31 | $ 5.23 | $ 5.20 | $ 5.20 | $ 5.18 | $ 5.22 | $ 5.25 |
| Low Growth & High Prices | Stanfield | 2020-2021 | $ 5.36 | $ 5.33 | $ 5.34 | $ 5.25 | $ 5.48 | $ 5.44 | $ 5.32 | $ 5.28 | $ 5.25 | $ 5.24 | $ 5.32 | $ 5.37 |
| Low Growth & High Prices | Stanfield | 2021-2022 | $ 5.59 | $ 5.55 | $ 5.82 | $ 5.76 | $ 5.80 | $ 5.79 | $ 5.73 | $ 5.67 | $ 5.64 | $ 5.64 | $ 5.75 | $ 5.80 |
| Low Growth & High Prices | Stanfield | 2022-2023 | $ 6.00 | $ 5.89 | $ 5.79 | $ 5.79 | $ 5.88 | $ 5.81 | $ 5.69 | $ 5.63 | $ 5.60 | $ 5.59 | $ 5.68 | $ 5.71 |
| Low Growth & High Prices | Stanfield | 2023-2024 | $ 6.08 | $ 6.01 | $ 6.24 | $ 6.06 | $ 6.27 | $ 6.22 | $ 6.07 | $ 6.00 | $ 5.96 | $ 5.95 | $ 6.07 | $ 6.12 |
| Low Growth & High Prices | Stanfield | 2024-2025 | $ 6.39 | $ 6.36 | $ 6.44 | $ 6.33 | $ 6.52 | $ 6.48 | $ 6.44 | $ 6.36 | $ 6.34 | $ 6.33 | $ 6.43 | $ 6.46 |
| Low Growth & High Prices | Stanfield | 2025-2026 | $ 6.72 | $ 6.66 | $ 6.81 | $ 6.66 | $ 6.82 | $ 6.75 | $ 6.63 | $ 6.56 | $ 6.55 | $ 6.54 | $ 6.65 | $ 6.80 |
| Low Growth & High Prices | Stanfield | 2026-2027 | $ 6.97 | $ 6.96 | $ 7.01 | $ 6.75 | $ 7.04 | $ 7.03 | $ 6.85 | $ 6.77 | $ 6.75 | $ 6.75 | $ 6.83 | $ 7.02 |
| Low Growth & High Prices | Stanfield | 2027-2028 | $ 7.20 | $ 7.16 | $ 7.13 | $ 6.93 | $ 7.22 | $ 7.23 | $ 7.05 | $ 6.99 | $ 6.96 | $ 6.96 | $ 7.04 | $ 7.23 |
| Low Growth & High Prices | Stanfield | 2028-2029 | $ 7.45 | $ 7.38 | $ 7.65 | $ 7.60 | $ 7.67 | $ 7.56 | $ 7.50 | $ 7.43 | $ 7.44 | $ 7.42 | $ 7.50 | $ 7.54 |
| Low Growth & High Prices | Stanfield | 2029-2030 | $ 7.85 | $ 7.80 | $ 8.06 | $ 7.86 | $ 8.02 | $ 7.97 | $ 7.77 | $ 7.69 | $ 7.66 | $ 7.68 | $ 7.75 | $ 7.93 |
| Low Growth & High Prices | Stanfield | 2030-2031 | $ 8.26 | $ 8.18 | $ 8.25 | $ 8.09 | $ 8.30 | $ 8.29 | $ 8.14 | $ 8.07 | $ 8.06 | $ 8.08 | $ 8.15 | $ 8.19 |
| Low Growth & High Prices | Stanfield | 2031-2032 | $ 8.51 | $ 8.27 | $ 8.37 | $ 8.37 | $ 8.45 | $ 8.20 | $ 8.16 | $ 8.08 | $ 7.96 | $ 7.94 | $ 8.12 | $ 8.22 |
| Low Growth & High Prices | Stanfield | 2032-2033 | $ 8.48 | $ 8.43 | $ 8.79 | $ 8.78 | $ 8.83 | $ 8.56 | $ 8.66 | $ 8.47 | $ 8.35 | $ 8.34 | $ 8.53 | $ 8.63 |
| | | | | | | | | | | | | | | |
| Low Growth & High Prices | Sumas | 2013-2014 | $ 3.93 | $ 5.31 | $ 4.68 | $ 3.87 | $ 4.28 | $ 4.06 | $ 4.13 | $ 4.08 | $ 4.10 | $ 4.02 | $ 4.08 | $ 4.10 |
| Low Growth & High Prices | Sumas | 2014-2015 | $ 4.44 | $ 4.55 | $ 4.79 | $ 4.69 | $ 4.64 | $ 4.42 | $ 4.47 | $ 4.37 | $ 4.34 | $ 4.29 | $ 4.39 | $ 4.43 |
| Low Growth & High Prices | Sumas | 2015-2016 | $ 4.78 | $ 4.88 | $ 4.95 | $ 4.85 | $ 4.79 | $ 4.54 | $ 4.60 | $ 4.52 | $ 4.49 | $ 4.43 | $ 4.50 | $ 4.55 |
| Low Growth & High Prices | Sumas | 2016-2017 | $ 4.94 | $ 5.01 | $ 5.10 | $ 4.98 | $ 4.93 | $ 4.63 | $ 4.68 | $ 4.62 | $ 4.61 | $ 4.53 | $ 4.60 | $ 4.69 |
| Low Growth & High Prices | Sumas | 2017-2018 | $ 5.04 | $ 5.10 | $ 5.31 | $ 5.17 | $ 5.14 | $ 4.90 | $ 4.89 | $ 4.84 | $ 4.82 | $ 4.73 | $ 4.80 | $ 4.90 |
| Low Growth & High Prices | Sumas | 2018-2019 | $ 5.34 | $ 5.38 | $ 5.37 | $ 5.24 | $ 5.28 | $ 5.00 | $ 4.97 | $ 4.90 | $ 4.89 | $ 4.84 | $ 4.86 | $ 4.89 |
| Low Growth & High Prices | Sumas | 2019-2020 | $ 5.29 | $ 5.47 | $ 5.38 | $ 5.26 | $ 5.31 | $ 5.06 | $ 5.10 | $ 5.04 | $ 5.01 | $ 4.96 | $ 4.98 | $ 5.01 |
| Low Growth & High Prices | Sumas | 2020-2021 | $ 5.36 | $ 5.55 | $ 5.51 | $ 5.42 | $ 5.47 | $ 5.18 | $ 5.21 | $ 5.13 | $ 5.05 | $ 5.02 | $ 5.07 | $ 5.10 |
| Low Growth & High Prices | Sumas | 2021-2022 | $ 5.66 | $ 5.77 | $ 5.99 | $ 5.83 | $ 5.84 | $ 5.59 | $ 5.62 | $ 5.53 | $ 5.50 | $ 5.46 | $ 5.54 | $ 5.57 |
| Low Growth & High Prices | Sumas | 2022-2023 | $ 6.07 | $ 6.10 | $ 6.07 | $ 5.82 | $ 5.78 | $ 5.59 | $ 5.52 | $ 5.41 | $ 5.43 | $ 5.35 | $ 5.45 | $ 5.48 |
| Low Growth & High Prices | Sumas | 2023-2024 | $ 5.93 | $ 6.23 | $ 6.41 | $ 6.14 | $ 6.22 | $ 6.04 | $ 5.95 | $ 5.85 | $ 5.84 | $ 5.76 | $ 5.89 | $ 5.94 |
| Low Growth & High Prices | Sumas | 2024-2025 | $ 6.24 | $ 6.58 | $ 6.72 | $ 6.42 | $ 6.47 | $ 6.29 | $ 6.28 | $ 6.19 | $ 6.18 | $ 6.11 | $ 6.22 | $ 6.28 |
| Low Growth & High Prices | Sumas | 2025-2026 | $ 6.57 | $ 6.88 | $ 6.98 | $ 6.83 | $ 6.76 | $ 6.54 | $ 6.47 | $ 6.37 | $ 6.36 | $ 6.29 | $ 6.41 | $ 6.43 |
| Low Growth & High Prices | Sumas | 2026-2027 | $ 6.82 | $ 7.18 | $ 7.18 | $ 6.92 | $ 6.98 | $ 6.69 | $ 6.69 | $ 6.57 | $ 6.59 | $ 6.51 | $ 6.63 | $ 6.66 |
| Low Growth & High Prices | Sumas | 2027-2028 | $ 7.05 | $ 7.38 | $ 7.30 | $ 7.09 | $ 7.15 | $ 6.89 | $ 6.87 | $ 6.78 | $ 6.77 | $ 6.74 | $ 6.81 | $ 6.84 |
| Low Growth & High Prices | Sumas | 2028-2029 | $ 7.52 | $ 7.60 | $ 7.82 | $ 7.67 | $ 7.74 | $ 7.40 | $ 7.41 | $ 7.28 | $ 7.31 | $ 7.26 | $ 7.32 | $ 7.34 |
| Low Growth & High Prices | Sumas | 2029-2030 | $ 7.92 | $ 8.09 | $ 8.43 | $ 7.93 | $ 8.12 | $ 7.64 | $ 7.62 | $ 7.49 | $ 7.51 | $ 7.47 | $ 7.53 | $ 7.58 |
| Low Growth & High Prices | Sumas | 2030-2031 | $ 8.33 | $ 8.47 | $ 8.72 | $ 8.16 | $ 8.40 | $ 7.98 | $ 8.00 | $ 7.88 | $ 7.93 | $ 7.89 | $ 7.96 | $ 7.99 |
| Low Growth & High Prices | Sumas | 2031-2032 | $ 8.58 | $ 8.66 | $ 8.59 | $ 8.59 | $ 8.50 | $ 8.04 | $ 7.93 | $ 7.67 | $ 7.82 | $ 7.79 | $ 7.92 | $ 8.04 |
| Low Growth & High Prices | Sumas | 2032-2033 | $ 8.53 | $ 8.75 | $ 9.12 | $ 9.12 | $ 8.88 | $ 8.41 | $ 8.30 | $ 8.07 | $ 8.21 | $ 8.19 | $ 8.33 | $ 8.45 |

# APPENDIX 5.2: WEIGHTED AVERAGE COST OF CAPITAL

**Avista Corporation Capital Structure and Overall Rate of Return**

**WASHINGTON**

| **From 2012 Rate Case Settlement** Cost of Capital | Percent of Total Capital | Cost | Component | After Tax |
|---|---|---|---|---|
| L/T Debt | 53.00% | 5.72% | 3.03% | 1.97% |
| Common Equity | 47.00% | 9.80% | 4.61% | 4.61% |
| TOTAL | 100.00% | | 7.64% | 6.58% |

**IDAHO**

| **Agreed-upon** Cost of Capital | Percent of Total Capital | Cost | Component | |
|---|---|---|---|---|
| L/T Debt (1) | 50.00% | 6.60% | 3.30% | 2.15% |
| Common Equity | 50.00% | 10.50% | 5.25% | 5.25% |
| TOTAL | 100.00% | | 8.55% | 7.40% |

**OREGON**

| **Agreed-upon** Cost of Capital | Percent of Total Capital | Cost | Component | |
|---|---|---|---|---|
| L/T Debt | 50.00% | 5.90% | 2.95% | 1.92% |
| Common Equity | 50.00% | 10.10% | 5.05% | 5.05% |
| TOTAL | 100.00% | | 8.00% | 6.97% |

| 11/13 Gas Net Rate Base AMA | | | |
|---|---|---|---|
| WA | $ | 217,600 | 45% |
| ID | $ | 110,739 | 23% |
| OR | $ | 151,627 | 32% |
| | $ | 479,966 | |

| | |
|---|---|
| **System Weighted Average Cost of Capital (Nominal)*** | 6.93% |
| GDP price deflator | 1.90% |
| Real After Tax WACC | 4.93% |

# APPENDIX 5.3: POTENTIAL SUPPLY SIDE RESOURCE OPTIONS

| Additional Resources | Jurisdiction | Size | Cost/Rates | Availability | Modeled | Case(s) | Notes |
|---|---|---|---|---|---|---|---|
| **Pipeline** | | | | | | | |
| Capacity Release Recalls | WA/ID | 28,000 Dth/d | NWPL fixed rate | 2018 | Yes | Expected/High | Recall previously released capacity |
| GTN Capacity | WA/ID | 25,000 - 75,000 Dth/d | GTN rate | 2013 | Yes | Expected/High | Currently available unsubscribed capacity from Kingsgate to Spokane |
| GTN Capacity | OR | 25,000 - 50,000 Dth/d | GTN rate | 2013 | Yes | Expected/High | Currently available unsubscribed capacity; requires expansion of Medford Lateral |
| GTN Medford Lateral Expansion | OR | 25,000 - 50,000 Dth/d | GTN rate | 2014 | Yes | Expected/High | Additional compression to allow more gas to flow from GTN mailine to the lateral |
| NWP Expansion | WA/ID | 75,000 Dth/d | NWPL fixed rate x 3 | 2018 | Yes | Expected/High | Transport expansion from Sumas/JP to WA/ID |
| NWP Expansion | OR | 50,000 Dth/d | NWPL fixed rate x 5 | 2018 | Yes | Expected/High | Transport expansion from Sumas/JP to Oregon |
| **Statellite LNG** | | | | | | | |
| WA/ID Satellite LNG | WA/ID | 270,000 capacity; 90,000 delivery for 3 days | $132 million capital cost $1 million annual O&M | November 2018 | Yes | Expected/High | |
| Medford/Roseburg Satellite LNG | OR | 135,000 capacity; 45,000 delivery for 3 days | $66 million capital cost $850,000 annual O&M | November 2018 | Yes | Expected/High | |
| Klamath Falls Satellite LNG | OR | 45,000 capacity; 15,000 delivery for 3 days | $22 million capital cost $850,000 annual O&M | November 2018 | Yes | Expected/High | |
| La Grande Satellite LNG | OR | 45,000 capacity; 15,000 delivery for 3 days | $22 million capital cost $850,000 annual O&M | November 2018 | Yes | Expected/High | |
| **Company Owned Liquifaction LNG** | | | | | | | |
| WA/ID | WA | 600 MMcf capacity; 150,000 delivery for 4 days | $75 million capital cost, $2 million annual O&M | November 2018 | No | | Considered and discussed but not taken to full cycle modeling. |
| **Export LNG** | | | | | | | |
| An Oregon Export LNG Facility plus pipeline build through Avista service territory. | OR | 25,000 Dth/d | Pipeline charge $1.00/Dth/d | November 2018 | No | | Considered and discussed but not taken to full cycle modeling. |
| **Other Resources Considered** | | | | | | | |
| Citygate deliveries | WA/ID/OR | | | | No | | Represents the ability to buy a delivered product fron another utility or marketer. Limited counterparties to structure transaction |
| **Inground Storage** | | | | | | | |
| California | | | | | No | | Dependent on GTN backhaul or convert to bidirectional pipeline |
| JP Expansion | | | | | No | | Dependent on NWP Expansion or other Tport arrangements back to service territory |
| Mist | | | | | No | | Dependent on NWP Expansion or other Tport arrangements back to service territory; Long term subscription may not be available |

# APPENDIX 5.4: EXPECTED CASE AVOIDED COST

Annual Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Expected Case | 2013-2014 | $ 3.54 | $ 4.12 | $ 3.54 | $ 3.54 | $ 3.54 | $ 3.53 | $ 3.45 | $ 4.12 | $ 3.70 | $ 3.65 |
| Expected Case | 2014-2015 | $ 3.50 | $ 4.16 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.56 | $ 3.42 | $ 4.17 | $ 3.72 | $ 3.63 |
| Expected Case | 2015-2016 | $ 3.77 | $ 4.46 | $ 3.77 | $ 3.77 | $ 3.77 | $ 3.84 | $ 3.70 | $ 4.48 | $ 4.01 | $ 3.91 |
| Expected Case | 2016-2017 | $ 3.53 | $ 4.34 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.60 | $ 3.45 | $ 4.35 | $ 3.80 | $ 3.69 |
| Expected Case | 2017-2018 | $ 3.50 | $ 4.38 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.58 | $ 3.43 | $ 4.38 | $ 3.80 | $ 3.68 |
| Expected Case | 2018-2019 | $ 3.36 | $ 4.26 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.42 | $ 3.28 | $ 4.27 | $ 3.65 | $ 3.54 |
| Expected Case | 2019-2020 | $ 3.44 | $ 4.20 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.51 | $ 3.36 | $ 4.20 | $ 3.69 | $ 3.59 |
| Expected Case | 2020-2021 | $ 3.67 | $ 4.28 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.71 | $ 3.57 | $ 4.28 | $ 3.85 | $ 3.79 |
| Expected Case | 2021-2022 | $ 3.80 | $ 4.16 | $ 3.80 | $ 3.80 | $ 3.80 | $ 3.85 | $ 3.72 | $ 4.17 | $ 3.92 | $ 3.87 |
| Expected Case | 2022-2023 | $ 3.84 | $ 4.23 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.87 | $ 3.76 | $ 4.24 | $ 3.96 | $ 3.92 |
| Expected Case | 2023-2024 | $ 4.14 | $ 4.30 | $ 4.14 | $ 4.14 | $ 4.14 | $ 4.13 | $ 4.06 | $ 4.33 | $ 4.17 | $ 4.17 |
| Expected Case | 2024-2025 | $ 4.45 | $ 4.86 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.46 | $ 4.35 | $ 4.88 | $ 4.56 | $ 4.53 |
| Expected Case | 2025-2026 | $ 4.64 | $ 5.06 | $ 4.64 | $ 4.64 | $ 4.64 | $ 4.66 | $ 4.54 | $ 5.07 | $ 4.76 | $ 4.72 |
| Expected Case | 2026-2027 | $ 4.67 | $ 5.30 | $ 4.67 | $ 4.67 | $ 4.67 | $ 4.71 | $ 4.57 | $ 5.30 | $ 4.86 | $ 4.79 |
| Expected Case | 2027-2028 | $ 4.71 | $ 5.42 | $ 4.71 | $ 4.71 | $ 4.71 | $ 4.76 | $ 4.61 | $ 5.43 | $ 4.93 | $ 4.85 |
| Expected Case | 2028-2029 | $ 5.17 | $ 5.61 | $ 5.17 | $ 5.17 | $ 5.17 | $ 5.19 | $ 5.06 | $ 5.62 | $ 5.29 | $ 5.25 |
| Expected Case | 2029-2030 | $ 5.09 | $ 5.57 | $ 5.09 | $ 5.09 | $ 5.09 | $ 5.12 | $ 5.00 | $ 5.59 | $ 5.24 | $ 5.18 |
| Expected Case | 2030-2031 | $ 5.31 | $ 5.68 | $ 5.31 | $ 5.31 | $ 5.31 | $ 5.33 | $ 5.21 | $ 5.71 | $ 5.42 | $ 5.39 |
| Expected Case | 2031-2032 | $ 5.54 | $ 5.63 | $ 5.53 | $ 5.53 | $ 5.53 | $ 5.54 | $ 5.43 | $ 5.67 | $ 5.55 | $ 5.55 |
| Expected Case | 2032-2033 | $ 5.81 | $ 5.79 | $ 5.79 | $ 5.79 | $ 5.79 | $ 5.74 | $ 5.70 | $ 5.79 | $ 5.75 | $ 5.80 |

Annual Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Winter | OR Winter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Expected Case | 2013-2014 | $ 3.72 | $ 4.16 | $ 3.72 | $ 3.72 | $ 3.72 | $ 3.78 | $ 3.59 | $ 4.10 | $ 3.83 | $ 3.81 |
| Expected Case | 2014-2015 | $ 3.47 | $ 4.14 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.70 | $ 3.36 | $ 4.14 | $ 3.73 | $ 3.60 |
| Expected Case | 2015-2016 | $ 4.00 | $ 4.61 | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.24 | $ 3.91 | $ 4.60 | $ 4.25 | $ 4.13 |
| Expected Case | 2016-2017 | $ 3.61 | $ 4.38 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.85 | $ 3.50 | $ 4.37 | $ 3.91 | $ 3.76 |
| Expected Case | 2017-2018 | $ 3.71 | $ 4.54 | $ 3.71 | $ 3.71 | $ 3.71 | $ 3.98 | $ 3.62 | $ 4.54 | $ 4.04 | $ 3.88 |
| Expected Case | 2018-2019 | $ 3.49 | $ 4.29 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.72 | $ 3.37 | $ 4.28 | $ 3.79 | $ 3.65 |
| Expected Case | 2019-2020 | $ 3.52 | $ 4.23 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.75 | $ 3.40 | $ 4.22 | $ 3.79 | $ 3.66 |
| Expected Case | 2020-2021 | $ 3.63 | $ 4.23 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.82 | $ 3.47 | $ 4.23 | $ 3.84 | $ 3.75 |
| Expected Case | 2021-2022 | $ 4.01 | $ 4.37 | $ 4.01 | $ 4.01 | $ 4.01 | $ 4.23 | $ 3.91 | $ 4.36 | $ 4.17 | $ 4.08 |
| Expected Case | 2022-2023 | $ 4.05 | $ 4.32 | $ 4.05 | $ 4.05 | $ 4.05 | $ 4.21 | $ 3.96 | $ 4.32 | $ 4.16 | $ 4.10 |
| Expected Case | 2023-2024 | $ 4.29 | $ 4.42 | $ 4.29 | $ 4.29 | $ 4.29 | $ 4.36 | $ 4.19 | $ 4.42 | $ 4.32 | $ 4.32 |
| Expected Case | 2024-2025 | $ 4.60 | $ 4.82 | $ 4.60 | $ 4.60 | $ 4.60 | $ 4.72 | $ 4.46 | $ 4.82 | $ 4.67 | $ 4.65 |
| Expected Case | 2025-2026 | $ 4.82 | $ 5.11 | $ 4.82 | $ 4.82 | $ 4.82 | $ 4.99 | $ 4.69 | $ 5.11 | $ 4.93 | $ 4.88 |
| Expected Case | 2026-2027 | $ 4.91 | $ 5.26 | $ 4.91 | $ 4.91 | $ 4.91 | $ 5.11 | $ 4.78 | $ 5.25 | $ 5.05 | $ 4.98 |
| Expected Case | 2027-2028 | $ 4.91 | $ 5.48 | $ 4.91 | $ 4.91 | $ 4.91 | $ 5.15 | $ 4.77 | $ 5.47 | $ 5.13 | $ 5.03 |
| Expected Case | 2028-2029 | $ 5.38 | $ 5.70 | $ 5.38 | $ 5.38 | $ 5.38 | $ 5.54 | $ 5.22 | $ 5.70 | $ 5.49 | $ 5.45 |
| Expected Case | 2029-2030 | $ 5.43 | $ 5.69 | $ 5.43 | $ 5.43 | $ 5.43 | $ 5.61 | $ 5.32 | $ 5.69 | $ 5.54 | $ 5.49 |
| Expected Case | 2030-2031 | $ 5.53 | $ 5.74 | $ 5.53 | $ 5.53 | $ 5.53 | $ 5.68 | $ 5.40 | $ 5.74 | $ 5.61 | $ 5.57 |
| Expected Case | 2031-2032 | $ 5.67 | $ 5.83 | $ 5.67 | $ 5.67 | $ 5.67 | $ 5.80 | $ 5.55 | $ 5.82 | $ 5.73 | $ 5.70 |
| Expected Case | 2032-2033 | $ 5.88 | $ 5.86 | $ 5.87 | $ 5.87 | $ 5.87 | $ 5.85 | $ 5.75 | $ 5.86 | $ 5.82 | $ 5.87 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: LOW GROWTH CASE AVOIDED COST

Annual Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2013-2014 | $ 3.89 | $ 4.53 | $ 3.89 | $ 3.89 | $ 3.89 | $ 3.91 | $ 3.79 | $ 4.52 | $ 4.07 | $ 4.02 |
| Low Growth & High Prices | 2014-2015 | $ 4.22 | $ 4.89 | $ 4.22 | $ 4.22 | $ 4.22 | $ 4.26 | $ 4.14 | $ 4.90 | $ 4.43 | $ 4.36 |
| Low Growth & High Prices | 2015-2016 | $ 4.38 | $ 5.08 | $ 4.38 | $ 4.38 | $ 4.38 | $ 4.42 | $ 4.30 | $ 5.08 | $ 4.60 | $ 4.52 |
| Low Growth & High Prices | 2016-2017 | $ 4.49 | $ 5.27 | $ 4.49 | $ 4.49 | $ 4.49 | $ 4.52 | $ 4.40 | $ 5.28 | $ 4.73 | $ 4.64 |
| Low Growth & High Prices | 2017-2018 | $ 4.66 | $ 5.53 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.70 | $ 4.57 | $ 5.53 | $ 4.93 | $ 4.83 |
| Low Growth & High Prices | 2018-2019 | $ 4.77 | $ 5.65 | $ 4.77 | $ 4.77 | $ 4.77 | $ 4.80 | $ 4.67 | $ 5.65 | $ 5.04 | $ 4.94 |
| Low Growth & High Prices | 2019-2020 | $ 4.89 | $ 5.64 | $ 4.89 | $ 4.89 | $ 4.89 | $ 4.92 | $ 4.79 | $ 5.64 | $ 5.12 | $ 5.04 |
| Low Growth & High Prices | 2020-2021 | $ 4.99 | $ 5.64 | $ 4.99 | $ 4.99 | $ 4.99 | $ 5.01 | $ 4.89 | $ 5.65 | $ 5.19 | $ 5.12 |
| Low Growth & High Prices | 2021-2022 | $ 5.38 | $ 5.72 | $ 5.38 | $ 5.38 | $ 5.38 | $ 5.38 | $ 5.28 | $ 5.72 | $ 5.46 | $ 5.45 |
| Low Growth & High Prices | 2022-2023 | $ 5.40 | $ 5.77 | $ 5.40 | $ 5.40 | $ 5.40 | $ 5.40 | $ 5.31 | $ 5.78 | $ 5.50 | $ 5.48 |
| Low Growth & High Prices | 2023-2024 | $ 5.74 | $ 5.88 | $ 5.74 | $ 5.74 | $ 5.74 | $ 5.71 | $ 5.65 | $ 5.90 | $ 5.75 | $ 5.77 |
| Low Growth & High Prices | 2024-2025 | $ 6.08 | $ 6.46 | $ 6.08 | $ 6.08 | $ 6.08 | $ 6.07 | $ 5.97 | $ 6.46 | $ 6.17 | $ 6.16 |
| Low Growth & High Prices | 2025-2026 | $ 6.31 | $ 6.71 | $ 6.31 | $ 6.31 | $ 6.31 | $ 6.30 | $ 6.20 | $ 6.71 | $ 6.40 | $ 6.39 |
| Low Growth & High Prices | 2026-2027 | $ 6.52 | $ 7.14 | $ 6.52 | $ 6.52 | $ 6.52 | $ 6.52 | $ 6.41 | $ 7.14 | $ 6.69 | $ 6.64 |
| Low Growth & High Prices | 2027-2028 | $ 6.72 | $ 7.41 | $ 6.72 | $ 6.72 | $ 6.72 | $ 6.72 | $ 6.60 | $ 7.41 | $ 6.91 | $ 6.86 |
| Low Growth & High Prices | 2028-2029 | $ 7.19 | $ 7.61 | $ 7.19 | $ 7.19 | $ 7.19 | $ 7.17 | $ 7.06 | $ 7.61 | $ 7.28 | $ 7.27 |
| Low Growth & High Prices | 2029-2030 | $ 7.47 | $ 7.88 | $ 7.47 | $ 7.47 | $ 7.47 | $ 7.44 | $ 7.34 | $ 7.88 | $ 7.56 | $ 7.55 |
| Low Growth & High Prices | 2030-2031 | $ 7.82 | $ 8.15 | $ 7.82 | $ 7.82 | $ 7.82 | $ 7.79 | $ 7.69 | $ 8.15 | $ 7.88 | $ 7.88 |
| Low Growth & High Prices | 2031-2032 | $ 7.97 | $ 8.01 | $ 7.95 | $ 7.95 | $ 7.95 | $ 7.92 | $ 7.85 | $ 8.05 | $ 7.94 | $ 7.97 |
| Low Growth & High Prices | 2032-2033 | $ 8.33 | $ 8.29 | $ 8.29 | $ 8.29 | $ 8.29 | $ 8.23 | $ 8.21 | $ 8.28 | $ 8.24 | $ 8.30 |

Annual Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Winter | OR Winter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2013-2014 | $ 3.84 | $ 4.42 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.99 | $ 3.69 | $ 4.39 | $ 4.02 | $ 3.95 |
| Low Growth & High Prices | 2014-2015 | $ 4.19 | $ 4.85 | $ 4.19 | $ 4.19 | $ 4.19 | $ 4.38 | $ 4.08 | $ 4.85 | $ 4.44 | $ 4.32 |
| Low Growth & High Prices | 2015-2016 | $ 4.39 | $ 5.07 | $ 4.39 | $ 4.39 | $ 4.39 | $ 4.57 | $ 4.28 | $ 5.06 | $ 4.64 | $ 4.52 |
| Low Growth & High Prices | 2016-2017 | $ 4.52 | $ 5.27 | $ 4.52 | $ 4.52 | $ 4.52 | $ 4.71 | $ 4.41 | $ 5.27 | $ 4.80 | $ 4.67 |
| Low Growth & High Prices | 2017-2018 | $ 4.66 | $ 5.48 | $ 4.66 | $ 4.66 | $ 4.66 | $ 4.85 | $ 4.54 | $ 5.48 | $ 4.96 | $ 4.82 |
| Low Growth & High Prices | 2018-2019 | $ 4.80 | $ 5.63 | $ 4.80 | $ 4.80 | $ 4.80 | $ 4.98 | $ 4.68 | $ 5.63 | $ 5.10 | $ 4.97 |
| Low Growth & High Prices | 2019-2020 | $ 4.90 | $ 5.62 | $ 4.90 | $ 4.90 | $ 4.90 | $ 5.08 | $ 4.78 | $ 5.62 | $ 5.16 | $ 5.05 |
| Low Growth & High Prices | 2020-2021 | $ 5.03 | $ 5.65 | $ 5.03 | $ 5.03 | $ 5.03 | $ 5.19 | $ 4.90 | $ 5.65 | $ 5.25 | $ 5.15 |
| Low Growth & High Prices | 2021-2022 | $ 5.36 | $ 5.69 | $ 5.36 | $ 5.36 | $ 5.36 | $ 5.48 | $ 5.24 | $ 5.69 | $ 5.47 | $ 5.42 |
| Low Growth & High Prices | 2022-2023 | $ 5.52 | $ 5.76 | $ 5.52 | $ 5.52 | $ 5.52 | $ 5.63 | $ 5.42 | $ 5.76 | $ 5.60 | $ 5.57 |
| Low Growth & High Prices | 2023-2024 | $ 5.76 | $ 5.88 | $ 5.75 | $ 5.75 | $ 5.75 | $ 5.80 | $ 5.67 | $ 5.88 | $ 5.78 | $ 5.78 |
| Low Growth & High Prices | 2024-2025 | $ 6.10 | $ 6.32 | $ 6.10 | $ 6.10 | $ 6.10 | $ 6.20 | $ 5.98 | $ 6.32 | $ 6.16 | $ 6.14 |
| Low Growth & High Prices | 2025-2026 | $ 6.37 | $ 6.65 | $ 6.37 | $ 6.37 | $ 6.37 | $ 6.49 | $ 6.25 | $ 6.65 | $ 6.46 | $ 6.42 |
| Low Growth & High Prices | 2026-2027 | $ 6.59 | $ 6.99 | $ 6.59 | $ 6.59 | $ 6.59 | $ 6.73 | $ 6.46 | $ 6.99 | $ 6.72 | $ 6.67 |
| Low Growth & High Prices | 2027-2028 | $ 6.78 | $ 7.36 | $ 6.78 | $ 6.78 | $ 6.78 | $ 6.92 | $ 6.63 | $ 7.36 | $ 6.97 | $ 6.89 |
| Low Growth & High Prices | 2028-2029 | $ 7.21 | $ 7.53 | $ 7.21 | $ 7.21 | $ 7.21 | $ 7.31 | $ 7.06 | $ 7.53 | $ 7.30 | $ 7.27 |
| Low Growth & High Prices | 2029-2030 | $ 7.56 | $ 7.78 | $ 7.56 | $ 7.56 | $ 7.56 | $ 7.65 | $ 7.42 | $ 7.78 | $ 7.61 | $ 7.60 |
| Low Growth & High Prices | 2030-2031 | $ 7.84 | $ 8.04 | $ 7.84 | $ 7.84 | $ 7.84 | $ 7.93 | $ 7.69 | $ 8.04 | $ 7.89 | $ 7.88 |
| Low Growth & High Prices | 2031-2032 | $ 8.02 | $ 8.10 | $ 8.01 | $ 8.01 | $ 8.01 | $ 8.05 | $ 7.89 | $ 8.10 | $ 8.01 | $ 8.03 |
| Low Growth & High Prices | 2032-2033 | $ 8.33 | $ 8.31 | $ 8.32 | $ 8.32 | $ 8.32 | $ 8.26 | $ 8.20 | $ 8.27 | $ 8.24 | $ 8.32 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: HIGH GROWTH CASE AVOIDED COST

**Annual Avoided Costs 1/**
**2012$**

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2013-2014 | $ 3.53 | $ 3.90 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.56 | $ 3.44 | $ 3.89 | $ 3.63 | $ 3.60 |
| High Growth & Low Prices | 2014-2015 | $ 3.65 | $ 4.04 | $ 3.65 | $ 3.65 | $ 3.65 | $ 3.68 | $ 3.57 | $ 4.03 | $ 3.76 | $ 3.73 |
| High Growth & Low Prices | 2015-2016 | $ 3.61 | $ 4.01 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.65 | $ 3.53 | $ 4.00 | $ 3.72 | $ 3.69 |
| High Growth & Low Prices | 2016-2017 | $ 3.52 | $ 4.08 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.57 | $ 3.43 | $ 4.08 | $ 3.69 | $ 3.63 |
| High Growth & Low Prices | 2017-2018 | $ 3.41 | $ 4.01 | $ 3.41 | $ 3.41 | $ 3.41 | $ 3.46 | $ 3.32 | $ 4.01 | $ 3.60 | $ 3.53 |
| High Growth & Low Prices | 2018-2019 | $ 3.31 | $ 3.92 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.35 | $ 3.20 | $ 3.91 | $ 3.49 | $ 3.43 |
| High Growth & Low Prices | 2019-2020 | $ 3.33 | $ 3.84 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.35 | $ 3.21 | $ 3.84 | $ 3.47 | $ 3.43 |
| High Growth & Low Prices | 2020-2021 | $ 3.32 | $ 3.81 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.34 | $ 3.19 | $ 3.81 | $ 3.45 | $ 3.42 |
| High Growth & Low Prices | 2021-2022 | $ 3.46 | $ 3.77 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.46 | $ 3.32 | $ 3.77 | $ 3.51 | $ 3.54 |
| High Growth & Low Prices | 2022-2023 | $ 3.27 | $ 3.61 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.27 | $ 3.15 | $ 3.61 | $ 3.34 | $ 3.36 |
| High Growth & Low Prices | 2023-2024 | $ 3.34 | $ 3.49 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.32 | $ 3.22 | $ 3.49 | $ 3.34 | $ 3.38 |
| High Growth & Low Prices | 2024-2025 | $ 3.48 | $ 3.84 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.48 | $ 3.34 | $ 3.84 | $ 3.56 | $ 3.58 |
| High Growth & Low Prices | 2025-2026 | $ 3.43 | $ 3.80 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.44 | $ 3.30 | $ 3.80 | $ 3.51 | $ 3.53 |
| High Growth & Low Prices | 2026-2027 | $ 3.38 | $ 3.79 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.38 | $ 3.22 | $ 3.79 | $ 3.46 | $ 3.49 |
| High Growth & Low Prices | 2027-2028 | $ 3.32 | $ 9.20 | $ 3.36 | $ 3.36 | $ 3.36 | $ 8.77 | $ 3.14 | $ 9.20 | $ 7.04 | $ 4.52 |
| High Growth & Low Prices | 2028-2029 | $ 3.49 | $ 9.34 | $ 3.54 | $ 3.54 | $ 3.54 | $ 8.96 | $ 3.32 | $ 9.34 | $ 7.21 | $ 4.69 |
| High Growth & Low Prices | 2029-2030 | $ 3.48 | $ 9.32 | $ 8.99 | $ 8.99 | $ 8.99 | $ 8.96 | $ 3.33 | $ 9.32 | $ 7.20 | $ 7.96 |
| High Growth & Low Prices | 2030-2031 | $ 3.56 | $ 9.35 | $ 9.07 | $ 9.07 | $ 9.07 | $ 9.02 | $ 8.87 | $ 9.36 | $ 9.08 | $ 8.02 |
| High Growth & Low Prices | 2031-2032 | $ 3.44 | $ 8.96 | $ 14.35 | $ 14.35 | $ 14.35 | $ 8.88 | $ 8.74 | $ 8.96 | $ 8.86 | $ 11.09 |
| High Growth & Low Prices | 2032-2033 | $ 3.43 | $ 8.93 | $ 14.36 | $ 14.36 | $ 14.36 | $ 8.87 | $ 8.75 | $ 8.91 | $ 8.84 | $ 11.09 |

**Annual Avoided Costs 1/**
**2012$**

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Winter | OR Winter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2013-2014 | $ 3.54 | $ 3.92 | $ 3.54 | $ 3.54 | $ 3.54 | $ 3.70 | $ 3.42 | $ 3.88 | $ 3.67 | $ 3.61 |
| High Growth & Low Prices | 2014-2015 | $ 3.67 | $ 4.04 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.83 | $ 3.56 | $ 4.02 | $ 3.81 | $ 3.75 |
| High Growth & Low Prices | 2015-2016 | $ 3.67 | $ 4.05 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.84 | $ 3.55 | $ 4.03 | $ 3.81 | $ 3.75 |
| High Growth & Low Prices | 2016-2017 | $ 3.61 | $ 4.34 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.83 | $ 3.49 | $ 4.33 | $ 3.88 | $ 3.76 |
| High Growth & Low Prices | 2017-2018 | $ 3.50 | $ 4.25 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.71 | $ 3.36 | $ 4.25 | $ 3.77 | $ 3.65 |
| High Growth & Low Prices | 2018-2019 | $ 3.45 | $ 4.23 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.62 | $ 3.26 | $ 4.23 | $ 3.70 | $ 3.61 |
| High Growth & Low Prices | 2019-2020 | $ 3.44 | $ 4.07 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.57 | $ 3.22 | $ 4.07 | $ 3.62 | $ 3.57 |
| High Growth & Low Prices | 2020-2021 | $ 3.45 | $ 4.03 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.59 | $ 3.23 | $ 4.03 | $ 3.61 | $ 3.57 |
| High Growth & Low Prices | 2021-2022 | $ 3.61 | $ 3.81 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.68 | $ 3.35 | $ 3.81 | $ 3.61 | $ 3.65 |
| High Growth & Low Prices | 2022-2023 | $ 3.52 | $ 3.68 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.60 | $ 3.30 | $ 3.68 | $ 3.52 | $ 3.55 |
| High Growth & Low Prices | 2023-2024 | $ 3.51 | $ 3.59 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.55 | $ 3.31 | $ 3.59 | $ 3.48 | $ 3.53 |
| High Growth & Low Prices | 2024-2025 | $ 3.63 | $ 3.79 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.71 | $ 3.39 | $ 3.79 | $ 3.63 | $ 3.66 |
| High Growth & Low Prices | 2025-2026 | $ 3.66 | $ 3.83 | $ 3.66 | $ 3.66 | $ 3.66 | $ 3.75 | $ 3.41 | $ 3.83 | $ 3.66 | $ 3.69 |
| High Growth & Low Prices | 2026-2027 | $ 3.64 | $ 3.86 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.71 | $ 3.34 | $ 3.86 | $ 3.64 | $ 3.69 |
| High Growth & Low Prices | 2027-2028 | $ 3.60 | $ 17.04 | $ 3.60 | $ 3.60 | $ 3.60 | $ 16.79 | $ 3.24 | $ 17.04 | $ 12.36 | $ 6.29 |
| High Growth & Low Prices | 2028-2029 | $ 3.73 | $ 17.11 | $ 3.73 | $ 3.73 | $ 3.73 | $ 17.01 | $ 3.39 | $ 17.11 | $ 12.50 | $ 6.40 |
| High Growth & Low Prices | 2029-2030 | $ 3.76 | $ 17.10 | $ 16.98 | $ 16.98 | $ 16.98 | $ 17.09 | $ 3.47 | $ 17.10 | $ 12.55 | $ 14.36 |
| High Growth & Low Prices | 2030-2031 | $ 3.78 | $ 17.08 | $ 16.99 | $ 16.99 | $ 16.99 | $ 17.06 | $ 16.69 | $ 17.10 | $ 16.95 | $ 14.37 |
| High Growth & Low Prices | 2031-2032 | $ 3.69 | $ 16.88 | $ 29.94 | $ 29.94 | $ 29.94 | $ 16.87 | $ 16.52 | $ 16.88 | $ 16.76 | $ 22.08 |
| High Growth & Low Prices | 2032-2033 | $ 3.64 | $ 16.90 | $ 30.07 | $ 30.07 | $ 30.07 | $ 16.90 | $ 16.59 | $ 16.90 | $ 16.79 | $ 22.15 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: CARBON LEGISLATION – MEDIUM CASE AVOIDED COST

Annual Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon Legislation - Medium Case | 2013-2014 | $ 3.52 | $ 3.71 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.45 | $ 3.45 | $ 3.66 | $ 3.52 | $ 3.56 |
| Carbon Legislation - Medium Case | 2014-2015 | $ 3.49 | $ 3.72 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.51 | $ 3.43 | $ 3.72 | $ 3.55 | $ 3.53 |
| Carbon Legislation - Medium Case | 2015-2016 | $ 3.76 | $ 3.92 | $ 3.76 | $ 3.76 | $ 3.76 | $ 3.77 | $ 3.70 | $ 3.92 | $ 3.79 | $ 3.79 |
| Carbon Legislation - Medium Case | 2016-2017 | $ 3.52 | $ 3.80 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.57 | $ 3.45 | $ 3.80 | $ 3.61 | $ 3.57 |
| Carbon Legislation - Medium Case | 2017-2018 | $ 3.49 | $ 3.79 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.54 | $ 3.43 | $ 3.79 | $ 3.59 | $ 3.55 |
| Carbon Legislation - Medium Case | 2018-2019 | $ 3.34 | $ 3.64 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.39 | $ 3.28 | $ 3.63 | $ 3.43 | $ 3.40 |
| Carbon Legislation - Medium Case | 2019-2020 | $ 3.43 | $ 3.68 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.47 | $ 3.36 | $ 3.68 | $ 3.50 | $ 3.48 |
| Carbon Legislation - Medium Case | 2020-2021 | $ 4.14 | $ 4.34 | $ 4.14 | $ 4.14 | $ 4.14 | $ 4.17 | $ 4.05 | $ 4.34 | $ 4.19 | $ 4.18 |
| Carbon Legislation - Medium Case | 2021-2022 | $ 4.32 | $ 4.47 | $ 4.32 | $ 4.32 | $ 4.32 | $ 4.32 | $ 4.24 | $ 4.47 | $ 4.34 | $ 4.35 |
| Carbon Legislation - Medium Case | 2022-2023 | $ 4.30 | $ 4.44 | $ 4.30 | $ 4.30 | $ 4.30 | $ 4.28 | $ 4.23 | $ 4.44 | $ 4.32 | $ 4.33 |
| Carbon Legislation - Medium Case | 2023-2024 | $ 4.53 | $ 4.58 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.50 | $ 4.46 | $ 4.58 | $ 4.51 | $ 4.54 |
| Carbon Legislation - Medium Case | 2024-2025 | $ 4.77 | $ 4.93 | $ 4.77 | $ 4.77 | $ 4.77 | $ 4.75 | $ 4.69 | $ 4.93 | $ 4.79 | $ 4.80 |
| Carbon Legislation - Medium Case | 2025-2026 | $ 4.91 | $ 5.08 | $ 4.91 | $ 4.91 | $ 4.91 | $ 4.89 | $ 4.83 | $ 5.08 | $ 4.93 | $ 4.95 |
| Carbon Legislation - Medium Case | 2026-2027 | $ 4.90 | $ 5.10 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.81 | $ 5.10 | $ 4.93 | $ 4.94 |
| Carbon Legislation - Medium Case | 2027-2028 | $ 4.89 | $ 5.09 | $ 4.89 | $ 4.89 | $ 4.89 | $ 4.90 | $ 4.80 | $ 5.09 | $ 4.93 | $ 4.93 |
| Carbon Legislation - Medium Case | 2028-2029 | $ 5.30 | $ 5.47 | $ 5.30 | $ 5.30 | $ 5.30 | $ 5.28 | $ 5.20 | $ 5.48 | $ 5.32 | $ 5.33 |
| Carbon Legislation - Medium Case | 2029-2030 | $ 5.19 | $ 5.36 | $ 5.19 | $ 5.19 | $ 5.19 | $ 5.17 | $ 5.10 | $ 5.36 | $ 5.21 | $ 5.22 |
| Carbon Legislation - Medium Case | 2030-2031 | $ 5.37 | $ 5.50 | $ 5.37 | $ 5.37 | $ 5.37 | $ 5.34 | $ 5.28 | $ 5.50 | $ 5.37 | $ 5.40 |
| Carbon Legislation - Medium Case | 2031-2032 | $ 5.57 | $ 5.57 | $ 5.55 | $ 5.55 | $ 5.55 | $ 5.52 | $ 5.47 | $ 5.57 | $ 5.52 | $ 5.56 |
| Carbon Legislation - Medium Case | 2032-2033 | $ 5.80 | $ 5.77 | $ 5.76 | $ 5.76 | $ 5.76 | $ 5.73 | $ 5.71 | $ 5.76 | $ 5.73 | $ 5.77 |

Winter Avoided Costs 1/
2012$

| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon Legislation - Medium Case | 2013-2014 | $ 3.69 | $ 3.87 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.60 | $ 3.60 | $ 3.74 | $ 3.65 | $ 3.72 |
| Carbon Legislation - Medium Case | 2014-2015 | $ 3.44 | $ 3.71 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.57 | $ 3.36 | $ 3.71 | $ 3.55 | $ 3.49 |
| Carbon Legislation - Medium Case | 2015-2016 | $ 3.98 | $ 4.22 | $ 3.98 | $ 3.98 | $ 3.98 | $ 4.07 | $ 3.91 | $ 4.21 | $ 4.06 | $ 4.03 |
| Carbon Legislation - Medium Case | 2016-2017 | $ 3.58 | $ 3.95 | $ 3.58 | $ 3.58 | $ 3.58 | $ 3.77 | $ 3.50 | $ 3.95 | $ 3.74 | $ 3.65 |
| Carbon Legislation - Medium Case | 2017-2018 | $ 3.69 | $ 4.09 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.89 | $ 3.62 | $ 4.09 | $ 3.87 | $ 3.77 |
| Carbon Legislation - Medium Case | 2018-2019 | $ 3.44 | $ 3.84 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.64 | $ 3.37 | $ 3.83 | $ 3.61 | $ 3.52 |
| Carbon Legislation - Medium Case | 2019-2020 | $ 3.48 | $ 3.79 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.67 | $ 3.40 | $ 3.79 | $ 3.62 | $ 3.54 |
| Carbon Legislation - Medium Case | 2020-2021 | $ 3.95 | $ 4.24 | $ 3.95 | $ 3.95 | $ 3.95 | $ 4.12 | $ 3.82 | $ 4.24 | $ 4.06 | $ 4.01 |
| Carbon Legislation - Medium Case | 2021-2022 | $ 4.53 | $ 4.69 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.63 | $ 4.45 | $ 4.69 | $ 4.59 | $ 4.56 |
| Carbon Legislation - Medium Case | 2022-2023 | $ 4.51 | $ 4.62 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.56 | $ 4.43 | $ 4.62 | $ 4.54 | $ 4.53 |
| Carbon Legislation - Medium Case | 2023-2024 | $ 4.68 | $ 4.73 | $ 4.67 | $ 4.67 | $ 4.67 | $ 4.69 | $ 4.60 | $ 4.72 | $ 4.67 | $ 4.68 |
| Carbon Legislation - Medium Case | 2024-2025 | $ 4.90 | $ 4.99 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.94 | $ 4.81 | $ 4.99 | $ 4.91 | $ 4.92 |
| Carbon Legislation - Medium Case | 2025-2026 | $ 5.09 | $ 5.21 | $ 5.09 | $ 5.09 | $ 5.09 | $ 5.14 | $ 5.00 | $ 5.21 | $ 5.11 | $ 5.11 |
| Carbon Legislation - Medium Case | 2026-2027 | $ 5.13 | $ 5.30 | $ 5.13 | $ 5.13 | $ 5.13 | $ 5.23 | $ 5.03 | $ 5.30 | $ 5.19 | $ 5.17 |
| Carbon Legislation - Medium Case | 2027-2028 | $ 5.09 | $ 5.30 | $ 5.08 | $ 5.08 | $ 5.08 | $ 5.21 | $ 4.98 | $ 5.30 | $ 5.16 | $ 5.13 |
| Carbon Legislation - Medium Case | 2028-2029 | $ 5.50 | $ 5.62 | $ 5.49 | $ 5.49 | $ 5.49 | $ 5.56 | $ 5.38 | $ 5.62 | $ 5.52 | $ 5.52 |
| Carbon Legislation - Medium Case | 2029-2030 | $ 5.54 | $ 5.64 | $ 5.54 | $ 5.54 | $ 5.54 | $ 5.59 | $ 5.44 | $ 5.64 | $ 5.56 | $ 5.56 |
| Carbon Legislation - Medium Case | 2030-2031 | $ 5.59 | $ 5.66 | $ 5.59 | $ 5.59 | $ 5.59 | $ 5.62 | $ 5.48 | $ 5.66 | $ 5.59 | $ 5.60 |
| Carbon Legislation - Medium Case | 2031-2032 | $ 5.71 | $ 5.74 | $ 5.70 | $ 5.70 | $ 5.70 | $ 5.72 | $ 5.59 | $ 5.72 | $ 5.68 | $ 5.71 |
| Carbon Legislation - Medium Case | 2032-2033 | $ 5.86 | $ 5.84 | $ 5.85 | $ 5.85 | $ 5.85 | $ 5.84 | $ 5.76 | $ 5.84 | $ 5.81 | $ 5.85 |

1/Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: COLD DAY 20 YR WEATHER STANDARD AVOIDED COST

Annual Avoided Costs 1/
2012$

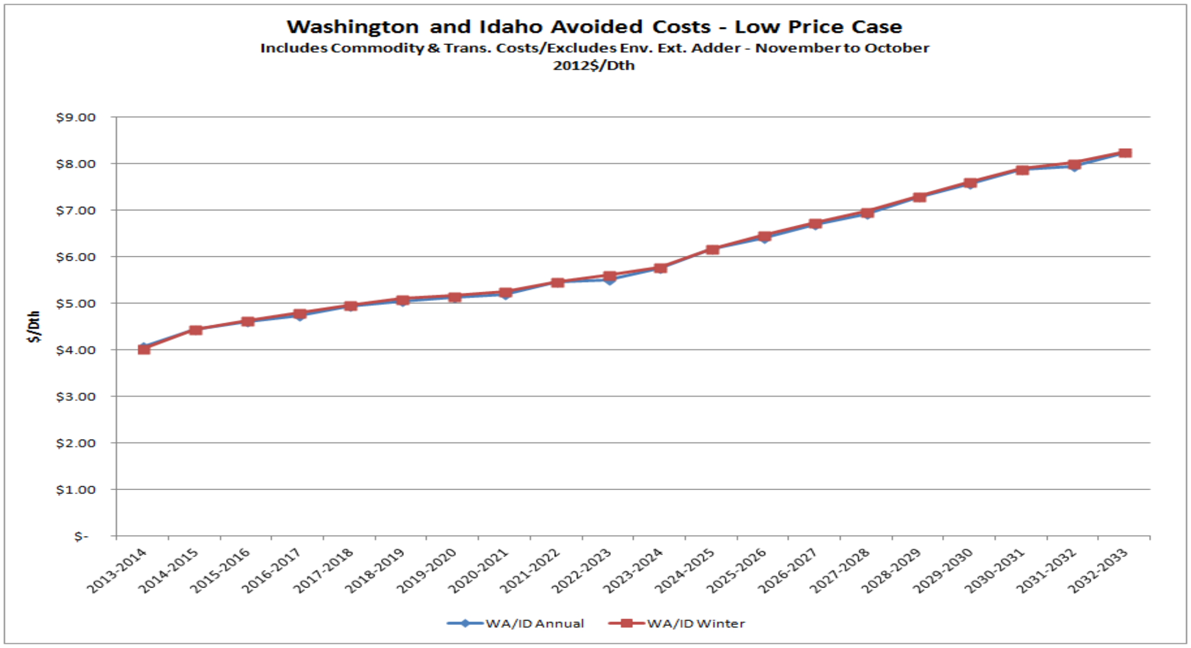
| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cold Day 20 Yr Weather Std | 2013-2014 | $ 3.53 | $ 4.12 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.54 | $ 3.45 | $ 4.12 | $ 3.70 | $ 3.65 |
| Cold Day 20 Yr Weather Std | 2014-2015 | $ 3.50 | $ 4.16 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.56 | $ 3.42 | $ 4.17 | $ 3.72 | $ 3.63 |
| Cold Day 20 Yr Weather Std | 2015-2016 | $ 3.77 | $ 4.46 | $ 3.77 | $ 3.77 | $ 3.77 | $ 3.84 | $ 3.70 | $ 4.48 | $ 4.01 | $ 3.91 |
| Cold Day 20 Yr Weather Std | 2016-2017 | $ 3.53 | $ 4.34 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.60 | $ 3.45 | $ 4.34 | $ 3.80 | $ 3.69 |
| Cold Day 20 Yr Weather Std | 2017-2018 | $ 3.50 | $ 4.38 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.58 | $ 3.43 | $ 4.38 | $ 3.80 | $ 3.67 |
| Cold Day 20 Yr Weather Std | 2018-2019 | $ 3.36 | $ 4.26 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.42 | $ 3.28 | $ 4.27 | $ 3.65 | $ 3.54 |
| Cold Day 20 Yr Weather Std | 2019-2020 | $ 3.44 | $ 4.20 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.51 | $ 3.36 | $ 4.21 | $ 3.69 | $ 3.59 |
| Cold Day 20 Yr Weather Std | 2020-2021 | $ 3.75 | $ 4.36 | $ 3.75 | $ 3.75 | $ 3.75 | $ 3.78 | $ 3.64 | $ 4.37 | $ 3.93 | $ 3.87 |
| Cold Day 20 Yr Weather Std | 2021-2022 | $ 3.81 | $ 4.17 | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.87 | $ 3.74 | $ 4.17 | $ 3.93 | $ 3.88 |
| Cold Day 20 Yr Weather Std | 2022-2023 | $ 3.77 | $ 4.15 | $ 3.77 | $ 3.77 | $ 3.77 | $ 3.80 | $ 3.69 | $ 4.17 | $ 3.89 | $ 3.84 |
| Cold Day 20 Yr Weather Std | 2023-2024 | $ 3.97 | $ 4.13 | $ 3.97 | $ 3.97 | $ 3.97 | $ 3.97 | $ 3.90 | $ 4.16 | $ 4.01 | $ 4.00 |
| Cold Day 20 Yr Weather Std | 2024-2025 | $ 4.19 | $ 4.61 | $ 4.19 | $ 4.19 | $ 4.19 | $ 4.22 | $ 4.11 | $ 4.64 | $ 4.32 | $ 4.28 |
| Cold Day 20 Yr Weather Std | 2025-2026 | $ 4.30 | $ 4.73 | $ 4.30 | $ 4.30 | $ 4.30 | $ 4.34 | $ 4.22 | $ 4.74 | $ 4.44 | $ 4.39 |
| Cold Day 20 Yr Weather Std | 2026-2027 | $ 4.25 | $ 4.89 | $ 4.25 | $ 4.25 | $ 4.25 | $ 4.30 | $ 4.17 | $ 4.89 | $ 4.45 | $ 4.38 |
| Cold Day 20 Yr Weather Std | 2027-2028 | $ 4.22 | $ 4.92 | $ 4.22 | $ 4.22 | $ 4.22 | $ 4.27 | $ 4.12 | $ 4.93 | $ 4.44 | $ 4.36 |
| Cold Day 20 Yr Weather Std | 2028-2029 | $ 4.59 | $ 5.04 | $ 4.59 | $ 4.59 | $ 4.59 | $ 4.63 | $ 4.49 | $ 5.05 | $ 4.72 | $ 4.68 |
| Cold Day 20 Yr Weather Std | 2029-2030 | $ 4.44 | $ 4.92 | $ 4.44 | $ 4.44 | $ 4.44 | $ 4.47 | $ 4.36 | $ 4.94 | $ 4.59 | $ 4.54 |
| Cold Day 20 Yr Weather Std | 2030-2031 | $ 4.59 | $ 4.96 | $ 4.59 | $ 4.59 | $ 4.59 | $ 4.61 | $ 4.50 | $ 5.00 | $ 4.70 | $ 4.67 |
| Cold Day 20 Yr Weather Std | 2031-2032 | $ 4.73 | $ 4.86 | $ 4.74 | $ 4.74 | $ 4.74 | $ 4.76 | $ 4.64 | $ 4.90 | $ 4.77 | $ 4.76 |
| Cold Day 20 Yr Weather Std | 2032-2033 | $ 4.94 | $ 4.93 | $ 4.93 | $ 4.93 | $ 4.93 | $ 4.88 | $ 4.84 | $ 4.93 | $ 4.89 | $ 4.93 |

Winter Avoided Costs 1/
2012$

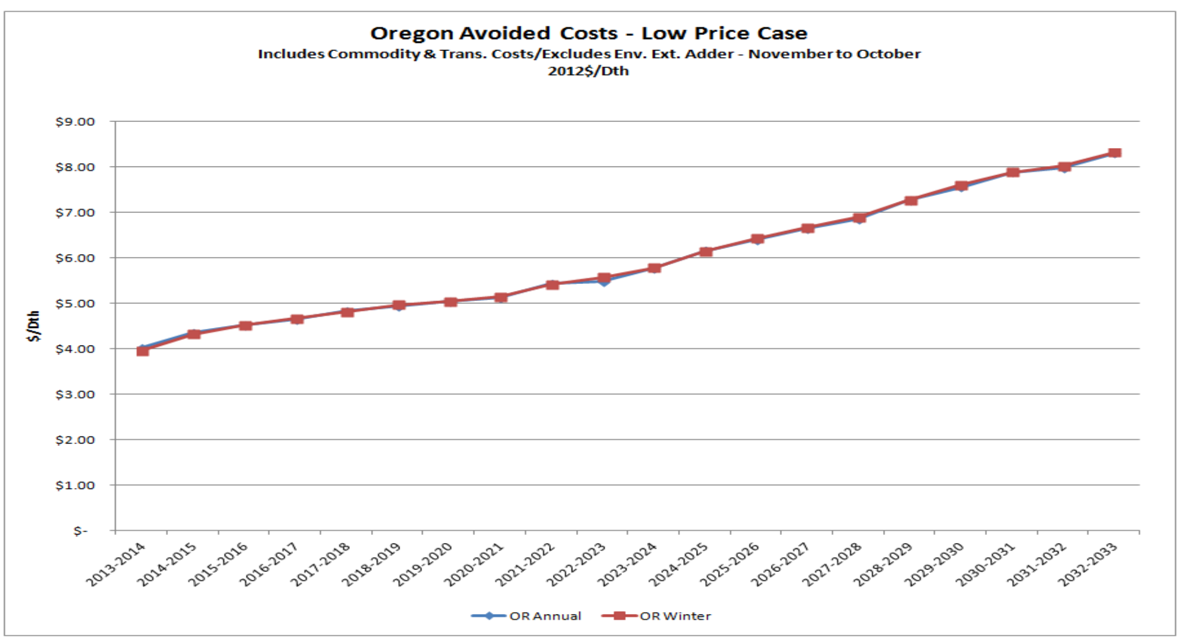
| Scenario | Gas Year | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cold Day 20 Yr Weather Std | 2013-2014 | $ 3.72 | $ 4.16 | $ 3.72 | $ 3.72 | $ 3.72 | $ 3.81 | $ 3.59 | $ 4.10 | $ 3.84 | $ 3.81 |
| Cold Day 20 Yr Weather Std | 2014-2015 | $ 3.47 | $ 4.14 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.70 | $ 3.36 | $ 4.14 | $ 3.73 | $ 3.60 |
| Cold Day 20 Yr Weather Std | 2015-2016 | $ 4.00 | $ 4.61 | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.24 | $ 3.91 | $ 4.60 | $ 4.25 | $ 4.13 |
| Cold Day 20 Yr Weather Std | 2016-2017 | $ 3.61 | $ 4.37 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.85 | $ 3.50 | $ 4.37 | $ 3.91 | $ 3.76 |
| Cold Day 20 Yr Weather Std | 2017-2018 | $ 3.71 | $ 4.54 | $ 3.71 | $ 3.71 | $ 3.71 | $ 3.98 | $ 3.62 | $ 4.54 | $ 4.05 | $ 3.88 |
| Cold Day 20 Yr Weather Std | 2018-2019 | $ 3.49 | $ 4.29 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.72 | $ 3.37 | $ 4.28 | $ 3.79 | $ 3.65 |
| Cold Day 20 Yr Weather Std | 2019-2020 | $ 3.52 | $ 4.23 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.75 | $ 3.40 | $ 4.22 | $ 3.79 | $ 3.66 |
| Cold Day 20 Yr Weather Std | 2020-2021 | $ 3.70 | $ 4.31 | $ 3.70 | $ 3.70 | $ 3.70 | $ 3.87 | $ 3.53 | $ 4.31 | $ 3.90 | $ 3.82 |
| Cold Day 20 Yr Weather Std | 2021-2022 | $ 4.04 | $ 4.38 | $ 4.04 | $ 4.04 | $ 4.04 | $ 4.26 | $ 3.95 | $ 4.37 | $ 4.19 | $ 4.11 |
| Cold Day 20 Yr Weather Std | 2022-2023 | $ 4.00 | $ 4.27 | $ 4.00 | $ 4.00 | $ 4.00 | $ 4.16 | $ 3.90 | $ 4.27 | $ 4.11 | $ 4.05 |
| Cold Day 20 Yr Weather Std | 2023-2024 | $ 4.13 | $ 4.25 | $ 4.13 | $ 4.13 | $ 4.13 | $ 4.21 | $ 4.05 | $ 4.25 | $ 4.17 | $ 4.16 |
| Cold Day 20 Yr Weather Std | 2024-2025 | $ 4.35 | $ 4.59 | $ 4.35 | $ 4.35 | $ 4.35 | $ 4.51 | $ 4.23 | $ 4.59 | $ 4.44 | $ 4.40 |
| Cold Day 20 Yr Weather Std | 2025-2026 | $ 4.50 | $ 4.80 | $ 4.50 | $ 4.50 | $ 4.50 | $ 4.69 | $ 4.39 | $ 4.80 | $ 4.63 | $ 4.56 |
| Cold Day 20 Yr Weather Std | 2026-2027 | $ 4.51 | $ 4.85 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.71 | $ 4.39 | $ 4.85 | $ 4.65 | $ 4.58 |
| Cold Day 20 Yr Weather Std | 2027-2028 | $ 4.45 | $ 4.98 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.68 | $ 4.31 | $ 4.98 | $ 4.65 | $ 4.55 |
| Cold Day 20 Yr Weather Std | 2028-2029 | $ 4.82 | $ 5.15 | $ 4.82 | $ 4.82 | $ 4.82 | $ 5.01 | $ 4.68 | $ 5.15 | $ 4.94 | $ 4.89 |
| Cold Day 20 Yr Weather Std | 2029-2030 | $ 4.81 | $ 5.05 | $ 4.81 | $ 4.81 | $ 4.81 | $ 4.98 | $ 4.70 | $ 5.05 | $ 4.91 | $ 4.86 |
| Cold Day 20 Yr Weather Std | 2030-2031 | $ 4.84 | $ 5.04 | $ 4.84 | $ 4.84 | $ 4.84 | $ 4.98 | $ 4.70 | $ 5.05 | $ 4.91 | $ 4.88 |
| Cold Day 20 Yr Weather Std | 2031-2032 | $ 4.89 | $ 5.08 | $ 4.88 | $ 4.88 | $ 4.88 | $ 5.06 | $ 4.77 | $ 5.08 | $ 4.97 | $ 4.92 |
| Cold Day 20 Yr Weather Std | 2032-2033 | $ 5.03 | $ 5.01 | $ 5.02 | $ 5.02 | $ 5.02 | $ 5.00 | $ 4.90 | $ 5.00 | $ 4.97 | $ 5.02 |

1/Avoided costs are before Environmental Externalities adder.

## APPENDIX 5.4: WASHINGTON AND IDAHO AVOIDED COSTS - LOW GROWTH/HIGH PRICE CASE




## APPENDIX 5.4: NATURAL GAS OREGON AVOIDED COSTS - LOW GROWTH/HIGH PRICE CASE



# APPENDIX 5.4: LOW GROWTH – HIGH PRICE MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2013-2014 | Nov | $ 3.33 | $ 3.83 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.27 | $ 3.27 | $ 3.83 | $ 3.46 | $ 3.43 |
| Low Growth & High Prices | 2013-2014 | Dec | $ 4.01 | $ 4.73 | $ 4.02 | $ 4.02 | $ 4.02 | $ 4.21 | $ 3.66 | $ 4.59 | $ 4.15 | $ 4.16 |
| Low Growth & High Prices | 2013-2014 | Jan | $ 4.26 | $ 4.61 | $ 4.26 | $ 4.26 | $ 4.26 | $ 4.61 | $ 4.20 | $ 4.61 | $ 4.47 | $ 4.33 |
| Low Growth & High Prices | 2013-2014 | Feb | $ 3.56 | $ 4.30 | $ 3.56 | $ 3.56 | $ 3.56 | $ 3.89 | $ 3.35 | $ 4.30 | $ 3.85 | $ 3.71 |
| Low Growth & High Prices | 2013-2014 | Mar | $ 3.98 | $ 4.59 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.92 | $ 3.92 | $ 4.59 | $ 4.14 | $ 4.10 |
| Low Growth & High Prices | 2013-2014 | Apr | $ 3.96 | $ 4.61 | $ 3.96 | $ 3.96 | $ 3.96 | $ 3.90 | $ 3.90 | $ 4.61 | $ 4.13 | $ 4.09 |
| Low Growth & High Prices | 2013-2014 | May | $ 3.92 | $ 4.59 | $ 3.92 | $ 3.92 | $ 3.92 | $ 3.86 | $ 3.86 | $ 4.59 | $ 4.10 | $ 4.05 |
| Low Growth & High Prices | 2013-2014 | Jun | $ 3.93 | $ 4.59 | $ 3.93 | $ 3.93 | $ 3.93 | $ 3.87 | $ 3.87 | $ 4.59 | $ 4.11 | $ 4.06 |
| Low Growth & High Prices | 2013-2014 | Jul | $ 3.91 | $ 4.59 | $ 3.91 | $ 3.91 | $ 3.91 | $ 3.85 | $ 3.85 | $ 4.59 | $ 4.09 | $ 4.04 |
| Low Growth & High Prices | 2013-2014 | Aug | $ 3.90 | $ 4.59 | $ 3.90 | $ 3.90 | $ 3.90 | $ 3.84 | $ 3.84 | $ 4.59 | $ 4.09 | $ 4.04 |
| Low Growth & High Prices | 2013-2014 | Sep | $ 3.93 | $ 4.59 | $ 3.93 | $ 3.93 | $ 3.93 | $ 3.87 | $ 3.87 | $ 4.59 | $ 4.11 | $ 4.06 |
| Low Growth & High Prices | 2013-2014 | Oct | $ 3.95 | $ 4.68 | $ 3.95 | $ 3.95 | $ 3.95 | $ 3.89 | $ 3.89 | $ 4.68 | $ 4.15 | $ 4.09 |
| Low Growth & High Prices | 2014-2015 | Nov | $ 3.98 | $ 4.71 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.92 | $ 3.92 | $ 4.71 | $ 4.18 | $ 4.12 |
| Low Growth & High Prices | 2014-2015 | Dec | $ 4.07 | $ 4.79 | $ 4.07 | $ 4.07 | $ 4.07 | $ 4.40 | $ 3.84 | $ 4.80 | $ 4.35 | $ 4.22 |
| Low Growth & High Prices | 2014-2015 | Jan | $ 4.23 | $ 4.92 | $ 4.23 | $ 4.23 | $ 4.23 | $ 4.65 | $ 4.17 | $ 4.92 | $ 4.58 | $ 4.37 |
| Low Growth & High Prices | 2014-2015 | Feb | $ 4.29 | $ 4.94 | $ 4.29 | $ 4.29 | $ 4.29 | $ 4.63 | $ 4.18 | $ 4.93 | $ 4.58 | $ 4.42 |
| Low Growth & High Prices | 2014-2015 | Mar | $ 4.38 | $ 4.92 | $ 4.38 | $ 4.38 | $ 4.38 | $ 4.32 | $ 4.32 | $ 4.92 | $ 4.52 | $ 4.49 |
| Low Growth & High Prices | 2014-2015 | Apr | $ 4.31 | $ 4.95 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.25 | $ 4.25 | $ 4.95 | $ 4.48 | $ 4.44 |
| Low Growth & High Prices | 2014-2015 | May | $ 4.24 | $ 4.92 | $ 4.24 | $ 4.24 | $ 4.24 | $ 4.18 | $ 4.18 | $ 4.92 | $ 4.42 | $ 4.38 |
| Low Growth & High Prices | 2014-2015 | Jun | $ 4.23 | $ 4.92 | $ 4.23 | $ 4.23 | $ 4.23 | $ 4.17 | $ 4.17 | $ 4.92 | $ 4.42 | $ 4.37 |
| Low Growth & High Prices | 2014-2015 | Jul | $ 4.20 | $ 4.89 | $ 4.20 | $ 4.20 | $ 4.20 | $ 4.14 | $ 4.14 | $ 4.92 | $ 4.40 | $ 4.34 |
| Low Growth & High Prices | 2014-2015 | Aug | $ 4.19 | $ 4.88 | $ 4.19 | $ 4.19 | $ 4.19 | $ 4.13 | $ 4.13 | $ 4.92 | $ 4.39 | $ 4.33 |
| Low Growth & High Prices | 2014-2015 | Sep | $ 4.23 | $ 4.92 | $ 4.23 | $ 4.23 | $ 4.23 | $ 4.17 | $ 4.17 | $ 4.92 | $ 4.42 | $ 4.37 |
| Low Growth & High Prices | 2014-2015 | Oct | $ 4.29 | $ 4.93 | $ 4.29 | $ 4.29 | $ 4.29 | $ 4.23 | $ 4.23 | $ 4.93 | $ 4.46 | $ 4.42 |
| Low Growth & High Prices | 2015-2016 | Nov | $ 4.31 | $ 5.04 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.25 | $ 4.25 | $ 5.04 | $ 4.51 | $ 4.46 |
| Low Growth & High Prices | 2015-2016 | Dec | $ 4.37 | $ 5.08 | $ 4.37 | $ 4.37 | $ 4.37 | $ 4.70 | $ 4.16 | $ 5.07 | $ 4.64 | $ 4.51 |
| Low Growth & High Prices | 2015-2016 | Jan | $ 4.33 | $ 5.07 | $ 4.33 | $ 4.33 | $ 4.33 | $ 4.75 | $ 4.27 | $ 5.07 | $ 4.69 | $ 4.48 |
| Low Growth & High Prices | 2015-2016 | Feb | $ 4.40 | $ 5.10 | $ 4.40 | $ 4.40 | $ 4.40 | $ 4.72 | $ 4.28 | $ 5.07 | $ 4.69 | $ 4.54 |
| Low Growth & High Prices | 2015-2016 | Mar | $ 4.51 | $ 5.07 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.44 | $ 4.44 | $ 5.07 | $ 4.65 | $ 4.62 |
| Low Growth & High Prices | 2015-2016 | Apr | $ 4.44 | $ 5.17 | $ 4.44 | $ 4.44 | $ 4.44 | $ 4.37 | $ 4.37 | $ 5.17 | $ 4.63 | $ 4.58 |
| Low Growth & High Prices | 2015-2016 | May | $ 4.37 | $ 5.07 | $ 4.37 | $ 4.37 | $ 4.37 | $ 4.31 | $ 4.31 | $ 5.07 | $ 4.56 | $ 4.51 |
| Low Growth & High Prices | 2015-2016 | Jun | $ 4.40 | $ 5.07 | $ 4.40 | $ 4.40 | $ 4.40 | $ 4.33 | $ 4.33 | $ 5.07 | $ 4.57 | $ 4.53 |
| Low Growth & High Prices | 2015-2016 | Jul | $ 4.36 | $ 5.04 | $ 4.36 | $ 4.36 | $ 4.36 | $ 4.30 | $ 4.30 | $ 5.07 | $ 4.56 | $ 4.50 |
| Low Growth & High Prices | 2015-2016 | Aug | $ 4.33 | $ 5.07 | $ 4.33 | $ 4.33 | $ 4.33 | $ 4.27 | $ 4.27 | $ 5.07 | $ 4.54 | $ 4.48 |
| Low Growth & High Prices | 2015-2016 | Sep | $ 4.34 | $ 5.07 | $ 4.34 | $ 4.34 | $ 4.34 | $ 4.28 | $ 4.28 | $ 5.07 | $ 4.54 | $ 4.49 |
| Low Growth & High Prices | 2015-2016 | Oct | $ 4.39 | $ 5.14 | $ 4.39 | $ 4.39 | $ 4.39 | $ 4.32 | $ 4.32 | $ 5.14 | $ 4.59 | $ 4.54 |
| Low Growth & High Prices | 2016-2017 | Nov | $ 4.43 | $ 5.24 | $ 4.43 | $ 4.43 | $ 4.43 | $ 4.36 | $ 4.36 | $ 5.24 | $ 4.65 | $ 4.59 |
| Low Growth & High Prices | 2016-2017 | Dec | $ 4.49 | $ 5.27 | $ 4.49 | $ 4.49 | $ 4.49 | $ 4.82 | $ 4.27 | $ 5.27 | $ 4.78 | $ 4.64 |
| Low Growth & High Prices | 2016-2017 | Jan | $ 4.50 | $ 5.27 | $ 4.50 | $ 4.50 | $ 4.50 | $ 4.91 | $ 4.43 | $ 5.27 | $ 4.87 | $ 4.65 |
| Low Growth & High Prices | 2016-2017 | Feb | $ 4.56 | $ 5.28 | $ 4.56 | $ 4.56 | $ 4.56 | $ 4.91 | $ 4.45 | $ 5.28 | $ 4.88 | $ 4.71 |
| Low Growth & High Prices | 2016-2017 | Mar | $ 4.63 | $ 5.27 | $ 4.63 | $ 4.63 | $ 4.63 | $ 4.56 | $ 4.56 | $ 5.27 | $ 4.80 | $ 4.76 |
| Low Growth & High Prices | 2016-2017 | Apr | $ 4.53 | $ 5.32 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.46 | $ 4.46 | $ 5.32 | $ 4.75 | $ 4.69 |
| Low Growth & High Prices | 2016-2017 | May | $ 4.46 | $ 5.28 | $ 4.46 | $ 4.46 | $ 4.46 | $ 4.39 | $ 4.39 | $ 5.28 | $ 4.68 | $ 4.62 |
| Low Growth & High Prices | 2016-2017 | Jun | $ 4.46 | $ 5.26 | $ 4.46 | $ 4.46 | $ 4.46 | $ 4.39 | $ 4.39 | $ 5.28 | $ 4.68 | $ 4.62 |
| Low Growth & High Prices | 2016-2017 | Jul | $ 4.44 | $ 5.25 | $ 4.44 | $ 4.44 | $ 4.44 | $ 4.37 | $ 4.37 | $ 5.28 | $ 4.67 | $ 4.60 |
| Low Growth & High Prices | 2016-2017 | Aug | $ 4.43 | $ 5.26 | $ 4.43 | $ 4.43 | $ 4.43 | $ 4.36 | $ 4.36 | $ 5.28 | $ 4.66 | $ 4.59 |
| Low Growth & High Prices | 2016-2017 | Sep | $ 4.45 | $ 5.28 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.38 | $ 4.38 | $ 5.28 | $ 4.68 | $ 4.61 |
| Low Growth & High Prices | 2016-2017 | Oct | $ 4.50 | $ 5.30 | $ 4.50 | $ 4.50 | $ 4.50 | $ 4.43 | $ 4.43 | $ 5.30 | $ 4.72 | $ 4.66 |
| Low Growth & High Prices | 2017-2018 | Nov | $ 4.51 | $ 5.39 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.44 | $ 4.44 | $ 5.39 | $ 4.76 | $ 4.68 |
| Low Growth & High Prices | 2017-2018 | Dec | $ 4.56 | $ 5.40 | $ 4.56 | $ 4.56 | $ 4.56 | $ 4.90 | $ 4.33 | $ 5.41 | $ 4.88 | $ 4.73 |
| Low Growth & High Prices | 2017-2018 | Jan | $ 4.69 | $ 5.55 | $ 4.69 | $ 4.69 | $ 4.69 | $ 5.10 | $ 4.62 | $ 5.55 | $ 5.09 | $ 4.86 |
| Low Growth & High Prices | 2017-2018 | Feb | $ 4.73 | $ 5.55 | $ 4.73 | $ 4.73 | $ 4.73 | $ 5.09 | $ 4.61 | $ 5.55 | $ 5.08 | $ 4.90 |
| Low Growth & High Prices | 2017-2018 | Mar | $ 4.79 | $ 5.51 | $ 4.79 | $ 4.79 | $ 4.79 | $ 4.72 | $ 4.72 | $ 5.51 | $ 4.98 | $ 4.94 |
| Low Growth & High Prices | 2017-2018 | Apr | $ 4.72 | $ 5.58 | $ 4.72 | $ 4.72 | $ 4.72 | $ 4.65 | $ 4.65 | $ 5.58 | $ 4.96 | $ 4.89 |
| Low Growth & High Prices | 2017-2018 | May | $ 4.67 | $ 5.55 | $ 4.67 | $ 4.67 | $ 4.67 | $ 4.60 | $ 4.60 | $ 5.55 | $ 4.91 | $ 4.85 |
| Low Growth & High Prices | 2017-2018 | Jun | $ 4.67 | $ 5.55 | $ 4.67 | $ 4.67 | $ 4.67 | $ 4.60 | $ 4.60 | $ 5.55 | $ 4.92 | $ 4.85 |
| Low Growth & High Prices | 2017-2018 | Jul | $ 4.65 | $ 5.55 | $ 4.65 | $ 4.65 | $ 4.65 | $ 4.58 | $ 4.58 | $ 5.55 | $ 4.90 | $ 4.83 |
| Low Growth & High Prices | 2017-2018 | Aug | $ 4.63 | $ 5.55 | $ 4.63 | $ 4.63 | $ 4.63 | $ 4.56 | $ 4.56 | $ 5.55 | $ 4.89 | $ 4.81 |
| Low Growth & High Prices | 2017-2018 | Sep | $ 4.64 | $ 5.55 | $ 4.64 | $ 4.64 | $ 4.64 | $ 4.57 | $ 4.57 | $ 5.55 | $ 4.90 | $ 4.82 |
| Low Growth & High Prices | 2017-2018 | Oct | $ 4.68 | $ 5.58 | $ 4.68 | $ 4.68 | $ 4.68 | $ 4.61 | $ 4.61 | $ 5.58 | $ 4.93 | $ 4.86 |
| Low Growth & High Prices | 2018-2019 | Nov | $ 4.79 | $ 5.62 | $ 4.79 | $ 4.79 | $ 4.79 | $ 4.72 | $ 4.72 | $ 5.62 | $ 5.02 | $ 4.96 |
| Low Growth & High Prices | 2018-2019 | Dec | $ 4.83 | $ 5.64 | $ 4.83 | $ 4.83 | $ 4.83 | $ 5.15 | $ 4.59 | $ 5.63 | $ 5.12 | $ 4.99 |
| Low Growth & High Prices | 2018-2019 | Jan | $ 4.70 | $ 5.63 | $ 4.70 | $ 4.70 | $ 4.70 | $ 5.11 | $ 4.63 | $ 5.63 | $ 5.12 | $ 4.89 |
| Low Growth & High Prices | 2018-2019 | Feb | $ 4.79 | $ 5.63 | $ 4.79 | $ 4.79 | $ 4.79 | $ 5.11 | $ 4.64 | $ 5.63 | $ 5.13 | $ 4.96 |
| Low Growth & High Prices | 2018-2019 | Mar | $ 4.90 | $ 5.63 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.83 | $ 4.83 | $ 5.63 | $ 5.10 | $ 5.05 |
| Low Growth & High Prices | 2018-2019 | Apr | $ 4.81 | $ 5.76 | $ 4.81 | $ 4.81 | $ 4.81 | $ 4.74 | $ 4.74 | $ 5.76 | $ 5.08 | $ 5.00 |
| Low Growth & High Prices | 2018-2019 | May | $ 4.76 | $ 5.63 | $ 4.76 | $ 4.76 | $ 4.76 | $ 4.69 | $ 4.69 | $ 5.63 | $ 5.00 | $ 4.94 |
| Low Growth & High Prices | 2018-2019 | Jun | $ 4.73 | $ 5.63 | $ 4.73 | $ 4.73 | $ 4.73 | $ 4.66 | $ 4.66 | $ 5.63 | $ 4.98 | $ 4.91 |
| Low Growth & High Prices | 2018-2019 | Jul | $ 4.71 | $ 5.63 | $ 4.71 | $ 4.71 | $ 4.71 | $ 4.64 | $ 4.64 | $ 5.64 | $ 4.97 | $ 4.89 |
| Low Growth & High Prices | 2018-2019 | Aug | $ 4.69 | $ 5.64 | $ 4.69 | $ 4.69 | $ 4.69 | $ 4.62 | $ 4.62 | $ 5.64 | $ 4.96 | $ 4.88 |
| Low Growth & High Prices | 2018-2019 | Sep | $ 4.71 | $ 5.64 | $ 4.71 | $ 4.71 | $ 4.71 | $ 4.64 | $ 4.64 | $ 5.64 | $ 4.97 | $ 4.90 |
| Low Growth & High Prices | 2018-2019 | Oct | $ 4.76 | $ 5.72 | $ 4.76 | $ 4.76 | $ 4.76 | $ 4.69 | $ 4.69 | $ 5.72 | $ 5.03 | $ 4.95 |
| Low Growth & High Prices | 2019-2020 | Nov | $ 4.89 | $ 5.59 | $ 4.89 | $ 4.89 | $ 4.89 | $ 4.82 | $ 4.82 | $ 5.59 | $ 5.08 | $ 5.03 |
| Low Growth & High Prices | 2019-2020 | Dec | $ 4.92 | $ 5.61 | $ 4.92 | $ 4.92 | $ 4.92 | $ 5.24 | $ 4.70 | $ 5.62 | $ 5.18 | $ 5.06 |
| Low Growth & High Prices | 2019-2020 | Jan | $ 4.75 | $ 5.64 | $ 4.75 | $ 4.75 | $ 4.75 | $ 5.16 | $ 4.68 | $ 5.64 | $ 5.16 | $ 4.93 |
| Low Growth & High Prices | 2019-2020 | Feb | $ 4.88 | $ 5.61 | $ 4.88 | $ 4.88 | $ 4.88 | $ 5.19 | $ 4.73 | $ 5.61 | $ 5.17 | $ 5.03 |
| Low Growth & High Prices | 2019-2020 | Mar | $ 5.07 | $ 5.64 | $ 5.07 | $ 5.07 | $ 5.07 | $ 4.99 | $ 4.99 | $ 5.64 | $ 5.21 | $ 5.18 |
| Low Growth & High Prices | 2019-2020 | Apr | $ 4.98 | $ 5.69 | $ 4.98 | $ 4.98 | $ 4.98 | $ 4.90 | $ 4.90 | $ 5.69 | $ 5.16 | $ 5.12 |
| Low Growth & High Prices | 2019-2020 | May | $ 4.90 | $ 5.65 | $ 4.90 | $ 4.90 | $ 4.90 | $ 4.83 | $ 4.83 | $ 5.65 | $ 5.10 | $ 5.05 |
| Low Growth & High Prices | 2019-2020 | Jun | $ 4.87 | $ 5.65 | $ 4.87 | $ 4.87 | $ 4.87 | $ 4.80 | $ 4.80 | $ 5.65 | $ 5.08 | $ 5.03 |
| Low Growth & High Prices | 2019-2020 | Jul | $ 4.83 | $ 5.62 | $ 4.83 | $ 4.83 | $ 4.83 | $ 4.76 | $ 4.76 | $ 5.65 | $ 5.05 | $ 4.99 |
| Low Growth & High Prices | 2019-2020 | Aug | $ 4.82 | $ 5.62 | $ 4.82 | $ 4.82 | $ 4.82 | $ 4.75 | $ 4.75 | $ 5.65 | $ 5.05 | $ 4.98 |
| Low Growth & High Prices | 2019-2020 | Sep | $ 4.84 | $ 5.65 | $ 4.84 | $ 4.84 | $ 4.84 | $ 4.77 | $ 4.77 | $ 5.65 | $ 5.06 | $ 5.00 |
| Low Growth & High Prices | 2019-2020 | Oct | $ 4.89 | $ 5.67 | $ 4.89 | $ 4.89 | $ 4.89 | $ 4.82 | $ 4.82 | $ 5.67 | $ 5.10 | $ 5.05 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: LOW GROWTH – HIGH PRICE MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2020-2021 | Nov | $ 4.98 | $ 5.65 | $ 4.98 | $ 4.98 | $ 4.98 | $ 4.90 | $ 4.90 | $ 5.65 | $ 5.15 | $ 5.11 |
| Low Growth & High Prices | 2020-2021 | Dec | $ 5.00 | $ 5.67 | $ 5.00 | $ 5.00 | $ 5.00 | $ 5.29 | $ 4.75 | $ 5.66 | $ 5.23 | $ 5.14 |
| Low Growth & High Prices | 2020-2021 | Jan | $ 4.93 | $ 5.65 | $ 4.93 | $ 4.93 | $ 4.93 | $ 5.34 | $ 4.86 | $ 5.65 | $ 5.28 | $ 5.08 |
| Low Growth & High Prices | 2020-2021 | Feb | $ 5.03 | $ 5.66 | $ 5.03 | $ 5.03 | $ 5.03 | $ 5.34 | $ 4.89 | $ 5.66 | $ 5.30 | $ 5.15 |
| Low Growth & High Prices | 2020-2021 | Mar | $ 5.19 | $ 5.62 | $ 5.19 | $ 5.19 | $ 5.19 | $ 5.11 | $ 5.11 | $ 5.62 | $ 5.28 | $ 5.28 |
| Low Growth & High Prices | 2020-2021 | Apr | $ 5.10 | $ 5.62 | $ 5.10 | $ 5.10 | $ 5.10 | $ 5.02 | $ 5.02 | $ 5.65 | $ 5.23 | $ 5.20 |
| Low Growth & High Prices | 2020-2021 | May | $ 5.01 | $ 5.65 | $ 5.01 | $ 5.01 | $ 5.01 | $ 4.93 | $ 4.93 | $ 5.65 | $ 5.17 | $ 5.13 |
| Low Growth & High Prices | 2020-2021 | Jun | $ 4.96 | $ 5.54 | $ 4.96 | $ 4.96 | $ 4.96 | $ 4.89 | $ 4.89 | $ 5.65 | $ 5.14 | $ 5.08 |
| Low Growth & High Prices | 2020-2021 | Jul | $ 4.88 | $ 5.65 | $ 4.88 | $ 4.88 | $ 4.88 | $ 4.81 | $ 4.81 | $ 5.65 | $ 5.09 | $ 5.04 |
| Low Growth & High Prices | 2020-2021 | Aug | $ 4.87 | $ 5.64 | $ 4.87 | $ 4.87 | $ 4.87 | $ 4.80 | $ 4.80 | $ 5.65 | $ 5.08 | $ 5.03 |
| Low Growth & High Prices | 2020-2021 | Sep | $ 4.93 | $ 5.65 | $ 4.93 | $ 4.93 | $ 4.93 | $ 4.86 | $ 4.86 | $ 5.65 | $ 5.12 | $ 5.08 |
| Low Growth & High Prices | 2020-2021 | Oct | $ 4.99 | $ 5.70 | $ 4.99 | $ 4.99 | $ 4.99 | $ 4.91 | $ 4.91 | $ 5.70 | $ 5.17 | $ 5.13 |
| Low Growth & High Prices | 2021-2022 | Nov | $ 5.09 | $ 5.63 | $ 5.09 | $ 5.09 | $ 5.09 | $ 5.01 | $ 5.01 | $ 5.63 | $ 5.22 | $ 5.20 |
| Low Growth & High Prices | 2021-2022 | Dec | $ 5.19 | $ 5.71 | $ 5.19 | $ 5.19 | $ 5.19 | $ 5.48 | $ 4.97 | $ 5.71 | $ 5.39 | $ 5.29 |
| Low Growth & High Prices | 2021-2022 | Jan | $ 5.42 | $ 5.73 | $ 5.42 | $ 5.42 | $ 5.42 | $ 5.73 | $ 5.34 | $ 5.73 | $ 5.60 | $ 5.48 |
| Low Growth & High Prices | 2021-2022 | Feb | $ 5.51 | $ 5.72 | $ 5.51 | $ 5.51 | $ 5.51 | $ 5.66 | $ 5.38 | $ 5.72 | $ 5.59 | $ 5.55 |
| Low Growth & High Prices | 2021-2022 | Mar | $ 5.59 | $ 5.65 | $ 5.59 | $ 5.59 | $ 5.59 | $ 5.50 | $ 5.50 | $ 5.65 | $ 5.55 | $ 5.60 |
| Low Growth & High Prices | 2021-2022 | Apr | $ 5.48 | $ 5.78 | $ 5.48 | $ 5.48 | $ 5.48 | $ 5.40 | $ 5.40 | $ 5.78 | $ 5.53 | $ 5.54 |
| Low Growth & High Prices | 2021-2022 | May | $ 5.41 | $ 5.76 | $ 5.41 | $ 5.41 | $ 5.41 | $ 5.33 | $ 5.33 | $ 5.76 | $ 5.47 | $ 5.48 |
| Low Growth & High Prices | 2021-2022 | Jun | $ 5.35 | $ 5.71 | $ 5.35 | $ 5.35 | $ 5.35 | $ 5.27 | $ 5.27 | $ 5.72 | $ 5.42 | $ 5.42 |
| Low Growth & High Prices | 2021-2022 | Jul | $ 5.33 | $ 5.68 | $ 5.33 | $ 5.33 | $ 5.33 | $ 5.25 | $ 5.25 | $ 5.72 | $ 5.41 | $ 5.40 |
| Low Growth & High Prices | 2021-2022 | Aug | $ 5.31 | $ 5.70 | $ 5.31 | $ 5.31 | $ 5.31 | $ 5.23 | $ 5.23 | $ 5.72 | $ 5.39 | $ 5.39 |
| Low Growth & High Prices | 2021-2022 | Sep | $ 5.40 | $ 5.77 | $ 5.40 | $ 5.40 | $ 5.40 | $ 5.32 | $ 5.32 | $ 5.77 | $ 5.47 | $ 5.48 |
| Low Growth & High Prices | 2021-2022 | Oct | $ 5.44 | $ 5.77 | $ 5.44 | $ 5.44 | $ 5.44 | $ 5.36 | $ 5.36 | $ 5.77 | $ 5.50 | $ 5.51 |
| Low Growth & High Prices | 2022-2023 | Nov | $ 5.49 | $ 5.77 | $ 5.49 | $ 5.49 | $ 5.49 | $ 5.41 | $ 5.41 | $ 5.77 | $ 5.53 | $ 5.55 |
| Low Growth & High Prices | 2022-2023 | Dec | $ 5.50 | $ 5.71 | $ 5.50 | $ 5.50 | $ 5.50 | $ 5.71 | $ 5.34 | $ 5.71 | $ 5.59 | $ 5.55 |
| Low Growth & High Prices | 2022-2023 | Jan | $ 5.49 | $ 5.79 | $ 5.49 | $ 5.49 | $ 5.49 | $ 5.79 | $ 5.41 | $ 5.79 | $ 5.66 | $ 5.55 |
| Low Growth & High Prices | 2022-2023 | Feb | $ 5.51 | $ 5.77 | $ 5.51 | $ 5.51 | $ 5.51 | $ 5.71 | $ 5.40 | $ 5.77 | $ 5.63 | $ 5.56 |
| Low Growth & High Prices | 2022-2023 | Mar | $ 5.62 | $ 5.77 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.53 | $ 5.53 | $ 5.77 | $ 5.61 | $ 5.65 |
| Low Growth & High Prices | 2022-2023 | Apr | $ 5.48 | $ 5.86 | $ 5.48 | $ 5.48 | $ 5.48 | $ 5.40 | $ 5.40 | $ 5.86 | $ 5.55 | $ 5.56 |
| Low Growth & High Prices | 2022-2023 | May | $ 5.34 | $ 5.77 | $ 5.34 | $ 5.34 | $ 5.34 | $ 5.26 | $ 5.26 | $ 5.77 | $ 5.43 | $ 5.43 |
| Low Growth & High Prices | 2022-2023 | Jun | $ 5.28 | $ 5.71 | $ 5.28 | $ 5.28 | $ 5.28 | $ 5.20 | $ 5.20 | $ 5.77 | $ 5.39 | $ 5.37 |
| Low Growth & High Prices | 2022-2023 | Jul | $ 5.25 | $ 5.71 | $ 5.25 | $ 5.25 | $ 5.25 | $ 5.17 | $ 5.17 | $ 5.77 | $ 5.37 | $ 5.34 |
| Low Growth & High Prices | 2022-2023 | Aug | $ 5.23 | $ 5.72 | $ 5.23 | $ 5.23 | $ 5.23 | $ 5.15 | $ 5.15 | $ 5.77 | $ 5.36 | $ 5.33 |
| Low Growth & High Prices | 2022-2023 | Sep | $ 5.30 | $ 5.77 | $ 5.30 | $ 5.30 | $ 5.30 | $ 5.22 | $ 5.22 | $ 5.77 | $ 5.41 | $ 5.40 |
| Low Growth & High Prices | 2022-2023 | Oct | $ 5.34 | $ 5.83 | $ 5.34 | $ 5.34 | $ 5.34 | $ 5.26 | $ 5.26 | $ 5.83 | $ 5.45 | $ 5.44 |
| Low Growth & High Prices | 2023-2024 | Nov | $ 5.56 | $ 5.88 | $ 5.56 | $ 5.56 | $ 5.56 | $ 5.47 | $ 5.47 | $ 5.88 | $ 5.61 | $ 5.62 |
| Low Growth & High Prices | 2023-2024 | Dec | $ 5.62 | $ 5.84 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.84 | $ 5.45 | $ 5.84 | $ 5.71 | $ 5.67 |
| Low Growth & High Prices | 2023-2024 | Jan | $ 5.82 | $ 5.90 | $ 5.82 | $ 5.82 | $ 5.82 | $ 5.90 | $ 5.73 | $ 5.90 | $ 5.84 | $ 5.84 |
| Low Growth & High Prices | 2023-2024 | Feb | $ 5.85 | $ 5.87 | $ 5.85 | $ 5.85 | $ 5.85 | $ 5.85 | $ 5.76 | $ 5.87 | $ 5.83 | $ 5.85 |
| Low Growth & High Prices | 2023-2024 | Mar | $ 5.97 | $ 5.91 | $ 5.92 | $ 5.92 | $ 5.92 | $ 5.91 | $ 5.92 | $ 5.91 | $ 5.91 | $ 5.93 |
| Low Growth & High Prices | 2023-2024 | Apr | $ 5.89 | $ 6.03 | $ 5.89 | $ 5.89 | $ 5.89 | $ 5.80 | $ 5.80 | $ 6.03 | $ 5.88 | $ 5.92 |
| Low Growth & High Prices | 2023-2024 | May | $ 5.76 | $ 5.90 | $ 5.76 | $ 5.76 | $ 5.76 | $ 5.67 | $ 5.67 | $ 5.90 | $ 5.75 | $ 5.79 |
| Low Growth & High Prices | 2023-2024 | Jun | $ 5.70 | $ 5.79 | $ 5.70 | $ 5.70 | $ 5.70 | $ 5.61 | $ 5.61 | $ 5.88 | $ 5.70 | $ 5.72 |
| Low Growth & High Prices | 2023-2024 | Jul | $ 5.65 | $ 5.80 | $ 5.65 | $ 5.65 | $ 5.65 | $ 5.56 | $ 5.56 | $ 5.88 | $ 5.67 | $ 5.68 |
| Low Growth & High Prices | 2023-2024 | Aug | $ 5.64 | $ 5.79 | $ 5.64 | $ 5.64 | $ 5.64 | $ 5.55 | $ 5.55 | $ 5.88 | $ 5.66 | $ 5.67 |
| Low Growth & High Prices | 2023-2024 | Sep | $ 5.72 | $ 5.87 | $ 5.72 | $ 5.72 | $ 5.72 | $ 5.63 | $ 5.63 | $ 5.88 | $ 5.72 | $ 5.75 |
| Low Growth & High Prices | 2023-2024 | Oct | $ 5.77 | $ 6.00 | $ 5.77 | $ 5.77 | $ 5.77 | $ 5.68 | $ 5.68 | $ 6.00 | $ 5.79 | $ 5.82 |
| Low Growth & High Prices | 2024-2025 | Nov | $ 5.87 | $ 5.98 | $ 5.87 | $ 5.87 | $ 5.87 | $ 5.78 | $ 5.78 | $ 5.98 | $ 5.85 | $ 5.89 |
| Low Growth & High Prices | 2024-2025 | Dec | $ 6.00 | $ 6.07 | $ 6.00 | $ 6.00 | $ 6.00 | $ 6.07 | $ 5.80 | $ 6.07 | $ 5.98 | $ 6.02 |
| Low Growth & High Prices | 2024-2025 | Jan | $ 6.16 | $ 6.52 | $ 6.16 | $ 6.16 | $ 6.16 | $ 6.52 | $ 6.06 | $ 6.52 | $ 6.37 | $ 6.23 |
| Low Growth & High Prices | 2024-2025 | Feb | $ 6.19 | $ 6.53 | $ 6.19 | $ 6.19 | $ 6.19 | $ 6.44 | $ 6.05 | $ 6.53 | $ 6.34 | $ 6.26 |
| Low Growth & High Prices | 2024-2025 | Mar | $ 6.28 | $ 6.51 | $ 6.28 | $ 6.28 | $ 6.28 | $ 6.18 | $ 6.18 | $ 6.51 | $ 6.29 | $ 6.32 |
| Low Growth & High Prices | 2024-2025 | Apr | $ 6.16 | $ 6.60 | $ 6.16 | $ 6.16 | $ 6.16 | $ 6.06 | $ 6.06 | $ 6.60 | $ 6.24 | $ 6.24 |
| Low Growth & High Prices | 2024-2025 | May | $ 6.10 | $ 6.61 | $ 6.10 | $ 6.10 | $ 6.10 | $ 6.01 | $ 6.01 | $ 6.61 | $ 6.21 | $ 6.21 |
| Low Growth & High Prices | 2024-2025 | Jun | $ 6.04 | $ 6.52 | $ 6.04 | $ 6.04 | $ 6.04 | $ 5.95 | $ 5.95 | $ 6.53 | $ 6.14 | $ 6.14 |
| Low Growth & High Prices | 2024-2025 | Jul | $ 5.99 | $ 6.53 | $ 5.99 | $ 5.99 | $ 5.99 | $ 5.90 | $ 5.90 | $ 6.53 | $ 6.11 | $ 6.10 |
| Low Growth & High Prices | 2024-2025 | Aug | $ 5.98 | $ 6.53 | $ 5.98 | $ 5.98 | $ 5.98 | $ 5.89 | $ 5.89 | $ 6.53 | $ 6.10 | $ 6.09 |
| Low Growth & High Prices | 2024-2025 | Sep | $ 6.06 | $ 6.53 | $ 6.06 | $ 6.06 | $ 6.06 | $ 5.97 | $ 5.97 | $ 6.53 | $ 6.16 | $ 6.16 |
| Low Growth & High Prices | 2024-2025 | Oct | $ 6.12 | $ 6.61 | $ 6.12 | $ 6.12 | $ 6.12 | $ 6.02 | $ 6.02 | $ 6.61 | $ 6.22 | $ 6.21 |
| Low Growth & High Prices | 2025-2026 | Nov | $ 6.21 | $ 6.60 | $ 6.21 | $ 6.21 | $ 6.21 | $ 6.11 | $ 6.11 | $ 6.60 | $ 6.28 | $ 6.29 |
| Low Growth & High Prices | 2025-2026 | Dec | $ 6.30 | $ 6.53 | $ 6.30 | $ 6.30 | $ 6.30 | $ 6.53 | $ 6.10 | $ 6.53 | $ 6.39 | $ 6.35 |
| Low Growth & High Prices | 2025-2026 | Jan | $ 6.37 | $ 6.72 | $ 6.37 | $ 6.37 | $ 6.37 | $ 6.72 | $ 6.27 | $ 6.72 | $ 6.57 | $ 6.44 |
| Low Growth & High Prices | 2025-2026 | Feb | $ 6.42 | $ 6.70 | $ 6.42 | $ 6.42 | $ 6.42 | $ 6.63 | $ 6.29 | $ 6.70 | $ 6.54 | $ 6.48 |
| Low Growth & High Prices | 2025-2026 | Mar | $ 6.54 | $ 6.71 | $ 6.54 | $ 6.54 | $ 6.54 | $ 6.44 | $ 6.44 | $ 6.71 | $ 6.53 | $ 6.57 |
| Low Growth & High Prices | 2025-2026 | Apr | $ 6.41 | $ 6.83 | $ 6.41 | $ 6.41 | $ 6.41 | $ 6.31 | $ 6.31 | $ 6.83 | $ 6.49 | $ 6.49 |
| Low Growth & High Prices | 2025-2026 | May | $ 6.30 | $ 6.75 | $ 6.30 | $ 6.30 | $ 6.30 | $ 6.20 | $ 6.20 | $ 6.75 | $ 6.39 | $ 6.39 |
| Low Growth & High Prices | 2025-2026 | Jun | $ 6.23 | $ 6.68 | $ 6.23 | $ 6.23 | $ 6.23 | $ 6.13 | $ 6.13 | $ 6.71 | $ 6.33 | $ 6.32 |
| Low Growth & High Prices | 2025-2026 | Jul | $ 6.18 | $ 6.71 | $ 6.18 | $ 6.18 | $ 6.18 | $ 6.08 | $ 6.08 | $ 6.71 | $ 6.29 | $ 6.28 |
| Low Growth & High Prices | 2025-2026 | Aug | $ 6.17 | $ 6.71 | $ 6.17 | $ 6.17 | $ 6.17 | $ 6.07 | $ 6.07 | $ 6.71 | $ 6.29 | $ 6.27 |
| Low Growth & High Prices | 2025-2026 | Sep | $ 6.26 | $ 6.71 | $ 6.26 | $ 6.26 | $ 6.26 | $ 6.16 | $ 6.16 | $ 6.71 | $ 6.35 | $ 6.35 |
| Low Growth & High Prices | 2025-2026 | Oct | $ 6.31 | $ 6.88 | $ 6.31 | $ 6.31 | $ 6.31 | $ 6.21 | $ 6.21 | $ 6.88 | $ 6.44 | $ 6.42 |
| Low Growth & High Prices | 2026-2027 | Nov | $ 6.46 | $ 6.74 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.36 | $ 6.36 | $ 6.74 | $ 6.49 | $ 6.52 |
| Low Growth & High Prices | 2026-2027 | Dec | $ 6.58 | $ 6.78 | $ 6.58 | $ 6.58 | $ 6.58 | $ 6.78 | $ 6.35 | $ 6.80 | $ 6.64 | $ 6.62 |
| Low Growth & High Prices | 2026-2027 | Jan | $ 6.57 | $ 7.21 | $ 6.57 | $ 6.57 | $ 6.57 | $ 6.95 | $ 6.47 | $ 7.21 | $ 6.88 | $ 6.70 |
| Low Growth & High Prices | 2026-2027 | Feb | $ 6.55 | $ 7.08 | $ 6.55 | $ 6.55 | $ 6.55 | $ 6.84 | $ 6.39 | $ 7.09 | $ 6.78 | $ 6.66 |
| Low Growth & High Prices | 2026-2027 | Mar | $ 6.80 | $ 7.11 | $ 6.80 | $ 6.80 | $ 6.80 | $ 6.69 | $ 6.69 | $ 7.11 | $ 6.83 | $ 6.86 |
| Low Growth & High Prices | 2026-2027 | Apr | $ 6.58 | $ 7.31 | $ 6.58 | $ 6.58 | $ 6.58 | $ 6.48 | $ 6.48 | $ 7.31 | $ 6.76 | $ 6.73 |
| Low Growth & High Prices | 2026-2027 | May | $ 6.50 | $ 7.22 | $ 6.50 | $ 6.50 | $ 6.50 | $ 6.40 | $ 6.40 | $ 7.22 | $ 6.67 | $ 6.64 |
| Low Growth & High Prices | 2026-2027 | Jun | $ 6.42 | $ 7.22 | $ 6.42 | $ 6.42 | $ 6.42 | $ 6.32 | $ 6.32 | $ 7.22 | $ 6.62 | $ 6.58 |
| Low Growth & High Prices | 2026-2027 | Jul | $ 6.39 | $ 7.22 | $ 6.39 | $ 6.39 | $ 6.39 | $ 6.29 | $ 6.29 | $ 7.22 | $ 6.60 | $ 6.56 |
| Low Growth & High Prices | 2026-2027 | Aug | $ 6.38 | $ 7.22 | $ 6.38 | $ 6.38 | $ 6.38 | $ 6.28 | $ 6.28 | $ 7.22 | $ 6.60 | $ 6.55 |
| Low Growth & High Prices | 2026-2027 | Sep | $ 6.47 | $ 7.22 | $ 6.47 | $ 6.47 | $ 6.47 | $ 6.37 | $ 6.37 | $ 7.22 | $ 6.66 | $ 6.62 |
| Low Growth & High Prices | 2026-2027 | Oct | $ 6.52 | $ 7.38 | $ 6.52 | $ 6.52 | $ 6.52 | $ 6.42 | $ 6.42 | $ 7.38 | $ 6.74 | $ 6.69 |
| Low Growth & High Prices | 2027-2028 | Nov | $ 6.69 | $ 7.32 | $ 6.69 | $ 6.69 | $ 6.69 | $ 6.59 | $ 6.59 | $ 7.32 | $ 6.84 | $ 6.82 |
| Low Growth & High Prices | 2027-2028 | Dec | $ 6.81 | $ 7.34 | $ 6.81 | $ 6.81 | $ 6.81 | $ 7.09 | $ 6.56 | $ 7.34 | $ 7.00 | $ 6.91 |
| Low Growth & High Prices | 2027-2028 | Jan | $ 6.69 | $ 7.38 | $ 6.69 | $ 6.69 | $ 6.69 | $ 7.07 | $ 6.59 | $ 7.38 | $ 7.02 | $ 6.83 |
| Low Growth & High Prices | 2027-2028 | Feb | $ 6.73 | $ 7.37 | $ 6.73 | $ 6.73 | $ 6.73 | $ 7.00 | $ 6.56 | $ 7.37 | $ 6.98 | $ 6.86 |
| Low Growth & High Prices | 2027-2028 | Mar | $ 6.95 | $ 7.40 | $ 6.95 | $ 6.95 | $ 6.95 | $ 6.85 | $ 6.85 | $ 7.40 | $ 7.03 | $ 7.04 |
| Low Growth & High Prices | 2027-2028 | Apr | $ 6.79 | $ 7.51 | $ 6.79 | $ 6.79 | $ 6.79 | $ 6.68 | $ 6.68 | $ 7.51 | $ 6.96 | $ 6.93 |
| Low Growth & High Prices | 2027-2028 | May | $ 6.72 | $ 7.40 | $ 6.72 | $ 6.72 | $ 6.72 | $ 6.61 | $ 6.61 | $ 7.40 | $ 6.88 | $ 6.85 |
| Low Growth & High Prices | 2027-2028 | Jun | $ 6.65 | $ 7.40 | $ 6.65 | $ 6.65 | $ 6.65 | $ 6.55 | $ 6.55 | $ 7.40 | $ 6.84 | $ 6.80 |
| Low Growth & High Prices | 2027-2028 | Jul | $ 6.60 | $ 7.40 | $ 6.60 | $ 6.60 | $ 6.60 | $ 6.50 | $ 6.50 | $ 7.41 | $ 6.80 | $ 6.76 |
| Low Growth & High Prices | 2027-2028 | Aug | $ 6.60 | $ 7.41 | $ 6.60 | $ 6.60 | $ 6.60 | $ 6.50 | $ 6.50 | $ 7.41 | $ 6.81 | $ 6.76 |
| Low Growth & High Prices | 2027-2028 | Sep | $ 6.67 | $ 7.41 | $ 6.67 | $ 6.67 | $ 6.67 | $ 6.57 | $ 6.57 | $ 7.41 | $ 6.85 | $ 6.82 |
| Low Growth & High Prices | 2027-2028 | Oct | $ 6.74 | $ 7.58 | $ 6.74 | $ 6.74 | $ 6.74 | $ 6.64 | $ 6.64 | $ 7.58 | $ 6.95 | $ 6.90 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: LOW GROWTH – HIGH PRICE MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2028-2029 | Nov | $ 6.95 | $ 7.54 | $ 6.95 | $ 6.95 | $ 6.95 | $ 6.85 | $ 6.85 | $ 7.54 | $ 7.08 | $ 7.07 |
| Low Growth & High Prices | 2028-2029 | Dec | $ 7.07 | $ 7.51 | $ 7.07 | $ 7.07 | $ 7.07 | $ 7.34 | $ 6.83 | $ 7.51 | $ 7.23 | $ 7.16 |
| Low Growth & High Prices | 2028-2029 | Jan | $ 7.20 | $ 7.63 | $ 7.20 | $ 7.20 | $ 7.20 | $ 7.57 | $ 7.10 | $ 7.63 | $ 7.43 | $ 7.29 |
| Low Growth & High Prices | 2028-2029 | Feb | $ 7.33 | $ 7.44 | $ 7.33 | $ 7.33 | $ 7.33 | $ 7.40 | $ 7.17 | $ 7.44 | $ 7.33 | $ 7.35 |
| Low Growth & High Prices | 2028-2029 | Mar | $ 7.50 | $ 7.51 | $ 7.50 | $ 7.50 | $ 7.50 | $ 7.39 | $ 7.39 | $ 7.51 | $ 7.43 | $ 7.50 |
| Low Growth & High Prices | 2028-2029 | Apr | $ 7.28 | $ 7.70 | $ 7.28 | $ 7.28 | $ 7.28 | $ 7.18 | $ 7.18 | $ 7.70 | $ 7.35 | $ 7.37 |
| Low Growth & High Prices | 2028-2029 | May | $ 7.22 | $ 7.71 | $ 7.22 | $ 7.22 | $ 7.22 | $ 7.12 | $ 7.12 | $ 7.71 | $ 7.31 | $ 7.32 |
| Low Growth & High Prices | 2028-2029 | Jun | $ 7.15 | $ 7.59 | $ 7.15 | $ 7.15 | $ 7.15 | $ 7.05 | $ 7.05 | $ 7.64 | $ 7.24 | $ 7.24 |
| Low Growth & High Prices | 2028-2029 | Jul | $ 7.11 | $ 7.65 | $ 7.11 | $ 7.11 | $ 7.11 | $ 7.01 | $ 7.01 | $ 7.65 | $ 7.22 | $ 7.22 |
| Low Growth & High Prices | 2028-2029 | Aug | $ 7.08 | $ 7.64 | $ 7.08 | $ 7.08 | $ 7.08 | $ 6.98 | $ 6.98 | $ 7.64 | $ 7.20 | $ 7.19 |
| Low Growth & High Prices | 2028-2029 | Sep | $ 7.15 | $ 7.66 | $ 7.15 | $ 7.15 | $ 7.15 | $ 7.05 | $ 7.05 | $ 7.66 | $ 7.25 | $ 7.25 |
| Low Growth & High Prices | 2028-2029 | Oct | $ 7.19 | $ 7.71 | $ 7.19 | $ 7.19 | $ 7.19 | $ 7.09 | $ 7.09 | $ 7.71 | $ 7.29 | $ 7.30 |
| Low Growth & High Prices | 2029-2030 | Nov | $ 7.35 | $ 7.68 | $ 7.35 | $ 7.35 | $ 7.35 | $ 7.24 | $ 7.24 | $ 7.68 | $ 7.39 | $ 7.41 |
| Low Growth & High Prices | 2029-2030 | Dec | $ 7.46 | $ 7.67 | $ 7.46 | $ 7.46 | $ 7.46 | $ 7.67 | $ 7.24 | $ 7.67 | $ 7.53 | $ 7.50 |
| Low Growth & High Prices | 2029-2030 | Jan | $ 7.61 | $ 7.88 | $ 7.61 | $ 7.61 | $ 7.61 | $ 7.88 | $ 7.50 | $ 7.88 | $ 7.75 | $ 7.66 |
| Low Growth & High Prices | 2029-2030 | Feb | $ 7.56 | $ 7.81 | $ 7.56 | $ 7.56 | $ 7.56 | $ 7.74 | $ 7.39 | $ 7.81 | $ 7.64 | $ 7.61 |
| Low Growth & High Prices | 2029-2030 | Mar | $ 7.82 | $ 7.85 | $ 7.82 | $ 7.82 | $ 7.82 | $ 7.71 | $ 7.71 | $ 7.85 | $ 7.76 | $ 7.83 |
| Low Growth & High Prices | 2029-2030 | Apr | $ 7.53 | $ 8.07 | $ 7.53 | $ 7.53 | $ 7.53 | $ 7.42 | $ 7.42 | $ 8.07 | $ 7.64 | $ 7.64 |
| Low Growth & High Prices | 2029-2030 | May | $ 7.45 | $ 7.95 | $ 7.45 | $ 7.45 | $ 7.45 | $ 7.34 | $ 7.34 | $ 7.95 | $ 7.54 | $ 7.55 |
| Low Growth & High Prices | 2029-2030 | Jun | $ 7.38 | $ 7.89 | $ 7.38 | $ 7.38 | $ 7.38 | $ 7.27 | $ 7.27 | $ 7.89 | $ 7.47 | $ 7.48 |
| Low Growth & High Prices | 2029-2030 | Jul | $ 7.34 | $ 7.89 | $ 7.34 | $ 7.34 | $ 7.34 | $ 7.23 | $ 7.23 | $ 7.89 | $ 7.45 | $ 7.45 |
| Low Growth & High Prices | 2029-2030 | Aug | $ 7.32 | $ 7.89 | $ 7.32 | $ 7.32 | $ 7.32 | $ 7.21 | $ 7.21 | $ 7.89 | $ 7.43 | $ 7.43 |
| Low Growth & High Prices | 2029-2030 | Sep | $ 7.38 | $ 7.89 | $ 7.38 | $ 7.38 | $ 7.38 | $ 7.27 | $ 7.27 | $ 7.89 | $ 7.47 | $ 7.48 |
| Low Growth & High Prices | 2029-2030 | Oct | $ 7.45 | $ 8.12 | $ 7.45 | $ 7.45 | $ 7.45 | $ 7.34 | $ 7.34 | $ 8.12 | $ 7.60 | $ 7.58 |
| Low Growth & High Prices | 2030-2031 | Nov | $ 7.76 | $ 7.97 | $ 7.76 | $ 7.76 | $ 7.76 | $ 7.65 | $ 7.65 | $ 7.97 | $ 7.76 | $ 7.80 |
| Low Growth & High Prices | 2030-2031 | Dec | $ 7.82 | $ 7.96 | $ 7.82 | $ 7.82 | $ 7.82 | $ 7.95 | $ 7.60 | $ 7.96 | $ 7.84 | $ 7.85 |
| Low Growth & High Prices | 2030-2031 | Jan | $ 7.78 | $ 8.10 | $ 7.78 | $ 7.78 | $ 7.78 | $ 8.10 | $ 7.67 | $ 8.10 | $ 7.96 | $ 7.85 |
| Low Growth & High Prices | 2030-2031 | Feb | $ 7.76 | $ 8.08 | $ 7.76 | $ 7.76 | $ 7.76 | $ 7.97 | $ 7.57 | $ 8.08 | $ 7.87 | $ 7.82 |
| Low Growth & High Prices | 2030-2031 | Mar | $ 8.09 | $ 8.09 | $ 8.09 | $ 8.09 | $ 8.09 | $ 7.97 | $ 7.97 | $ 8.09 | $ 8.01 | $ 8.09 |
| Low Growth & High Prices | 2030-2031 | Apr | $ 7.88 | $ 8.23 | $ 7.88 | $ 7.88 | $ 7.88 | $ 7.76 | $ 7.76 | $ 8.23 | $ 7.92 | $ 7.95 |
| Low Growth & High Prices | 2030-2031 | May | $ 7.82 | $ 8.21 | $ 7.82 | $ 7.82 | $ 7.82 | $ 7.71 | $ 7.71 | $ 8.21 | $ 7.88 | $ 7.90 |
| Low Growth & High Prices | 2030-2031 | Jun | $ 7.76 | $ 8.16 | $ 7.76 | $ 7.76 | $ 7.76 | $ 7.65 | $ 7.65 | $ 8.16 | $ 7.82 | $ 7.84 |
| Low Growth & High Prices | 2030-2031 | Jul | $ 7.74 | $ 8.21 | $ 7.74 | $ 7.74 | $ 7.74 | $ 7.63 | $ 7.63 | $ 8.21 | $ 7.82 | $ 7.84 |
| Low Growth & High Prices | 2030-2031 | Aug | $ 7.73 | $ 8.22 | $ 7.73 | $ 7.73 | $ 7.73 | $ 7.62 | $ 7.62 | $ 8.22 | $ 7.82 | $ 7.83 |
| Low Growth & High Prices | 2030-2031 | Sep | $ 7.80 | $ 8.29 | $ 7.80 | $ 7.80 | $ 7.80 | $ 7.69 | $ 7.69 | $ 8.29 | $ 7.89 | $ 7.90 |
| Low Growth & High Prices | 2030-2031 | Oct | $ 7.86 | $ 8.29 | $ 7.86 | $ 7.86 | $ 7.86 | $ 7.74 | $ 7.74 | $ 8.29 | $ 7.92 | $ 7.94 |
| Low Growth & High Prices | 2031-2032 | Nov | $ 8.02 | $ 8.11 | $ 8.02 | $ 8.02 | $ 8.02 | $ 7.90 | $ 7.90 | $ 8.11 | $ 7.97 | $ 8.04 |
| Low Growth & High Prices | 2031-2032 | Dec | $ 7.88 | $ 8.14 | $ 7.88 | $ 7.88 | $ 7.88 | $ 8.14 | $ 7.67 | $ 8.14 | $ 7.98 | $ 7.93 |
| Low Growth & High Prices | 2031-2032 | Jan | $ 8.02 | $ 8.07 | $ 8.02 | $ 8.02 | $ 8.02 | $ 8.07 | $ 7.90 | $ 8.07 | $ 8.01 | $ 8.03 |
| Low Growth & High Prices | 2031-2032 | Feb | $ 8.03 | $ 8.10 | $ 8.03 | $ 8.03 | $ 8.03 | $ 8.07 | $ 7.91 | $ 8.10 | $ 8.02 | $ 8.04 |
| Low Growth & High Prices | 2031-2032 | Mar | $ 8.15 | $ 8.07 | $ 8.10 | $ 8.10 | $ 8.10 | $ 8.07 | $ 8.07 | $ 8.07 | $ 8.07 | $ 8.10 |
| Low Growth & High Prices | 2031-2032 | Apr | $ 8.03 | $ 8.05 | $ 8.03 | $ 8.03 | $ 8.03 | $ 7.91 | $ 7.91 | $ 8.05 | $ 7.96 | $ 8.03 |
| Low Growth & High Prices | 2031-2032 | May | $ 8.01 | $ 8.00 | $ 8.00 | $ 8.00 | $ 8.00 | $ 7.89 | $ 7.89 | $ 8.00 | $ 7.93 | $ 8.00 |
| Low Growth & High Prices | 2031-2032 | Jun | $ 7.94 | $ 7.90 | $ 7.81 | $ 7.81 | $ 7.81 | $ 7.82 | $ 7.82 | $ 8.00 | $ 7.88 | $ 7.85 |
| Low Growth & High Prices | 2031-2032 | Jul | $ 7.82 | $ 7.81 | $ 7.81 | $ 7.81 | $ 7.81 | $ 7.71 | $ 7.71 | $ 8.00 | $ 7.81 | $ 7.81 |
| Low Growth & High Prices | 2031-2032 | Aug | $ 7.80 | $ 7.81 | $ 7.80 | $ 7.80 | $ 7.80 | $ 7.69 | $ 7.69 | $ 8.00 | $ 7.79 | $ 7.81 |
| Low Growth & High Prices | 2031-2032 | Sep | $ 7.96 | $ 8.00 | $ 7.96 | $ 7.96 | $ 7.96 | $ 7.84 | $ 7.84 | $ 8.00 | $ 7.89 | $ 7.97 |
| Low Growth & High Prices | 2031-2032 | Oct | $ 8.01 | $ 8.09 | $ 8.01 | $ 8.01 | $ 8.01 | $ 7.89 | $ 7.89 | $ 8.09 | $ 7.96 | $ 8.02 |
| Low Growth & High Prices | 2032-2033 | Nov | $ 8.11 | $ 8.06 | $ 8.11 | $ 8.11 | $ 8.11 | $ 7.99 | $ 7.99 | $ 8.06 | $ 8.01 | $ 8.10 |
| Low Growth & High Prices | 2032-2033 | Dec | $ 8.14 | $ 8.17 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.17 | $ 7.94 | $ 8.17 | $ 8.10 | $ 8.15 |
| Low Growth & High Prices | 2032-2033 | Jan | $ 8.43 | $ 8.42 | $ 8.43 | $ 8.43 | $ 8.43 | $ 8.31 | $ 8.31 | $ 8.31 | $ 8.31 | $ 8.43 |
| Low Growth & High Prices | 2032-2033 | Feb | $ 8.42 | $ 8.44 | $ 8.42 | $ 8.42 | $ 8.42 | $ 8.38 | $ 8.30 | $ 8.38 | $ 8.35 | $ 8.43 |
| Low Growth & High Prices | 2032-2033 | Mar | $ 8.54 | $ 8.45 | $ 8.49 | $ 8.49 | $ 8.49 | $ 8.45 | $ 8.45 | $ 8.45 | $ 8.45 | $ 8.49 |
| Low Growth & High Prices | 2032-2033 | Apr | $ 8.40 | $ 8.36 | $ 8.40 | $ 8.40 | $ 8.40 | $ 8.28 | $ 8.28 | $ 8.36 | $ 8.31 | $ 8.40 |
| Low Growth & High Prices | 2032-2033 | May | $ 8.39 | $ 8.33 | $ 8.33 | $ 8.33 | $ 8.33 | $ 8.27 | $ 8.27 | $ 8.33 | $ 8.29 | $ 8.34 |
| Low Growth & High Prices | 2032-2033 | Jun | $ 8.30 | $ 8.22 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.22 | $ 8.22 | $ 8.22 | $ 8.22 | $ 8.19 |
| Low Growth & High Prices | 2032-2033 | Jul | $ 8.22 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.10 | $ 8.10 | $ 8.14 | $ 8.11 | $ 8.16 |
| Low Growth & High Prices | 2032-2033 | Aug | $ 8.20 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.14 | $ 8.08 | $ 8.08 | $ 8.14 | $ 8.10 | $ 8.15 |
| Low Growth & High Prices | 2032-2033 | Sep | $ 8.36 | $ 8.32 | $ 8.32 | $ 8.32 | $ 8.32 | $ 8.24 | $ 8.24 | $ 8.32 | $ 8.27 | $ 8.33 |
| Low Growth & High Prices | 2032-2033 | Oct | $ 8.44 | $ 8.43 | $ 8.43 | $ 8.43 | $ 8.43 | $ 8.31 | $ 8.31 | $ 8.43 | $ 8.35 | $ 8.43 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: EXPECTED MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Expected Case | 2013-2014 | Nov | $ 3.33 | $ 3.83 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.27 | $ 3.27 | $ 3.83 | $ 3.46 | $ 3.43 |
| Expected Case | 2013-2014 | Dec | $ 4.01 | $ 4.38 | $ 4.02 | $ 4.02 | $ 4.02 | $ 4.16 | $ 3.66 | $ 4.16 | $ 3.99 | $ 4.09 |
| Expected Case | 2013-2014 | Jan | $ 4.26 | $ 4.26 | $ 4.26 | $ 4.26 | $ 4.26 | $ 4.19 | $ 4.20 | $ 4.19 | $ 4.19 | $ 4.26 |
| Expected Case | 2013-2014 | Feb | $ 3.47 | $ 4.17 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.82 | $ 3.35 | $ 4.17 | $ 3.78 | $ 3.61 |
| Expected Case | 2013-2014 | Mar | $ 3.51 | $ 4.16 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.45 | $ 3.45 | $ 4.17 | $ 3.69 | $ 3.64 |
| Expected Case | 2013-2014 | Apr | $ 3.49 | $ 4.15 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.43 | $ 3.43 | $ 4.15 | $ 3.67 | $ 3.62 |
| Expected Case | 2013-2014 | May | $ 3.44 | $ 4.12 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 4.12 | $ 3.63 | $ 3.57 |
| Expected Case | 2013-2014 | Jun | $ 3.45 | $ 4.12 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.39 | $ 3.39 | $ 4.12 | $ 3.64 | $ 3.58 |
| Expected Case | 2013-2014 | Jul | $ 3.44 | $ 4.12 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 4.12 | $ 3.63 | $ 3.58 |
| Expected Case | 2013-2014 | Aug | $ 3.37 | $ 4.07 | $ 3.37 | $ 3.37 | $ 3.37 | $ 3.31 | $ 3.31 | $ 4.12 | $ 3.58 | $ 3.51 |
| Expected Case | 2013-2014 | Sep | $ 3.40 | $ 4.10 | $ 3.40 | $ 3.40 | $ 3.40 | $ 3.34 | $ 3.34 | $ 4.12 | $ 3.60 | $ 3.54 |
| Expected Case | 2013-2014 | Oct | $ 3.25 | $ 3.99 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 4.12 | $ 3.50 | $ 3.39 |
| Expected Case | 2014-2015 | Nov | $ 3.35 | $ 4.09 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.44 | $ 3.29 | $ 4.09 | $ 3.61 | $ 3.50 |
| Expected Case | 2014-2015 | Dec | $ 3.50 | $ 4.16 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.83 | $ 3.27 | $ 4.16 | $ 3.75 | $ 3.63 |
| Expected Case | 2014-2015 | Jan | $ 3.42 | $ 4.16 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.84 | $ 3.35 | $ 4.16 | $ 3.78 | $ 3.57 |
| Expected Case | 2014-2015 | Feb | $ 3.51 | $ 4.17 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.90 | $ 3.39 | $ 4.16 | $ 3.82 | $ 3.64 |
| Expected Case | 2014-2015 | Mar | $ 3.55 | $ 4.11 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.49 | $ 3.49 | $ 4.11 | $ 3.70 | $ 3.66 |
| Expected Case | 2014-2015 | Apr | $ 3.43 | $ 4.09 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.37 | $ 3.37 | $ 4.16 | $ 3.64 | $ 3.56 |
| Expected Case | 2014-2015 | May | $ 3.42 | $ 4.10 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.36 | $ 3.36 | $ 4.16 | $ 3.63 | $ 3.55 |
| Expected Case | 2014-2015 | Jun | $ 3.46 | $ 4.16 | $ 3.46 | $ 3.46 | $ 3.46 | $ 3.40 | $ 3.40 | $ 4.16 | $ 3.66 | $ 3.60 |
| Expected Case | 2014-2015 | Jul | $ 3.52 | $ 4.16 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 4.16 | $ 3.70 | $ 3.65 |
| Expected Case | 2014-2015 | Aug | $ 3.56 | $ 4.16 | $ 3.56 | $ 3.56 | $ 3.56 | $ 3.50 | $ 3.50 | $ 4.16 | $ 3.72 | $ 3.68 |
| Expected Case | 2014-2015 | Sep | $ 3.61 | $ 4.16 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.55 | $ 3.55 | $ 4.16 | $ 3.76 | $ 3.72 |
| Expected Case | 2014-2015 | Oct | $ 3.68 | $ 4.34 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.62 | $ 3.62 | $ 4.34 | $ 3.86 | $ 3.81 |
| Expected Case | 2015-2016 | Nov | $ 3.86 | $ 4.59 | $ 3.86 | $ 3.86 | $ 3.86 | $ 3.94 | $ 3.79 | $ 4.59 | $ 4.11 | $ 4.00 |
| Expected Case | 2015-2016 | Dec | $ 4.14 | $ 4.64 | $ 4.14 | $ 4.14 | $ 4.14 | $ 4.44 | $ 3.93 | $ 4.60 | $ 4.32 | $ 4.24 |
| Expected Case | 2015-2016 | Jan | $ 4.04 | $ 4.59 | $ 4.04 | $ 4.04 | $ 4.04 | $ 4.46 | $ 3.98 | $ 4.59 | $ 4.34 | $ 4.15 |
| Expected Case | 2015-2016 | Feb | $ 3.97 | $ 4.63 | $ 3.97 | $ 3.97 | $ 3.97 | $ 4.40 | $ 3.90 | $ 4.60 | $ 4.30 | $ 4.10 |
| Expected Case | 2015-2016 | Mar | $ 4.01 | $ 4.60 | $ 4.01 | $ 4.01 | $ 4.01 | $ 3.95 | $ 3.95 | $ 4.60 | $ 4.16 | $ 4.13 |
| Expected Case | 2015-2016 | Apr | $ 3.80 | $ 4.54 | $ 3.80 | $ 3.80 | $ 3.80 | $ 3.74 | $ 3.74 | $ 4.54 | $ 4.01 | $ 3.95 |
| Expected Case | 2015-2016 | May | $ 3.67 | $ 4.38 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.61 | $ 3.61 | $ 4.38 | $ 3.87 | $ 3.81 |
| Expected Case | 2015-2016 | Jun | $ 3.68 | $ 4.38 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.62 | $ 3.62 | $ 4.38 | $ 3.88 | $ 3.82 |
| Expected Case | 2015-2016 | Jul | $ 3.69 | $ 4.38 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.63 | $ 3.63 | $ 4.38 | $ 3.88 | $ 3.83 |
| Expected Case | 2015-2016 | Aug | $ 3.52 | $ 4.28 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 4.38 | $ 3.77 | $ 3.67 |
| Expected Case | 2015-2016 | Sep | $ 3.43 | $ 4.27 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.37 | $ 3.37 | $ 4.38 | $ 3.71 | $ 3.60 |
| Expected Case | 2015-2016 | Oct | $ 3.45 | $ 4.21 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.39 | $ 3.39 | $ 4.38 | $ 3.72 | $ 3.60 |
| Expected Case | 2016-2017 | Nov | $ 3.59 | $ 4.40 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.68 | $ 3.53 | $ 4.40 | $ 3.87 | $ 3.75 |
| Expected Case | 2016-2017 | Dec | $ 3.71 | $ 4.41 | $ 3.71 | $ 3.71 | $ 3.71 | $ 4.03 | $ 3.46 | $ 4.40 | $ 3.96 | $ 3.85 |
| Expected Case | 2016-2017 | Jan | $ 3.53 | $ 4.40 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.95 | $ 3.46 | $ 4.40 | $ 3.94 | $ 3.70 |
| Expected Case | 2016-2017 | Feb | $ 3.61 | $ 4.41 | $ 3.61 | $ 3.61 | $ 3.61 | $ 4.06 | $ 3.50 | $ 4.41 | $ 3.99 | $ 3.77 |
| Expected Case | 2016-2017 | Mar | $ 3.61 | $ 4.27 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.55 | $ 3.55 | $ 4.27 | $ 3.79 | $ 3.74 |
| Expected Case | 2016-2017 | Apr | $ 3.47 | $ 4.29 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.41 | $ 3.41 | $ 4.32 | $ 3.72 | $ 3.63 |
| Expected Case | 2016-2017 | May | $ 3.44 | $ 4.32 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 4.32 | $ 3.70 | $ 3.62 |
| Expected Case | 2016-2017 | Jun | $ 3.46 | $ 4.28 | $ 3.46 | $ 3.46 | $ 3.46 | $ 3.40 | $ 3.40 | $ 4.32 | $ 3.71 | $ 3.62 |
| Expected Case | 2016-2017 | Jul | $ 3.47 | $ 4.29 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.41 | $ 3.41 | $ 4.32 | $ 3.72 | $ 3.63 |
| Expected Case | 2016-2017 | Aug | $ 3.47 | $ 4.32 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.41 | $ 3.41 | $ 4.32 | $ 3.72 | $ 3.64 |
| Expected Case | 2016-2017 | Sep | $ 3.49 | $ 4.32 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.43 | $ 3.43 | $ 4.32 | $ 3.73 | $ 3.66 |
| Expected Case | 2016-2017 | Oct | $ 3.53 | $ 4.35 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.47 | $ 3.47 | $ 4.35 | $ 3.77 | $ 3.69 |
| Expected Case | 2017-2018 | Nov | $ 3.67 | $ 4.57 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.76 | $ 3.61 | $ 4.57 | $ 3.98 | $ 3.85 |
| Expected Case | 2017-2018 | Dec | $ 3.85 | $ 4.59 | $ 3.85 | $ 3.85 | $ 3.85 | $ 4.19 | $ 3.62 | $ 4.57 | $ 4.13 | $ 4.00 |
| Expected Case | 2017-2018 | Jan | $ 3.69 | $ 4.57 | $ 3.69 | $ 3.69 | $ 3.69 | $ 4.12 | $ 3.63 | $ 4.57 | $ 4.11 | $ 3.87 |
| Expected Case | 2017-2018 | Feb | $ 3.69 | $ 4.58 | $ 3.69 | $ 3.69 | $ 3.69 | $ 4.22 | $ 3.63 | $ 4.58 | $ 4.14 | $ 3.87 |
| Expected Case | 2017-2018 | Mar | $ 3.66 | $ 4.40 | $ 3.66 | $ 3.66 | $ 3.66 | $ 3.60 | $ 3.60 | $ 4.40 | $ 3.87 | $ 3.81 |
| Expected Case | 2017-2018 | Apr | $ 3.45 | $ 4.33 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.39 | $ 3.39 | $ 4.33 | $ 3.71 | $ 3.63 |
| Expected Case | 2017-2018 | May | $ 3.38 | $ 4.26 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 4.26 | $ 3.63 | $ 3.55 |
| Expected Case | 2017-2018 | Jun | $ 3.35 | $ 4.25 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 4.26 | $ 3.61 | $ 3.53 |
| Expected Case | 2017-2018 | Jul | $ 3.32 | $ 4.24 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.26 | $ 3.26 | $ 4.26 | $ 3.59 | $ 3.50 |
| Expected Case | 2017-2018 | Aug | $ 3.30 | $ 4.24 | $ 3.30 | $ 3.30 | $ 3.30 | $ 3.24 | $ 3.24 | $ 4.26 | $ 3.58 | $ 3.49 |
| Expected Case | 2017-2018 | Sep | $ 3.32 | $ 4.26 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.26 | $ 3.26 | $ 4.26 | $ 3.60 | $ 3.51 |
| Expected Case | 2017-2018 | Oct | $ 3.34 | $ 4.26 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.28 | $ 3.28 | $ 4.26 | $ 3.61 | $ 3.52 |
| Expected Case | 2018-2019 | Nov | $ 3.55 | $ 4.29 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.64 | $ 3.49 | $ 4.29 | $ 3.81 | $ 3.70 |
| Expected Case | 2018-2019 | Dec | $ 3.68 | $ 4.33 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.97 | $ 3.41 | $ 4.29 | $ 3.89 | $ 3.81 |
| Expected Case | 2018-2019 | Jan | $ 3.37 | $ 4.29 | $ 3.37 | $ 3.37 | $ 3.37 | $ 3.75 | $ 3.26 | $ 4.29 | $ 3.77 | $ 3.55 |
| Expected Case | 2018-2019 | Feb | $ 3.41 | $ 4.29 | $ 3.41 | $ 3.41 | $ 3.41 | $ 3.89 | $ 3.29 | $ 4.29 | $ 3.83 | $ 3.59 |
| Expected Case | 2018-2019 | Mar | $ 3.43 | $ 4.23 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.37 | $ 3.37 | $ 4.23 | $ 3.66 | $ 3.59 |
| Expected Case | 2018-2019 | Apr | $ 3.29 | $ 4.25 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.23 | $ 3.23 | $ 4.25 | $ 3.57 | $ 3.48 |
| Expected Case | 2018-2019 | May | $ 3.25 | $ 4.23 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 4.24 | $ 3.54 | $ 3.44 |
| Expected Case | 2018-2019 | Jun | $ 3.23 | $ 4.23 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.17 | $ 3.17 | $ 4.25 | $ 3.53 | $ 3.43 |
| Expected Case | 2018-2019 | Jul | $ 3.26 | $ 4.20 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.20 | $ 3.20 | $ 4.25 | $ 3.55 | $ 3.44 |
| Expected Case | 2018-2019 | Aug | $ 3.25 | $ 4.25 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 4.25 | $ 3.54 | $ 3.45 |
| Expected Case | 2018-2019 | Sep | $ 3.28 | $ 4.25 | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.22 | $ 3.22 | $ 4.25 | $ 3.57 | $ 3.47 |
| Expected Case | 2018-2019 | Oct | $ 3.32 | $ 4.30 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.26 | $ 3.26 | $ 4.30 | $ 3.61 | $ 3.51 |
| Expected Case | 2019-2020 | Nov | $ 3.53 | $ 4.25 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.62 | $ 3.47 | $ 4.25 | $ 3.78 | $ 3.67 |
| Expected Case | 2019-2020 | Dec | $ 3.74 | $ 4.27 | $ 3.74 | $ 3.74 | $ 3.74 | $ 4.01 | $ 3.47 | $ 4.26 | $ 3.91 | $ 3.84 |
| Expected Case | 2019-2020 | Jan | $ 3.36 | $ 4.25 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.74 | $ 3.25 | $ 4.25 | $ 3.75 | $ 3.54 |
| Expected Case | 2019-2020 | Feb | $ 3.45 | $ 4.23 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.92 | $ 3.33 | $ 4.23 | $ 3.83 | $ 3.60 |
| Expected Case | 2019-2020 | Mar | $ 3.52 | $ 4.12 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 4.12 | $ 3.68 | $ 3.64 |
| Expected Case | 2019-2020 | Apr | $ 3.39 | $ 4.13 | $ 3.39 | $ 3.39 | $ 3.39 | $ 3.33 | $ 3.33 | $ 4.18 | $ 3.61 | $ 3.54 |
| Expected Case | 2019-2020 | May | $ 3.35 | $ 4.15 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 4.18 | $ 3.59 | $ 3.51 |
| Expected Case | 2019-2020 | Jun | $ 3.37 | $ 4.17 | $ 3.37 | $ 3.37 | $ 3.37 | $ 3.31 | $ 3.31 | $ 4.18 | $ 3.60 | $ 3.53 |
| Expected Case | 2019-2020 | Jul | $ 3.38 | $ 4.18 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 4.18 | $ 3.61 | $ 3.54 |
| Expected Case | 2019-2020 | Aug | $ 3.39 | $ 4.18 | $ 3.39 | $ 3.39 | $ 3.39 | $ 3.33 | $ 3.33 | $ 4.18 | $ 3.62 | $ 3.55 |
| Expected Case | 2019-2020 | Sep | $ 3.39 | $ 4.18 | $ 3.39 | $ 3.39 | $ 3.39 | $ 3.33 | $ 3.33 | $ 4.18 | $ 3.62 | $ 3.55 |
| Expected Case | 2019-2020 | Oct | $ 3.46 | $ 4.26 | $ 3.46 | $ 3.46 | $ 3.46 | $ 3.40 | $ 3.40 | $ 4.26 | $ 3.69 | $ 3.62 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: EXPECTED MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Expected Case | 2020-2021 | Nov | $ 3.60 | $ 4.26 | $ 3.60 | $ 3.60 | $ 3.60 | $ 3.69 | $ 3.54 | $ 4.26 | $ 3.83 | $ 3.73 |
| Expected Case | 2020-2021 | Dec | $ 3.84 | $ 4.31 | $ 3.84 | $ 3.84 | $ 3.84 | $ 4.02 | $ 3.48 | $ 4.27 | $ 3.93 | $ 3.93 |
| Expected Case | 2020-2021 | Jan | $ 3.49 | $ 4.26 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.83 | $ 3.34 | $ 4.26 | $ 3.81 | $ 3.65 |
| Expected Case | 2020-2021 | Feb | $ 3.56 | $ 4.24 | $ 3.56 | $ 3.56 | $ 3.56 | $ 3.97 | $ 3.41 | $ 4.24 | $ 3.87 | $ 3.70 |
| Expected Case | 2020-2021 | Mar | $ 3.64 | $ 4.10 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.58 | $ 3.58 | $ 4.10 | $ 3.76 | $ 3.73 |
| Expected Case | 2020-2021 | Apr | $ 3.64 | $ 4.20 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.58 | $ 3.58 | $ 4.27 | $ 3.81 | $ 3.75 |
| Expected Case | 2020-2021 | May | $ 3.64 | $ 4.34 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.58 | $ 3.58 | $ 4.34 | $ 3.84 | $ 3.78 |
| Expected Case | 2020-2021 | Jun | $ 3.67 | $ 4.27 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.61 | $ 3.61 | $ 4.27 | $ 3.83 | $ 3.79 |
| Expected Case | 2020-2021 | Jul | $ 3.66 | $ 4.27 | $ 3.66 | $ 3.66 | $ 3.66 | $ 3.60 | $ 3.60 | $ 4.27 | $ 3.83 | $ 3.78 |
| Expected Case | 2020-2021 | Aug | $ 3.69 | $ 4.27 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.63 | $ 3.63 | $ 4.27 | $ 3.85 | $ 3.81 |
| Expected Case | 2020-2021 | Sep | $ 3.74 | $ 4.27 | $ 3.74 | $ 3.74 | $ 3.74 | $ 3.68 | $ 3.68 | $ 4.27 | $ 3.88 | $ 3.85 |
| Expected Case | 2020-2021 | Oct | $ 3.79 | $ 4.53 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.73 | $ 3.73 | $ 4.53 | $ 4.00 | $ 3.94 |
| Expected Case | 2021-2022 | Nov | $ 3.92 | $ 4.46 | $ 3.92 | $ 3.92 | $ 3.92 | $ 4.00 | $ 3.86 | $ 4.46 | $ 4.10 | $ 4.03 |
| Expected Case | 2021-2022 | Dec | $ 4.14 | $ 4.49 | $ 4.14 | $ 4.14 | $ 4.14 | $ 4.41 | $ 3.91 | $ 4.47 | $ 4.26 | $ 4.21 |
| Expected Case | 2021-2022 | Jan | $ 4.04 | $ 4.46 | $ 4.04 | $ 4.04 | $ 4.04 | $ 4.46 | $ 3.98 | $ 4.46 | $ 4.30 | $ 4.12 |
| Expected Case | 2021-2022 | Feb | $ 4.03 | $ 4.42 | $ 4.03 | $ 4.03 | $ 4.03 | $ 4.42 | $ 3.97 | $ 4.42 | $ 4.27 | $ 4.11 |
| Expected Case | 2021-2022 | Mar | $ 3.93 | $ 4.02 | $ 3.93 | $ 3.93 | $ 3.93 | $ 3.87 | $ 3.87 | $ 4.02 | $ 3.92 | $ 3.95 |
| Expected Case | 2021-2022 | Apr | $ 3.67 | $ 3.99 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.61 | $ 3.61 | $ 4.01 | $ 3.75 | $ 3.74 |
| Expected Case | 2021-2022 | May | $ 3.61 | $ 3.99 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.55 | $ 3.55 | $ 4.01 | $ 3.71 | $ 3.69 |
| Expected Case | 2021-2022 | Jun | $ 3.59 | $ 3.97 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.53 | $ 3.53 | $ 4.01 | $ 3.69 | $ 3.67 |
| Expected Case | 2021-2022 | Jul | $ 3.59 | $ 3.97 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.53 | $ 3.53 | $ 4.01 | $ 3.69 | $ 3.67 |
| Expected Case | 2021-2022 | Aug | $ 3.59 | $ 4.01 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.53 | $ 3.53 | $ 4.01 | $ 3.69 | $ 3.68 |
| Expected Case | 2021-2022 | Sep | $ 3.70 | $ 4.10 | $ 3.70 | $ 3.70 | $ 3.70 | $ 3.64 | $ 3.64 | $ 4.10 | $ 3.80 | $ 3.78 |
| Expected Case | 2021-2022 | Oct | $ 3.75 | $ 4.11 | $ 3.75 | $ 3.75 | $ 3.75 | $ 3.69 | $ 3.69 | $ 4.11 | $ 3.83 | $ 3.83 |
| Expected Case | 2022-2023 | Nov | $ 4.03 | $ 4.34 | $ 4.03 | $ 4.03 | $ 4.03 | $ 4.08 | $ 3.97 | $ 4.34 | $ 4.13 | $ 4.09 |
| Expected Case | 2022-2023 | Dec | $ 4.17 | $ 4.35 | $ 4.17 | $ 4.17 | $ 4.17 | $ 4.35 | $ 3.99 | $ 4.35 | $ 4.23 | $ 4.21 |
| Expected Case | 2022-2023 | Jan | $ 4.03 | $ 4.37 | $ 4.03 | $ 4.03 | $ 4.03 | $ 4.37 | $ 3.96 | $ 4.37 | $ 4.23 | $ 4.10 |
| Expected Case | 2022-2023 | Feb | $ 4.02 | $ 4.35 | $ 4.02 | $ 4.02 | $ 4.02 | $ 4.35 | $ 3.95 | $ 4.35 | $ 4.22 | $ 4.08 |
| Expected Case | 2022-2023 | Mar | $ 3.99 | $ 4.20 | $ 3.99 | $ 3.99 | $ 3.99 | $ 3.93 | $ 3.93 | $ 4.20 | $ 4.02 | $ 4.03 |
| Expected Case | 2022-2023 | Apr | $ 3.78 | $ 4.20 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.72 | $ 3.72 | $ 4.20 | $ 3.88 | $ 3.87 |
| Expected Case | 2022-2023 | May | $ 3.65 | $ 4.11 | $ 3.65 | $ 3.65 | $ 3.65 | $ 3.59 | $ 3.59 | $ 4.16 | $ 3.78 | $ 3.74 |
| Expected Case | 2022-2023 | Jun | $ 3.62 | $ 4.08 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.56 | $ 3.56 | $ 4.16 | $ 3.76 | $ 3.71 |
| Expected Case | 2022-2023 | Jul | $ 3.62 | $ 4.12 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.56 | $ 3.56 | $ 4.16 | $ 3.76 | $ 3.72 |
| Expected Case | 2022-2023 | Aug | $ 3.63 | $ 4.15 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.57 | $ 3.57 | $ 4.16 | $ 3.77 | $ 3.74 |
| Expected Case | 2022-2023 | Sep | $ 3.72 | $ 4.18 | $ 3.72 | $ 3.72 | $ 3.72 | $ 3.66 | $ 3.66 | $ 4.18 | $ 3.84 | $ 3.82 |
| Expected Case | 2022-2023 | Oct | $ 3.78 | $ 4.30 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.72 | $ 3.72 | $ 4.30 | $ 3.92 | $ 3.89 |
| Expected Case | 2023-2024 | Nov | $ 4.10 | $ 4.45 | $ 4.10 | $ 4.10 | $ 4.10 | $ 4.16 | $ 4.04 | $ 4.45 | $ 4.21 | $ 4.17 |
| Expected Case | 2023-2024 | Dec | $ 4.39 | $ 4.48 | $ 4.39 | $ 4.39 | $ 4.39 | $ 4.48 | $ 4.13 | $ 4.48 | $ 4.36 | $ 4.41 |
| Expected Case | 2023-2024 | Jan | $ 4.31 | $ 4.45 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.45 | $ 4.24 | $ 4.45 | $ 4.38 | $ 4.34 |
| Expected Case | 2023-2024 | Feb | $ 4.34 | $ 4.45 | $ 4.34 | $ 4.34 | $ 4.34 | $ 4.44 | $ 4.28 | $ 4.44 | $ 4.38 | $ 4.36 |
| Expected Case | 2023-2024 | Mar | $ 4.32 | $ 4.28 | $ 4.32 | $ 4.32 | $ 4.32 | $ 4.28 | $ 4.28 | $ 4.28 | $ 4.28 | $ 4.31 |
| Expected Case | 2023-2024 | Apr | $ 4.12 | $ 4.29 | $ 4.12 | $ 4.12 | $ 4.12 | $ 4.06 | $ 4.06 | $ 4.29 | $ 4.13 | $ 4.15 |
| Expected Case | 2023-2024 | May | $ 4.00 | $ 4.17 | $ 4.00 | $ 4.00 | $ 4.00 | $ 3.94 | $ 3.94 | $ 4.24 | $ 4.04 | $ 4.03 |
| Expected Case | 2023-2024 | Jun | $ 3.97 | $ 4.15 | $ 3.97 | $ 3.97 | $ 3.97 | $ 3.91 | $ 3.91 | $ 4.24 | $ 4.02 | $ 4.00 |
| Expected Case | 2023-2024 | Jul | $ 3.96 | $ 4.15 | $ 3.96 | $ 3.96 | $ 3.96 | $ 3.90 | $ 3.90 | $ 4.24 | $ 4.01 | $ 4.00 |
| Expected Case | 2023-2024 | Aug | $ 3.98 | $ 4.15 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.92 | $ 3.92 | $ 4.24 | $ 4.02 | $ 4.01 |
| Expected Case | 2023-2024 | Sep | $ 4.07 | $ 4.24 | $ 4.07 | $ 4.07 | $ 4.07 | $ 4.01 | $ 4.01 | $ 4.24 | $ 4.08 | $ 4.10 |
| Expected Case | 2023-2024 | Oct | $ 4.13 | $ 4.40 | $ 4.13 | $ 4.13 | $ 4.13 | $ 4.07 | $ 4.07 | $ 4.40 | $ 4.18 | $ 4.18 |
| Expected Case | 2024-2025 | Nov | $ 4.43 | $ 4.55 | $ 4.43 | $ 4.43 | $ 4.43 | $ 4.42 | $ 4.36 | $ 4.55 | $ 4.44 | $ 4.45 |
| Expected Case | 2024-2025 | Dec | $ 4.79 | $ 4.88 | $ 4.79 | $ 4.79 | $ 4.79 | $ 4.88 | $ 4.45 | $ 4.88 | $ 4.74 | $ 4.81 |
| Expected Case | 2024-2025 | Jan | $ 4.65 | $ 4.93 | $ 4.65 | $ 4.65 | $ 4.65 | $ 4.93 | $ 4.52 | $ 4.93 | $ 4.79 | $ 4.71 |
| Expected Case | 2024-2025 | Feb | $ 4.60 | $ 4.94 | $ 4.60 | $ 4.60 | $ 4.60 | $ 4.93 | $ 4.50 | $ 4.93 | $ 4.79 | $ 4.67 |
| Expected Case | 2024-2025 | Mar | $ 4.54 | $ 4.80 | $ 4.54 | $ 4.54 | $ 4.54 | $ 4.47 | $ 4.47 | $ 4.80 | $ 4.58 | $ 4.59 |
| Expected Case | 2024-2025 | Apr | $ 4.34 | $ 4.81 | $ 4.34 | $ 4.34 | $ 4.34 | $ 4.28 | $ 4.28 | $ 4.90 | $ 4.49 | $ 4.44 |
| Expected Case | 2024-2025 | May | $ 4.31 | $ 4.86 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.25 | $ 4.25 | $ 4.90 | $ 4.47 | $ 4.42 |
| Expected Case | 2024-2025 | Jun | $ 4.30 | $ 4.81 | $ 4.30 | $ 4.30 | $ 4.30 | $ 4.24 | $ 4.24 | $ 4.91 | $ 4.46 | $ 4.41 |
| Expected Case | 2024-2025 | Jul | $ 4.29 | $ 4.91 | $ 4.29 | $ 4.29 | $ 4.29 | $ 4.23 | $ 4.23 | $ 4.91 | $ 4.45 | $ 4.42 |
| Expected Case | 2024-2025 | Aug | $ 4.31 | $ 4.91 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.25 | $ 4.25 | $ 4.91 | $ 4.47 | $ 4.43 |
| Expected Case | 2024-2025 | Sep | $ 4.39 | $ 4.91 | $ 4.39 | $ 4.39 | $ 4.39 | $ 4.32 | $ 4.32 | $ 4.91 | $ 4.51 | $ 4.49 |
| Expected Case | 2024-2025 | Oct | $ 4.46 | $ 4.98 | $ 4.46 | $ 4.46 | $ 4.46 | $ 4.39 | $ 4.39 | $ 4.98 | $ 4.59 | $ 4.56 |
| Expected Case | 2025-2026 | Nov | $ 4.70 | $ 5.12 | $ 4.70 | $ 4.70 | $ 4.70 | $ 4.82 | $ 4.63 | $ 5.12 | $ 4.86 | $ 4.78 |
| Expected Case | 2025-2026 | Dec | $ 4.99 | $ 5.13 | $ 4.99 | $ 4.99 | $ 4.99 | $ 5.13 | $ 4.71 | $ 5.13 | $ 4.99 | $ 5.02 |
| Expected Case | 2025-2026 | Jan | $ 4.82 | $ 5.15 | $ 4.82 | $ 4.82 | $ 4.82 | $ 5.15 | $ 4.69 | $ 5.15 | $ 5.00 | $ 4.88 |
| Expected Case | 2025-2026 | Feb | $ 4.81 | $ 5.14 | $ 4.81 | $ 4.81 | $ 4.81 | $ 5.14 | $ 4.72 | $ 5.14 | $ 5.00 | $ 4.88 |
| Expected Case | 2025-2026 | Mar | $ 4.79 | $ 5.01 | $ 4.79 | $ 4.79 | $ 4.79 | $ 4.72 | $ 4.72 | $ 5.01 | $ 4.82 | $ 4.84 |
| Expected Case | 2025-2026 | Apr | $ 4.56 | $ 5.02 | $ 4.56 | $ 4.56 | $ 4.56 | $ 4.49 | $ 4.49 | $ 5.02 | $ 4.67 | $ 4.65 |
| Expected Case | 2025-2026 | May | $ 4.49 | $ 4.97 | $ 4.49 | $ 4.49 | $ 4.49 | $ 4.42 | $ 4.42 | $ 5.02 | $ 4.62 | $ 4.58 |
| Expected Case | 2025-2026 | Jun | $ 4.46 | $ 4.94 | $ 4.46 | $ 4.46 | $ 4.46 | $ 4.39 | $ 4.39 | $ 5.02 | $ 4.60 | $ 4.55 |
| Expected Case | 2025-2026 | Jul | $ 4.45 | $ 5.01 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.38 | $ 4.38 | $ 5.02 | $ 4.59 | $ 4.56 |
| Expected Case | 2025-2026 | Aug | $ 4.47 | $ 5.02 | $ 4.47 | $ 4.47 | $ 4.47 | $ 4.40 | $ 4.40 | $ 5.02 | $ 4.61 | $ 4.58 |
| Expected Case | 2025-2026 | Sep | $ 4.54 | $ 5.03 | $ 4.54 | $ 4.54 | $ 4.54 | $ 4.47 | $ 4.47 | $ 5.03 | $ 4.65 | $ 4.64 |
| Expected Case | 2025-2026 | Oct | $ 4.59 | $ 5.19 | $ 4.59 | $ 4.59 | $ 4.59 | $ 4.52 | $ 4.52 | $ 5.19 | $ 4.74 | $ 4.71 |
| Expected Case | 2026-2027 | Nov | $ 4.88 | $ 5.18 | $ 4.88 | $ 4.88 | $ 4.88 | $ 4.96 | $ 4.81 | $ 5.18 | $ 4.98 | $ 4.94 |
| Expected Case | 2026-2027 | Dec | $ 5.12 | $ 5.30 | $ 5.12 | $ 5.12 | $ 5.12 | $ 5.30 | $ 4.87 | $ 5.30 | $ 5.15 | $ 5.16 |
| Expected Case | 2026-2027 | Jan | $ 4.88 | $ 5.30 | $ 4.88 | $ 4.88 | $ 4.88 | $ 5.23 | $ 4.75 | $ 5.30 | $ 5.09 | $ 4.96 |
| Expected Case | 2026-2027 | Feb | $ 4.79 | $ 5.31 | $ 4.79 | $ 4.79 | $ 4.79 | $ 5.20 | $ 4.69 | $ 5.31 | $ 5.06 | $ 4.90 |
| Expected Case | 2026-2027 | Mar | $ 4.85 | $ 5.19 | $ 4.85 | $ 4.85 | $ 4.85 | $ 4.86 | $ 4.78 | $ 5.19 | $ 4.94 | $ 4.92 |
| Expected Case | 2026-2027 | Apr | $ 4.54 | $ 5.30 | $ 4.54 | $ 4.54 | $ 4.54 | $ 4.47 | $ 4.47 | $ 5.30 | $ 4.75 | $ 4.69 |
| Expected Case | 2026-2027 | May | $ 4.48 | $ 5.30 | $ 4.48 | $ 4.48 | $ 4.48 | $ 4.41 | $ 4.41 | $ 5.30 | $ 4.71 | $ 4.64 |
| Expected Case | 2026-2027 | Jun | $ 4.45 | $ 5.29 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.38 | $ 4.38 | $ 5.30 | $ 4.69 | $ 4.62 |
| Expected Case | 2026-2027 | Jul | $ 4.45 | $ 5.30 | $ 4.45 | $ 4.45 | $ 4.45 | $ 4.38 | $ 4.38 | $ 5.30 | $ 4.69 | $ 4.62 |
| Expected Case | 2026-2027 | Aug | $ 4.47 | $ 5.30 | $ 4.47 | $ 4.47 | $ 4.47 | $ 4.40 | $ 4.40 | $ 5.30 | $ 4.70 | $ 4.63 |
| Expected Case | 2026-2027 | Sep | $ 4.53 | $ 5.31 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.46 | $ 4.46 | $ 5.31 | $ 4.74 | $ 4.68 |
| Expected Case | 2026-2027 | Oct | $ 4.58 | $ 5.48 | $ 4.58 | $ 4.58 | $ 4.58 | $ 4.51 | $ 4.51 | $ 5.48 | $ 4.83 | $ 4.76 |
| Expected Case | 2027-2028 | Nov | $ 4.92 | $ 5.52 | $ 4.92 | $ 4.92 | $ 4.92 | $ 5.04 | $ 4.85 | $ 5.52 | $ 5.14 | $ 5.04 |
| Expected Case | 2027-2028 | Dec | $ 5.13 | $ 5.55 | $ 5.13 | $ 5.13 | $ 5.13 | $ 5.39 | $ 4.88 | $ 5.53 | $ 5.27 | $ 5.22 |
| Expected Case | 2027-2028 | Jan | $ 4.90 | $ 5.52 | $ 4.90 | $ 4.90 | $ 4.90 | $ 5.21 | $ 4.73 | $ 5.52 | $ 5.15 | $ 5.03 |
| Expected Case | 2027-2028 | Feb | $ 4.80 | $ 5.51 | $ 4.80 | $ 4.80 | $ 4.80 | $ 5.29 | $ 4.69 | $ 5.51 | $ 5.16 | $ 4.94 |
| Expected Case | 2027-2028 | Mar | $ 4.80 | $ 5.30 | $ 4.80 | $ 4.80 | $ 4.80 | $ 4.82 | $ 4.73 | $ 5.30 | $ 4.95 | $ 4.90 |
| Expected Case | 2027-2028 | Apr | $ 4.57 | $ 5.33 | $ 4.57 | $ 4.57 | $ 4.57 | $ 4.50 | $ 4.50 | $ 5.37 | $ 4.79 | $ 4.72 |
| Expected Case | 2027-2028 | May | $ 4.53 | $ 5.35 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.46 | $ 4.46 | $ 5.37 | $ 4.76 | $ 4.69 |
| Expected Case | 2027-2028 | Jun | $ 4.51 | $ 5.31 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.44 | $ 4.44 | $ 5.37 | $ 4.75 | $ 4.67 |
| Expected Case | 2027-2028 | Jul | $ 4.51 | $ 5.37 | $ 4.51 | $ 4.51 | $ 4.51 | $ 4.44 | $ 4.44 | $ 5.37 | $ 4.75 | $ 4.68 |
| Expected Case | 2027-2028 | Aug | $ 4.53 | $ 5.37 | $ 4.53 | $ 4.53 | $ 4.53 | $ 4.46 | $ 4.46 | $ 5.37 | $ 4.76 | $ 4.70 |
| Expected Case | 2027-2028 | Sep | $ 4.61 | $ 5.37 | $ 4.61 | $ 4.61 | $ 4.61 | $ 4.54 | $ 4.54 | $ 5.37 | $ 4.82 | $ 4.76 |
| Expected Case | 2027-2028 | Oct | $ 4.67 | $ 5.55 | $ 4.67 | $ 4.67 | $ 4.67 | $ 4.60 | $ 4.60 | $ 5.55 | $ 4.92 | $ 4.85 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: EXPECTED MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Expected Case | 2028-2029 | Nov | $ 5.15 | $ 5.76 | $ 5.15 | $ 5.15 | $ 5.15 | $ 5.26 | $ 5.07 | $ 5.76 | $ 5.36 | $ 5.27 |
| Expected Case | 2028-2029 | Dec | $ 5.52 | $ 5.78 | $ 5.52 | $ 5.52 | $ 5.52 | $ 5.65 | $ 5.14 | $ 5.78 | $ 5.52 | $ 5.57 |
| Expected Case | 2028-2029 | Jan | $ 5.41 | $ 5.77 | $ 5.41 | $ 5.41 | $ 5.41 | $ 5.74 | $ 5.26 | $ 5.77 | $ 5.59 | $ 5.49 |
| Expected Case | 2028-2029 | Feb | $ 5.43 | $ 5.73 | $ 5.43 | $ 5.43 | $ 5.43 | $ 5.73 | $ 5.34 | $ 5.73 | $ 5.60 | $ 5.49 |
| Expected Case | 2028-2029 | Mar | $ 5.40 | $ 5.45 | $ 5.40 | $ 5.40 | $ 5.40 | $ 5.35 | $ 5.32 | $ 5.45 | $ 5.37 | $ 5.41 |
| Expected Case | 2028-2029 | Apr | $ 5.08 | $ 5.53 | $ 5.08 | $ 5.08 | $ 5.08 | $ 5.00 | $ 5.00 | $ 5.55 | $ 5.18 | $ 5.17 |
| Expected Case | 2028-2029 | May | $ 5.02 | $ 5.55 | $ 5.02 | $ 5.02 | $ 5.02 | $ 4.94 | $ 4.94 | $ 5.55 | $ 5.14 | $ 5.12 |
| Expected Case | 2028-2029 | Jun | $ 4.98 | $ 5.45 | $ 4.98 | $ 4.98 | $ 4.98 | $ 4.90 | $ 4.90 | $ 5.55 | $ 5.12 | $ 5.07 |
| Expected Case | 2028-2029 | Jul | $ 4.95 | $ 5.53 | $ 4.95 | $ 4.95 | $ 4.95 | $ 4.88 | $ 4.88 | $ 5.55 | $ 5.10 | $ 5.07 |
| Expected Case | 2028-2029 | Aug | $ 4.97 | $ 5.55 | $ 4.97 | $ 4.97 | $ 4.97 | $ 4.89 | $ 4.89 | $ 5.55 | $ 5.11 | $ 5.08 |
| Expected Case | 2028-2029 | Sep | $ 5.03 | $ 5.58 | $ 5.03 | $ 5.03 | $ 5.03 | $ 4.95 | $ 4.95 | $ 5.58 | $ 5.16 | $ 5.14 |
| Expected Case | 2028-2029 | Oct | $ 5.08 | $ 5.63 | $ 5.08 | $ 5.08 | $ 5.08 | $ 5.00 | $ 5.00 | $ 5.63 | $ 5.21 | $ 5.19 |
| Expected Case | 2029-2030 | Nov | $ 5.42 | $ 5.77 | $ 5.42 | $ 5.42 | $ 5.42 | $ 5.51 | $ 5.34 | $ 5.77 | $ 5.54 | $ 5.49 |
| Expected Case | 2029-2030 | Dec | $ 5.62 | $ 5.78 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.78 | $ 5.39 | $ 5.78 | $ 5.65 | $ 5.65 |
| Expected Case | 2029-2030 | Jan | $ 5.47 | $ 5.77 | $ 5.47 | $ 5.47 | $ 5.47 | $ 5.77 | $ 5.38 | $ 5.77 | $ 5.64 | $ 5.53 |
| Expected Case | 2029-2030 | Feb | $ 5.34 | $ 5.76 | $ 5.34 | $ 5.34 | $ 5.34 | $ 5.76 | $ 5.26 | $ 5.76 | $ 5.59 | $ 5.43 |
| Expected Case | 2029-2030 | Mar | $ 5.31 | $ 5.38 | $ 5.31 | $ 5.31 | $ 5.31 | $ 5.26 | $ 5.23 | $ 5.38 | $ 5.29 | $ 5.32 |
| Expected Case | 2029-2030 | Apr | $ 4.93 | $ 5.51 | $ 4.93 | $ 4.93 | $ 4.93 | $ 4.86 | $ 4.86 | $ 5.51 | $ 5.08 | $ 5.05 |
| Expected Case | 2029-2030 | May | $ 4.81 | $ 5.41 | $ 4.81 | $ 4.81 | $ 4.81 | $ 4.74 | $ 4.74 | $ 5.50 | $ 4.99 | $ 4.93 |
| Expected Case | 2029-2030 | Jun | $ 4.78 | $ 5.38 | $ 4.78 | $ 4.78 | $ 4.78 | $ 4.71 | $ 4.71 | $ 5.50 | $ 4.97 | $ 4.90 |
| Expected Case | 2029-2030 | Jul | $ 4.77 | $ 5.45 | $ 4.77 | $ 4.77 | $ 4.77 | $ 4.70 | $ 4.70 | $ 5.50 | $ 4.97 | $ 4.91 |
| Expected Case | 2029-2030 | Aug | $ 4.78 | $ 5.50 | $ 4.78 | $ 4.78 | $ 4.78 | $ 4.71 | $ 4.71 | $ 5.50 | $ 4.97 | $ 4.93 |
| Expected Case | 2029-2030 | Sep | $ 4.87 | $ 5.50 | $ 4.87 | $ 4.87 | $ 4.87 | $ 4.80 | $ 4.80 | $ 5.50 | $ 5.03 | $ 5.00 |
| Expected Case | 2029-2030 | Oct | $ 4.94 | $ 5.66 | $ 4.94 | $ 4.94 | $ 4.94 | $ 4.87 | $ 4.87 | $ 5.66 | $ 5.13 | $ 5.09 |
| Expected Case | 2030-2031 | Nov | $ 5.52 | $ 5.77 | $ 5.52 | $ 5.52 | $ 5.52 | $ 5.57 | $ 5.44 | $ 5.77 | $ 5.59 | $ 5.57 |
| Expected Case | 2030-2031 | Dec | $ 5.75 | $ 5.83 | $ 5.75 | $ 5.75 | $ 5.75 | $ 5.83 | $ 5.52 | $ 5.83 | $ 5.73 | $ 5.77 |
| Expected Case | 2030-2031 | Jan | $ 5.57 | $ 5.83 | $ 5.57 | $ 5.57 | $ 5.57 | $ 5.83 | $ 5.42 | $ 5.83 | $ 5.69 | $ 5.63 |
| Expected Case | 2030-2031 | Feb | $ 5.41 | $ 5.82 | $ 5.41 | $ 5.41 | $ 5.41 | $ 5.80 | $ 5.29 | $ 5.82 | $ 5.64 | $ 5.49 |
| Expected Case | 2030-2031 | Mar | $ 5.40 | $ 5.45 | $ 5.40 | $ 5.40 | $ 5.40 | $ 5.35 | $ 5.32 | $ 5.45 | $ 5.37 | $ 5.41 |
| Expected Case | 2030-2031 | Apr | $ 5.14 | $ 5.53 | $ 5.14 | $ 5.14 | $ 5.14 | $ 5.06 | $ 5.06 | $ 5.66 | $ 5.26 | $ 5.22 |
| Expected Case | 2030-2031 | May | $ 5.11 | $ 5.54 | $ 5.11 | $ 5.11 | $ 5.11 | $ 5.03 | $ 5.03 | $ 5.66 | $ 5.24 | $ 5.19 |
| Expected Case | 2030-2031 | Jun | $ 5.08 | $ 5.53 | $ 5.08 | $ 5.08 | $ 5.08 | $ 5.00 | $ 5.00 | $ 5.66 | $ 5.22 | $ 5.17 |
| Expected Case | 2030-2031 | Jul | $ 5.12 | $ 5.63 | $ 5.12 | $ 5.12 | $ 5.12 | $ 5.04 | $ 5.04 | $ 5.66 | $ 5.25 | $ 5.22 |
| Expected Case | 2030-2031 | Aug | $ 5.14 | $ 5.67 | $ 5.14 | $ 5.14 | $ 5.14 | $ 5.06 | $ 5.06 | $ 5.67 | $ 5.26 | $ 5.24 |
| Expected Case | 2030-2031 | Sep | $ 5.22 | $ 5.75 | $ 5.22 | $ 5.22 | $ 5.22 | $ 5.14 | $ 5.14 | $ 5.75 | $ 5.34 | $ 5.33 |
| Expected Case | 2030-2031 | Oct | $ 5.30 | $ 5.77 | $ 5.30 | $ 5.30 | $ 5.30 | $ 5.22 | $ 5.22 | $ 5.77 | $ 5.40 | $ 5.39 |
| Expected Case | 2031-2032 | Nov | $ 5.78 | $ 5.87 | $ 5.78 | $ 5.78 | $ 5.78 | $ 5.77 | $ 5.69 | $ 5.87 | $ 5.78 | $ 5.80 |
| Expected Case | 2031-2032 | Dec | $ 5.71 | $ 5.89 | $ 5.71 | $ 5.71 | $ 5.71 | $ 5.89 | $ 5.41 | $ 5.89 | $ 5.73 | $ 5.75 |
| Expected Case | 2031-2032 | Jan | $ 5.57 | $ 5.86 | $ 5.57 | $ 5.57 | $ 5.57 | $ 5.86 | $ 5.47 | $ 5.86 | $ 5.73 | $ 5.63 |
| Expected Case | 2031-2032 | Feb | $ 5.58 | $ 5.83 | $ 5.58 | $ 5.58 | $ 5.58 | $ 5.84 | $ 5.49 | $ 5.84 | $ 5.72 | $ 5.63 |
| Expected Case | 2031-2032 | Mar | $ 5.73 | $ 5.67 | $ 5.69 | $ 5.69 | $ 5.69 | $ 5.67 | $ 5.67 | $ 5.67 | $ 5.67 | $ 5.70 |
| Expected Case | 2031-2032 | Apr | $ 5.52 | $ 5.59 | $ 5.52 | $ 5.52 | $ 5.52 | $ 5.44 | $ 5.44 | $ 5.59 | $ 5.49 | $ 5.54 |
| Expected Case | 2031-2032 | May | $ 5.49 | $ 5.52 | $ 5.49 | $ 5.49 | $ 5.49 | $ 5.41 | $ 5.41 | $ 5.52 | $ 5.45 | $ 5.50 |
| Expected Case | 2031-2032 | Jun | $ 5.41 | $ 5.42 | $ 5.33 | $ 5.33 | $ 5.33 | $ 5.33 | $ 5.33 | $ 5.52 | $ 5.39 | $ 5.36 |
| Expected Case | 2031-2032 | Jul | $ 5.30 | $ 5.33 | $ 5.30 | $ 5.30 | $ 5.30 | $ 5.22 | $ 5.22 | $ 5.52 | $ 5.32 | $ 5.31 |
| Expected Case | 2031-2032 | Aug | $ 5.30 | $ 5.35 | $ 5.30 | $ 5.30 | $ 5.30 | $ 5.22 | $ 5.22 | $ 5.52 | $ 5.32 | $ 5.31 |
| Expected Case | 2031-2032 | Sep | $ 5.49 | $ 5.58 | $ 5.49 | $ 5.49 | $ 5.49 | $ 5.41 | $ 5.41 | $ 5.58 | $ 5.47 | $ 5.51 |
| Expected Case | 2031-2032 | Oct | $ 5.55 | $ 5.67 | $ 5.55 | $ 5.55 | $ 5.55 | $ 5.46 | $ 5.46 | $ 5.67 | $ 5.53 | $ 5.57 |
| Expected Case | 2032-2033 | Nov | $ 5.84 | $ 5.82 | $ 5.84 | $ 5.84 | $ 5.84 | $ 5.78 | $ 5.75 | $ 5.82 | $ 5.78 | $ 5.84 |
| Expected Case | 2032-2033 | Dec | $ 5.91 | $ 5.83 | $ 5.91 | $ 5.91 | $ 5.91 | $ 5.83 | $ 5.61 | $ 5.83 | $ 5.75 | $ 5.90 |
| Expected Case | 2032-2033 | Jan | $ 5.83 | $ 5.85 | $ 5.83 | $ 5.83 | $ 5.83 | $ 5.85 | $ 5.72 | $ 5.85 | $ 5.81 | $ 5.84 |
| Expected Case | 2032-2033 | Feb | $ 5.87 | $ 5.91 | $ 5.87 | $ 5.87 | $ 5.87 | $ 5.90 | $ 5.75 | $ 5.90 | $ 5.85 | $ 5.88 |
| Expected Case | 2032-2033 | Mar | $ 5.95 | $ 5.89 | $ 5.91 | $ 5.91 | $ 5.91 | $ 5.89 | $ 5.89 | $ 5.89 | $ 5.89 | $ 5.92 |
| Expected Case | 2032-2033 | Apr | $ 5.78 | $ 5.78 | $ 5.78 | $ 5.78 | $ 5.78 | $ 5.69 | $ 5.69 | $ 5.78 | $ 5.72 | $ 5.78 |
| Expected Case | 2032-2033 | May | $ 5.77 | $ 5.75 | $ 5.75 | $ 5.75 | $ 5.75 | $ 5.68 | $ 5.68 | $ 5.75 | $ 5.70 | $ 5.75 |
| Expected Case | 2032-2033 | Jun | $ 5.70 | $ 5.64 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.63 | $ 5.63 | $ 5.63 | $ 5.63 | $ 5.64 |
| Expected Case | 2032-2033 | Jul | $ 5.64 | $ 5.60 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.55 | $ 5.55 | $ 5.60 | $ 5.57 | $ 5.62 |
| Expected Case | 2032-2033 | Aug | $ 5.64 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.62 | $ 5.55 | $ 5.55 | $ 5.62 | $ 5.57 | $ 5.62 |
| Expected Case | 2032-2033 | Sep | $ 5.86 | $ 5.86 | $ 5.86 | $ 5.86 | $ 5.86 | $ 5.77 | $ 5.77 | $ 5.86 | $ 5.80 | $ 5.86 |
| Expected Case | 2032-2033 | Oct | $ 5.91 | $ 5.95 | $ 5.91 | $ 5.91 | $ 5.91 | $ 5.82 | $ 5.82 | $ 5.95 | $ 5.87 | $ 5.92 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: HIGH GROWTH – LOW PRICE MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2013-2014 | Nov | $ 3.51 | $ 3.88 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.45 | $ 3.45 | $ 3.88 | $ 3.59 | $ 3.58 |
| High Growth & Low Prices | 2013-2014 | Dec | $ 3.63 | $ 4.02 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.86 | $ 3.36 | $ 3.88 | $ 3.70 | $ 3.71 |
| High Growth & Low Prices | 2013-2014 | Jan | $ 3.44 | $ 3.88 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.86 | $ 3.37 | $ 3.88 | $ 3.70 | $ 3.53 |
| High Growth & Low Prices | 2013-2014 | Feb | $ 3.52 | $ 3.95 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.81 | $ 3.39 | $ 3.90 | $ 3.70 | $ 3.61 |
| High Growth & Low Prices | 2013-2014 | Mar | $ 3.57 | $ 3.88 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.51 | $ 3.51 | $ 3.88 | $ 3.64 | $ 3.63 |
| High Growth & Low Prices | 2013-2014 | Apr | $ 3.55 | $ 3.88 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.49 | $ 3.49 | $ 3.88 | $ 3.62 | $ 3.62 |
| High Growth & Low Prices | 2013-2014 | May | $ 3.51 | $ 3.88 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.45 | $ 3.45 | $ 3.88 | $ 3.60 | $ 3.58 |
| High Growth & Low Prices | 2013-2014 | Jun | $ 3.52 | $ 3.88 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 3.88 | $ 3.60 | $ 3.59 |
| High Growth & Low Prices | 2013-2014 | Jul | $ 3.50 | $ 3.88 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.44 | $ 3.44 | $ 3.88 | $ 3.59 | $ 3.58 |
| High Growth & Low Prices | 2013-2014 | Aug | $ 3.49 | $ 3.88 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.43 | $ 3.43 | $ 3.88 | $ 3.58 | $ 3.57 |
| High Growth & Low Prices | 2013-2014 | Sep | $ 3.52 | $ 3.89 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 3.89 | $ 3.60 | $ 3.59 |
| High Growth & Low Prices | 2013-2014 | Oct | $ 3.54 | $ 3.95 | $ 3.54 | $ 3.54 | $ 3.54 | $ 3.48 | $ 3.48 | $ 3.95 | $ 3.64 | $ 3.62 |
| High Growth & Low Prices | 2014-2015 | Nov | $ 3.57 | $ 4.01 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.51 | $ 3.51 | $ 4.01 | $ 3.68 | $ 3.66 |
| High Growth & Low Prices | 2014-2015 | Dec | $ 3.67 | $ 4.07 | $ 3.67 | $ 3.67 | $ 3.67 | $ 3.95 | $ 3.44 | $ 4.02 | $ 3.80 | $ 3.75 |
| High Growth & Low Prices | 2014-2015 | Jan | $ 3.66 | $ 4.03 | $ 3.66 | $ 3.66 | $ 3.66 | $ 4.03 | $ 3.56 | $ 4.03 | $ 3.88 | $ 3.73 |
| High Growth & Low Prices | 2014-2015 | Feb | $ 3.68 | $ 4.09 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.96 | $ 3.57 | $ 4.04 | $ 3.86 | $ 3.76 |
| High Growth & Low Prices | 2014-2015 | Mar | $ 3.77 | $ 4.02 | $ 3.77 | $ 3.77 | $ 3.77 | $ 3.71 | $ 3.71 | $ 4.02 | $ 3.82 | $ 3.82 |
| High Growth & Low Prices | 2014-2015 | Apr | $ 3.70 | $ 4.04 | $ 3.70 | $ 3.70 | $ 3.70 | $ 3.64 | $ 3.64 | $ 4.04 | $ 3.78 | $ 3.77 |
| High Growth & Low Prices | 2014-2015 | May | $ 3.63 | $ 4.02 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.57 | $ 3.57 | $ 4.02 | $ 3.72 | $ 3.71 |
| High Growth & Low Prices | 2014-2015 | Jun | $ 3.62 | $ 4.02 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.56 | $ 3.56 | $ 4.02 | $ 3.72 | $ 3.70 |
| High Growth & Low Prices | 2014-2015 | Jul | $ 3.59 | $ 4.02 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.53 | $ 3.53 | $ 4.02 | $ 3.70 | $ 3.68 |
| High Growth & Low Prices | 2014-2015 | Aug | $ 3.58 | $ 4.02 | $ 3.58 | $ 3.58 | $ 3.58 | $ 3.52 | $ 3.52 | $ 4.02 | $ 3.69 | $ 3.67 |
| High Growth & Low Prices | 2014-2015 | Sep | $ 3.62 | $ 4.02 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.56 | $ 3.56 | $ 4.02 | $ 3.72 | $ 3.70 |
| High Growth & Low Prices | 2014-2015 | Oct | $ 3.68 | $ 4.09 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.62 | $ 3.62 | $ 4.09 | $ 3.78 | $ 3.76 |
| High Growth & Low Prices | 2015-2016 | Nov | $ 3.70 | $ 4.03 | $ 3.70 | $ 3.70 | $ 3.70 | $ 3.64 | $ 3.64 | $ 4.03 | $ 3.77 | $ 3.77 |
| High Growth & Low Prices | 2015-2016 | Dec | $ 3.77 | $ 4.12 | $ 3.77 | $ 3.77 | $ 3.77 | $ 4.04 | $ 3.55 | $ 4.04 | $ 3.88 | $ 3.84 |
| High Growth & Low Prices | 2015-2016 | Jan | $ 3.58 | $ 4.03 | $ 3.58 | $ 3.58 | $ 3.58 | $ 3.95 | $ 3.46 | $ 4.03 | $ 3.81 | $ 3.67 |
| High Growth & Low Prices | 2015-2016 | Feb | $ 3.59 | $ 4.09 | $ 3.59 | $ 3.59 | $ 3.59 | $ 3.96 | $ 3.47 | $ 4.03 | $ 3.82 | $ 3.69 |
| High Growth & Low Prices | 2015-2016 | Mar | $ 3.69 | $ 4.01 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.63 | $ 3.63 | $ 4.01 | $ 3.76 | $ 3.76 |
| High Growth & Low Prices | 2015-2016 | Apr | $ 3.62 | $ 3.96 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.56 | $ 3.56 | $ 3.96 | $ 3.70 | $ 3.69 |
| High Growth & Low Prices | 2015-2016 | May | $ 3.56 | $ 3.96 | $ 3.56 | $ 3.56 | $ 3.56 | $ 3.50 | $ 3.50 | $ 3.96 | $ 3.66 | $ 3.64 |
| High Growth & Low Prices | 2015-2016 | Jun | $ 3.58 | $ 3.96 | $ 3.58 | $ 3.58 | $ 3.58 | $ 3.52 | $ 3.52 | $ 3.96 | $ 3.67 | $ 3.66 |
| High Growth & Low Prices | 2015-2016 | Jul | $ 3.55 | $ 3.97 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.49 | $ 3.49 | $ 3.97 | $ 3.65 | $ 3.63 |
| High Growth & Low Prices | 2015-2016 | Aug | $ 3.52 | $ 3.97 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.46 | $ 3.46 | $ 3.97 | $ 3.63 | $ 3.61 |
| High Growth & Low Prices | 2015-2016 | Sep | $ 3.53 | $ 3.97 | $ 3.53 | $ 3.53 | $ 3.53 | $ 3.47 | $ 3.47 | $ 3.97 | $ 3.64 | $ 3.62 |
| High Growth & Low Prices | 2015-2016 | Oct | $ 3.57 | $ 4.02 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.51 | $ 3.51 | $ 4.02 | $ 3.68 | $ 3.66 |
| High Growth & Low Prices | 2016-2017 | Nov | $ 3.61 | $ 4.34 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.70 | $ 3.55 | $ 4.34 | $ 3.86 | $ 3.76 |
| High Growth & Low Prices | 2016-2017 | Dec | $ 3.72 | $ 4.36 | $ 3.72 | $ 3.72 | $ 3.72 | $ 4.02 | $ 3.46 | $ 4.35 | $ 3.94 | $ 3.85 |
| High Growth & Low Prices | 2016-2017 | Jan | $ 3.57 | $ 4.34 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.91 | $ 3.42 | $ 4.34 | $ 3.89 | $ 3.73 |
| High Growth & Low Prices | 2016-2017 | Feb | $ 3.55 | $ 4.36 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.99 | $ 3.44 | $ 4.36 | $ 3.93 | $ 3.71 |
| High Growth & Low Prices | 2016-2017 | Mar | $ 3.61 | $ 4.28 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.55 | $ 3.55 | $ 4.28 | $ 3.80 | $ 3.75 |
| High Growth & Low Prices | 2016-2017 | Apr | $ 3.51 | $ 3.88 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.45 | $ 3.45 | $ 3.88 | $ 3.60 | $ 3.58 |
| High Growth & Low Prices | 2016-2017 | May | $ 3.44 | $ 3.88 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 3.88 | $ 3.55 | $ 3.53 |
| High Growth & Low Prices | 2016-2017 | Jun | $ 3.44 | $ 3.88 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 3.88 | $ 3.55 | $ 3.53 |
| High Growth & Low Prices | 2016-2017 | Jul | $ 3.42 | $ 3.88 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.36 | $ 3.36 | $ 3.88 | $ 3.54 | $ 3.51 |
| High Growth & Low Prices | 2016-2017 | Aug | $ 3.41 | $ 3.88 | $ 3.41 | $ 3.41 | $ 3.41 | $ 3.35 | $ 3.35 | $ 3.88 | $ 3.53 | $ 3.50 |
| High Growth & Low Prices | 2016-2017 | Sep | $ 3.43 | $ 3.88 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.37 | $ 3.37 | $ 3.88 | $ 3.54 | $ 3.52 |
| High Growth & Low Prices | 2016-2017 | Oct | $ 3.48 | $ 4.01 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.42 | $ 3.42 | $ 4.01 | $ 3.62 | $ 3.59 |
| High Growth & Low Prices | 2017-2018 | Nov | $ 3.49 | $ 4.25 | $ 3.49 | $ 3.49 | $ 3.49 | $ 3.58 | $ 3.43 | $ 4.25 | $ 3.76 | $ 3.64 |
| High Growth & Low Prices | 2017-2018 | Dec | $ 3.62 | $ 4.27 | $ 3.62 | $ 3.62 | $ 3.62 | $ 3.89 | $ 3.32 | $ 4.26 | $ 3.82 | $ 3.75 |
| High Growth & Low Prices | 2017-2018 | Jan | $ 3.51 | $ 4.25 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.80 | $ 3.31 | $ 4.25 | $ 3.79 | $ 3.66 |
| High Growth & Low Prices | 2017-2018 | Feb | $ 3.42 | $ 4.26 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.89 | $ 3.30 | $ 4.26 | $ 3.82 | $ 3.59 |
| High Growth & Low Prices | 2017-2018 | Mar | $ 3.47 | $ 4.21 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.41 | $ 3.41 | $ 4.21 | $ 3.68 | $ 3.62 |
| High Growth & Low Prices | 2017-2018 | Apr | $ 3.40 | $ 3.90 | $ 3.40 | $ 3.40 | $ 3.40 | $ 3.34 | $ 3.34 | $ 3.90 | $ 3.53 | $ 3.50 |
| High Growth & Low Prices | 2017-2018 | May | $ 3.35 | $ 3.81 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.81 | $ 3.47 | $ 3.44 |
| High Growth & Low Prices | 2017-2018 | Jun | $ 3.35 | $ 3.81 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.81 | $ 3.47 | $ 3.44 |
| High Growth & Low Prices | 2017-2018 | Jul | $ 3.33 | $ 3.81 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.27 | $ 3.27 | $ 3.81 | $ 3.45 | $ 3.43 |
| High Growth & Low Prices | 2017-2018 | Aug | $ 3.31 | $ 3.82 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.82 | $ 3.44 | $ 3.41 |
| High Growth & Low Prices | 2017-2018 | Sep | $ 3.32 | $ 3.82 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.26 | $ 3.26 | $ 3.82 | $ 3.45 | $ 3.42 |
| High Growth & Low Prices | 2017-2018 | Oct | $ 3.36 | $ 3.94 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.30 | $ 3.30 | $ 3.94 | $ 3.52 | $ 3.48 |
| High Growth & Low Prices | 2018-2019 | Nov | $ 3.47 | $ 4.25 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.56 | $ 3.41 | $ 4.25 | $ 3.74 | $ 3.63 |
| High Growth & Low Prices | 2018-2019 | Dec | $ 3.65 | $ 4.28 | $ 3.65 | $ 3.65 | $ 3.65 | $ 3.85 | $ 3.28 | $ 4.26 | $ 3.80 | $ 3.78 |
| High Growth & Low Prices | 2018-2019 | Jan | $ 3.47 | $ 4.26 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.61 | $ 3.12 | $ 4.26 | $ 3.66 | $ 3.62 |
| High Growth & Low Prices | 2018-2019 | Feb | $ 3.26 | $ 4.20 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.78 | $ 3.13 | $ 4.20 | $ 3.70 | $ 3.45 |
| High Growth & Low Prices | 2018-2019 | Mar | $ 3.38 | $ 4.18 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 4.18 | $ 3.61 | $ 3.54 |
| High Growth & Low Prices | 2018-2019 | Apr | $ 3.29 | $ 3.82 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.23 | $ 3.23 | $ 3.82 | $ 3.43 | $ 3.39 |
| High Growth & Low Prices | 2018-2019 | May | $ 3.24 | $ 3.81 | $ 3.24 | $ 3.24 | $ 3.24 | $ 3.18 | $ 3.18 | $ 3.81 | $ 3.39 | $ 3.35 |
| High Growth & Low Prices | 2018-2019 | Jun | $ 3.21 | $ 3.64 | $ 3.21 | $ 3.21 | $ 3.21 | $ 3.15 | $ 3.15 | $ 3.64 | $ 3.32 | $ 3.29 |
| High Growth & Low Prices | 2018-2019 | Jul | $ 3.19 | $ 3.64 | $ 3.19 | $ 3.19 | $ 3.19 | $ 3.13 | $ 3.13 | $ 3.64 | $ 3.30 | $ 3.28 |
| High Growth & Low Prices | 2018-2019 | Aug | $ 3.17 | $ 3.64 | $ 3.17 | $ 3.17 | $ 3.17 | $ 3.11 | $ 3.11 | $ 3.64 | $ 3.29 | $ 3.26 |
| High Growth & Low Prices | 2018-2019 | Sep | $ 3.19 | $ 3.64 | $ 3.19 | $ 3.19 | $ 3.19 | $ 3.13 | $ 3.13 | $ 3.64 | $ 3.30 | $ 3.28 |
| High Growth & Low Prices | 2018-2019 | Oct | $ 3.24 | $ 3.64 | $ 3.24 | $ 3.24 | $ 3.24 | $ 3.18 | $ 3.18 | $ 3.65 | $ 3.34 | $ 3.32 |
| High Growth & Low Prices | 2019-2020 | Nov | $ 3.37 | $ 4.08 | $ 3.37 | $ 3.37 | $ 3.37 | $ 3.46 | $ 3.31 | $ 4.08 | $ 3.62 | $ 3.51 |
| High Growth & Low Prices | 2019-2020 | Dec | $ 3.64 | $ 4.09 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.75 | $ 3.19 | $ 4.09 | $ 3.68 | $ 3.73 |
| High Growth & Low Prices | 2019-2020 | Jan | $ 3.48 | $ 4.08 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.56 | $ 3.07 | $ 4.08 | $ 3.57 | $ 3.60 |
| High Growth & Low Prices | 2019-2020 | Feb | $ 3.26 | $ 4.05 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.72 | $ 3.12 | $ 4.05 | $ 3.63 | $ 3.42 |
| High Growth & Low Prices | 2019-2020 | Mar | $ 3.44 | $ 4.04 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 4.04 | $ 3.60 | $ 3.56 |
| High Growth & Low Prices | 2019-2020 | Apr | $ 3.35 | $ 3.68 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.68 | $ 3.42 | $ 3.41 |
| High Growth & Low Prices | 2019-2020 | May | $ 3.28 | $ 3.84 | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.22 | $ 3.22 | $ 3.84 | $ 3.43 | $ 3.39 |
| High Growth & Low Prices | 2019-2020 | Jun | $ 3.25 | $ 3.65 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 3.65 | $ 3.35 | $ 3.33 |
| High Growth & Low Prices | 2019-2020 | Jul | $ 3.21 | $ 3.65 | $ 3.21 | $ 3.21 | $ 3.21 | $ 3.15 | $ 3.15 | $ 3.65 | $ 3.32 | $ 3.30 |
| High Growth & Low Prices | 2019-2020 | Aug | $ 3.20 | $ 3.66 | $ 3.20 | $ 3.20 | $ 3.20 | $ 3.14 | $ 3.14 | $ 3.66 | $ 3.31 | $ 3.29 |
| High Growth & Low Prices | 2019-2020 | Sep | $ 3.22 | $ 3.66 | $ 3.22 | $ 3.22 | $ 3.22 | $ 3.16 | $ 3.16 | $ 3.66 | $ 3.33 | $ 3.30 |
| High Growth & Low Prices | 2019-2020 | Oct | $ 3.27 | $ 3.66 | $ 3.27 | $ 3.27 | $ 3.27 | $ 3.21 | $ 3.21 | $ 3.66 | $ 3.36 | $ 3.35 |

1/ Avoided costs are before Environmental Externalities adder.

# APPENDIX 5.4: HIGH GROWTH – LOW PRICE MONTHLY DETAIL

Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2020-2021 | Nov | $ 3.35 | $ 4.06 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.44 | $ 3.29 | $ 4.06 | $ 3.60 | $ 3.49 |
| High Growth & Low Prices | 2020-2021 | Dec | $ 3.65 | $ 4.08 | $ 3.65 | $ 3.65 | $ 3.65 | $ 3.70 | $ 3.14 | $ 4.06 | $ 3.64 | $ 3.74 |
| High Growth & Low Prices | 2020-2021 | Jan | $ 3.50 | $ 4.06 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.62 | $ 3.13 | $ 4.06 | $ 3.60 | $ 3.61 |
| High Growth & Low Prices | 2020-2021 | Feb | $ 3.29 | $ 4.04 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.78 | $ 3.17 | $ 4.04 | $ 3.66 | $ 3.44 |
| High Growth & Low Prices | 2020-2021 | Mar | $ 3.45 | $ 3.92 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.39 | $ 3.39 | $ 3.92 | $ 3.57 | $ 3.54 |
| High Growth & Low Prices | 2020-2021 | Apr | $ 3.35 | $ 3.68 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.68 | $ 3.42 | $ 3.41 |
| High Growth & Low Prices | 2020-2021 | May | $ 3.27 | $ 3.82 | $ 3.27 | $ 3.27 | $ 3.27 | $ 3.21 | $ 3.21 | $ 3.82 | $ 3.41 | $ 3.38 |
| High Growth & Low Prices | 2020-2021 | Jun | $ 3.23 | $ 3.62 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.17 | $ 3.17 | $ 3.62 | $ 3.32 | $ 3.31 |
| High Growth & Low Prices | 2020-2021 | Jul | $ 3.15 | $ 3.62 | $ 3.15 | $ 3.15 | $ 3.15 | $ 3.09 | $ 3.09 | $ 3.63 | $ 3.27 | $ 3.24 |
| High Growth & Low Prices | 2020-2021 | Aug | $ 3.14 | $ 3.63 | $ 3.14 | $ 3.14 | $ 3.14 | $ 3.08 | $ 3.08 | $ 3.63 | $ 3.26 | $ 3.23 |
| High Growth & Low Prices | 2020-2021 | Sep | $ 3.20 | $ 3.63 | $ 3.20 | $ 3.20 | $ 3.20 | $ 3.14 | $ 3.14 | $ 3.63 | $ 3.30 | $ 3.28 |
| High Growth & Low Prices | 2020-2021 | Oct | $ 3.25 | $ 3.63 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 3.63 | $ 3.34 | $ 3.32 |
| High Growth & Low Prices | 2021-2022 | Nov | $ 3.34 | $ 3.86 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.48 | $ 3.28 | $ 3.86 | $ 3.54 | $ 3.44 |
| High Growth & Low Prices | 2021-2022 | Dec | $ 3.87 | $ 3.88 | $ 3.87 | $ 3.87 | $ 3.87 | $ 3.77 | $ 3.25 | $ 3.86 | $ 3.63 | $ 3.87 |
| High Growth & Low Prices | 2021-2022 | Jan | $ 3.77 | $ 3.86 | $ 3.77 | $ 3.77 | $ 3.77 | $ 3.82 | $ 3.33 | $ 3.86 | $ 3.67 | $ 3.79 |
| High Growth & Low Prices | 2021-2022 | Feb | $ 3.48 | $ 3.80 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.80 | $ 3.37 | $ 3.80 | $ 3.66 | $ 3.54 |
| High Growth & Low Prices | 2021-2022 | Mar | $ 3.55 | $ 3.65 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.52 | $ 3.49 | $ 3.65 | $ 3.56 | $ 3.57 |
| High Growth & Low Prices | 2021-2022 | Apr | $ 3.45 | $ 3.79 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.39 | $ 3.39 | $ 3.79 | $ 3.53 | $ 3.52 |
| High Growth & Low Prices | 2021-2022 | May | $ 3.38 | $ 3.77 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 3.77 | $ 3.47 | $ 3.46 |
| High Growth & Low Prices | 2021-2022 | Jun | $ 3.32 | $ 3.71 | $ 3.32 | $ 3.32 | $ 3.32 | $ 3.26 | $ 3.26 | $ 3.71 | $ 3.41 | $ 3.40 |
| High Growth & Low Prices | 2021-2022 | Jul | $ 3.29 | $ 3.69 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.23 | $ 3.23 | $ 3.71 | $ 3.39 | $ 3.37 |
| High Growth & Low Prices | 2021-2022 | Aug | $ 3.28 | $ 3.71 | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.22 | $ 3.22 | $ 3.71 | $ 3.39 | $ 3.36 |
| High Growth & Low Prices | 2021-2022 | Sep | $ 3.36 | $ 3.71 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.30 | $ 3.30 | $ 3.71 | $ 3.44 | $ 3.43 |
| High Growth & Low Prices | 2021-2022 | Oct | $ 3.41 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.35 | $ 3.35 | $ 3.78 | $ 3.50 | $ 3.70 |
| High Growth & Low Prices | 2022-2023 | Nov | $ 3.46 | $ 3.71 | $ 3.46 | $ 3.46 | $ 3.46 | $ 3.53 | $ 3.40 | $ 3.71 | $ 3.55 | $ 3.51 |
| High Growth & Low Prices | 2022-2023 | Dec | $ 3.78 | $ 3.72 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.72 | $ 3.33 | $ 3.72 | $ 3.59 | $ 3.77 |
| High Growth & Low Prices | 2022-2023 | Jan | $ 3.68 | $ 3.69 | $ 3.68 | $ 3.68 | $ 3.68 | $ 3.69 | $ 3.21 | $ 3.69 | $ 3.53 | $ 3.68 |
| High Growth & Low Prices | 2022-2023 | Feb | $ 3.29 | $ 3.66 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.66 | $ 3.20 | $ 3.66 | $ 3.51 | $ 3.36 |
| High Growth & Low Prices | 2022-2023 | Mar | $ 3.39 | $ 3.61 | $ 3.39 | $ 3.39 | $ 3.39 | $ 3.40 | $ 3.33 | $ 3.61 | $ 3.45 | $ 3.43 |
| High Growth & Low Prices | 2022-2023 | Apr | $ 3.26 | $ 3.65 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.20 | $ 3.20 | $ 3.65 | $ 3.35 | $ 3.34 |
| High Growth & Low Prices | 2022-2023 | May | $ 3.12 | $ 3.59 | $ 3.12 | $ 3.12 | $ 3.12 | $ 3.06 | $ 3.06 | $ 3.59 | $ 3.24 | $ 3.21 |
| High Growth & Low Prices | 2022-2023 | Jun | $ 3.05 | $ 3.53 | $ 3.05 | $ 3.05 | $ 3.05 | $ 3.00 | $ 3.00 | $ 3.53 | $ 3.18 | $ 3.15 |
| High Growth & Low Prices | 2022-2023 | Jul | $ 3.02 | $ 3.53 | $ 3.02 | $ 3.02 | $ 3.02 | $ 2.97 | $ 2.97 | $ 3.53 | $ 3.16 | $ 3.13 |
| High Growth & Low Prices | 2022-2023 | Aug | $ 3.00 | $ 3.53 | $ 3.00 | $ 3.00 | $ 3.00 | $ 2.95 | $ 2.95 | $ 3.53 | $ 3.15 | $ 3.11 |
| High Growth & Low Prices | 2022-2023 | Sep | $ 3.08 | $ 3.53 | $ 3.08 | $ 3.08 | $ 3.08 | $ 3.02 | $ 3.02 | $ 3.53 | $ 3.19 | $ 3.17 |
| High Growth & Low Prices | 2022-2023 | Oct | $ 3.13 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.07 | $ 3.07 | $ 3.57 | $ 3.24 | $ 3.48 |
| High Growth & Low Prices | 2023-2024 | Nov | $ 3.34 | $ 3.65 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.43 | $ 3.28 | $ 3.65 | $ 3.45 | $ 3.40 |
| High Growth & Low Prices | 2023-2024 | Dec | $ 3.73 | $ 3.66 | $ 3.73 | $ 3.73 | $ 3.73 | $ 3.66 | $ 3.26 | $ 3.66 | $ 3.53 | $ 3.71 |
| High Growth & Low Prices | 2023-2024 | Jan | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.64 | $ 3.25 | $ 3.64 | $ 3.51 | $ 3.64 |
| High Growth & Low Prices | 2023-2024 | Feb | $ 3.36 | $ 3.56 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.56 | $ 3.28 | $ 3.56 | $ 3.47 | $ 3.40 |
| High Growth & Low Prices | 2023-2024 | Mar | $ 3.49 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.45 | $ 3.44 | $ 3.44 | $ 3.45 | $ 3.45 | $ 3.46 |
| High Growth & Low Prices | 2023-2024 | Apr | $ 3.38 | $ 3.57 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 3.57 | $ 3.41 | $ 3.42 |
| High Growth & Low Prices | 2023-2024 | May | $ 3.25 | $ 3.44 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 3.44 | $ 3.28 | $ 3.29 |
| High Growth & Low Prices | 2023-2024 | Jun | $ 3.18 | $ 3.33 | $ 3.18 | $ 3.18 | $ 3.18 | $ 3.12 | $ 3.12 | $ 3.34 | $ 3.20 | $ 3.21 |
| High Growth & Low Prices | 2023-2024 | Jul | $ 3.13 | $ 3.34 | $ 3.13 | $ 3.13 | $ 3.13 | $ 3.07 | $ 3.07 | $ 3.34 | $ 3.16 | $ 3.17 |
| High Growth & Low Prices | 2023-2024 | Aug | $ 3.12 | $ 3.33 | $ 3.12 | $ 3.12 | $ 3.12 | $ 3.06 | $ 3.06 | $ 3.34 | $ 3.16 | $ 3.16 |
| High Growth & Low Prices | 2023-2024 | Sep | $ 3.21 | $ 3.34 | $ 3.21 | $ 3.21 | $ 3.21 | $ 3.15 | $ 3.15 | $ 3.34 | $ 3.22 | $ 3.23 |
| High Growth & Low Prices | 2023-2024 | Oct | $ 3.25 | $ 3.54 | $ 3.54 | $ 3.54 | $ 3.54 | $ 3.19 | $ 3.19 | $ 3.54 | $ 3.31 | $ 3.48 |
| High Growth & Low Prices | 2024-2025 | Nov | $ 3.36 | $ 3.51 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.39 | $ 3.30 | $ 3.51 | $ 3.40 | $ 3.39 |
| High Growth & Low Prices | 2024-2025 | Dec | $ 3.88 | $ 3.82 | $ 3.88 | $ 3.88 | $ 3.88 | $ 3.82 | $ 3.32 | $ 3.82 | $ 3.65 | $ 3.87 |
| High Growth & Low Prices | 2024-2025 | Jan | $ 3.81 | $ 3.87 | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.87 | $ 3.40 | $ 3.87 | $ 3.72 | $ 3.82 |
| High Growth & Low Prices | 2024-2025 | Feb | $ 3.52 | $ 3.87 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.87 | $ 3.38 | $ 3.87 | $ 3.71 | $ 3.59 |
| High Growth & Low Prices | 2024-2025 | Mar | $ 3.57 | $ 3.86 | $ 3.57 | $ 3.57 | $ 3.57 | $ 3.62 | $ 3.51 | $ 3.86 | $ 3.67 | $ 3.63 |
| High Growth & Low Prices | 2024-2025 | Apr | $ 3.46 | $ 3.92 | $ 3.46 | $ 3.46 | $ 3.46 | $ 3.40 | $ 3.40 | $ 3.92 | $ 3.58 | $ 3.55 |
| High Growth & Low Prices | 2024-2025 | May | $ 3.40 | $ 3.97 | $ 3.40 | $ 3.40 | $ 3.40 | $ 3.34 | $ 3.34 | $ 3.97 | $ 3.55 | $ 3.52 |
| High Growth & Low Prices | 2024-2025 | Jun | $ 3.35 | $ 3.84 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.84 | $ 3.48 | $ 3.45 |
| High Growth & Low Prices | 2024-2025 | Jul | $ 3.29 | $ 3.84 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.23 | $ 3.23 | $ 3.84 | $ 3.44 | $ 3.40 |
| High Growth & Low Prices | 2024-2025 | Aug | $ 3.29 | $ 3.84 | $ 3.29 | $ 3.29 | $ 3.29 | $ 3.23 | $ 3.23 | $ 3.84 | $ 3.44 | $ 3.40 |
| High Growth & Low Prices | 2024-2025 | Sep | $ 3.37 | $ 3.84 | $ 3.37 | $ 3.37 | $ 3.37 | $ 3.31 | $ 3.31 | $ 3.84 | $ 3.49 | $ 3.47 |
| High Growth & Low Prices | 2024-2025 | Oct | $ 3.42 | $ 3.94 | $ 3.94 | $ 3.94 | $ 3.94 | $ 3.36 | $ 3.36 | $ 3.94 | $ 3.56 | $ 3.84 |
| High Growth & Low Prices | 2025-2026 | Nov | $ 3.51 | $ 3.86 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.66 | $ 3.45 | $ 3.86 | $ 3.66 | $ 3.58 |
| High Growth & Low Prices | 2025-2026 | Dec | $ 3.91 | $ 3.85 | $ 3.91 | $ 3.91 | $ 3.91 | $ 3.85 | $ 3.43 | $ 3.85 | $ 3.71 | $ 3.90 |
| High Growth & Low Prices | 2025-2026 | Jan | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.81 | $ 3.32 | $ 3.81 | $ 3.65 | $ 3.81 |
| High Growth & Low Prices | 2025-2026 | Feb | $ 3.47 | $ 3.83 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.83 | $ 3.34 | $ 3.83 | $ 3.67 | $ 3.54 |
| High Growth & Low Prices | 2025-2026 | Mar | $ 3.55 | $ 3.78 | $ 3.55 | $ 3.55 | $ 3.55 | $ 3.59 | $ 3.49 | $ 3.78 | $ 3.62 | $ 3.60 |
| High Growth & Low Prices | 2025-2026 | Apr | $ 3.42 | $ 3.89 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.36 | $ 3.36 | $ 3.89 | $ 3.54 | $ 3.52 |
| High Growth & Low Prices | 2025-2026 | May | $ 3.31 | $ 3.82 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.82 | $ 3.44 | $ 3.41 |
| High Growth & Low Prices | 2025-2026 | Jun | $ 3.24 | $ 3.75 | $ 3.24 | $ 3.24 | $ 3.24 | $ 3.18 | $ 3.18 | $ 3.75 | $ 3.37 | $ 3.34 |
| High Growth & Low Prices | 2025-2026 | Jul | $ 3.20 | $ 3.75 | $ 3.20 | $ 3.20 | $ 3.20 | $ 3.14 | $ 3.14 | $ 3.75 | $ 3.35 | $ 3.31 |
| High Growth & Low Prices | 2025-2026 | Aug | $ 3.19 | $ 3.75 | $ 3.19 | $ 3.19 | $ 3.19 | $ 3.13 | $ 3.13 | $ 3.75 | $ 3.34 | $ 3.30 |
| High Growth & Low Prices | 2025-2026 | Sep | $ 3.27 | $ 3.75 | $ 3.27 | $ 3.27 | $ 3.27 | $ 3.21 | $ 3.21 | $ 3.75 | $ 3.39 | $ 3.37 |
| High Growth & Low Prices | 2025-2026 | Oct | $ 3.32 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.78 | $ 3.26 | $ 3.26 | $ 3.78 | $ 3.44 | $ 3.69 |
| High Growth & Low Prices | 2026-2027 | Nov | $ 3.47 | $ 3.81 | $ 3.47 | $ 3.47 | $ 3.47 | $ 3.65 | $ 3.41 | $ 3.81 | $ 3.63 | $ 3.54 |
| High Growth & Low Prices | 2026-2027 | Dec | $ 3.98 | $ 3.87 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.87 | $ 3.40 | $ 3.87 | $ 3.72 | $ 3.96 |
| High Growth & Low Prices | 2026-2027 | Jan | $ 3.87 | $ 3.89 | $ 3.87 | $ 3.87 | $ 3.87 | $ 3.73 | $ 3.24 | $ 3.89 | $ 3.62 | $ 3.87 |
| High Growth & Low Prices | 2026-2027 | Feb | $ 3.33 | $ 3.87 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.71 | $ 3.16 | $ 3.87 | $ 3.58 | $ 3.44 |
| High Growth & Low Prices | 2026-2027 | Mar | $ 3.52 | $ 3.86 | $ 3.52 | $ 3.52 | $ 3.52 | $ 3.58 | $ 3.46 | $ 3.86 | $ 3.64 | $ 3.59 |
| High Growth & Low Prices | 2026-2027 | Apr | $ 3.31 | $ 3.74 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.74 | $ 3.42 | $ 3.40 |
| High Growth & Low Prices | 2026-2027 | May | $ 3.23 | $ 3.82 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.17 | $ 3.17 | $ 3.82 | $ 3.39 | $ 3.35 |
| High Growth & Low Prices | 2026-2027 | Jun | $ 3.15 | $ 3.72 | $ 3.15 | $ 3.15 | $ 3.15 | $ 3.09 | $ 3.09 | $ 3.72 | $ 3.30 | $ 3.26 |
| High Growth & Low Prices | 2026-2027 | Jul | $ 3.12 | $ 3.72 | $ 3.12 | $ 3.12 | $ 3.12 | $ 3.06 | $ 3.06 | $ 3.72 | $ 3.28 | $ 3.24 |
| High Growth & Low Prices | 2026-2027 | Aug | $ 3.11 | $ 3.72 | $ 3.11 | $ 3.11 | $ 3.11 | $ 3.05 | $ 3.05 | $ 3.72 | $ 3.28 | $ 3.23 |
| High Growth & Low Prices | 2026-2027 | Sep | $ 3.20 | $ 3.72 | $ 3.20 | $ 3.20 | $ 3.20 | $ 3.14 | $ 3.14 | $ 3.72 | $ 3.34 | $ 3.30 |
| High Growth & Low Prices | 2026-2027 | Oct | $ 3.25 | $ 3.74 | $ 3.74 | $ 3.74 | $ 3.74 | $ 3.19 | $ 3.19 | $ 3.74 | $ 3.38 | $ 3.64 |
| High Growth & Low Prices | 2027-2028 | Nov | $ 3.42 | $ 3.90 | $ 3.42 | $ 3.42 | $ 3.42 | $ 3.80 | $ 3.36 | $ 3.90 | $ 3.69 | $ 3.52 |
| High Growth & Low Prices | 2027-2028 | Dec | $ 4.00 | $ 3.96 | $ 4.00 | $ 4.00 | $ 4.00 | $ 3.84 | $ 3.33 | $ 3.93 | $ 3.70 | $ 3.99 |
| High Growth & Low Prices | 2027-2028 | Jan | $ 3.90 | $ 3.90 | $ 3.90 | $ 3.90 | $ 3.90 | $ 3.57 | $ 3.08 | $ 3.90 | $ 3.52 | $ 3.90 |
| High Growth & Low Prices | 2027-2028 | Feb | $ 3.26 | $ 72.72 | $ 3.26 | $ 3.26 | $ 3.26 | $ 72.44 | $ 3.05 | $ 72.72 | $ 49.40 | $ 17.15 |
| High Growth & Low Prices | 2027-2028 | Mar | $ 3.39 | $ 3.91 | $ 3.39 | $ 3.39 | $ 3.39 | $ 3.49 | $ 3.33 | $ 3.91 | $ 3.58 | $ 3.50 |
| High Growth & Low Prices | 2027-2028 | Apr | $ 3.23 | $ 3.66 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.17 | $ 3.17 | $ 3.66 | $ 3.34 | $ 3.32 |
| High Growth & Low Prices | 2027-2028 | May | $ 3.16 | $ 3.70 | $ 3.16 | $ 3.16 | $ 3.16 | $ 3.10 | $ 3.10 | $ 3.70 | $ 3.30 | $ 3.27 |
| High Growth & Low Prices | 2027-2028 | Jun | $ 3.10 | $ 3.60 | $ 3.10 | $ 3.10 | $ 3.10 | $ 3.04 | $ 3.04 | $ 3.60 | $ 3.23 | $ 3.20 |
| High Growth & Low Prices | 2027-2028 | Jul | $ 3.05 | $ 3.60 | $ 3.05 | $ 3.05 | $ 3.05 | $ 2.99 | $ 2.99 | $ 3.60 | $ 3.20 | $ 3.16 |
| High Growth & Low Prices | 2027-2028 | Aug | $ 3.05 | $ 3.60 | $ 3.05 | $ 3.05 | $ 3.05 | $ 2.99 | $ 2.99 | $ 3.60 | $ 3.20 | $ 3.16 |
| High Growth & Low Prices | 2027-2028 | Sep | $ 3.12 | $ 3.61 | $ 3.12 | $ 3.12 | $ 3.12 | $ 3.06 | $ 3.06 | $ 3.61 | $ 3.24 | $ 3.22 |
| High Growth & Low Prices | 2027-2028 | Oct | $ 3.18 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.61 | $ 3.12 | $ 3.12 | $ 3.61 | $ 3.29 | $ 3.53 |

1/ Avoided costs are before Environmental Externalities adder.

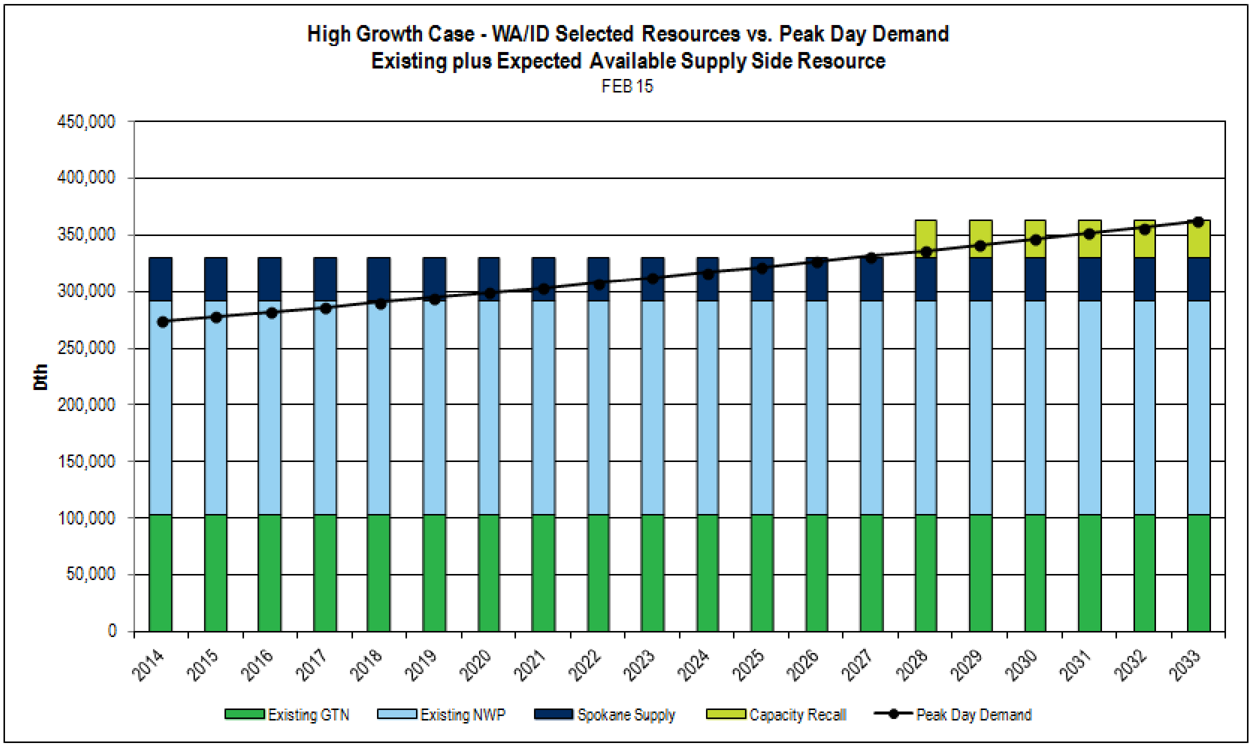
# APPENDIX 5.4: HIGH GROWTH – LOW PRICE MONTHLY DETAIL

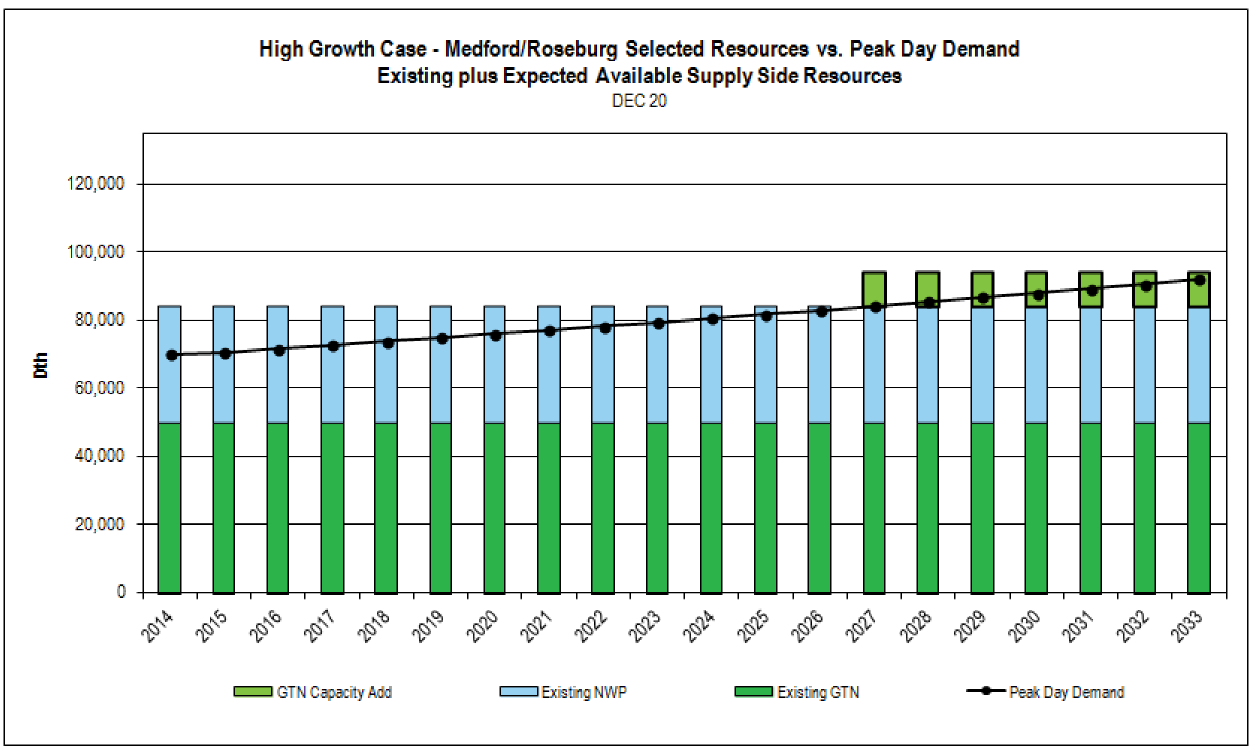
Monthly Avoided Cost Detail 1/
2012$

| Scenario | Gas Year | Month | Klam Falls | La Grande | Medford GTN | Medford NWP | Roseburg | Wa/Id Both | Wa/Id GTN | Wa/Id NWP | WA/ID Annual | OR Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2028-2029 | Nov | $ 3.40 | $ 3.96 | $ 3.40 | $ 3.40 | $ 3.40 | $ 3.78 | $ 3.34 | $ 3.96 | $ 3.69 | $ 3.51 |
| High Growth & Low Prices | 2028-2029 | Dec | $ 4.02 | $ 3.99 | $ 4.02 | $ 4.02 | $ 4.02 | $ 3.83 | $ 3.31 | $ 3.99 | $ 3.71 | $ 4.02 |
| High Growth & Low Prices | 2028-2029 | Jan | $ 3.87 | $ 3.87 | $ 3.87 | $ 3.87 | $ 3.87 | $ 3.80 | $ 3.31 | $ 3.87 | $ 3.66 | $ 3.87 |
| High Growth & Low Prices | 2028-2029 | Feb | $ 3.66 | $ 75.14 | $ 3.66 | $ 3.66 | $ 3.66 | $ 75.14 | $ 3.37 | $ 75.14 | $ 51.22 | $ 17.96 |
| High Growth & Low Prices | 2028-2029 | Mar | $ 3.66 | $ 3.75 | $ 3.66 | $ 3.66 | $ 3.66 | $ 3.68 | $ 3.60 | $ 3.76 | $ 3.68 | $ 3.68 |
| High Growth & Low Prices | 2028-2029 | Apr | $ 3.44 | $ 3.91 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.38 | $ 3.38 | $ 3.92 | $ 3.56 | $ 3.54 |
| High Growth & Low Prices | 2028-2029 | May | $ 3.38 | $ 3.96 | $ 3.38 | $ 3.38 | $ 3.38 | $ 3.32 | $ 3.32 | $ 3.96 | $ 3.53 | $ 3.50 |
| High Growth & Low Prices | 2028-2029 | Jun | $ 3.31 | $ 3.82 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.83 | $ 3.44 | $ 3.41 |
| High Growth & Low Prices | 2028-2029 | Jul | $ 3.27 | $ 3.83 | $ 3.27 | $ 3.27 | $ 3.27 | $ 3.21 | $ 3.21 | $ 3.83 | $ 3.42 | $ 3.38 |
| High Growth & Low Prices | 2028-2029 | Aug | $ 3.25 | $ 3.83 | $ 3.25 | $ 3.25 | $ 3.25 | $ 3.19 | $ 3.19 | $ 3.83 | $ 3.40 | $ 3.37 |
| High Growth & Low Prices | 2028-2029 | Sep | $ 3.31 | $ 3.83 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.83 | $ 3.45 | $ 3.41 |
| High Growth & Low Prices | 2028-2029 | Oct | $ 3.35 | $ 3.88 | $ 3.88 | $ 3.88 | $ 3.88 | $ 3.29 | $ 3.29 | $ 3.88 | $ 3.49 | $ 3.78 |
| High Growth & Low Prices | 2029-2030 | Nov | $ 3.51 | $ 3.92 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.92 | $ 3.45 | $ 3.92 | $ 3.77 | $ 3.60 |
| High Growth & Low Prices | 2029-2030 | Dec | $ 4.02 | $ 3.93 | $ 68.39 | $ 68.39 | $ 68.39 | $ 3.93 | $ 3.45 | $ 3.93 | $ 3.77 | $ 42.63 |
| High Growth & Low Prices | 2029-2030 | Jan | $ 3.92 | $ 3.92 | $ 3.92 | $ 3.92 | $ 3.92 | $ 3.92 | $ 3.43 | $ 3.92 | $ 3.76 | $ 3.92 |
| High Growth & Low Prices | 2029-2030 | Feb | $ 3.62 | $ 75.13 | $ 3.62 | $ 3.62 | $ 3.62 | $ 75.13 | $ 3.32 | $ 75.13 | $ 51.19 | $ 17.92 |
| High Growth & Low Prices | 2029-2030 | Mar | $ 3.71 | $ 3.81 | $ 3.71 | $ 3.71 | $ 3.71 | $ 3.73 | $ 3.65 | $ 3.81 | $ 3.73 | $ 3.73 |
| High Growth & Low Prices | 2029-2030 | Apr | $ 3.41 | $ 3.87 | $ 3.41 | $ 3.41 | $ 3.41 | $ 3.35 | $ 3.35 | $ 3.87 | $ 3.52 | $ 3.50 |
| High Growth & Low Prices | 2029-2030 | May | $ 3.33 | $ 3.91 | $ 3.33 | $ 3.33 | $ 3.33 | $ 3.27 | $ 3.27 | $ 3.91 | $ 3.48 | $ 3.45 |
| High Growth & Low Prices | 2029-2030 | Jun | $ 3.26 | $ 3.80 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.20 | $ 3.20 | $ 3.80 | $ 3.40 | $ 3.37 |
| High Growth & Low Prices | 2029-2030 | Jul | $ 3.22 | $ 3.80 | $ 3.22 | $ 3.22 | $ 3.22 | $ 3.16 | $ 3.16 | $ 3.80 | $ 3.38 | $ 3.34 |
| High Growth & Low Prices | 2029-2030 | Aug | $ 3.20 | $ 3.80 | $ 3.20 | $ 3.20 | $ 3.20 | $ 3.14 | $ 3.14 | $ 3.81 | $ 3.36 | $ 3.32 |
| High Growth & Low Prices | 2029-2030 | Sep | $ 3.26 | $ 3.81 | $ 3.26 | $ 3.26 | $ 3.26 | $ 3.20 | $ 3.20 | $ 3.81 | $ 3.40 | $ 3.37 |
| High Growth & Low Prices | 2029-2030 | Oct | $ 3.33 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.27 | $ 3.27 | $ 3.84 | $ 3.46 | $ 3.74 |
| High Growth & Low Prices | 2030-2031 | Nov | $ 3.65 | $ 3.94 | $ 3.65 | $ 3.65 | $ 3.65 | $ 3.94 | $ 3.59 | $ 3.94 | $ 3.82 | $ 3.71 |
| High Growth & Low Prices | 2030-2031 | Dec | $ 4.06 | $ 3.95 | $ 68.42 | $ 68.42 | $ 68.42 | $ 3.95 | $ 3.53 | $ 3.95 | $ 3.81 | $ 42.66 |
| High Growth & Low Prices | 2030-2031 | Jan | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.84 | $ 3.82 | $ 3.33 | $ 3.94 | $ 3.70 | $ 3.84 |
| High Growth & Low Prices | 2030-2031 | Feb | $ 3.66 | $ 75.09 | $ 3.66 | $ 3.66 | $ 3.66 | $ 75.06 | $ 74.55 | $ 75.09 | $ 74.90 | $ 17.94 |
| High Growth & Low Prices | 2030-2031 | Mar | $ 3.69 | $ 3.78 | $ 3.69 | $ 3.69 | $ 3.69 | $ 3.70 | $ 3.63 | $ 3.78 | $ 3.70 | $ 3.71 |
| High Growth & Low Prices | 2030-2031 | Apr | $ 3.48 | $ 3.92 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.42 | $ 3.42 | $ 3.92 | $ 3.59 | $ 3.57 |
| High Growth & Low Prices | 2030-2031 | May | $ 3.43 | $ 3.91 | $ 3.43 | $ 3.43 | $ 3.43 | $ 3.37 | $ 3.37 | $ 3.91 | $ 3.55 | $ 3.53 |
| High Growth & Low Prices | 2030-2031 | Jun | $ 3.36 | $ 3.85 | $ 3.36 | $ 3.36 | $ 3.36 | $ 3.30 | $ 3.30 | $ 3.86 | $ 3.49 | $ 3.46 |
| High Growth & Low Prices | 2030-2031 | Jul | $ 3.35 | $ 3.86 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.86 | $ 3.48 | $ 3.45 |
| High Growth & Low Prices | 2030-2031 | Aug | $ 3.34 | $ 3.86 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.28 | $ 3.28 | $ 3.86 | $ 3.48 | $ 3.45 |
| High Growth & Low Prices | 2030-2031 | Sep | $ 3.41 | $ 3.86 | $ 3.41 | $ 3.41 | $ 3.41 | $ 3.35 | $ 3.35 | $ 3.86 | $ 3.52 | $ 3.50 |
| High Growth & Low Prices | 2030-2031 | Oct | $ 3.46 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.98 | $ 3.40 | $ 3.40 | $ 3.98 | $ 3.60 | $ 3.87 |
| High Growth & Low Prices | 2031-2032 | Nov | $ 3.63 | $ 3.86 | $ 3.63 | $ 3.63 | $ 3.63 | $ 3.86 | $ 3.57 | $ 3.86 | $ 3.76 | $ 3.67 |
| High Growth & Low Prices | 2031-2032 | Dec | $ 3.98 | $ 3.87 | $ 132.71 | $ 132.71 | $ 132.71 | $ 3.83 | $ 3.32 | $ 3.87 | $ 3.68 | $ 81.20 |
| High Growth & Low Prices | 2031-2032 | Jan | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.77 | $ 3.28 | $ 3.82 | $ 3.62 | $ 3.79 |
| High Growth & Low Prices | 2031-2032 | Feb | $ 3.51 | $ 72.57 | $ 3.51 | $ 3.51 | $ 3.51 | $ 72.57 | $ 72.15 | $ 72.57 | $ 72.43 | $ 17.32 |
| High Growth & Low Prices | 2031-2032 | Mar | $ 3.51 | $ 3.47 | $ 3.50 | $ 3.50 | $ 3.50 | $ 3.47 | $ 3.45 | $ 3.47 | $ 3.47 | $ 3.50 |
| High Growth & Low Prices | 2031-2032 | Apr | $ 3.35 | $ 3.47 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.47 | $ 3.35 | $ 3.38 |
| High Growth & Low Prices | 2031-2032 | May | $ 3.34 | $ 3.42 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.28 | $ 3.28 | $ 3.42 | $ 3.33 | $ 3.36 |
| High Growth & Low Prices | 2031-2032 | Jun | $ 3.26 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.23 | $ 3.20 | $ 3.20 | $ 3.23 | $ 3.21 | $ 3.23 |
| High Growth & Low Prices | 2031-2032 | Jul | $ 3.15 | $ 3.23 | $ 3.15 | $ 3.15 | $ 3.15 | $ 3.09 | $ 3.09 | $ 3.23 | $ 3.14 | $ 3.17 |
| High Growth & Low Prices | 2031-2032 | Aug | $ 3.14 | $ 3.23 | $ 3.14 | $ 3.14 | $ 3.14 | $ 3.08 | $ 3.08 | $ 3.23 | $ 3.13 | $ 3.16 |
| High Growth & Low Prices | 2031-2032 | Sep | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.28 | $ 3.22 | $ 3.22 | $ 3.28 | $ 3.24 | $ 3.28 |
| High Growth & Low Prices | 2031-2032 | Oct | $ 3.33 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.27 | $ 3.27 | $ 3.51 | $ 3.35 | $ 3.47 |
| High Growth & Low Prices | 2032-2033 | Nov | $ 3.44 | $ 3.55 | $ 3.44 | $ 3.44 | $ 3.44 | $ 3.55 | $ 3.38 | $ 3.55 | $ 3.49 | $ 3.47 |
| High Growth & Low Prices | 2032-2033 | Dec | $ 3.89 | $ 3.80 | $ 132.64 | $ 132.64 | $ 132.64 | $ 3.80 | $ 3.32 | $ 3.80 | $ 3.64 | $ 81.12 |
| High Growth & Low Prices | 2032-2033 | Jan | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.79 | $ 3.32 | $ 3.79 | $ 3.64 | $ 3.79 |
| High Growth & Low Prices | 2032-2033 | Feb | $ 3.52 | $ 75.05 | $ 3.52 | $ 3.52 | $ 3.52 | $ 75.05 | $ 74.62 | $ 75.05 | $ 74.91 | $ 17.82 |
| High Growth & Low Prices | 2032-2033 | Mar | $ 3.52 | $ 3.48 | $ 3.51 | $ 3.51 | $ 3.51 | $ 3.48 | $ 3.46 | $ 3.48 | $ 3.48 | $ 3.51 |
| High Growth & Low Prices | 2032-2033 | Apr | $ 3.35 | $ 3.41 | $ 3.35 | $ 3.35 | $ 3.35 | $ 3.29 | $ 3.29 | $ 3.41 | $ 3.33 | $ 3.36 |
| High Growth & Low Prices | 2032-2033 | May | $ 3.34 | $ 3.38 | $ 3.34 | $ 3.34 | $ 3.34 | $ 3.28 | $ 3.28 | $ 3.38 | $ 3.32 | $ 3.35 |
| High Growth & Low Prices | 2032-2033 | Jun | $ 3.29 | $ 3.25 | $ 3.17 | $ 3.17 | $ 3.17 | $ 3.03 | $ 3.23 | $ 3.03 | $ 3.10 | $ 3.21 |
| High Growth & Low Prices | 2032-2033 | Jul | $ 3.17 | $ 3.17 | $ 3.17 | $ 3.17 | $ 3.17 | $ 3.11 | $ 3.11 | $ 3.17 | $ 3.13 | $ 3.17 |
| High Growth & Low Prices | 2032-2033 | Aug | $ 3.15 | $ 3.17 | $ 3.15 | $ 3.15 | $ 3.15 | $ 3.09 | $ 3.09 | $ 3.17 | $ 3.12 | $ 3.15 |
| High Growth & Low Prices | 2032-2033 | Sep | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.31 | $ 3.25 | $ 3.25 | $ 3.31 | $ 3.27 | $ 3.31 |
| High Growth & Low Prices | 2032-2033 | Oct | $ 3.38 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.48 | $ 3.32 | $ 3.32 | $ 3.48 | $ 3.38 | $ 3.46 |

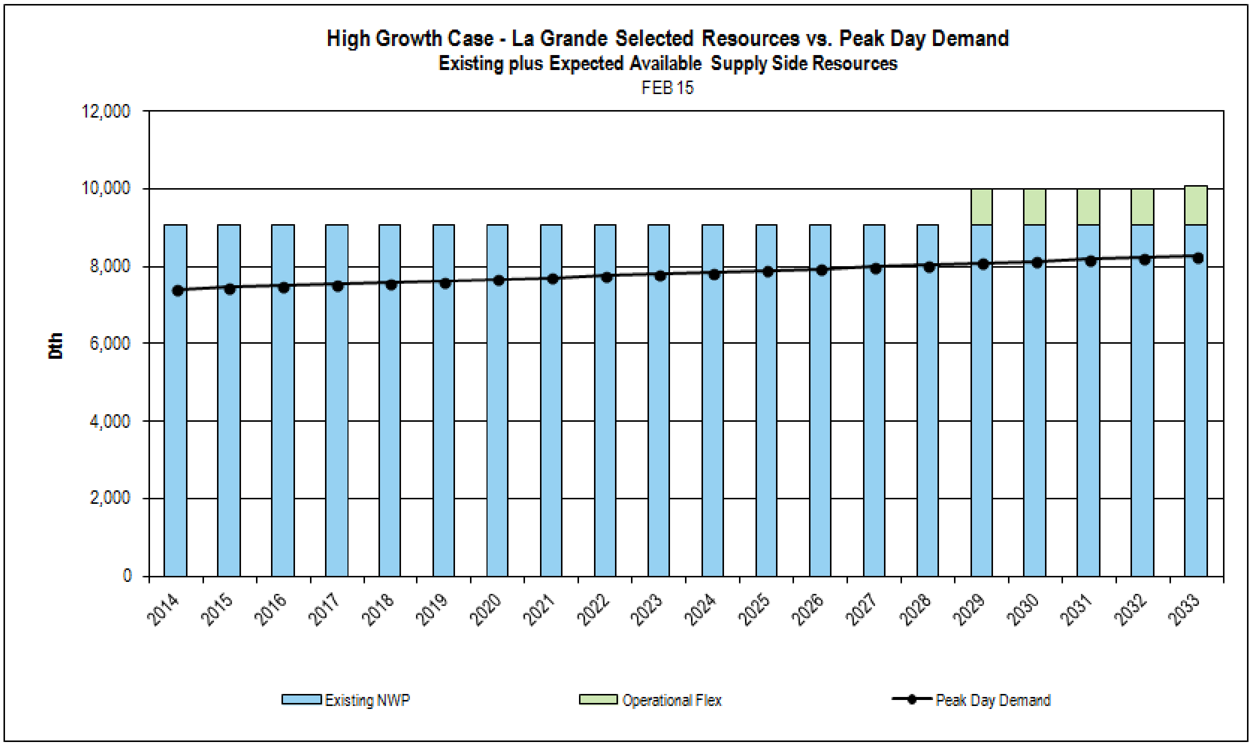
1/ Avoided costs are before Environmental Externalities adder.

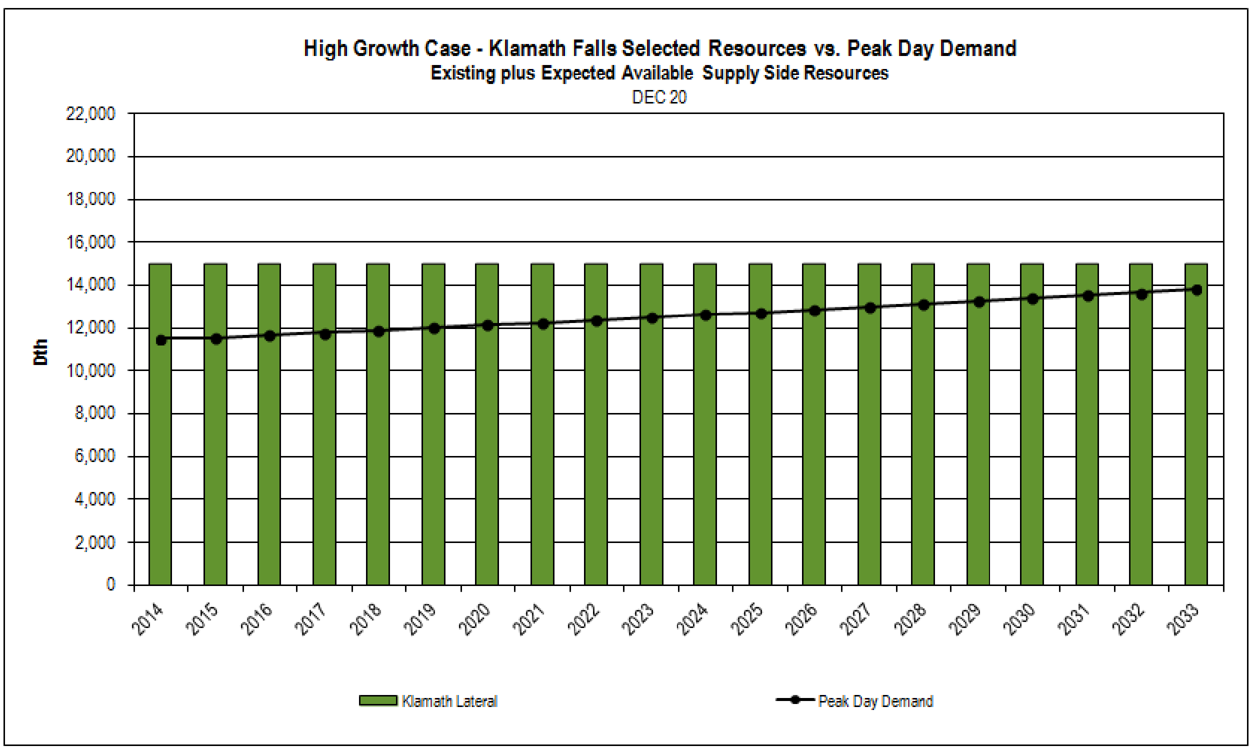
# Appendix 6.1: High Growth Cases
# Selected Resources vs. Peak Day Demand
# Existing plus Expected Available



# APPENDIX 6.1: HIGH GROWTH CASES
## SELECTED RESOURCES VS. PEAK DAY DEMAND
## EXISTING PLUS EXPECTED AVAILABLE



# APPENDIX 6.2: PEAK DAY DEMAND TABLE
# HIGH GROWTH

**Peak Day Demand - Served and Unserved (MDth/d)**

Before Resource Additions & Net of DSM Savings

| Case | Gas Year | LaGrande Served | LaGrande Unserved | LaGrande Total | LaGrande % of Peak Day Served | WA/ID Served | WA/ID Unserved | WA/ID Total | WA/ID % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2014 | 7,404 | - | 7,404 | 100% | 273,778 | - | 273,778 | 100% |
| High Growth & Low Prices | 2015 | 7,449 | - | 7,449 | 100% | 277,834 | - | 277,834 | 100% |
| High Growth & Low Prices | 2016 | 7,492 | - | 7,492 | 100% | 281,972 | - | 281,972 | 100% |
| High Growth & Low Prices | 2017 | 7,538 | - | 7,538 | 100% | 286,157 | - | 286,157 | 100% |
| High Growth & Low Prices | 2018 | 7,581 | - | 7,581 | 100% | 290,384 | - | 290,384 | 100% |
| High Growth & Low Prices | 2019 | 7,626 | - | 7,626 | 100% | 294,655 | - | 294,655 | 100% |
| High Growth & Low Prices | 2020 | 7,673 | - | 7,673 | 100% | 298,996 | - | 298,996 | 100% |
| High Growth & Low Prices | 2021 | 7,717 | - | 7,717 | 100% | 303,428 | - | 303,428 | 100% |
| High Growth & Low Prices | 2022 | 7,763 | - | 7,763 | 100% | 307,929 | - | 307,929 | 100% |
| High Growth & Low Prices | 2023 | 7,810 | - | 7,810 | 100% | 312,500 | - | 312,500 | 100% |
| High Growth & Low Prices | 2024 | 7,854 | - | 7,854 | 100% | 317,136 | - | 317,136 | 100% |
| High Growth & Low Prices | 2025 | 7,901 | - | 7,901 | 100% | 321,846 | - | 321,846 | 100% |
| High Growth & Low Prices | 2026 | 7,948 | - | 7,948 | 100% | 326,626 | - | 326,626 | 100% |
| High Growth & Low Prices | 2027 | 7,995 | - | 7,995 | 100% | 331,483 | - | 331,483 | 100% |
| High Growth & Low Prices | 2028 | 8,043 | - | 8,043 | 100% | 331,804 | 4,607 | 336,411 | 99% |
| High Growth & Low Prices | 2029 | 8,091 | - | 8,091 | 100% | 332,121 | 9,293 | 341,414 | 97% |
| High Growth & Low Prices | 2030 | 8,139 | - | 8,139 | 100% | 332,447 | 14,050 | 346,497 | 96% |
| High Growth & Low Prices | 2031 | 8,187 | - | 8,187 | 100% | 332,391 | 19,267 | 351,658 | 95% |
| High Growth & Low Prices | 2032 | 8,235 | - | 8,235 | 100% | 332,314 | 24,586 | 356,900 | 93% |
| High Growth & Low Prices | 2033 | 8,284 | - | 8,284 | 100% | 332,237 | 29,982 | 362,219 | 92% |

| Case | Gas Year | Klamath Falls Served | Klamath Falls Unserved | Klamath Falls Total | Klamath Falls % of Peak Day Served | Medford/Roseburg Served | Medford/Roseburg Unserved | Medford/Roseburg Total | Medford/Roseburg % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| High Growth & Low Prices | 2014 | 11,488 | - | 11,488 | 100% | 70,032 | - | 70,032 | 100% |
| High Growth & Low Prices | 2015 | 11,539 | - | 11,539 | 100% | 70,686 | - | 70,686 | 100% |
| High Growth & Low Prices | 2016 | 11,653 | - | 11,653 | 100% | 71,711 | - | 71,711 | 100% |
| High Growth & Low Prices | 2017 | 11,768 | - | 11,768 | 100% | 72,765 | - | 72,765 | 100% |
| High Growth & Low Prices | 2018 | 11,890 | - | 11,890 | 100% | 73,822 | - | 73,822 | 100% |
| High Growth & Low Prices | 2019 | 12,005 | - | 12,005 | 100% | 74,901 | - | 74,901 | 100% |
| High Growth & Low Prices | 2020 | 12,122 | - | 12,122 | 100% | 75,994 | - | 75,994 | 100% |
| High Growth & Low Prices | 2021 | 12,248 | - | 12,248 | 100% | 77,109 | - | 77,109 | 100% |
| High Growth & Low Prices | 2022 | 12,366 | - | 12,366 | 100% | 78,236 | - | 78,236 | 100% |
| High Growth & Low Prices | 2023 | 12,487 | - | 12,487 | 100% | 79,391 | - | 79,391 | 100% |
| High Growth & Low Prices | 2024 | 12,616 | - | 12,616 | 100% | 80,551 | - | 80,551 | 100% |
| High Growth & Low Prices | 2025 | 12,739 | - | 12,739 | 100% | 81,736 | - | 81,736 | 100% |
| High Growth & Low Prices | 2026 | 12,865 | - | 12,865 | 100% | 82,938 | - | 82,938 | 100% |
| High Growth & Low Prices | 2027 | 12,996 | - | 12,996 | 100% | 84,166 | - | 84,166 | 100% |
| High Growth & Low Prices | 2028 | 13,123 | - | 13,123 | 100% | 85,403 | - | 85,403 | 100% |
| High Growth & Low Prices | 2029 | 13,252 | - | 13,252 | 100% | 86,668 | - | 86,668 | 100% |
| High Growth & Low Prices | 2030 | 13,388 | - | 13,388 | 100% | 87,097 | 849 | 87,947 | 99% |
| High Growth & Low Prices | 2031 | 13,518 | - | 13,518 | 100% | 87,091 | 2,163 | 89,254 | 98% |
| High Growth & Low Prices | 2032 | 13,649 | - | 13,649 | 100% | 87,085 | 3,490 | 90,575 | 96% |
| High Growth & Low Prices | 2033 | 13,790 | - | 13,790 | 100% | 87,079 | 4,843 | 91,922 | 95% |

# APPENDIX 6.2: PEAK DAY DEMAND TABLE
# LOW GROWTH

**Peak Day Demand - Served and Unserved (MDth/d)**
Before Resource Additions & Net of DSM Savings

| Case | Gas Year | LaGrande Served | LaGrande Unserved | LaGrande Total | LaGrande % of Peak Day Served | WA/ID Served | WA/ID Unserved | WA/ID Total | WA/ID % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2014 | 7,345 | - | 7,345 | 100% | 270,352 | - | 270,352 | 100% |
| Low Growth & High Prices | 2015 | 7,195 | - | 7,195 | 100% | 265,445 | - | 265,445 | 100% |
| Low Growth & High Prices | 2016 | 7,132 | - | 7,132 | 100% | 263,889 | - | 263,889 | 100% |
| Low Growth & High Prices | 2017 | 7,109 | - | 7,109 | 100% | 263,718 | - | 263,718 | 100% |
| Low Growth & High Prices | 2018 | 7,089 | - | 7,089 | 100% | 263,664 | - | 263,664 | 100% |
| Low Growth & High Prices | 2019 | 7,056 | - | 7,056 | 100% | 263,054 | - | 263,054 | 100% |
| Low Growth & High Prices | 2020 | 7,045 | - | 7,045 | 100% | 263,292 | - | 263,292 | 100% |
| Low Growth & High Prices | 2021 | 7,040 | - | 7,040 | 100% | 263,837 | - | 263,837 | 100% |
| Low Growth & High Prices | 2022 | 7,017 | - | 7,017 | 100% | 263,736 | - | 263,736 | 100% |
| Low Growth & High Prices | 2023 | 6,981 | - | 6,981 | 100% | 263,060 | - | 263,060 | 100% |
| Low Growth & High Prices | 2024 | 6,995 | - | 6,995 | 100% | 264,284 | - | 264,284 | 100% |
| Low Growth & High Prices | 2025 | 6,965 | - | 6,965 | 100% | 263,830 | - | 263,830 | 100% |
| Low Growth & High Prices | 2026 | 6,940 | - | 6,940 | 100% | 263,559 | - | 263,559 | 100% |
| Low Growth & High Prices | 2027 | 6,926 | - | 6,926 | 100% | 263,749 | - | 263,749 | 100% |
| Low Growth & High Prices | 2028 | 6,921 | - | 6,921 | 100% | 264,377 | - | 264,377 | 100% |
| Low Growth & High Prices | 2029 | 6,917 | - | 6,917 | 100% | 264,926 | - | 264,926 | 100% |
| Low Growth & High Prices | 2030 | 6,883 | - | 6,883 | 100% | 264,327 | - | 264,327 | 100% |
| Low Growth & High Prices | 2031 | 6,865 | - | 6,865 | 100% | 264,329 | - | 264,329 | 100% |
| Low Growth & High Prices | 2032 | 6,846 | - | 6,846 | 100% | 264,312 | - | 264,312 | 100% |
| Low Growth & High Prices | 2033 | 6,859 | - | 6,859 | 100% | 265,562 | - | 265,562 | 100% |

| Case | Gas Year | Klamath Falls Served | Klamath Falls Unserved | Klamath Falls Total | Klamath Falls % of Peak Day Served | Medford/Roseburg Served | Medford/Roseburg Unserved | Medford/Roseburg Total | Medford/Roseburg % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| Low Growth & High Prices | 2014 | 11,451 | - | 11,451 | 100% | 69,822 | - | 69,822 | 100% |
| Low Growth & High Prices | 2015 | 11,230 | - | 11,230 | 100% | 68,580 | - | 68,580 | 100% |
| Low Growth & High Prices | 2016 | 11,151 | - | 11,151 | 100% | 68,191 | - | 68,191 | 100% |
| Low Growth & High Prices | 2017 | 11,130 | - | 11,130 | 100% | 68,150 | - | 68,150 | 100% |
| Low Growth & High Prices | 2018 | 11,105 | - | 11,105 | 100% | 68,148 | - | 68,148 | 100% |
| Low Growth & High Prices | 2019 | 11,067 | - | 11,067 | 100% | 68,004 | - | 68,004 | 100% |
| Low Growth & High Prices | 2020 | 11,061 | - | 11,061 | 100% | 68,080 | - | 68,080 | 100% |
| Low Growth & High Prices | 2021 | 11,063 | - | 11,063 | 100% | 68,222 | - | 68,222 | 100% |
| Low Growth & High Prices | 2022 | 11,043 | - | 11,043 | 100% | 68,206 | - | 68,206 | 100% |
| Low Growth & High Prices | 2023 | 11,001 | - | 11,001 | 100% | 68,039 | - | 68,039 | 100% |
| Low Growth & High Prices | 2024 | 11,030 | - | 11,030 | 100% | 68,359 | - | 68,359 | 100% |
| Low Growth & High Prices | 2025 | 10,995 | - | 10,995 | 100% | 68,244 | - | 68,244 | 100% |
| Low Growth & High Prices | 2026 | 10,969 | - | 10,969 | 100% | 68,184 | - | 68,184 | 100% |
| Low Growth & High Prices | 2027 | 10,956 | - | 10,956 | 100% | 68,235 | - | 68,235 | 100% |
| Low Growth & High Prices | 2028 | 10,965 | - | 10,965 | 100% | 68,402 | - | 68,402 | 100% |
| Low Growth & High Prices | 2029 | 10,972 | - | 10,972 | 100% | 68,545 | - | 68,545 | 100% |
| Low Growth & High Prices | 2030 | 10,926 | - | 10,926 | 100% | 68,398 | - | 68,398 | 100% |
| Low Growth & High Prices | 2031 | 10,911 | - | 10,911 | 100% | 68,399 | - | 68,399 | 100% |
| Low Growth & High Prices | 2032 | 10,895 | - | 10,895 | 100% | 68,401 | - | 68,401 | 100% |
| Low Growth & High Prices | 2033 | 10,922 | - | 10,922 | 100% | 68,719 | - | 68,719 | 100% |

# APPENDIX 6.2: PEAK DAY DEMAND TABLE
# COLDEST IN 20 YEARS

**Peak Day Demand - Served and Unserved (MDth/d)**

Before Resource Additions & Net of DSM Savings

| Case | Gas Year | LaGrande Served | LaGrande Unserved | LaGrande Total | LaGrande % of Peak Day Served | WA/ID Served | WA/ID Unserved | WA/ID Total | WA/ID % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| Coldest in 20 | 2014 | 7,388 | - | 7,388 | 100% | 252,453 | - | 252,453 | 100% |
| Coldest in 20 | 2015 | 7,422 | - | 7,422 | 100% | 254,998 | - | 254,998 | 100% |
| Coldest in 20 | 2016 | 7,457 | - | 7,457 | 100% | 257,472 | - | 257,472 | 100% |
| Coldest in 20 | 2017 | 7,429 | - | 7,429 | 100% | 257,946 | - | 257,946 | 100% |
| Coldest in 20 | 2018 | 7,471 | - | 7,471 | 100% | 260,769 | - | 260,769 | 100% |
| Coldest in 20 | 2019 | 7,501 | - | 7,501 | 100% | 263,261 | - | 263,261 | 100% |
| Coldest in 20 | 2020 | 7,532 | - | 7,532 | 100% | 265,785 | - | 265,785 | 100% |
| Coldest in 20 | 2021 | 7,536 | - | 7,536 | 100% | 267,539 | - | 267,539 | 100% |
| Coldest in 20 | 2022 | 7,478 | - | 7,478 | 100% | 266,917 | - | 266,917 | 100% |
| Coldest in 20 | 2023 | 7,498 | - | 7,498 | 100% | 269,164 | - | 269,164 | 100% |
| Coldest in 20 | 2024 | 7,528 | - | 7,528 | 100% | 271,778 | - | 271,778 | 100% |
| Coldest in 20 | 2025 | 7,497 | - | 7,497 | 100% | 272,296 | - | 272,296 | 100% |
| Coldest in 20 | 2026 | 7,469 | - | 7,469 | 100% | 272,781 | - | 272,781 | 100% |
| Coldest in 20 | 2027 | 7,474 | - | 7,474 | 100% | 274,514 | - | 274,514 | 100% |
| Coldest in 20 | 2028 | 7,503 | - | 7,503 | 100% | 277,190 | - | 277,190 | 100% |
| Coldest in 20 | 2029 | 7,531 | - | 7,531 | 100% | 279,891 | - | 279,891 | 100% |
| Coldest in 20 | 2030 | 7,476 | - | 7,476 | 100% | 279,431 | - | 279,431 | 100% |
| Coldest in 20 | 2031 | 7,506 | - | 7,506 | 100% | 282,162 | - | 282,162 | 100% |
| Coldest in 20 | 2032 | 7,502 | - | 7,502 | 100% | 283,631 | - | 283,631 | 100% |
| Coldest in 20 | 2033 | 7,512 | - | 7,512 | 100% | 285,655 | - | 285,655 | 100% |

| Case | Gas Year | Klamath Falls Served | Klamath Falls Unserved | Klamath Falls Total | Klamath Falls % of Peak Day Served | Medford/Roseburg Served | Medford/Roseburg Unserved | Medford/Roseburg Total | Medford/Roseburg % of Peak Day Served |
|---|---|---|---|---|---|---|---|---|---|
| Coldest in 20 | 2014 | 11,488 | - | 11,488 | 100% | 62,534 | - | 62,534 | 100% |
| Coldest in 20 | 2015 | 11,497 | - | 11,497 | 100% | 63,033 | - | 63,033 | 100% |
| Coldest in 20 | 2016 | 11,538 | - | 11,538 | 100% | 63,512 | - | 63,512 | 100% |
| Coldest in 20 | 2017 | 11,500 | - | 11,500 | 100% | 63,494 | - | 63,494 | 100% |
| Coldest in 20 | 2018 | 11,556 | - | 11,556 | 100% | 64,022 | - | 64,022 | 100% |
| Coldest in 20 | 2019 | 11,617 | - | 11,617 | 100% | 64,557 | - | 64,557 | 100% |
| Coldest in 20 | 2020 | 11,692 | - | 11,692 | 100% | 65,174 | - | 65,174 | 100% |
| Coldest in 20 | 2021 | 11,732 | - | 11,732 | 100% | 65,602 | - | 65,602 | 100% |
| Coldest in 20 | 2022 | 11,671 | - | 11,671 | 100% | 65,458 | - | 65,458 | 100% |
| Coldest in 20 | 2023 | 11,731 | - | 11,731 | 100% | 66,006 | - | 66,006 | 100% |
| Coldest in 20 | 2024 | 11,806 | - | 11,806 | 100% | 66,639 | - | 66,639 | 100% |
| Coldest in 20 | 2025 | 11,793 | - | 11,793 | 100% | 66,771 | - | 66,771 | 100% |
| Coldest in 20 | 2026 | 11,776 | - | 11,776 | 100% | 66,891 | - | 66,891 | 100% |
| Coldest in 20 | 2027 | 11,814 | - | 11,814 | 100% | 67,315 | - | 67,315 | 100% |
| Coldest in 20 | 2028 | 11,891 | - | 11,891 | 100% | 67,964 | - | 67,964 | 100% |
| Coldest in 20 | 2029 | 11,966 | - | 11,966 | 100% | 68,621 | - | 68,621 | 100% |
| Coldest in 20 | 2030 | 11,910 | - | 11,910 | 100% | 68,518 | - | 68,518 | 100% |
| Coldest in 20 | 2031 | 11,987 | - | 11,987 | 100% | 69,180 | - | 69,180 | 100% |
| Coldest in 20 | 2032 | 12,011 | - | 12,011 | 100% | 69,540 | - | 69,540 | 100% |
| Coldest in 20 | 2033 | 12,057 | - | 12,057 | 100% | 70,032 | - | 70,032 | 100% |

# APPENDIX 7.1: DISTRIBUTION SYSTEM MODELING

## OVERVIEW

The primary goal of distribution system planning is to design for present needs and to plan for future expansion to serve demand growth. This allows Avista to satisfy current demand-serving requirements while taking steps toward meeting future needs. Distribution system planning identifies potential problems and areas of the distribution system that require reinforcement. By knowing when and where pressure problems may occur, the necessary reinforcements can be incorporated into normal maintenance. Thus, more costly reactive and emergency solutions can be avoided.

## COMPUTER MODELING

When designing new main extensions, computer modeling can help determine the optimum size facilities for present and future needs. Undersized facilities are costly to replace, and oversized facilities incur unnecessary expenses to Avista and its customers.

### THEORY AND APPLICATION OF STUDY

Natural gas network load studies have evolved in the last decade to become a highly technical and useful means of analyzing the operation of a distribution system. Using a pipeline fluid flow formula, a specified parameter of each pipe element can be simultaneously solved. Through years of research, pipeline equations have been refined to the point where solutions obtained closely represent actual system behavior.

Avista conducts network load studies using GL Noble Denton's SynerGEE® 4.6.0 software. This computer-based modeling tool runs on a Windows operating system and allows users to analyze and interpret solutions graphically.

### CREATING A MODEL

To properly study the distribution system, all natural gas main information is entered (length, pipe roughness and ID) into the model. "Main" refers to all pipelines supplying services.

Nodes are placed at all pipe intersections, beginnings and ends of mains, changes in pipe diameter/material, and to identify all large customers. A model element connects two nodes together. Therefore, a "to node" and a "from node" will represent an element between those two nodes. Almost all of the elements in a model are pipes.

Regulators are treated like adjustable valves in which the downstream pressure is set to a known value. Although specific regulator types can be entered for realistic behavior, the expected flow passing through the actual regulator is determined and the modeled regulator is forced to accommodate such flows.

### FLUID MECHANICS OF THE MODEL

Pipe flow equations are used to determine the relationships between flow, pressure drop, diameter and pipe length. For all models, the Fundamental Flow equation (FM) is used due to its demonstrated reliability.

Efficiency factors are used to account for the equivalent resistance of valves, fittings and angle changes within the distribution system. Starting with a 95 percent factor, the efficiency can be changed to fine tune the model to match field results.

Pipe roughness, along with flow conditions, creates a friction factor for all pipes within a system. Thus, each pipe may have a unique friction factor, minimizing computational errors associated with generalized friction values.

## LOAD DATA

All studies are considered steady state; all natural gas entering the distribution system must equal the natural gas exiting the distribution system at any given time.

Customer loads are obtained from Avista's customer billing system and converted to an algebraic format so loads can be generated for various conditions. Customer Management Module (CMM), a new add-on application for SynerGEE, processes customer usage history and generates a base load (non-temperature dependent) and heat load (varying with temperature) for each customer.

In the event of a peak day or an extremely cold weather condition, it is assumed that all curtailable loads are interrupted. Therefore, the models will be conducted with only core loads.

## DETERMINING NATURAL GAS CUSTOMERS' MAXIMUM HOURLY USAGE

### DETERMINING DESIGN PEAK HOURLY LOAD

The design peak hourly load for a customer is estimated by adding the hourly base load and the hourly heat load for a design temperature. This estimate reflects highest system hourly demands, as shown in Table 1:

**Table 1 - Determining Peak* Hourly Load**

| Peak Hourly Base Load | + | Peak Hourly Heat Load | = | Peak Hourly Load |
|---|---|---|---|---|

This method differs from the approach that we use for IRP peak day load planning. The primary reason for this difference is due to the importance of responding to hourly peaking in the distribution system, while IRP resource planning focuses on peak day requirements to the city gate.

## APPLYING LOADS

Having estimated the peak loads for all customers in a particular service area, the model can be loaded. The first step is to assign each load to the respective node or element.

## GENERATING LOADS

Temperature-based and non-temperature-based loads are established for each node or element, thus loads can be varied based on any temperature (HDD). Such a tool is necessary to evaluate the difference in flow and pressure due to different weather conditions.

## GEOGRAPHIC INFORMATION SYSTEM (GIS)

Several years ago Avista converted its natural gas facility maps to GIS. While the GIS can provide a variety of map products, its power lies in its analytical capability. A GIS consists of three components: spatial operations, data association and map representation.

A GIS allows analysts to conduct spatial operations (relating a feature or facility to another geographically). A spatial operation is possible if a facility displayed on a map maintains a relationship to other facilities. Spatial relationships allow analysts to perform a multitude of queries, including:

- Identify electric customers adjacent to natural gas mains who are not currently using natural gas
- Display the ratio of customers to length of pipe in Emergency Operating Procedure zones (geographical areas defined by the number of customers and their safety in the event of an emergency)
- Classify high-pressure pipeline proximity criteria

The second component of the GIS is data association. This allows analysts to model relationships between facilities displayed on a map to tabular information in a database. Databases store facility information, such as pipe size, pipe material, pressure rating, or related information (e.g., customer databases, equipment databases and work management systems). Data association allows interactive queries within a map-like environment.

Finally, the GIS provides a means to create maps of existing facilities in different scales, projections and displays. In addition, the results of a comparative or spatial analysis can be presented pictorially. This allows users to present complex analyses rapidly and in an easy-to-understand method.

## BUILDING SYNERGEE® MODELS FROM A GIS

The GIS can provide additional benefits through the ease of creation and maintenance of load studies. Avista can create load studies from the GIS based on tabular data (attributes) installed during the mapping process.

## MAINTENANCE USING A GIS

The GIS helps maintain the existing distribution facility by allowing a design to be initiated on a GIS. Currently, design jobs for the company's natural gas system are managed through Avista's Facility Management (AFM) tool. Once jobs are completed, the as-built information is automatically updated on GIS, eliminating the need to convert physical maps to a GIS at a later date. Because the facility is updated, load studies can remain current by refreshing the analysis.

## DEVELOPING A PRESENT CASE LOAD STUDY

In order for any model to have accuracy, a present case model has to be developed that reflects what the system was doing when downstream pressures and flows are known. To establish the present case, pressure charts located throughout the distribution system are used.

Pressure charts plot pressure (some include temperature) versus time over several days. Various locations recording simultaneously are used to validate the model. Customer loads on SynerGEE® are generated to correspond with actual temperatures recorded on the pressure charts. An accurate model's downstream pressures will match the corresponding location's field pressure chart. Efficiency factors are fine-tuned to further refine the model's pressures.

Since telemetry at the gate stations record hourly flow, temperature and pressure, these values are used to validate the model. All loads are representative of the average daily temperature and are defined as hourly flows. If the load generating method is truly accurate, all natural gas entering the actual system (physical) equals total natural gas demand solved by the simulated system (model).

## DEVELOPING A PEAK CASE LOAD STUDY

Using the calculated peak loads, a model can be analyzed to identify the behavior during a peak day. The efficiency factors established in the present case are used throughout subsequent models.

## ANALYZING RESULTS

After a model has been balanced, several features within the SynerGEE® model are used to translate results. Color plots are generated to depict flow direction, pressure, pipe diameter and gradient with specific break points. Reinforcements can be identified by visual inspection. When user edits are completed and the model is re-balanced, pressure changes can be visually displayed, helping identify optimum reinforcements.

An optimum reinforcement will have the largest pressure increase per unit length. Reinforcements can also be deferred and occasionally eliminated through load mitigation of DSM efforts.

## PLANNING CRITERIA

In most instances, models resulting in node pressures below 15 psig indicate a likelihood of distribution low pressure, and therefore necessitate reinforcements. For most Avista distribution systems, a minimum of 15 psig will ensure deliverability as natural gas exits the distribution mains and travels through service pipelines to a customer's meter. Some Avista distribution areas operate at lower pressures and are assigned a minimum pressure of 5 psig for model results. Given a lower operating pressure, service pipelines in such areas are sized accordingly to maintain reliability.

## DETERMINING MAXIMUM CAPACITY FOR A SYSTEM

Using a peak day model, loads can be prorated at intervals until area pressures drop to 15 psig. At that point, the total amount of natural gas entering the system equals the maximum capacity before new construction is necessary. The difference between natural gas entering the system in this scenario and a peak day model is the maximum additional capacity that can be added to the system.

Since the approximate natural gas usage for the average customer is known, it can be determined how many new customers can be added to the distribution system before necessitating system reinforcements. The above models and procedures are utilized with new construction proposals or pipe reinforcements to determine the potential increase in capacity.

## FIVE-YEAR FORECASTING

The intent of our load study forecasting is to predict the system's behavior and reinforcements necessary within the next five years. Various Avista personnel provide information to determine where and why certain areas may experience growth.

By combining information from Avista's demand forecast, IRP planning efforts, regional growth plans and area developments, proposals for pipeline reinforcements and expansions can be evaluated with SynerGEE®.

# 2014 Avista Natural Gas IRP

Technical Advisory Committee Meeting 1

January 24, 2014

Portland, Oregon

# Agenda

- Introductions & Logistics
- Purpose of IRP and Avista's IRP Process
- Avista's Demand Overview and 2012 IRP Revisited
- Economic Outlook and Customer Count Forecast
- Demand Forecast Methodology
- Dynamic Demand Forecasting
- Demand Side Management
- Questions/Wrap Up

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
  - Demand Forecast and Demand Side Management – January 24
  - Supply/Infrastructure, Natural Gas Pricing, and Potential Case Discussion– *February 25*
  - Distribution Planning, SENDOUT® Preliminary Output Results and Further Case Discussion – *March 26*
  - SENDOUT® results – *April 23*
- **May 30, 2014 –** Draft of IRP document to TAC
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
- **August 31, 2014 –** File finalized IRP document

# Purpose of Gas Integrated Resource Planning

- Comprehensive long-range resource planning tool
- Fully integrates forecasted demand requirements with potential demand side and supply side resources
- Process determines the least cost, risk adjusted means for meeting demand requirements for our firm residential, commercial and industrial customers
- Responsive to Idaho, Oregon and Washington rules and/or orders

# Avista's IRP Process

- Comprehensive analysis bringing demand forecasting and existing and potential supply-side and demand-side resources together into a 20-year, risk adjusted least-cost plan
- Considers:
  - Customer growth and usage
  - Weather planning standard
  - Demand-side management opportunities
  - Existing and potential supply-side resource options
  - Risk
  - Public participation through Technical Advisory Committee meetings (TAC)
- 2012 IRP completed and filed in all three jurisdictions on August 31, 2012 and acknowledged

# Avista's Demand Overview and 2012 IRP Re-Visited

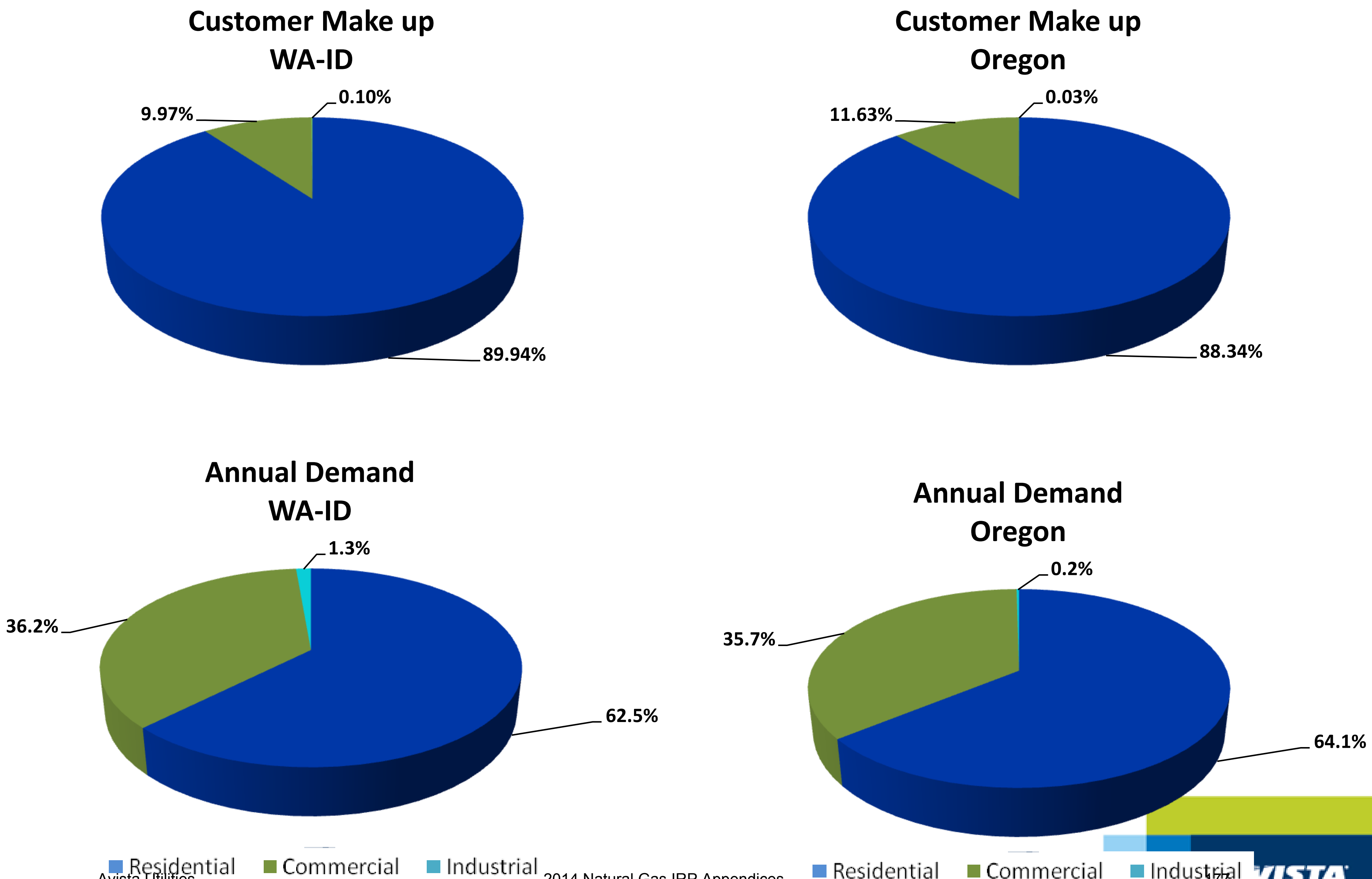
# Avista's Demand Overview

# Service Territory and Customer Overview

- Serves electric and natural gas customers in eastern Washington and northern Idaho, and natural gas customers in southern and eastern Oregon
  - Population of service area 1,590,341
    - 365,000 electric customers
    - 331,000 natural gas customers
- Have one of the smallest carbon footprints among America's 100 largest investor-owned utilities
- Committed to environmental stewardship and efficient use of resources

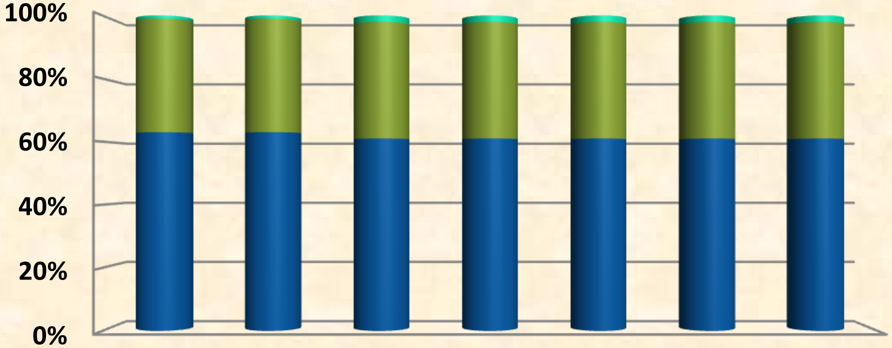

| State | Total Customers | % of Total |
|---|---|---|
| Washington | 157,557 | 47% |
| Oregon | 97,404 | 29% |
| Idaho | 76,739 | 23% |
| Total | 331,700 | 100% |

# 2013 Customer Make Up and Demand Mix



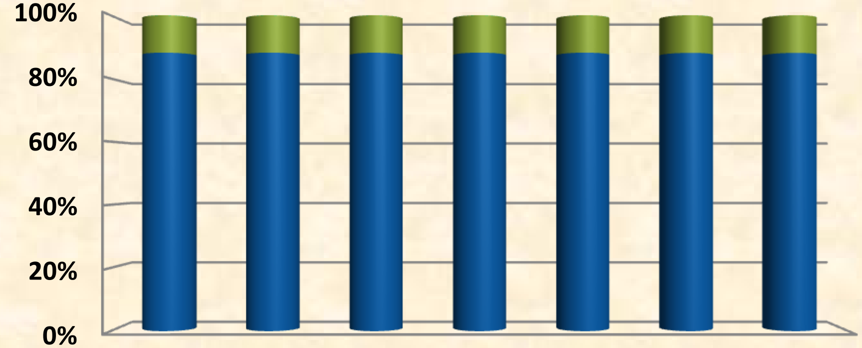
# Historical Demand Mix

## WA-ID



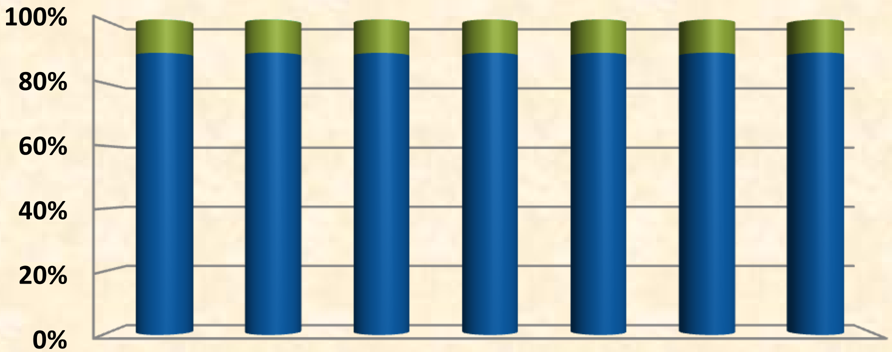

| | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|---|---|---|---|---|---|---|
| Industrial | 1% | 1% | 2% | 2% | 2% | 2% | 2% |
| Commercial | 36% | 36% | 37% | 37% | 37% | 37% | 37% |
| Residential | 63% | 63% | 61% | 61% | 61% | 61% | 61% |

## Medford/Roseburg



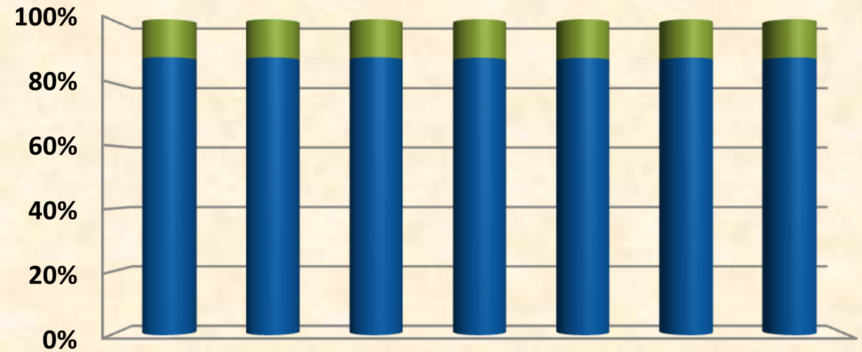

| | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|---|---|---|---|---|---|---|
| Industrial | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Commercial | 12% | 12% | 12% | 12% | 12% | 12% | 12% |
| Residential | 88% | 88% | 88% | 88% | 88% | 88% | 88% |

## Klamath Falls



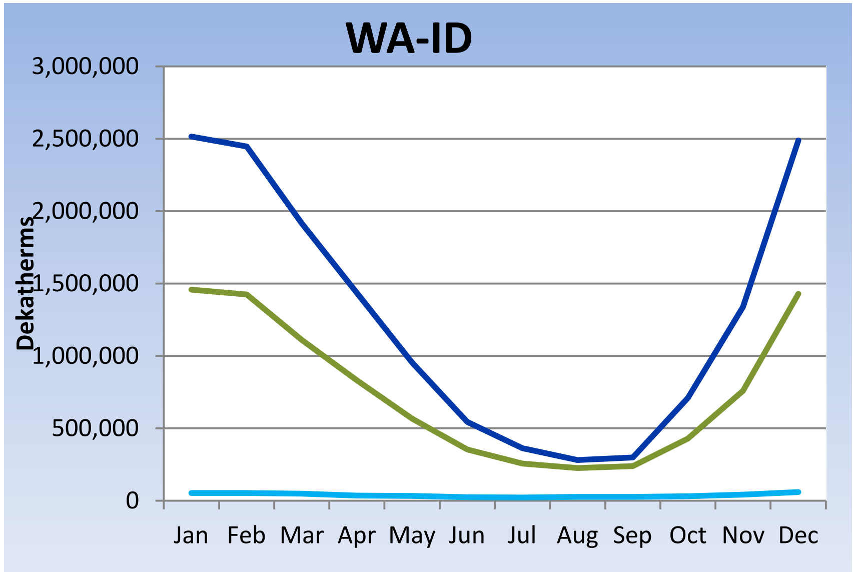

| | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|---|---|---|---|---|---|---|
| Industrial | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Commercial | 11% | 10% | 11% | 11% | 11% | 10% | 10% |
| Residential | 89% | 90% | 89% | 89% | 89% | 89% | 90% |

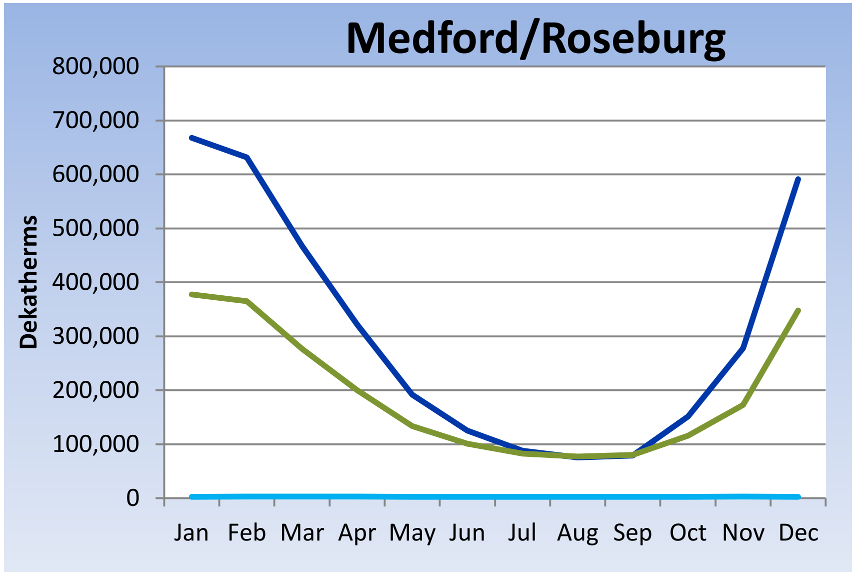
## LaGrande

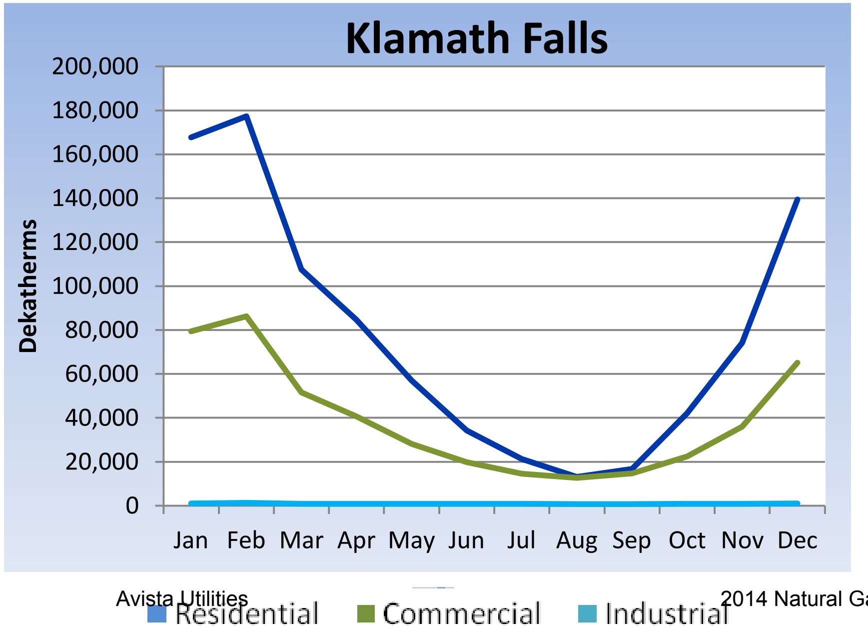


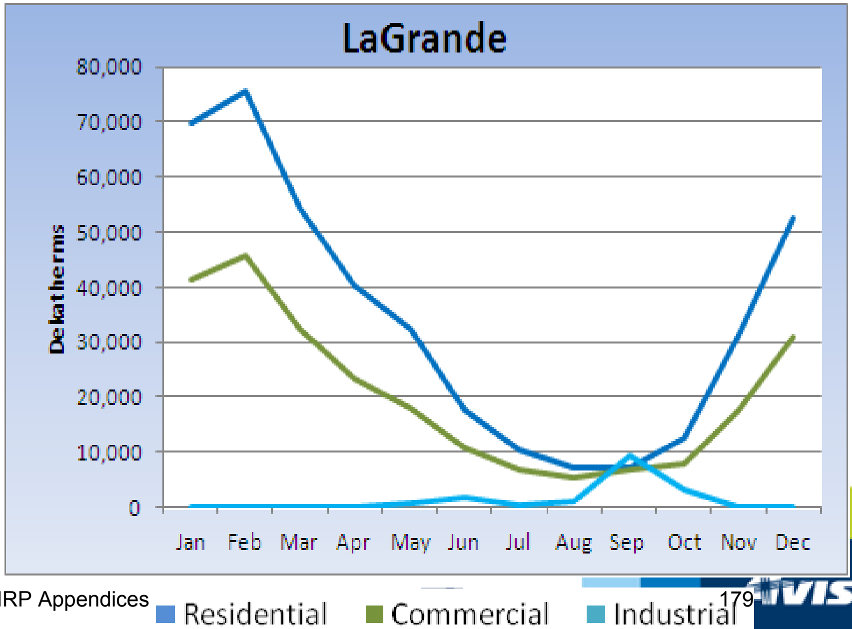

| | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 |
|---|---|---|---|---|---|---|---|
| Industrial | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Commercial | 12% | 12% | 12% | 12% | 12% | 12% | 12% |
| Residential | 88% | 88% | 88% | 88% | 88% | 88% | 88% |

# Seasonal Demand Profiles



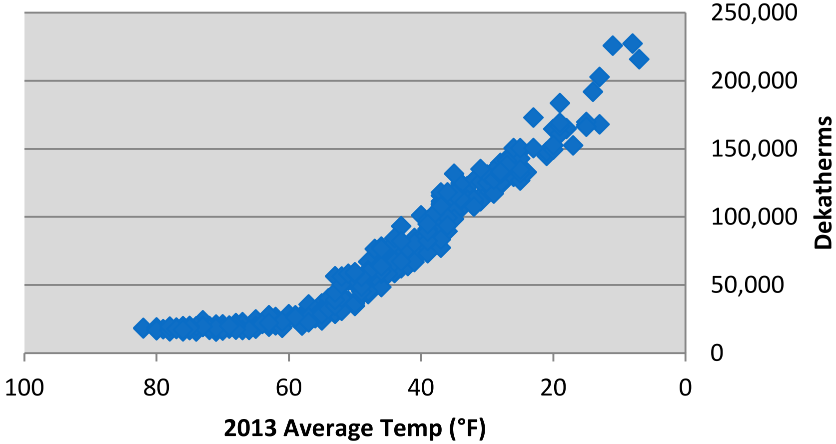



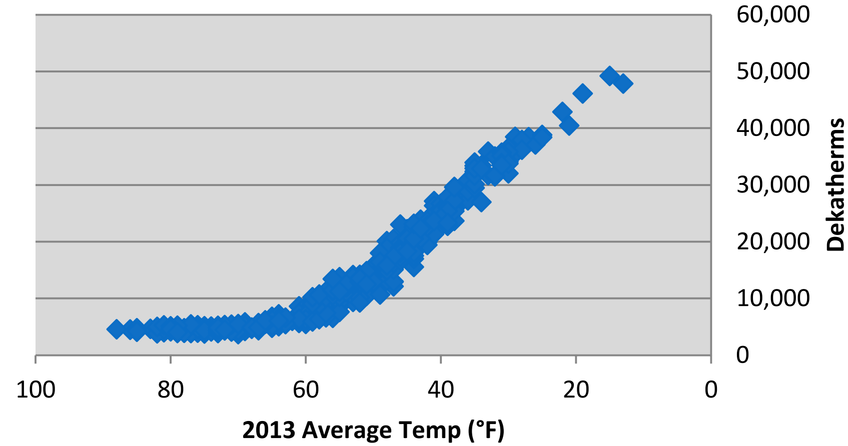



# Daily Demand Profiles

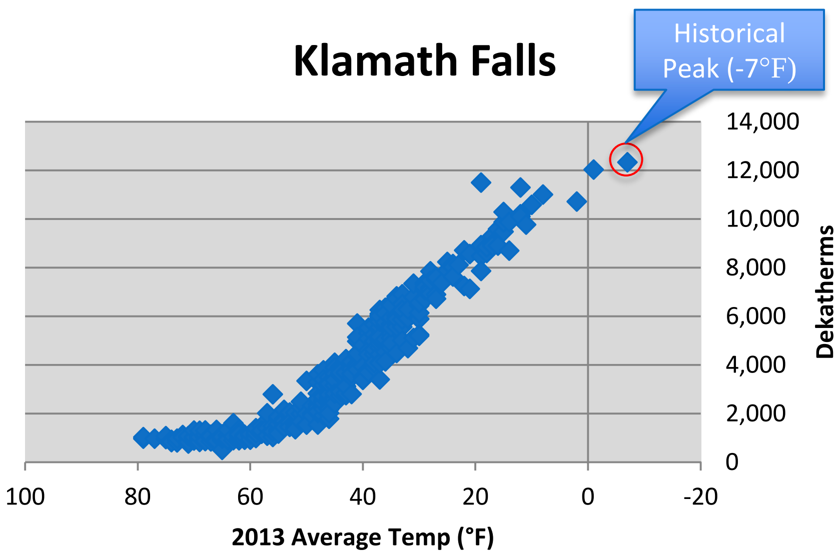
## WA-ID



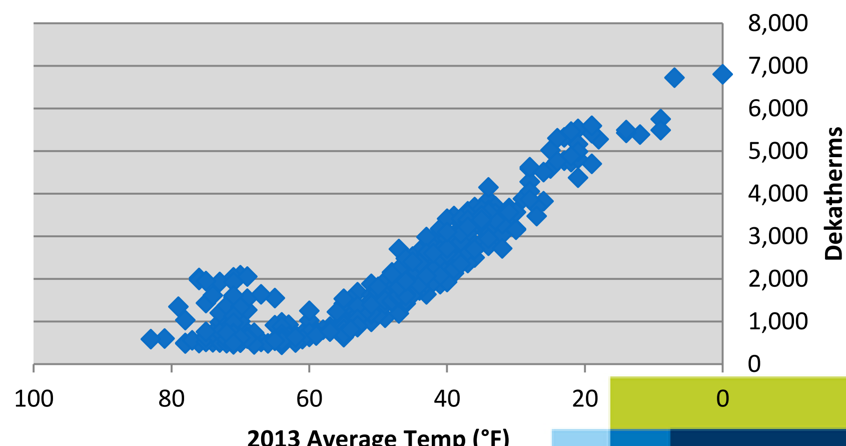

## Medford/Roseburg



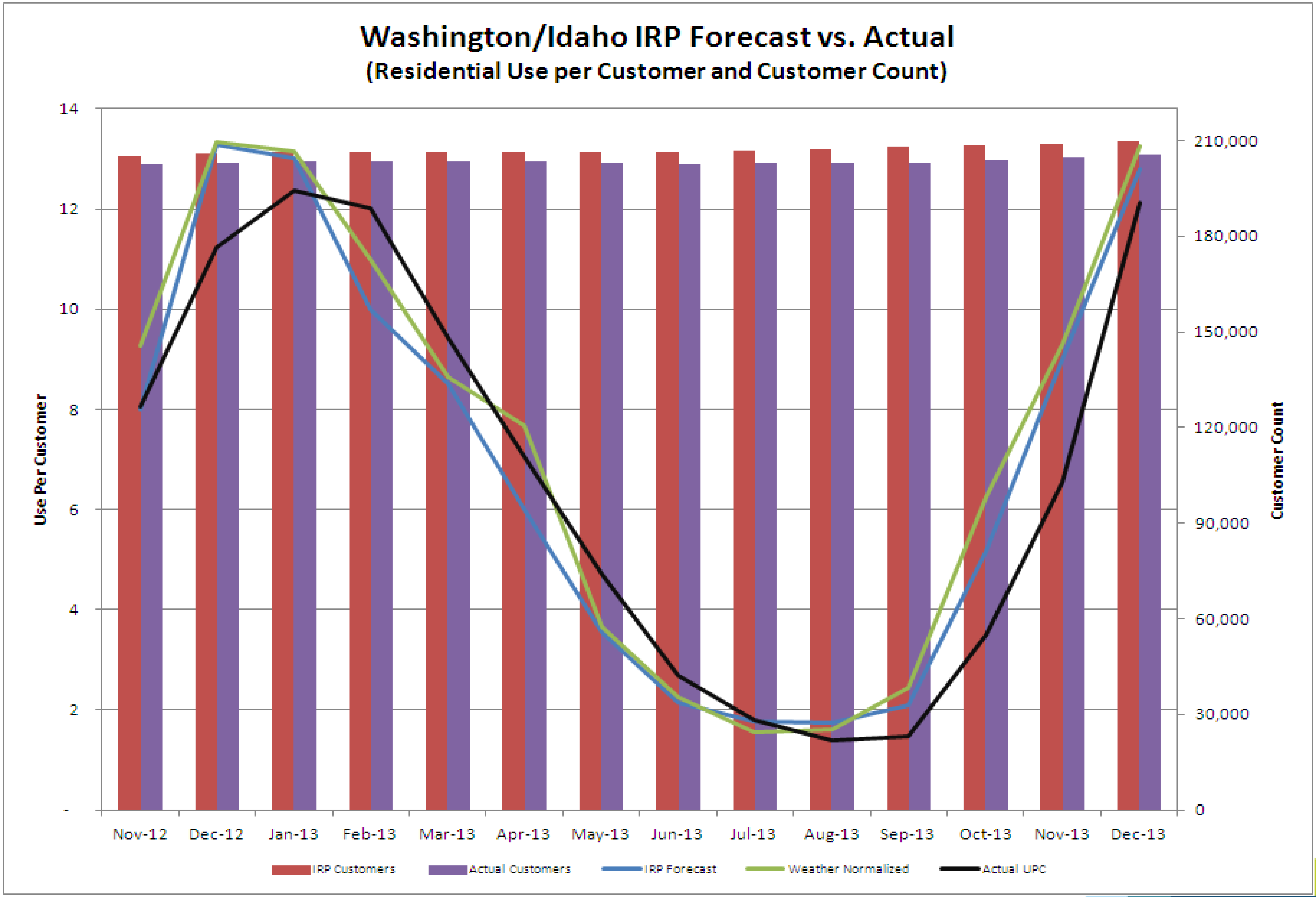

## Klamath Falls

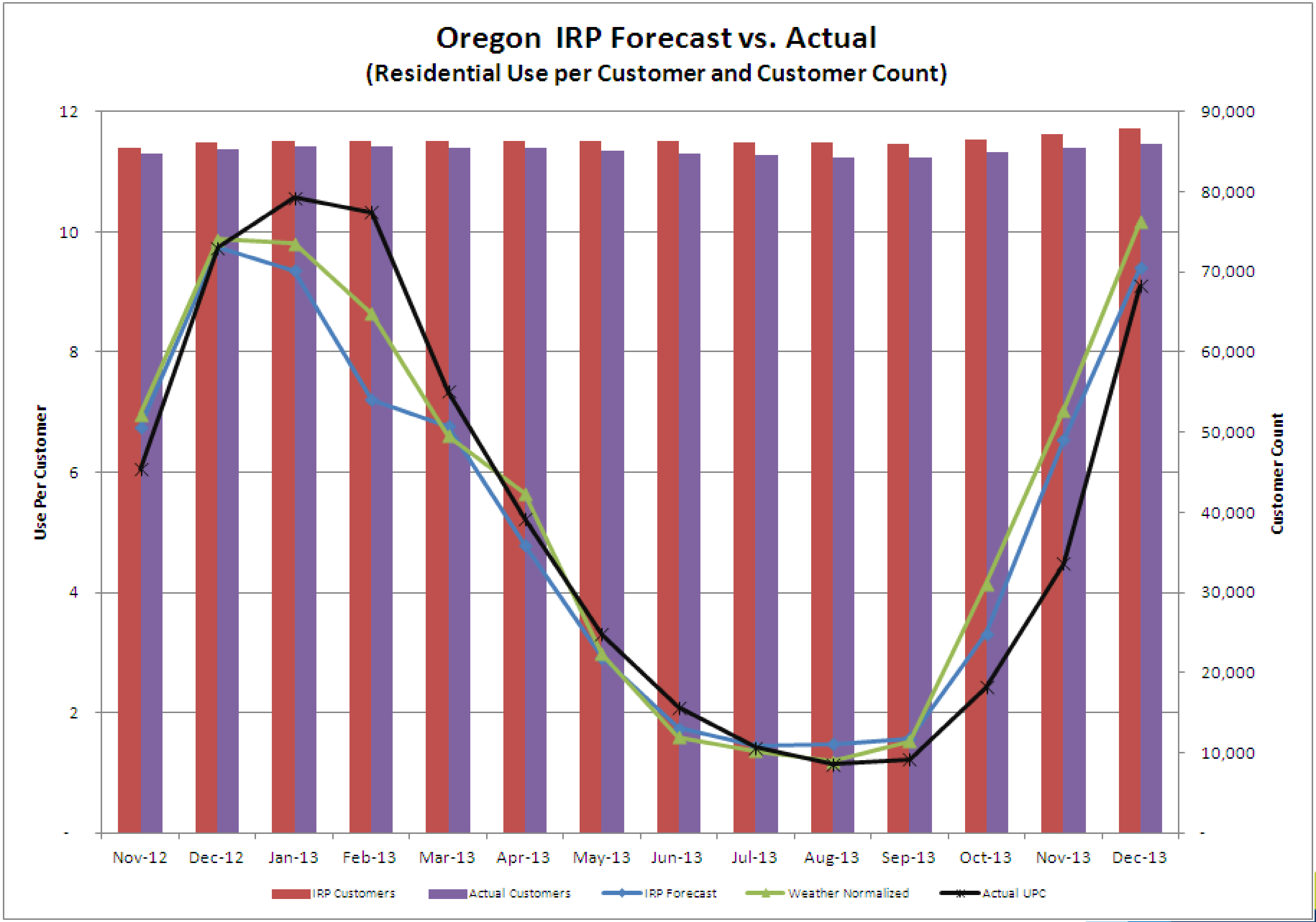



## LaGrande

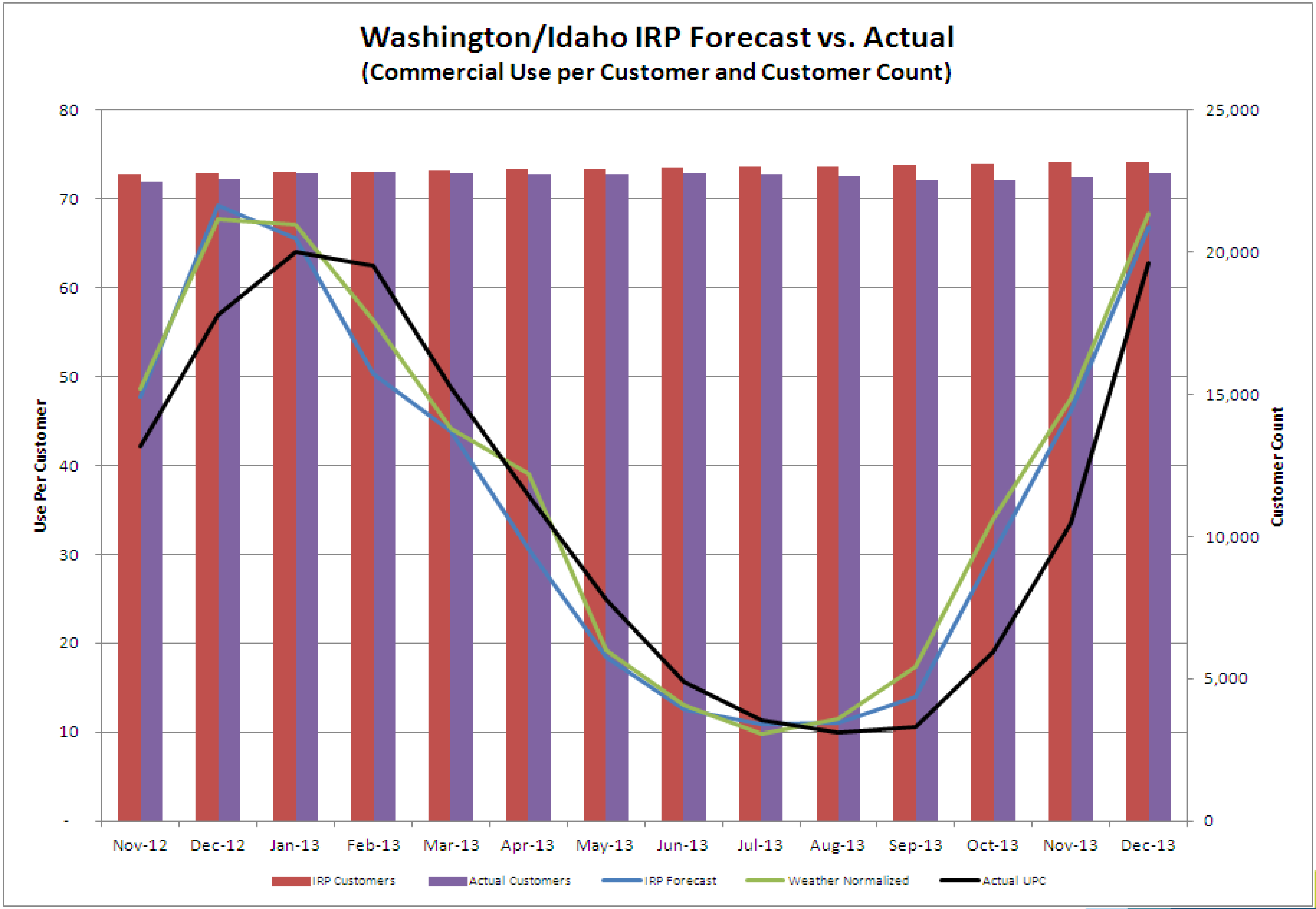


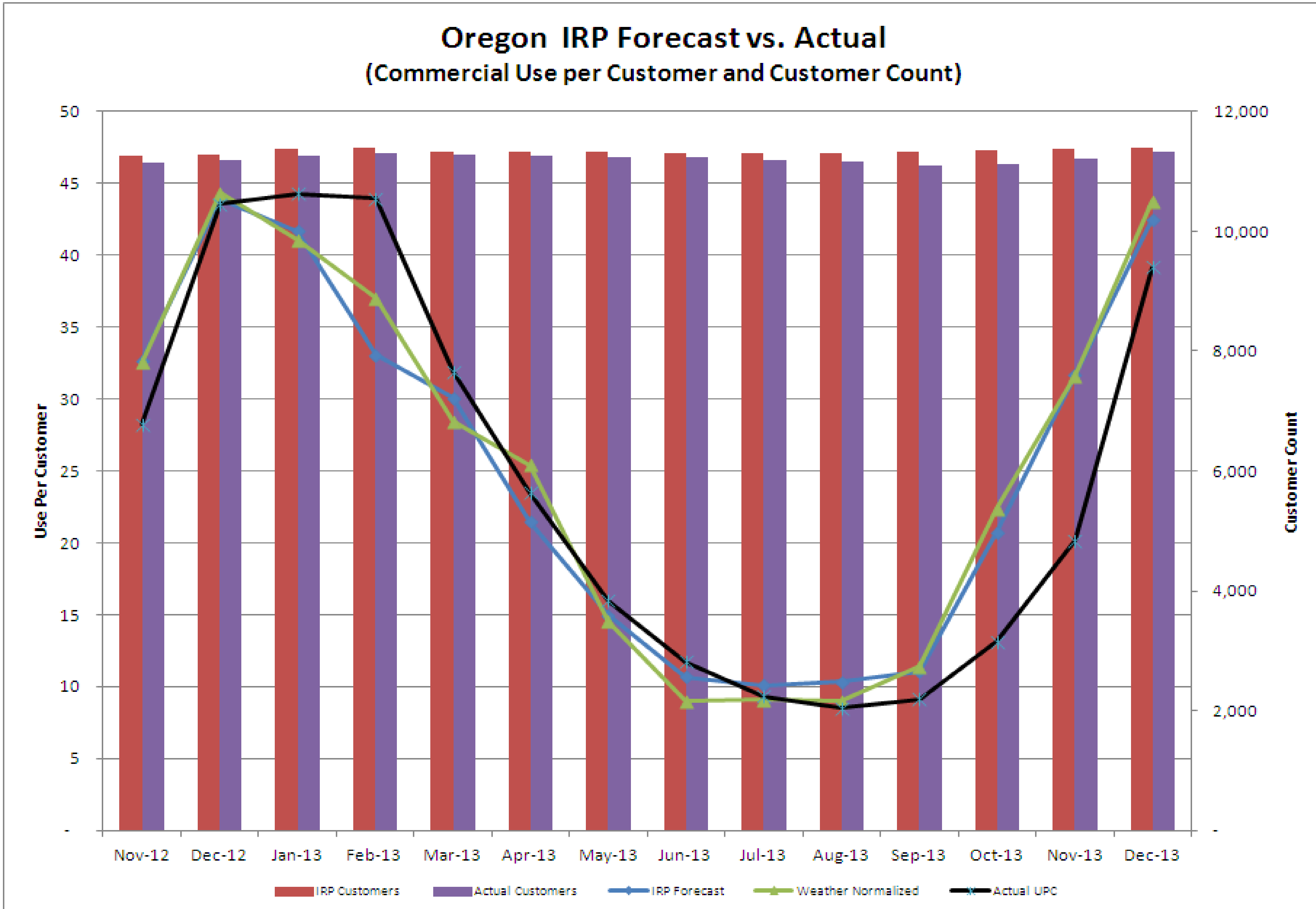
# Avista's 2012 Natural Gas IRP Re-Visited

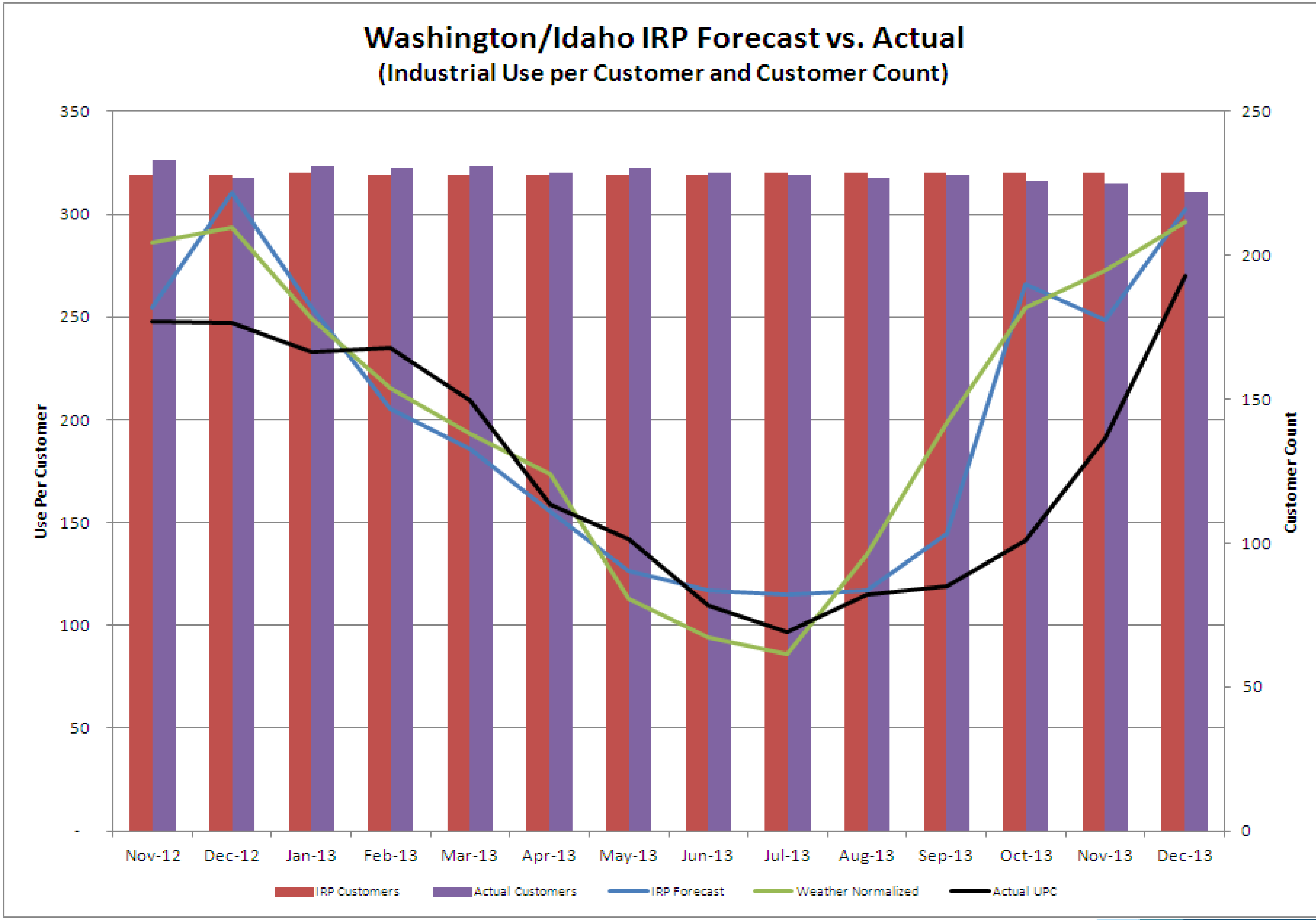

Washington/Idaho IRP Forecast vs. Actual
(Residential Use per Customer and Customer Count)
Use Per Customer
Customer Count
14
12
10
8
6
4
2
-
210,000
180,000
150,000
120,000
90,000
60,000
30,000
0
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC

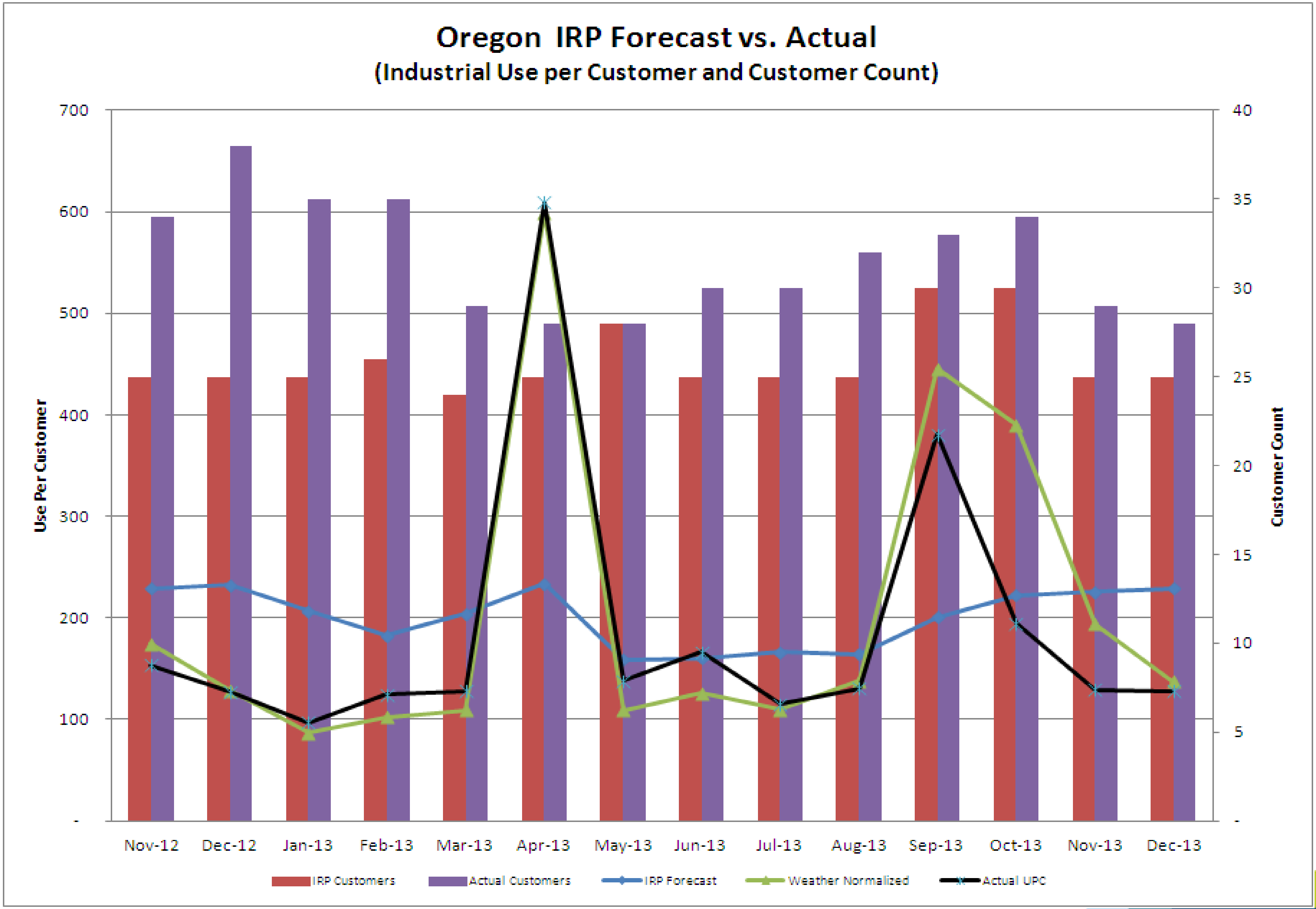


Oregon IRP Forecast vs. Actual
(Residential Use per Customer and Customer Count)
Use Per Customer
Customer Count
12
10
8
6
4
2
-
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
-
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC


Washington/Idaho IRP Forecast vs. Actual
(Commercial Use per Customer and Customer Count)
Use Per Customer
Customer Count
80
70
60
50
40
30
20
10
-
25,000
20,000
15,000
10,000
5,000
0
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC

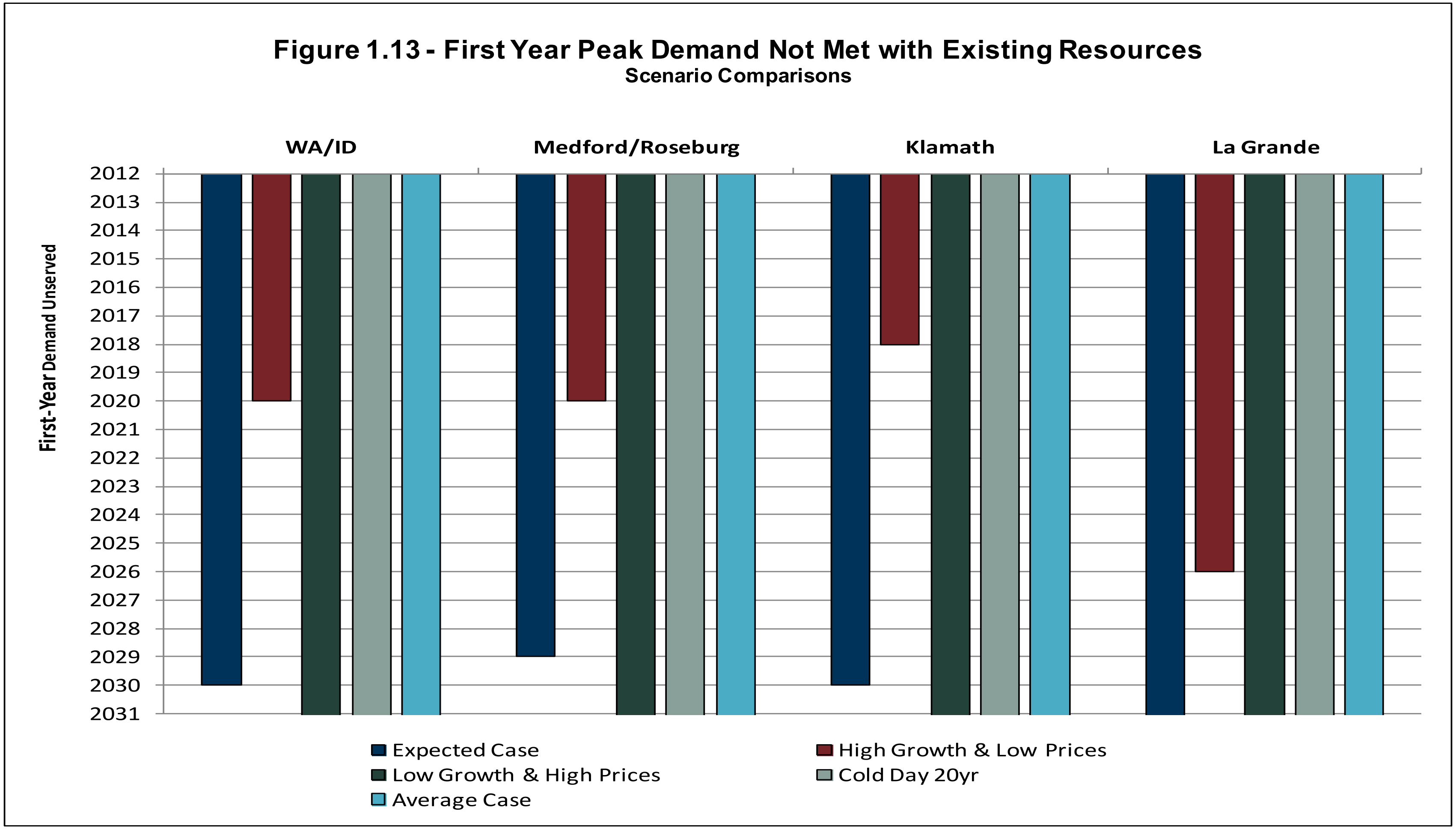

Oregon IRP Forecast vs. Actual
(Commercial Use per Customer and Customer Count)
Use Per Customer
Customer Count
50
45
40
35
30
25
20
15
10
5
-
12,000
10,000
8,000
6,000
4,000
2,000
-
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC


Washington/Idaho IRP Forecast vs. Actual
(Industrial Use per Customer and Customer Count)
350
300
250
200
150
100
50
-
Use Per Customer
250
200
150
100
50
0
Customer Count
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC


Oregon IRP Forecast vs. Actual
(Industrial Use per Customer and Customer Count)
Use Per Customer
Customer Count
700
600
500
400
300
200
100
-
40
35
30
25
20
15
10
5
-
Nov-12
Dec-12
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
IRP Customers
Actual Customers
IRP Forecast
Weather Normalized
Actual UPC

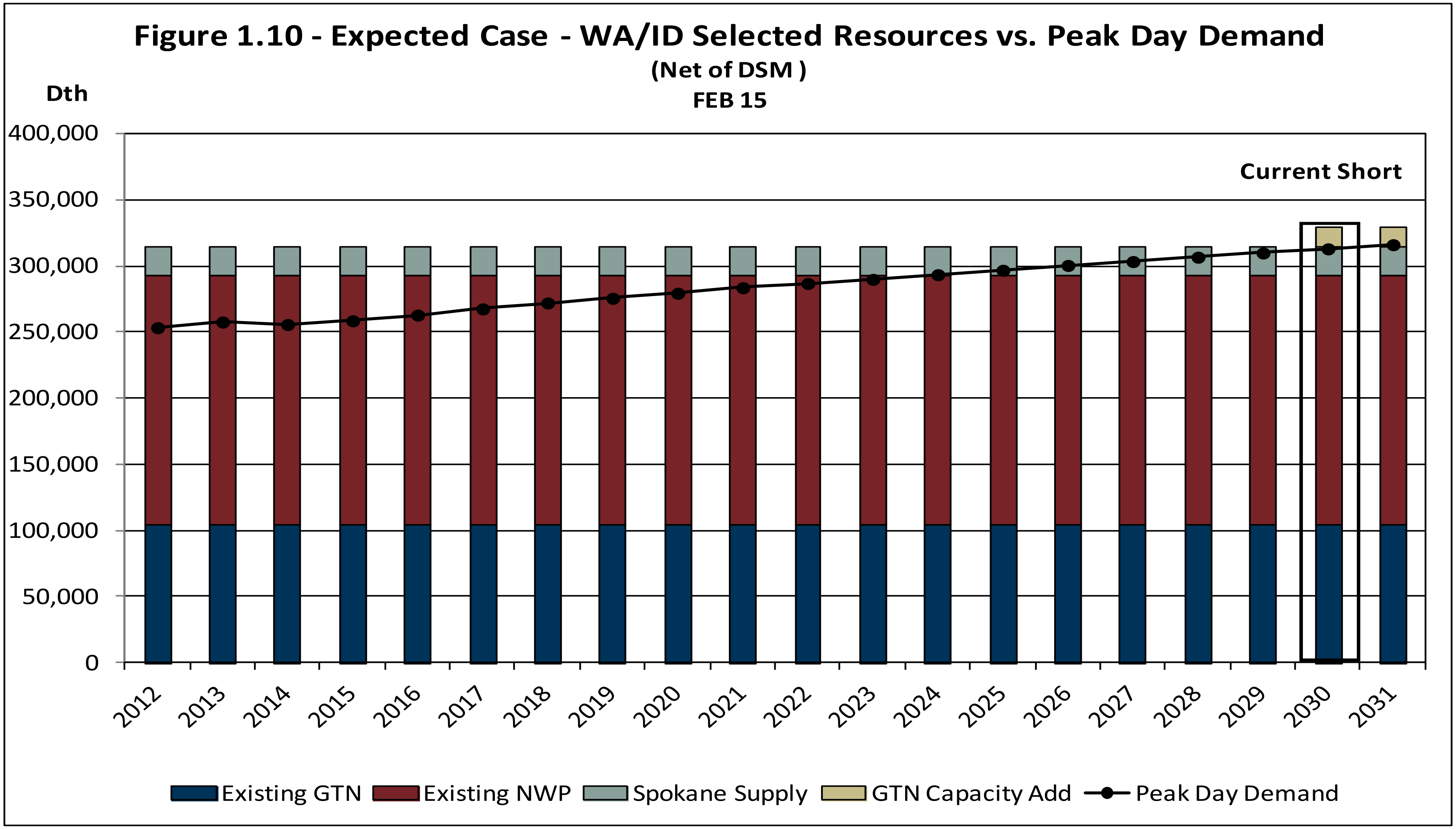
# Year First Unserved

## Scenario Comparisons



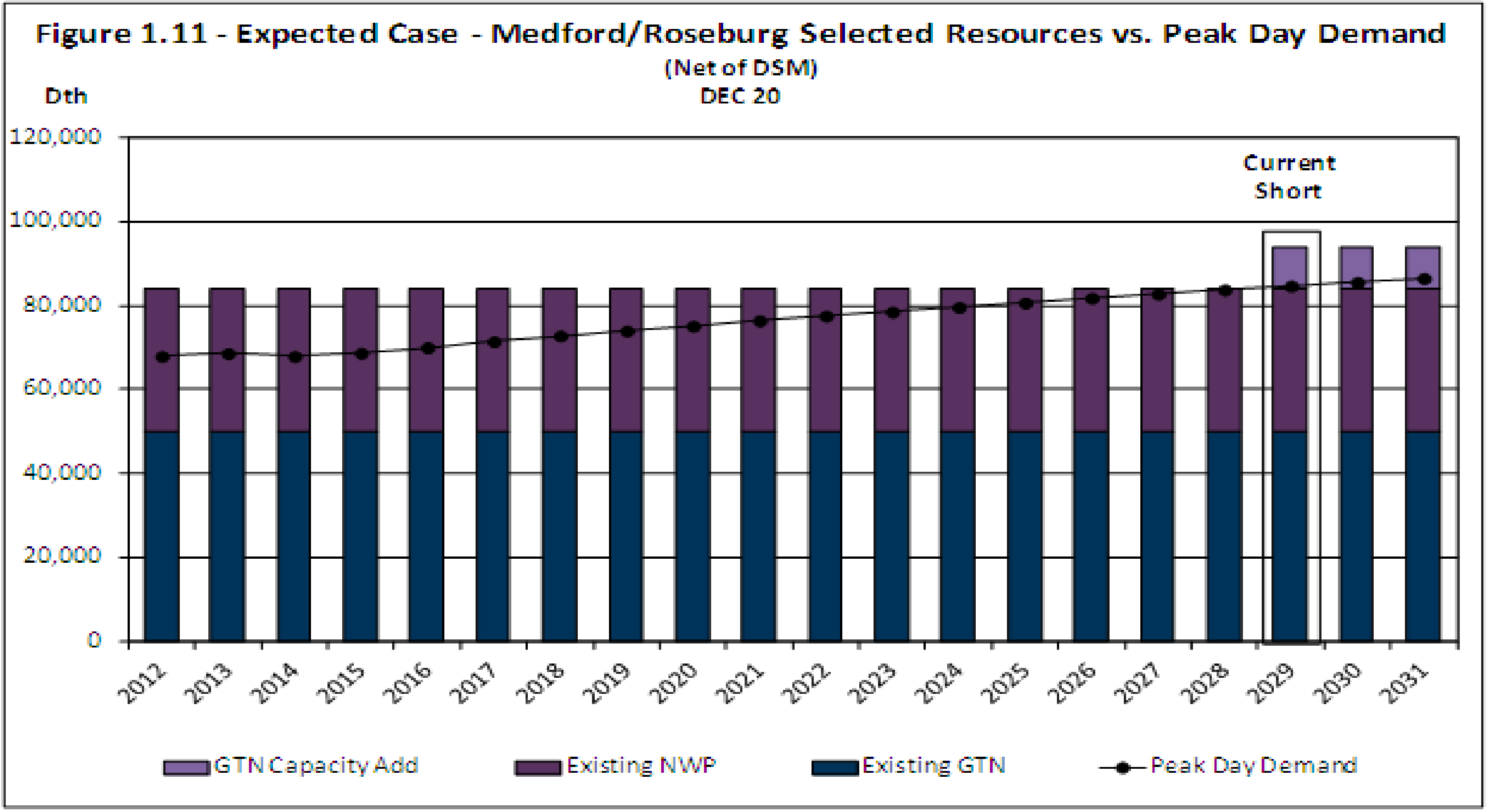
# Best Cost/Risk Resources

## Expected Case – WA/ID



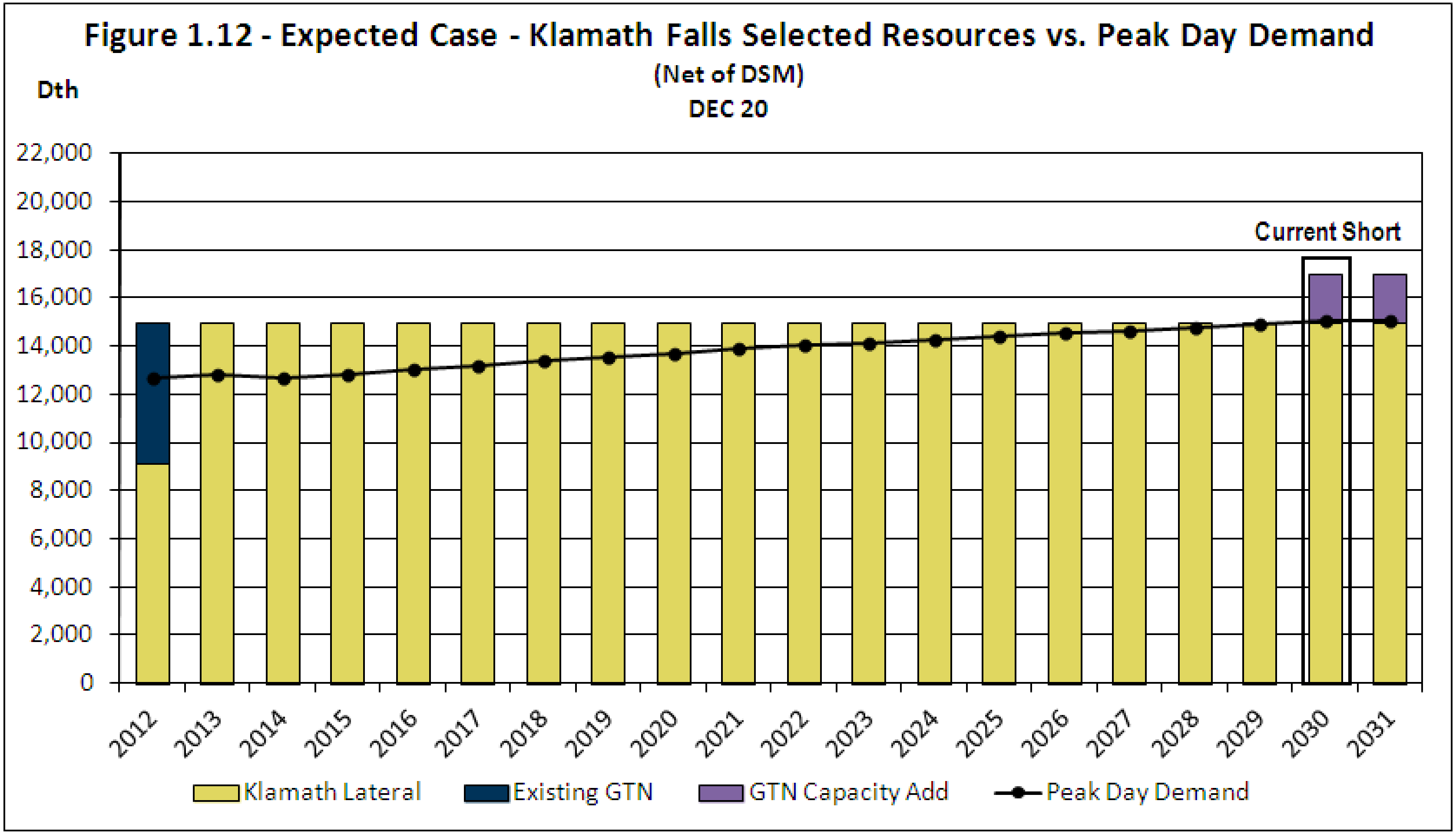
# Best Cost/Risk Resources

## Expected Case – Medford/Roseburg

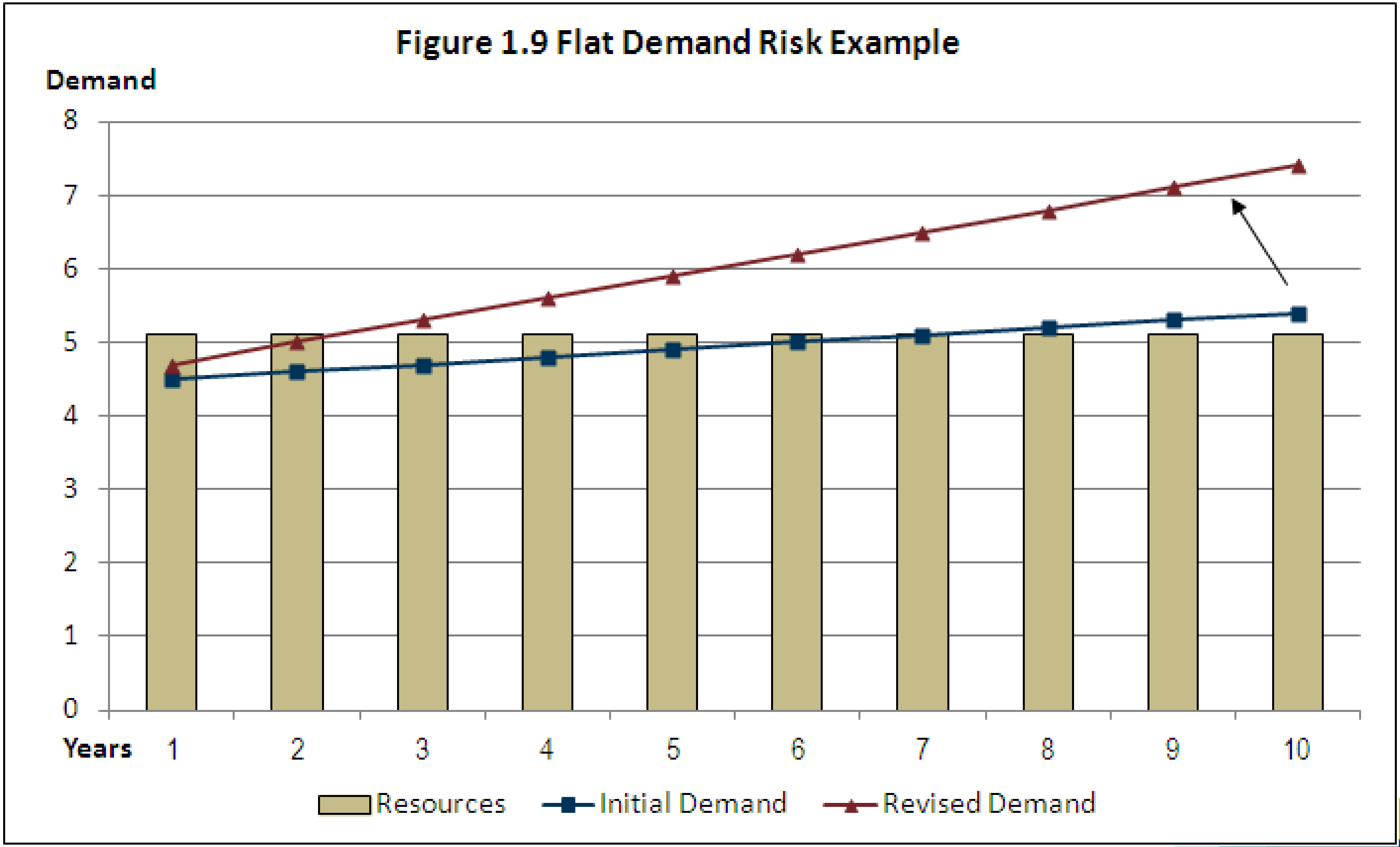


# Best Cost/Risk Resources

## Expected Case – Klamath Falls



# Our Biggest Risk Last IRP
# "Flat Demand" Risk



# December 8, 2013 Cold Weather Stats

| Area | Actual HDD | Peak HDD | Actual Demand (Dth/d) | Forecasted Peak Demand (Dth/d) |
|---|---|---|---|---|
| Klamath Falls | 72 | 72 | 12,656 | 12,830 |
| LaGrande | 65 | 74 | 6,709 | 7,310 |
| Medford | 52 | 61 | 48,060 | 53,120 |
| Roseburg | 44 | 55 | 13,058 | 13,930 |
| Washington/Idaho | 57 | 82 | 218,178 | 257,650 |

*Note: Klamath Falls and Medford set record high loads.  LaGrande and Roseburg had second highest demand days.*

# Near Term Action Items

- Demand trend monitoring
- Demand side management cost effectiveness and targets
- Gate station analysis

# On-going Action Items

- Price elasticity study inquiry
- NGV/CNG and other demand potential
- Supply side resource trends/availability
- Meet regularly with Commission Staff

# Economic Outlook and Customer Forecast Development

Grant D. Forsyth, Ph.D.
Chief Economist
Grant.Forsyth@avistacorp.com

# Load Forecasts-Two Step Process

- First, forecast customers (C) by month by schedule (s) by residential (r), commercial (c), industrial (i)—for example, $C_{t,y,s.r}$
- Forecast use per customer (U) by month by schedule by class—for example, $U_{t,y,s.r}$
- Load forecast (L) is the product of the two:

$$L_{t,y,s.r} = \boxed{C_{t,y,s.r}} \times U_{t,y,s.r}$$

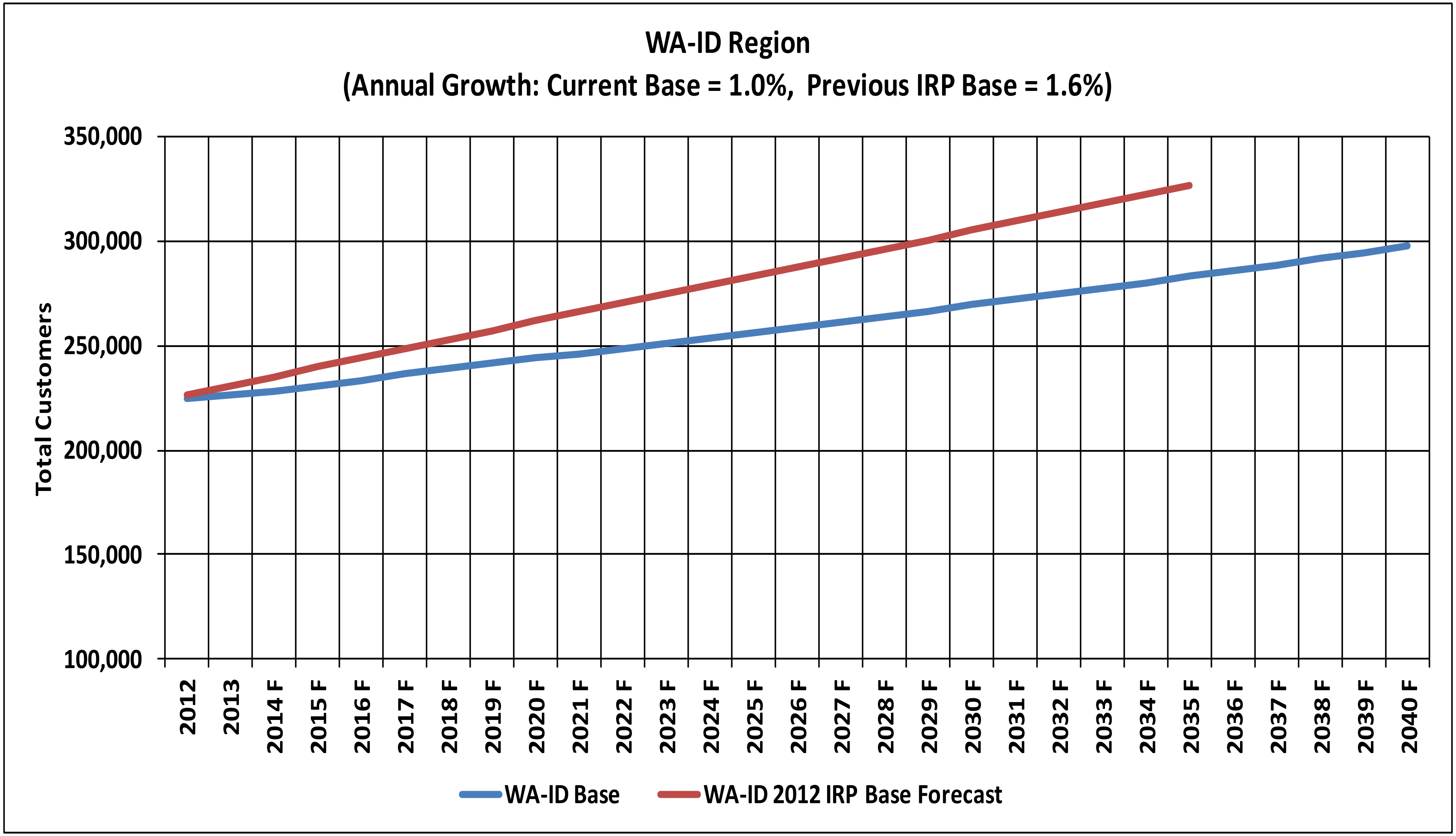
For non-IRP years, forecast is run out 5-yrs.

For weather sensitive schedules a 20-yr MA defines normal weather.

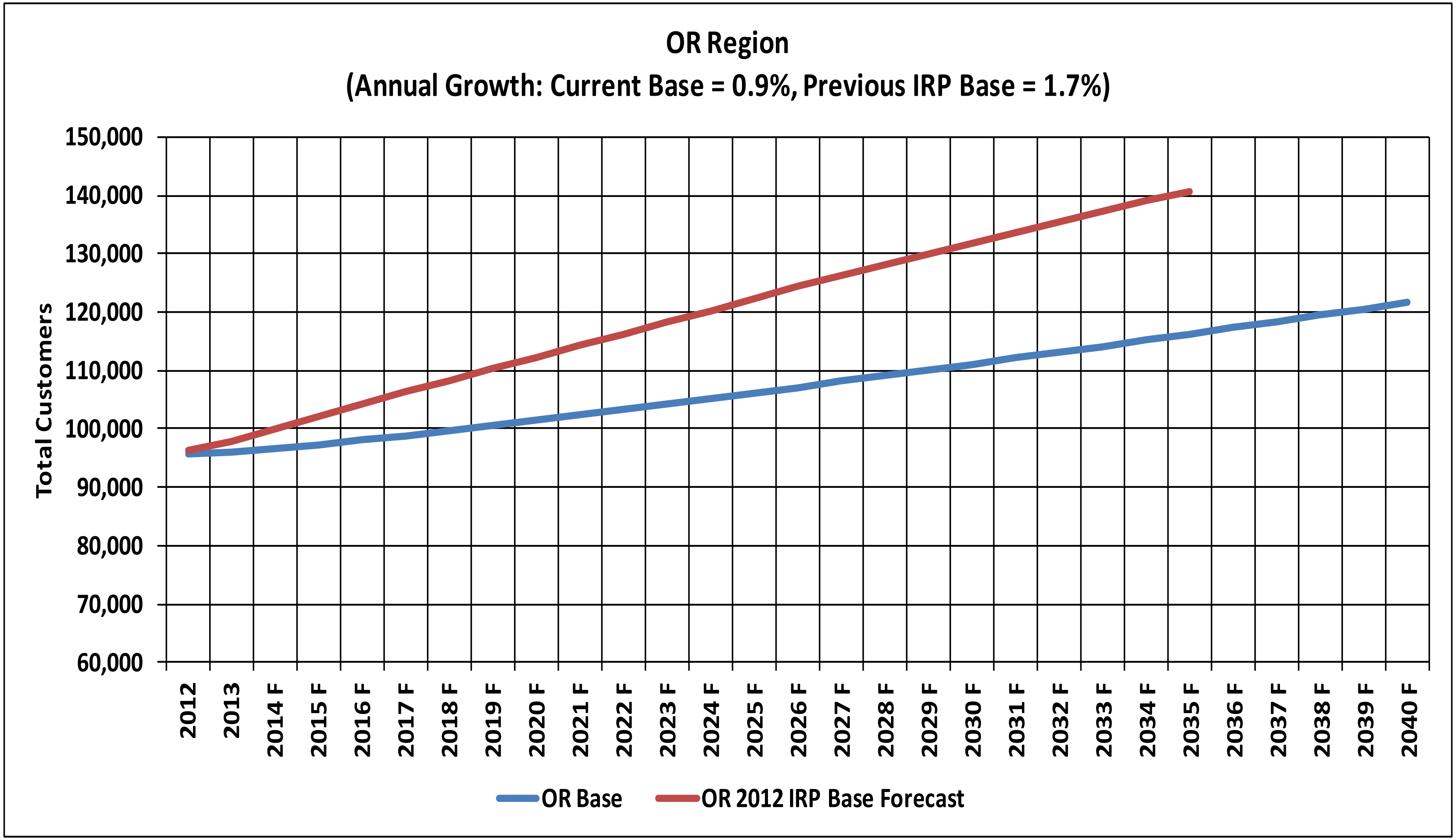
# Forecast Method—Methodology Change

- 5-year out forecasts: ARIMA based models with economic drivers and traditional smoothing models.
- For IRP years, will push out 5-year forecasts based on longer-run growth assumptions and historical relationships.
- SAS/ETS software.
- Also consider external analysis such as the University of Oregon's Regional Economic Indexes. Framing forecast in a broader economic context.
- Model building is dynamic and model improvements/changes constant.
- Forecast is lower than last IRP…Why?

# WA-ID Region: 2014 IRP and 2012 IRP



# OR Region: 2014 IRP and 2012 IRP



# The Relationship Between Classes

Residential customer growth is approximately equal to population growth in the long-run.

Commercial customer growth is highly correlated with and approximately equal to residential growth in the long-run.

**Year-over-year Growth, Gas Correlations by Class, Jan. 2006-May 2013**

| Customers | Residential | Commercial | Industrial | | Load | Residential | Commercial | Industrial |
|---|---|---|---|---|---|---|---|---|
| **Residential** | 1.00 | | | | **Residential** | 1.00 | | |
| **Commercial** | **0.83** | 1.00 | | | **Commercial** | **0.94** | 1.00 | |
| **Industrial** | **-0.44** | **-0.35** | 1.00 | | **Industrial** | **0.33** | **0.34** | 1.00 |

Industrial's correlation to residential is lower and negative. Customer numbers stable or slightly declining.

**(1)** Estimate with historical data: $C_{t,y,WA101.r} = \alpha_0 + \boldsymbol{\omega_{SD}D_{t,y}} + \text{ARIMA}\epsilon_{t,y}(10,1,0)(0,0,0)_{12}$

**(2)** 5-yr forecasts of $C_{t,y,WA101.r}$ adjusted (post-forecast) for forecasted population growth to get $C^*_{t,y,WA101.r}$

**(3)** Estimate with historical data: $C_{t,y,WA101.c} = \alpha_0 + \alpha_1 C_{t,y,WA101.r} + \boldsymbol{\omega_{SD}D_{t,y}} + \text{ARIMA}\epsilon_{t,y}(12,1,0)(0,0,0)_{12}$

**(4)** 5-yr forecasts of $C_{t,y,WA101.c}$ are generated by using $C^*_{t,y,WA101.r}$ in the estimate of (3).

# Getting to Population as a Driver

Average GDP Growth Forecasts:

- IMF, FOMC, Bloomberg, etc.
- Average forecasts out 5-yrs.

GDP

Non-farm Employment Growth Model:

- Model links year y, y-1, and y-2 GDP growth to year y regional employment growth.
- Forecast out 5-yrs.

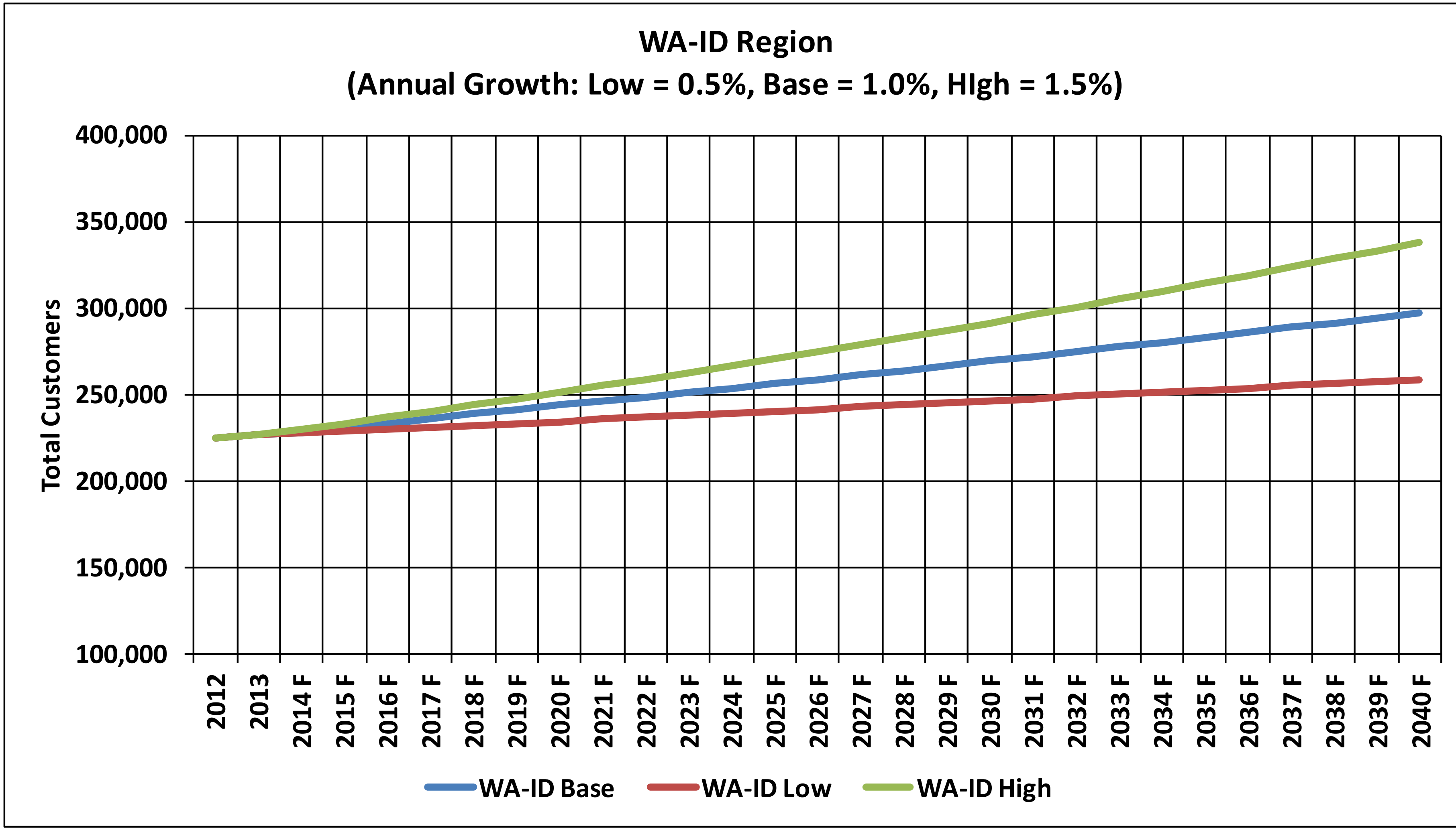
EMP

Regional Population Growth Models:

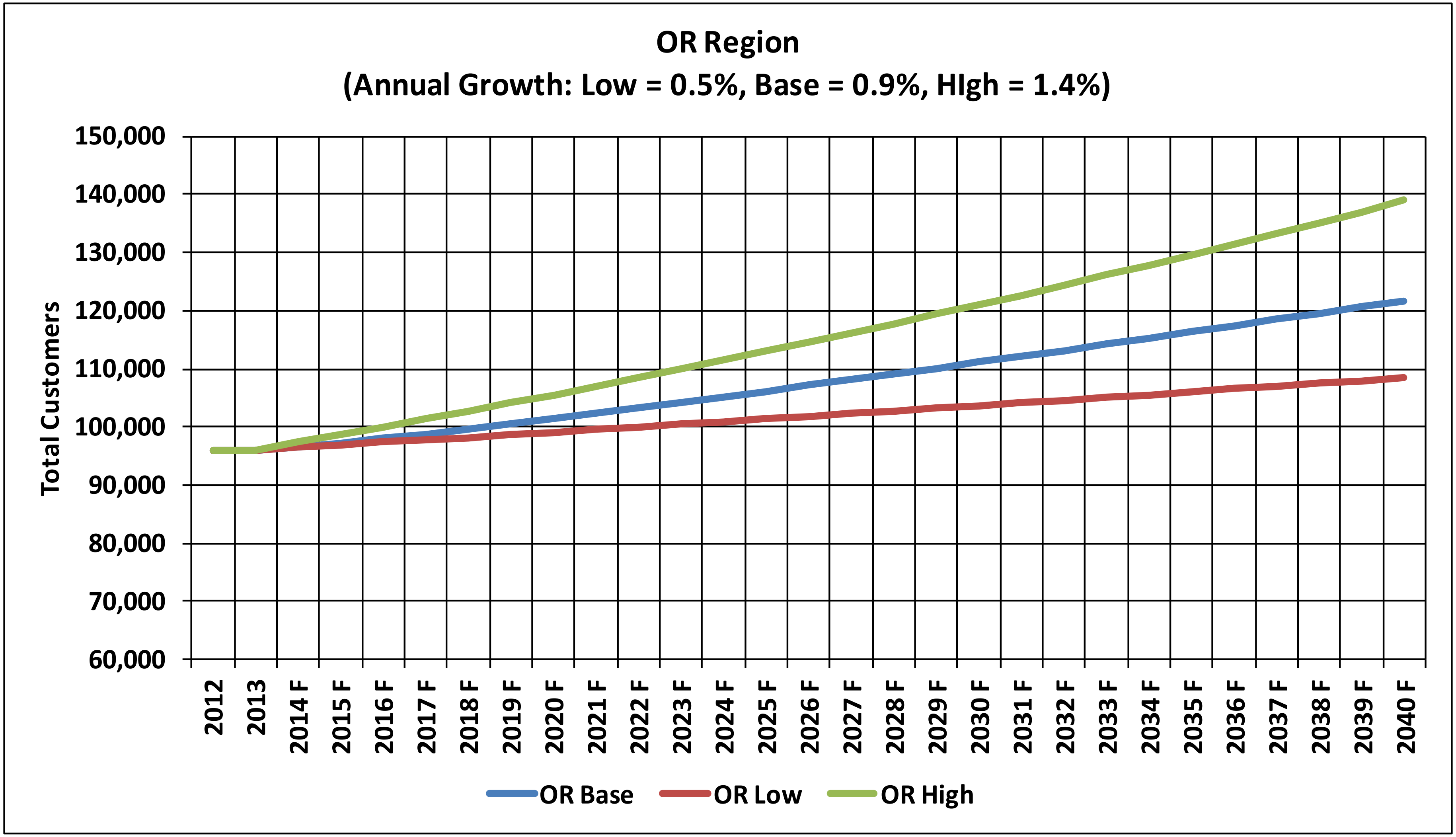
- Model links regional, U.S., and CA employment growth to regional population growth.
- Forecast out 5-yrs for Spokane, WA; Kootenai, ID; and Jackson, OR.
- Averaged with GI forecasts.
- Compare population forecasts to base customer forecasts for residential schedules 1, 101, and 410.
- Adjust base forecasts if large differences with base and population forecasts exist.

**By assuming different long-run values for regional employment growth, we can obtain long-run residential and commercial customer growth rates for base, low, and high cases.**

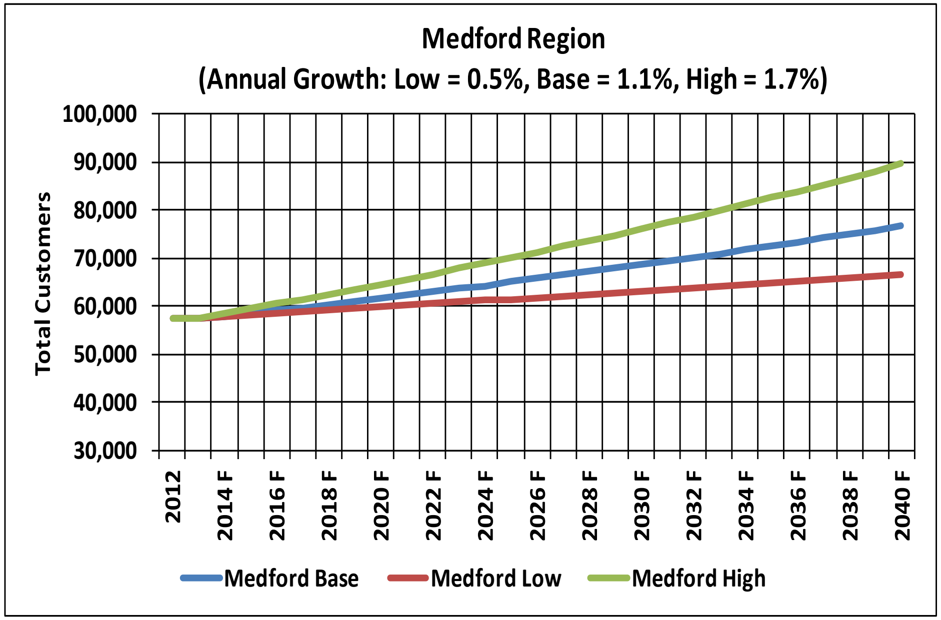
# WA-ID Region, 2012-2040

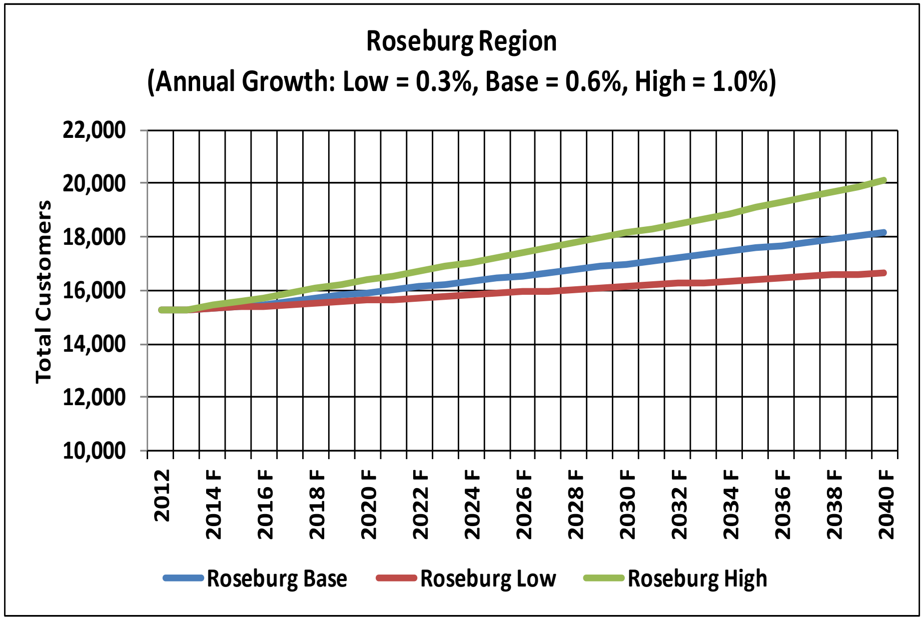


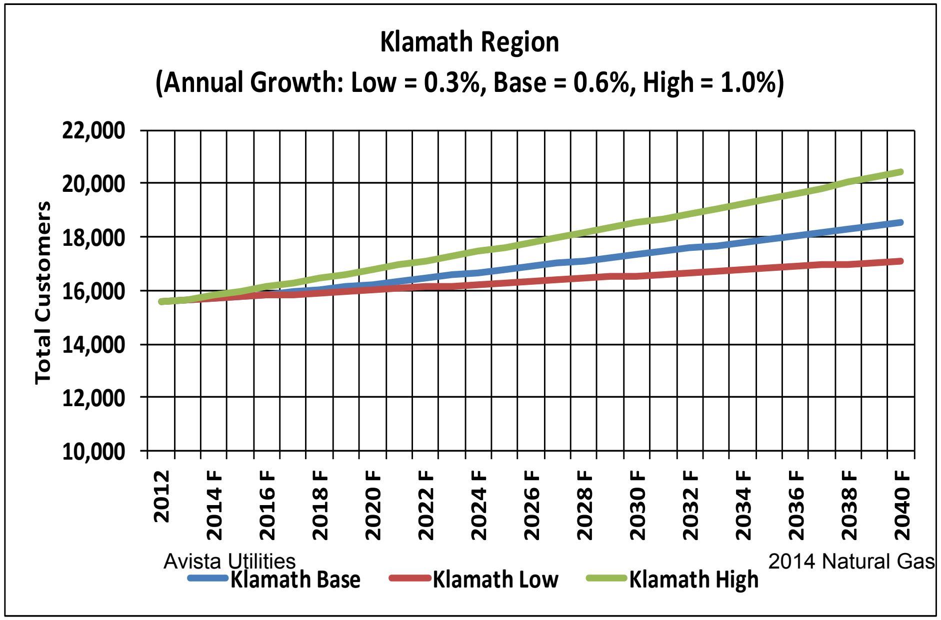
# OR Region, 2012-2040

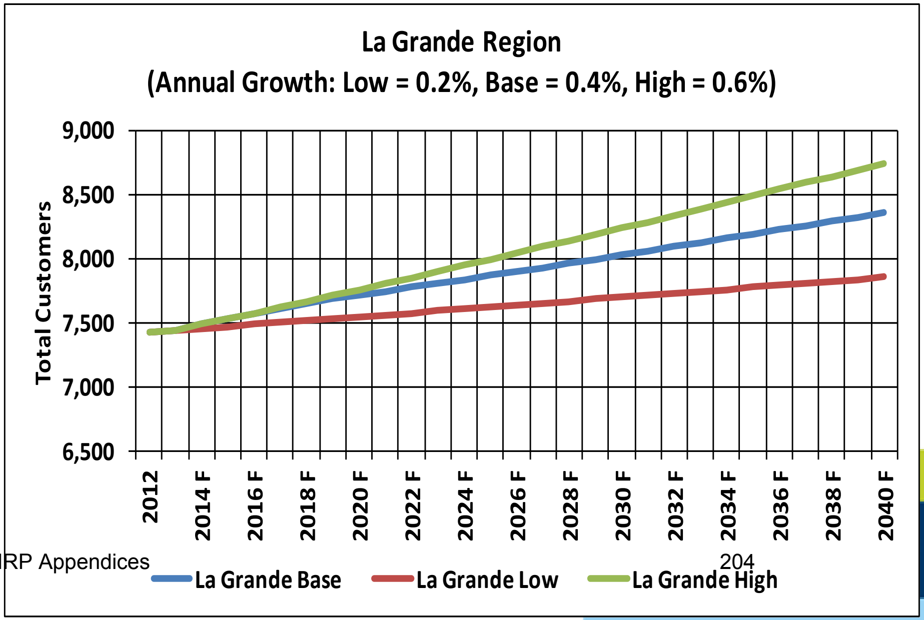


# OR by Individual Region, 2012-2040



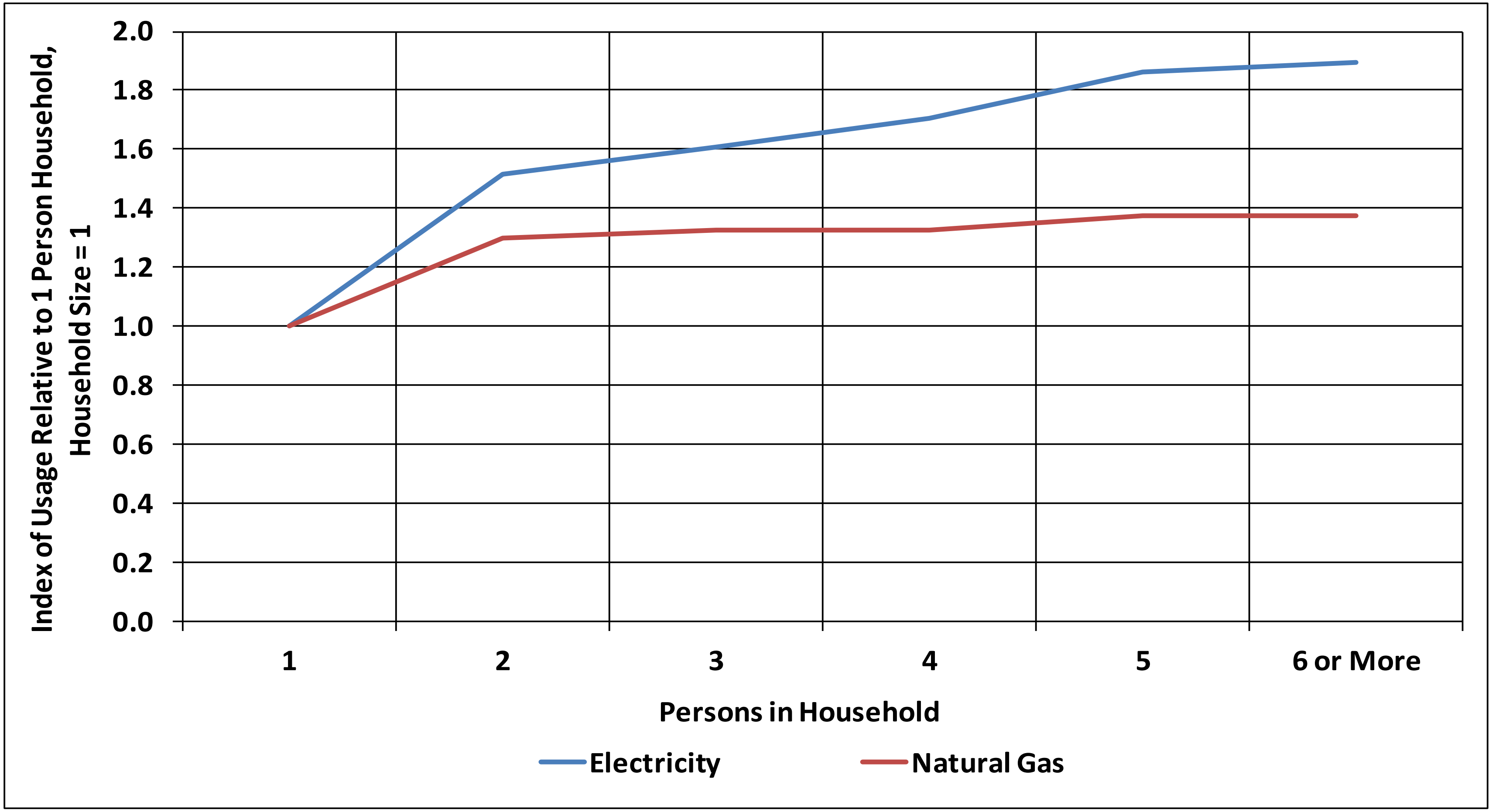



# Future Modeling

- Attempt to integrate employment and/or population directly into the residential customer model.

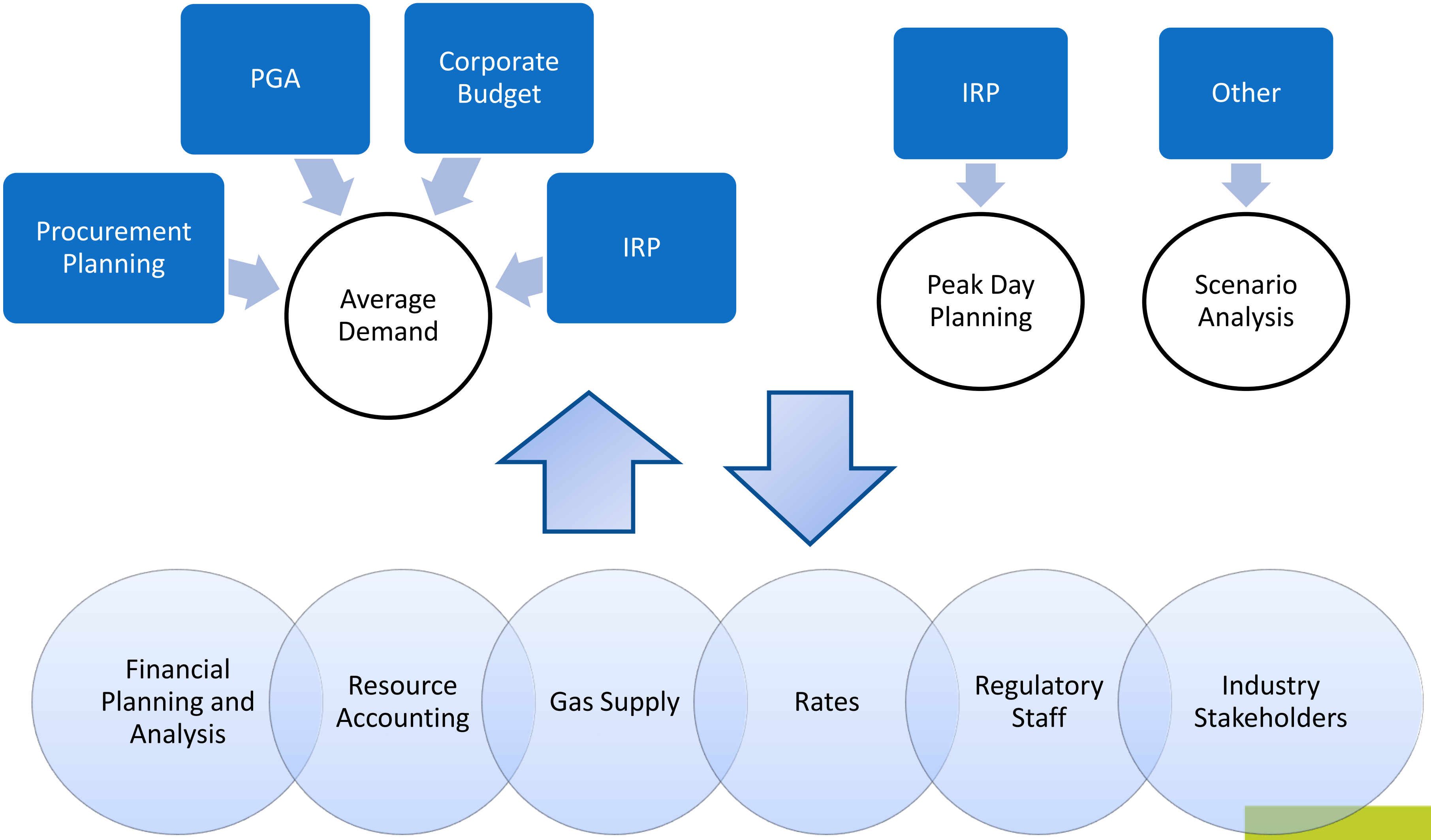
- Continue to explore the best way to model price, household income, and household size.

# Example: West Household Size and Usage, 2009 RECS

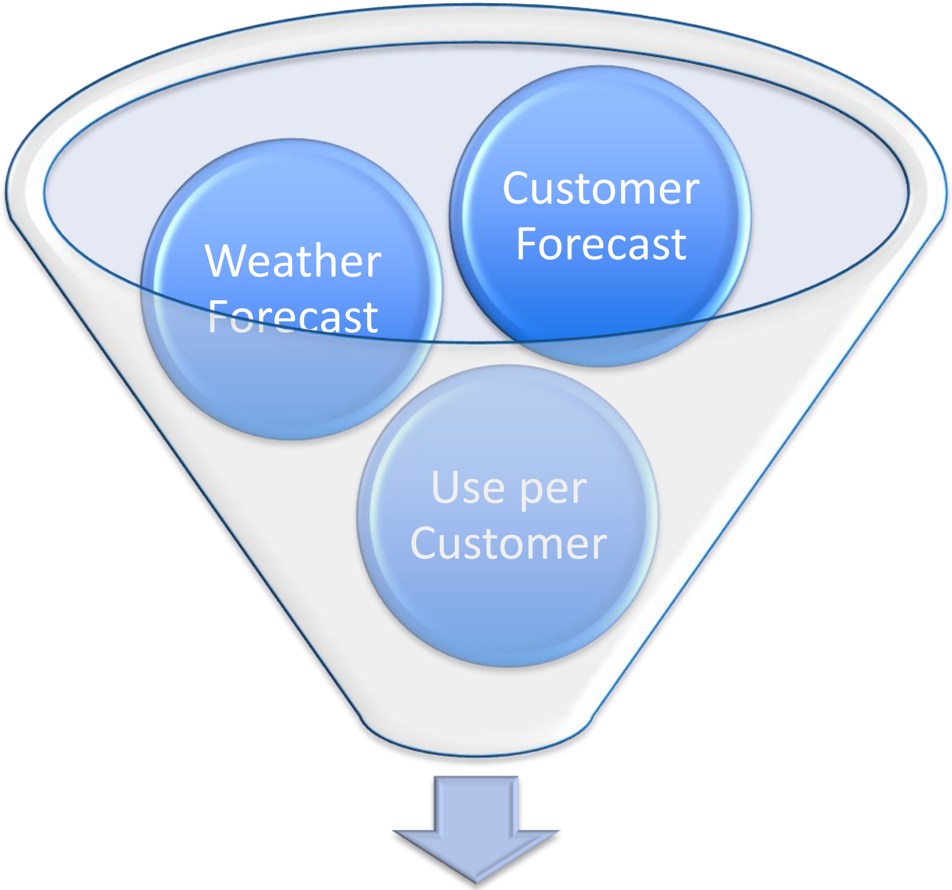


# Demand Forecast Methodology

# Natural Gas Demand Forecasting

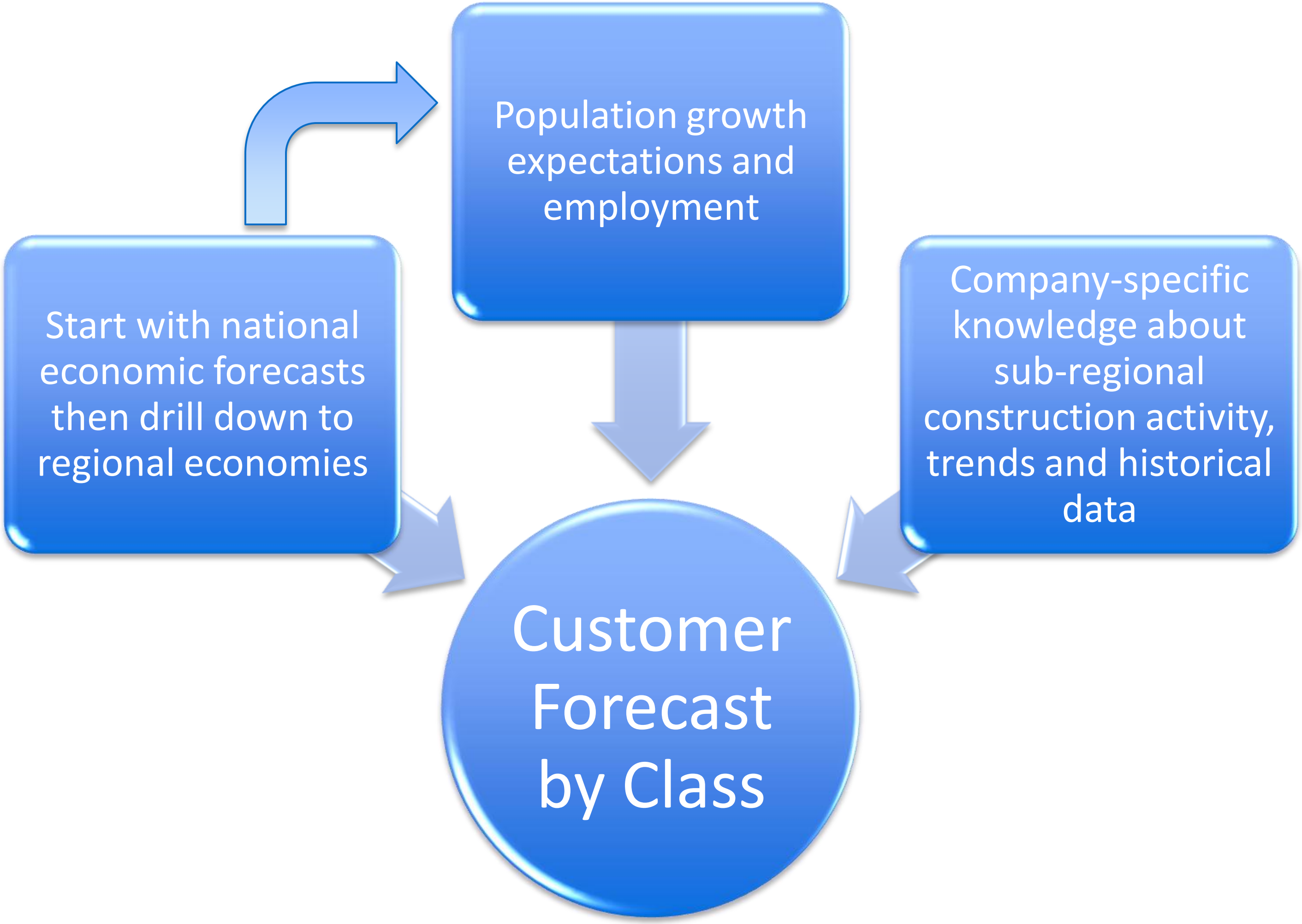


# What goes into the Natural Gas Demand Forecast?

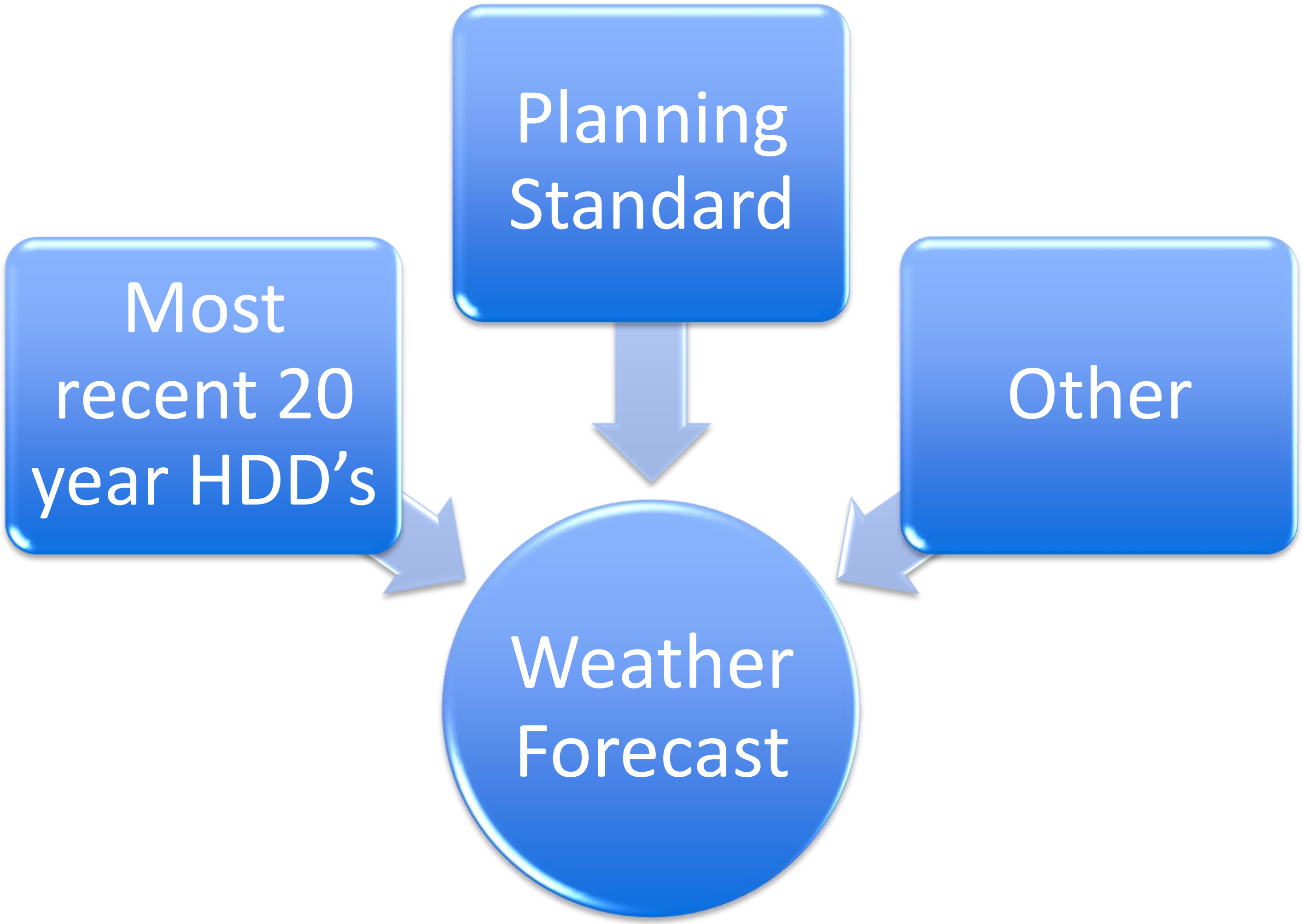



Natural Gas Demand Forecast

# The Customer Forecast



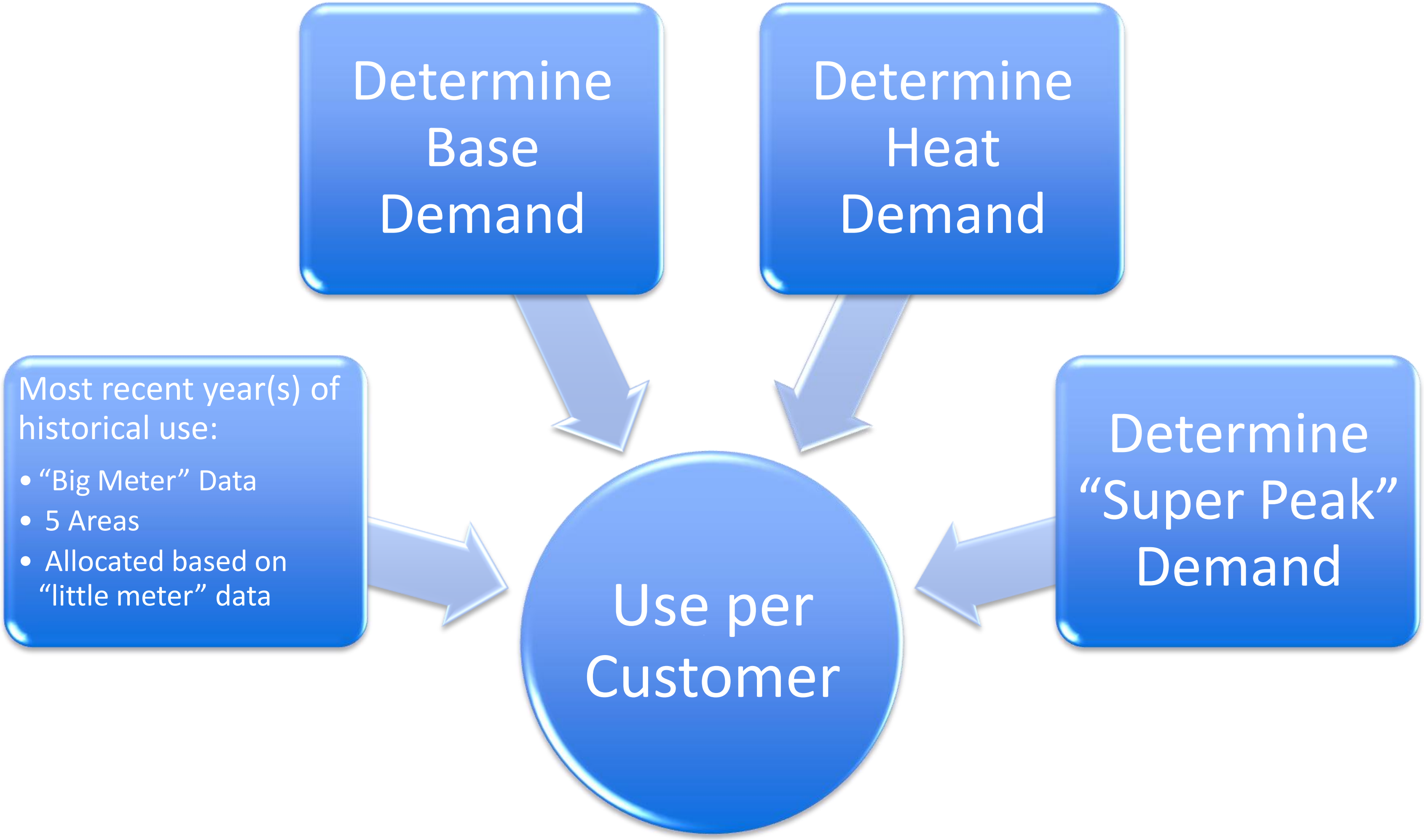
# The Weather Forecast



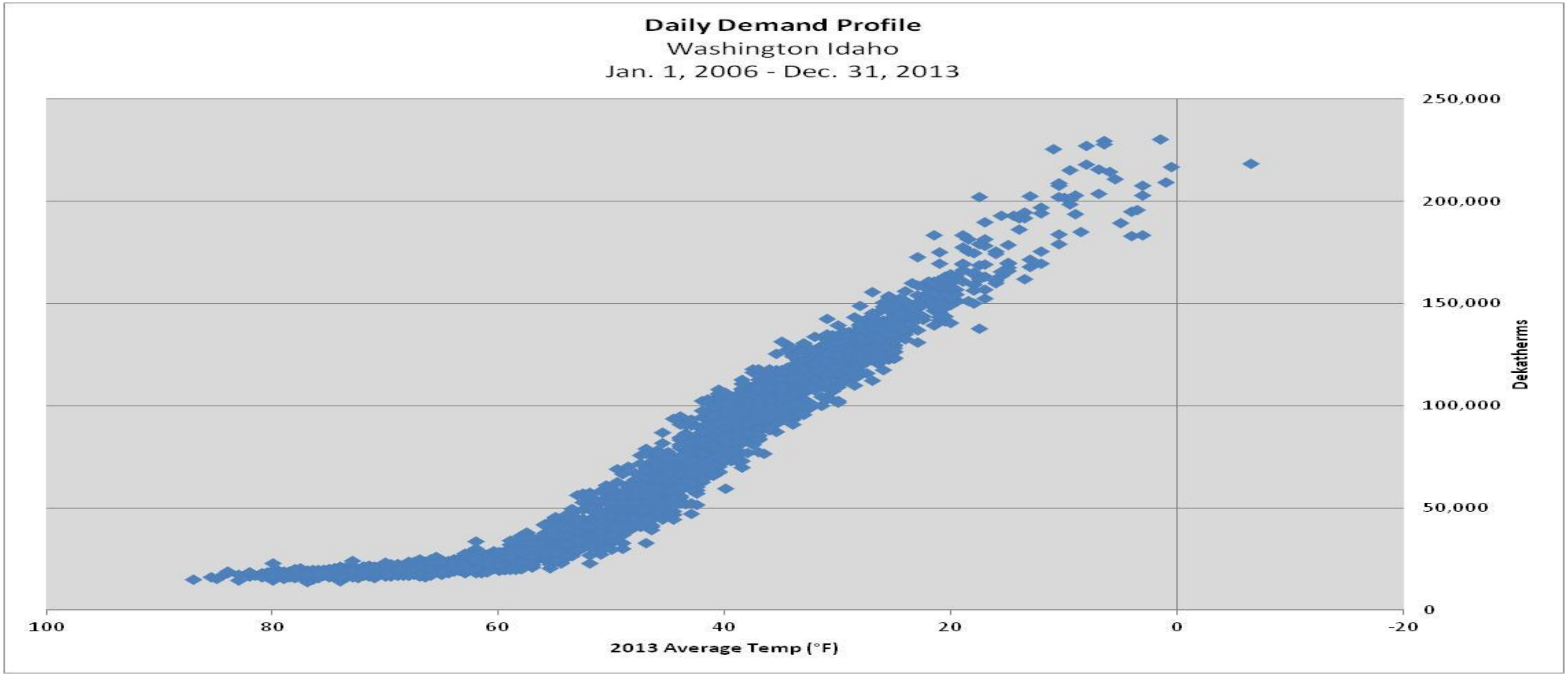
# Weather

- NOAA 20 year actual average daily HDD's (1994-2013)
- Peak weather includes two winter storms (5 day durration), one in December and one in February
- Planning Standard – coldest day on record
- Sensitivity around planning standard including
  - Normal/Average
  - Coincidental vs. Non-coincidental
  - Coldest in 20 years
  - Monte Carlo simulation

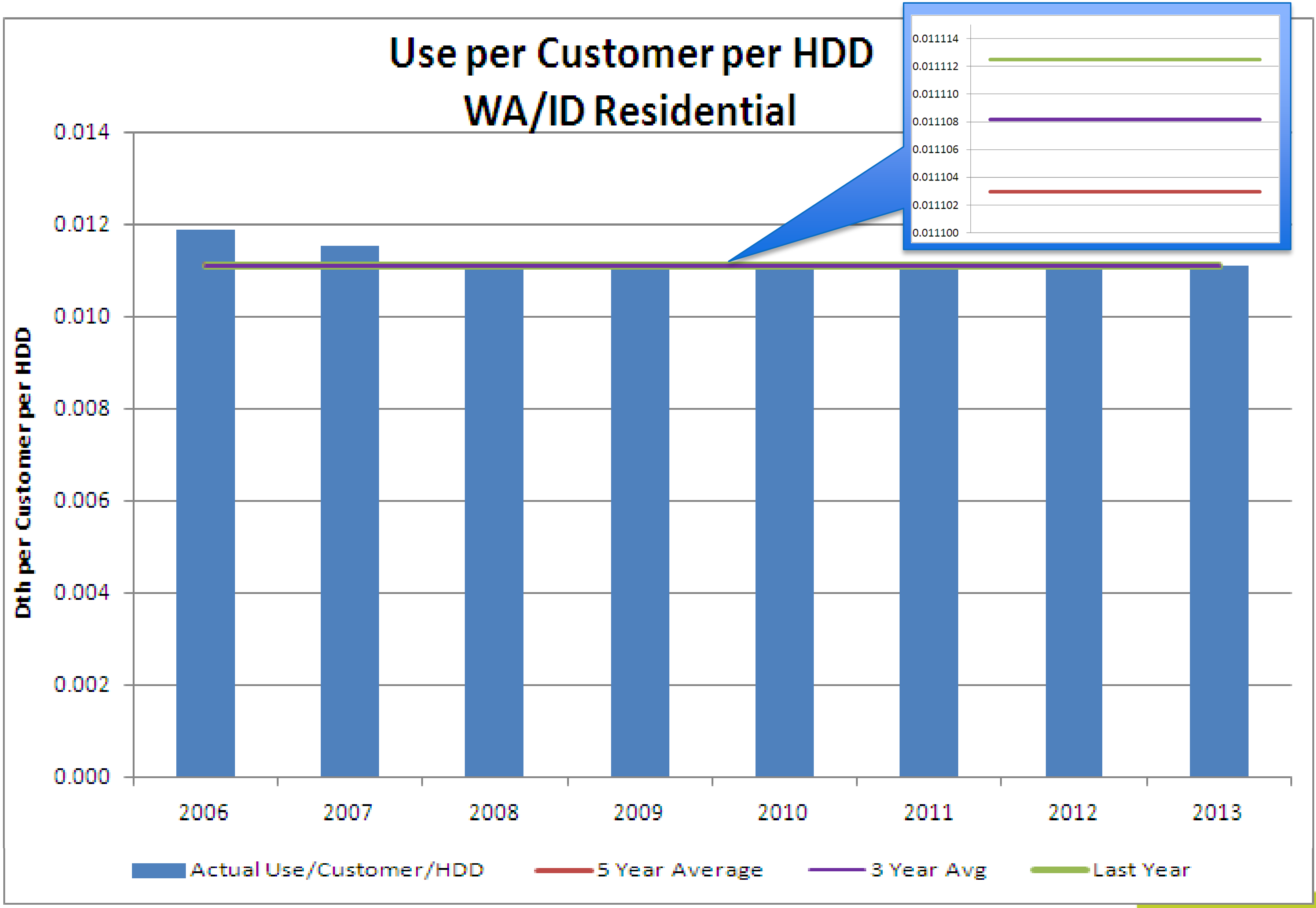
# The Use per Customer Forecast



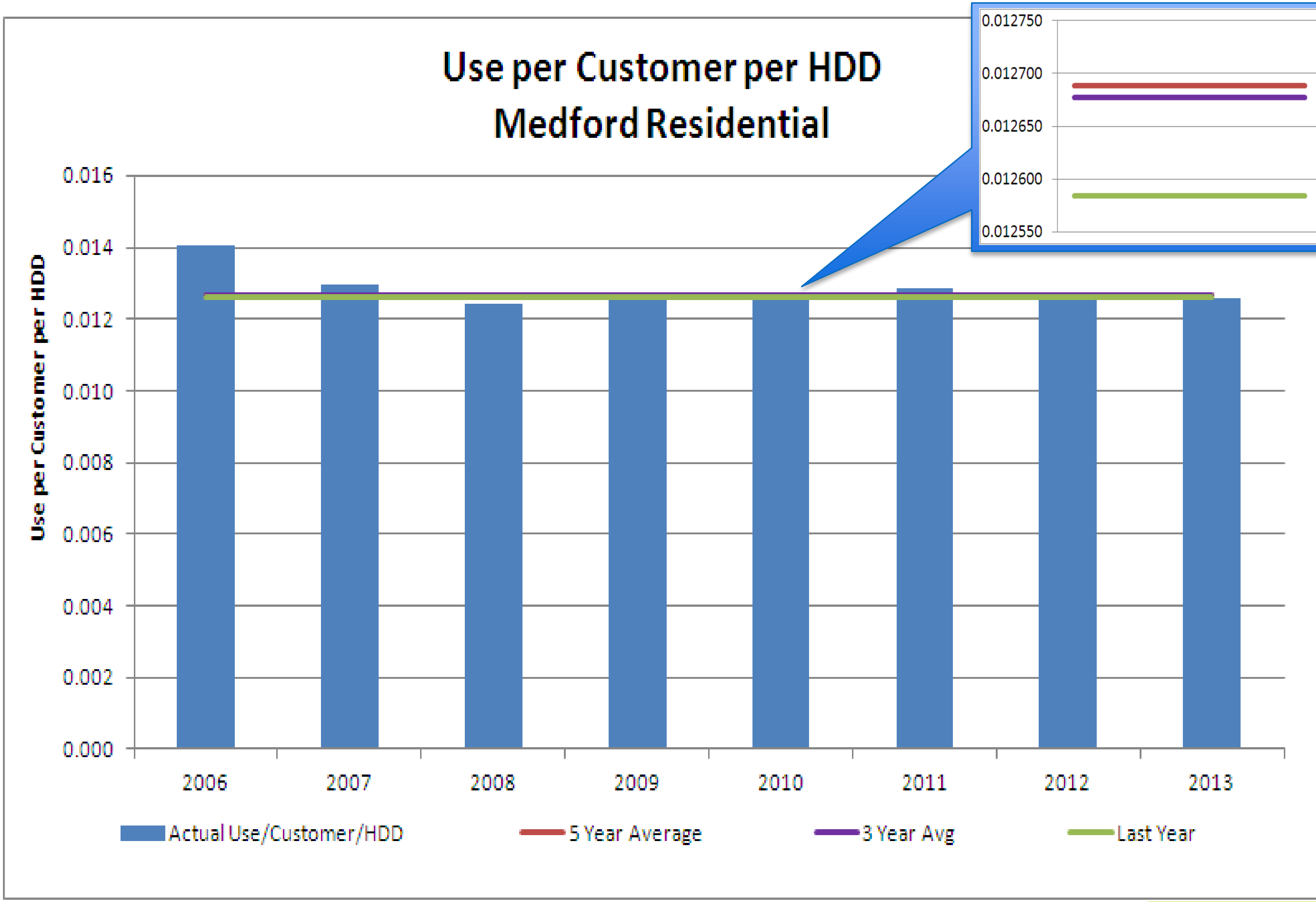
# The Use per Customer Forecast cont.

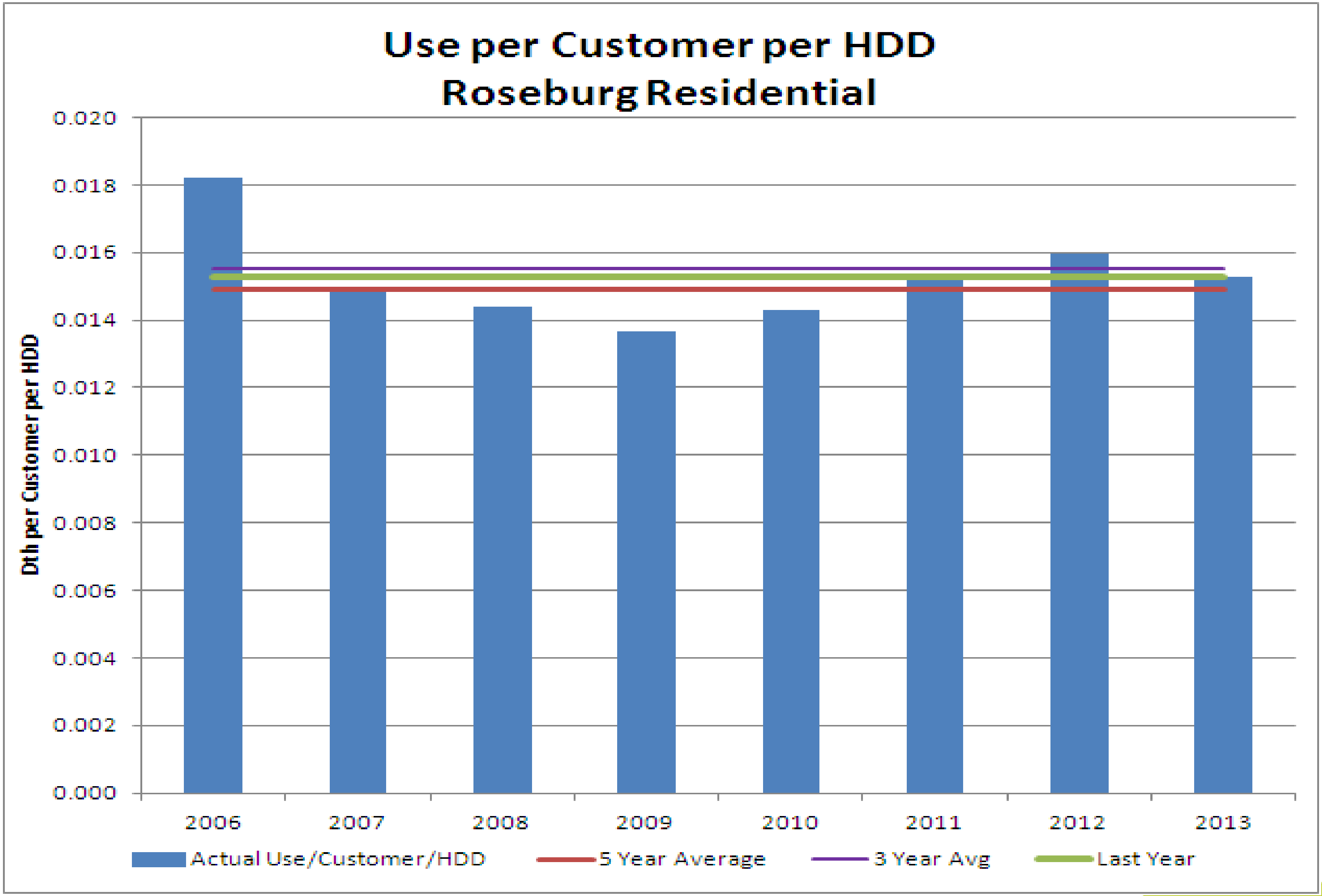


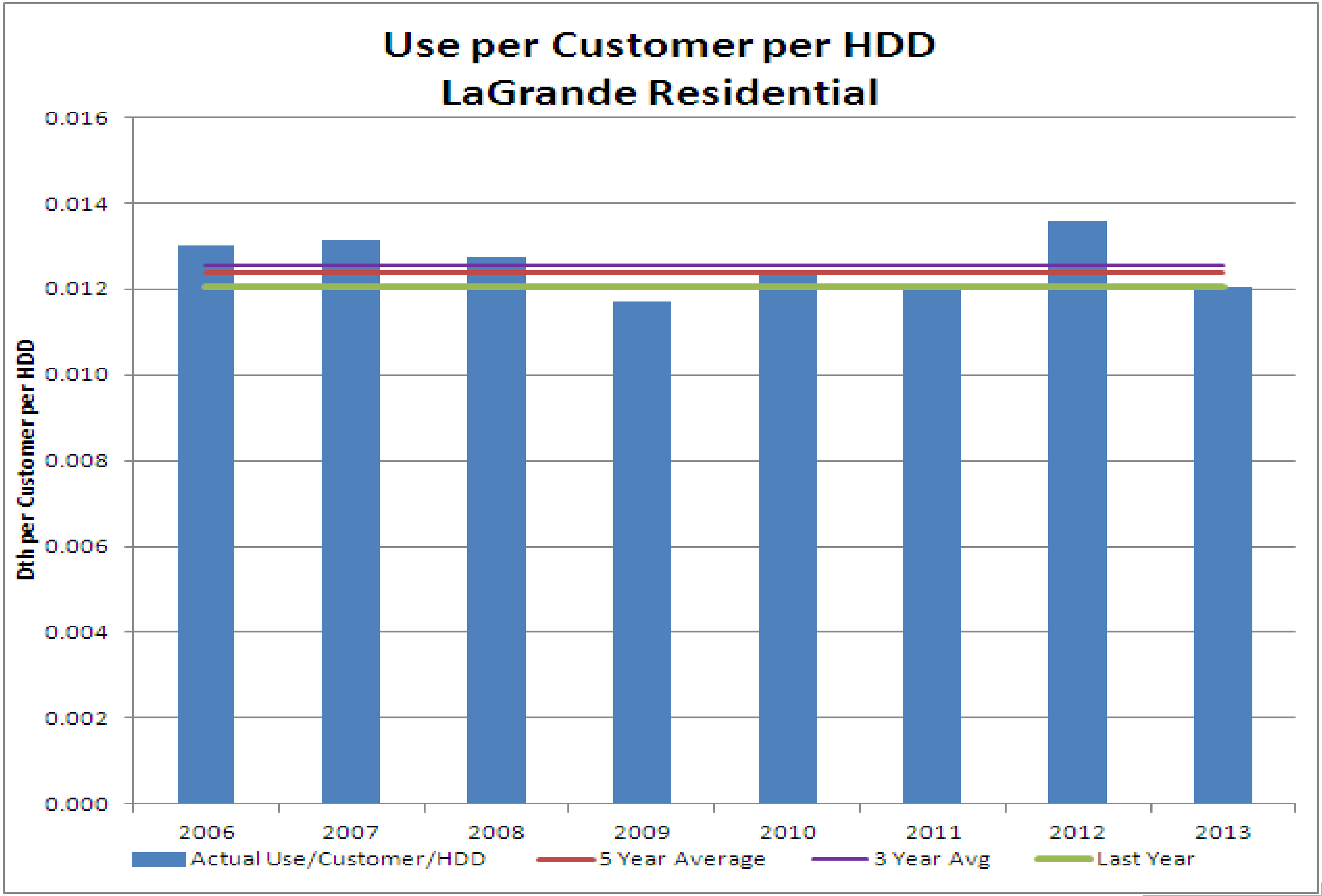

- Historical data is used to determine initial base and heat coefficients.
- Adjustments are made to incorporate DSM and price elastic responses.

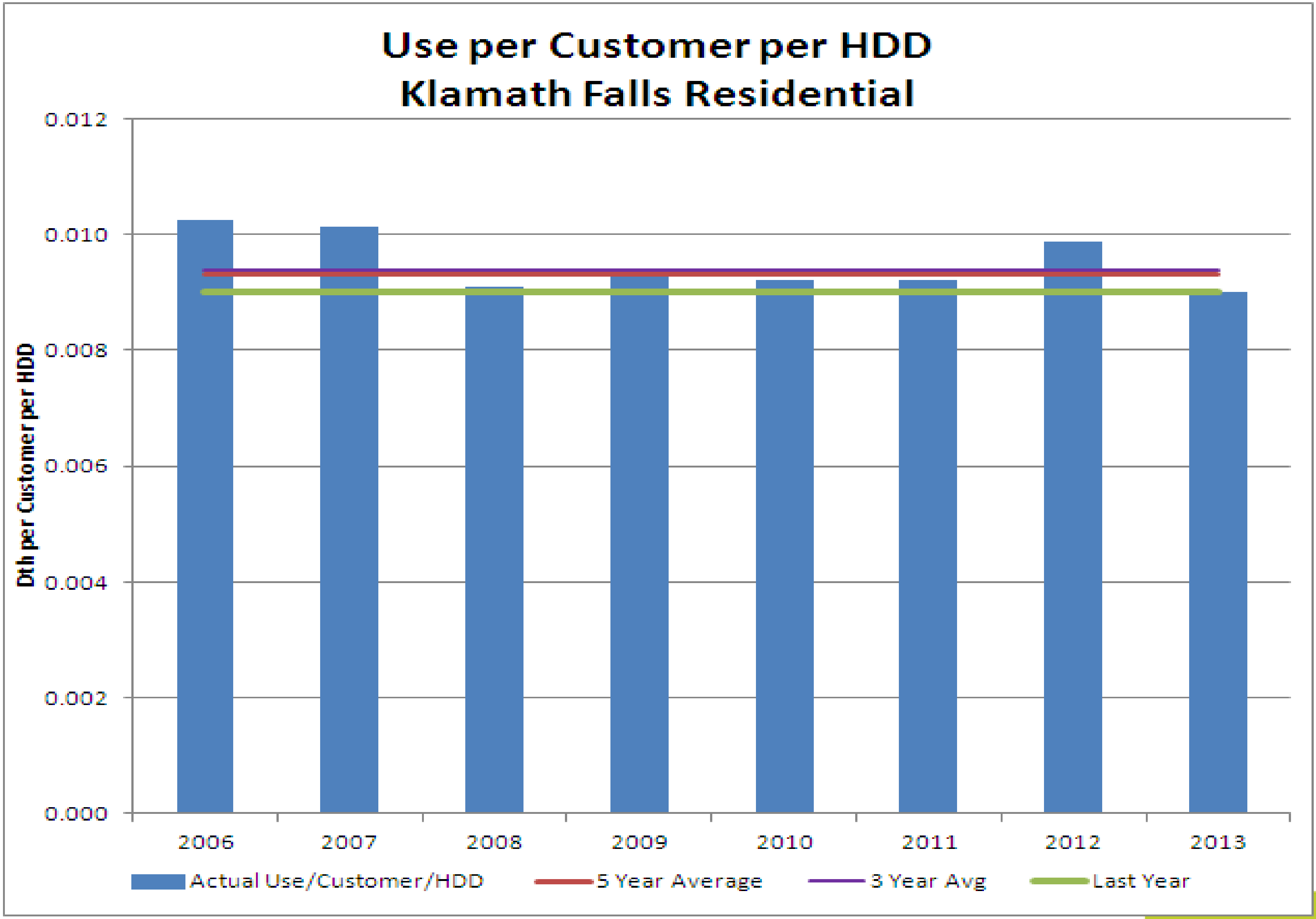


Use per Customer per HDD
WA/ID Residential
Dth per Customer per HDD
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
2006
2007
2008
2009
2010
2011
2012
2013
0.011114
0.011112
0.011110
0.011108
0.011106
0.011104
0.011102
0.011100
Actual Use/Customer/HDD
5 Year Average
3 Year Avg
Last Year


Use per Customer per HDD
Medford Residential
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
Use per Customer per HDD
2006
2007
2008
2009
2010
2011
2012
2013
Actual Use/Customer/HDD
5 Year Average
3 Year Avg
Last Year
0.012750
0.012700
0.012650
0.012600
0.012550


Use per Customer per HDD
Roseburg Residential
Dth per Customer per HDD
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
2006
2007
2008
2009
2010
2011
2012
2013
Actual Use/Customer/HDD
5 Year Average
3 Year Avg
Last Year


Use per Customer per HDD
LaGrande Residential
Dth per Customer per HDD
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
2006
2007
2008
2009
2010
2011
2012
2013
Actual Use/Customer/HDD
5 Year Average
3 Year Avg
Last Year


Use per Customer per HDD
Klamath Falls Residential
Dth per Customer per HDD
0.012
0.010
0.008
0.006
0.004
0.002
0.000
2006
2007
2008
2009
2010
2011
2012
2013
Actual Use/Customer/HDD
5 Year Average
3 Year Avg
Last Year

# Demand Modeling Equation – a closer look

SENDOUT® requires inputs expressed in the below format to compute daily demand in dekatherms. The **base** and **weather sensitive** usage (degree-day usage) factors are developed outside the model and capture a variety of demand usage assumptions.

**Table 3.2 Basic Demand Formula**

| |
|---|
| # of customers **x** Daily **base usage** / customer |
| **Plus** |
| # of customers **x** Daily **weather sensitive** usage / customer |

# Developing a Reference Case

Customer count forecast + Use per customer coefficients + Weather = Reference Case Demand

1. Customer annual growth rates:

| | Residential | Commercial | Industrial |
|---|---|---|---|
| Washington - Idaho | 1.0% | 1.0% | -0.53% |
| Klamath Falls | 0.66% | 0.66% | 0.0% |
| LaGrande | 0.40% | 0.40% | 0.0% |
| Medford | 1.1% | 1.1% | 0.0% |
| Roseburg | 0.8% | 0.02% | 0.0% |

2. Use per customer coefficients – Flat all classes, 5 year, 3 year or last year average use per HDD per customer

3. Weather planning standard – coldest day on record

- WA/ID 82; Medford 61; Roseburg 55; Klamath 72; La Grande 74

# Dynamic Demand Methodology

# Dynamic Demand Methodology

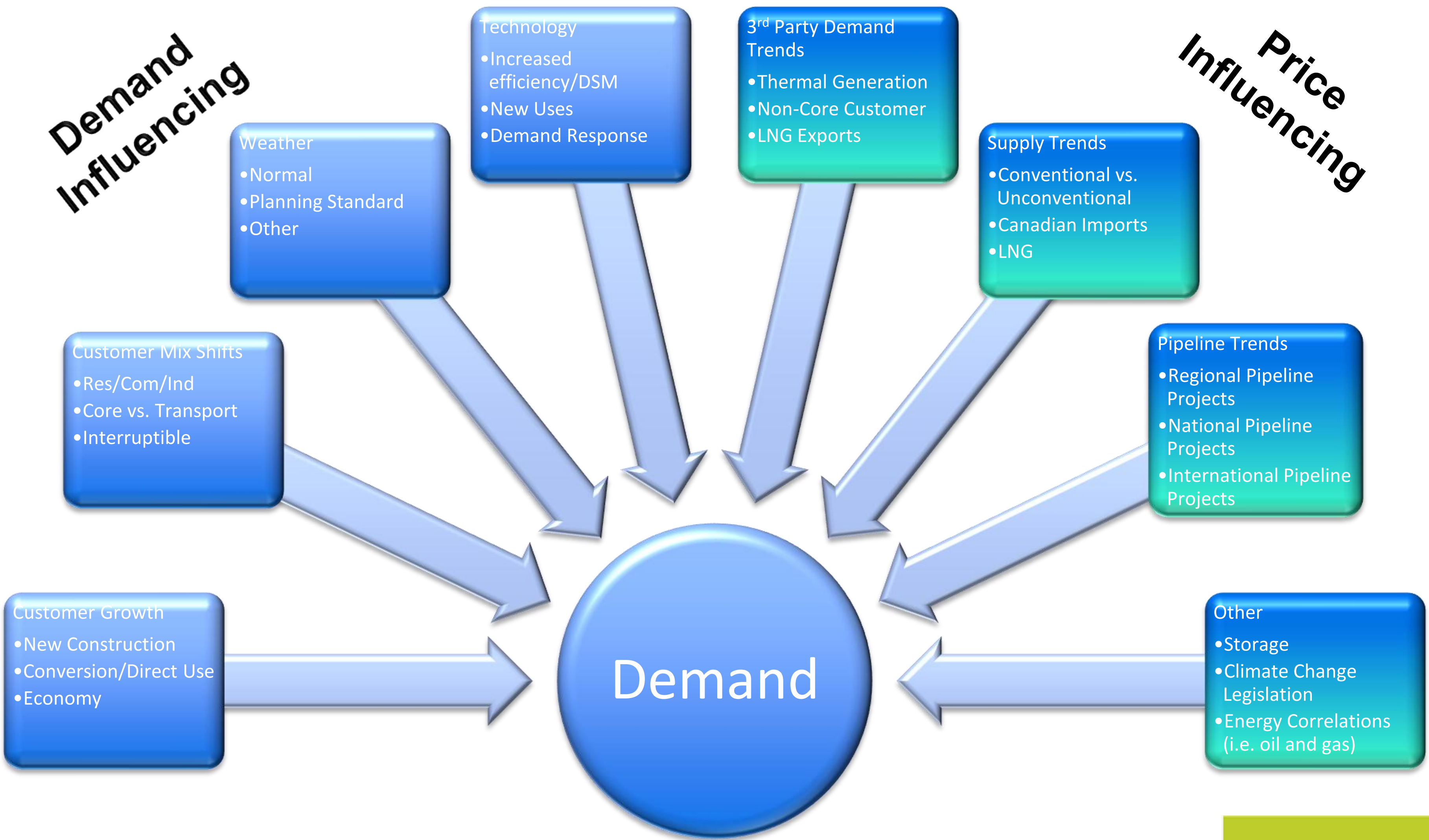
## Demand Influencing

- Conditions that **DIRECTLY** affect core customer volume consumed

## Price Influencing

- *PRICE SENSITIVE* conditions that, through price elasticity, **INDIRECTLY** affect core customer volume consumed

# Demand Drivers



# Customer Growth and Mix – Demand Influencing

- Key driver in demand growth
- Can change the timing and/or location of resource needs
- Currently we model expected, high, and low growth scenarios
- New construction vs. conversions
- Residential/Commercial/Industrial vs. Transportation
- New uses – CNG/NGV

# Weather Standard – Demand Influencing

- Has the potential to significantly change timing of resource needs
- Significant qualitative considerations
  - No infrastructure response time if standard exceeded
  - Significant safety and property damage risks
- Current Peak HDD Planning Standards
  - WA/ID 82
  - Medford 61
  - Roseburg 55
  - Klamath 72
  - LaGrande 74

# Global Warming – Demand Influencing

- There is a lack of studies or information on the affect global warming has on peak weather conditions
- Uncertain whether any change in timing of resource needs
- Peak and trough weather appears more volatile – does not influence the peak
- Will reduce annual consumption over time for LDC but could increase consumption for thermal generation
- Proposing to remove global warming adjustment

# Technology – Demand Influencing

- Demand side management initiatives will reduce demand **HOWEVER**, it is dependent upon customers willingness/ability to participate.
- Development of new uses for natural gas
    - CNG
    - NGV
    - LNG
    - ???NG
- Demand response (Smart Grid)
- New technologies in Demand Side Management

# Price Elasticity Factors Defined

- Price elasticity is usually expressed as a numerical factor that defines the relationship of a consumer's consumption change in response to price change.

- Typically, the factor is a **negative** number as consumers normally **reduce** their consumption in response to **higher** prices or will **increase** their consumption in response to **lower** prices.

- For example, a price elasticity factor of -0.13 means:
  - A 10% price **increase** will prompt a 1.3% consumption **decrease**
  - A 10% price **decrease** will prompt a 1.3% consumption **increase**

# Price Elasticity

- Establishes factors for use in other price influencing scenarios
- Very complex relationship – we use historical data however……
  - Historical data has DSM, rate changes (PGA, general rate, etc.), economic conditions, technological changes, etc.
  - History is not necessarily the best predictor of future behavior

# 2007 AGA Study Results

- **American Gas Assn Study**
  - National results
    - Short-run -0.09
    - Long-run -0.18
  - Pacific & Mtn Region results
    - Short-run -0.07 & -0.07
    - long-run -0.12 & -0.10
  - Min-Max range
    - Short-run +0.01 to -0.13
    - Long-run -.01 to -.29

- **Avista Specific Results**
  - Oregon
    - Short-run -0.08
    - long-run -0.13
  - Idaho
    - Short-run -0.05
    - long-run -0.10
  - Washington
    - Short-run -0.12
    - long-run -0.14

# Price Elasticity Assumptions From 2012 IRP

| Elasticity Assumption | Real Price annual increase within 30% |
|---|---|
| High | Negative .20 |
| Expected | Negative .13 |
| Low | No response |

# 3rd Party Demand Trends – Price Influencing

- Gas fired generation – the largest contributor to future growth
- Coal plant retirements driving gas for power
- CNG/NGV Transportation Fleets
- Export LNG
- Non-firm customer trends

# Supply Trends – Price Influencing

- Not all its "Frack-ed" up to be or "Fracking" Awesome
- Shale is Everywhere
- O' Canada vs. Canada Dry
- LNG Export
- Basis - Location, location, location

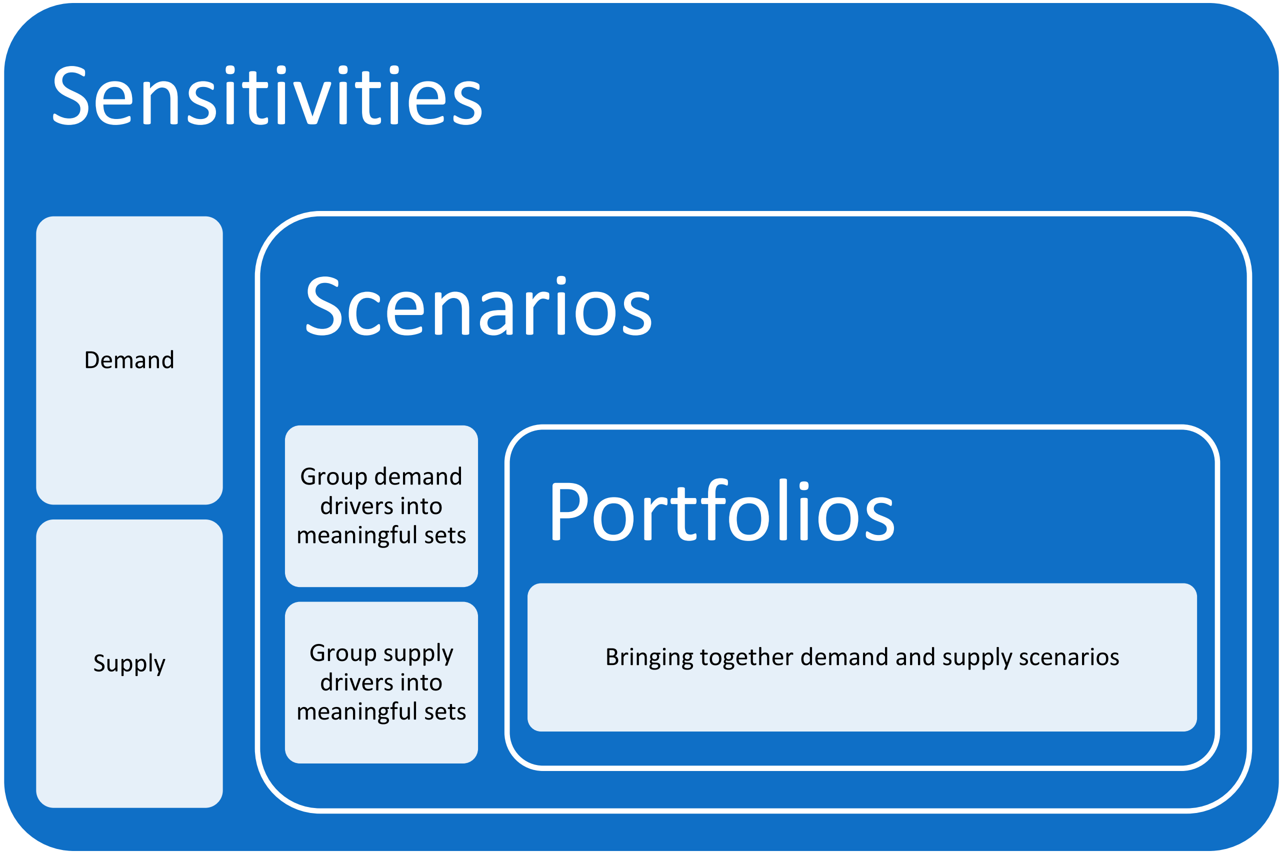
# Pipeline Trends – Price Influencing

- Regional Pipeline Proposals
  - N-Max/Palomar – cross Cascades pipeline (NWN, GTN and NWP)
  - Pacific Connector – from Jordan Cove LNG to various interconnects in the Pacific Northwest (Williams, Fort Chicago Energy Partners, and PG&E)
- National Pipeline Proposals
- International Pipeline Proposals

# Other Supply Issues – Price Influencing

- Storage
- Climate Change and Carbon Legislation
- Energy Correlations

# Sensitivities, Scenarios, Portfolios



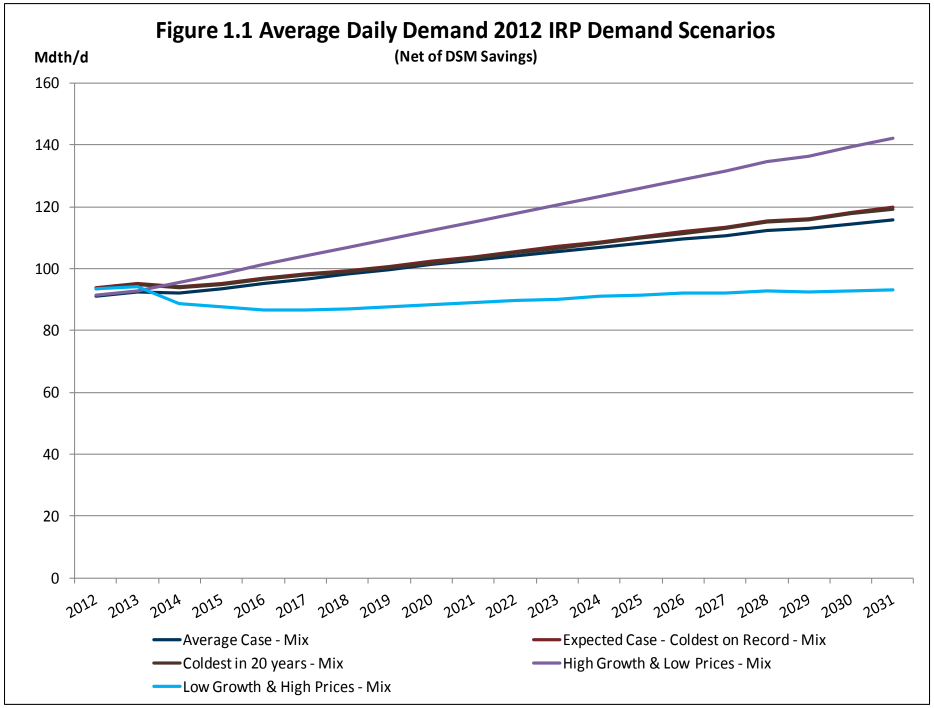
# Demand Sensitivities from 2012 IRP

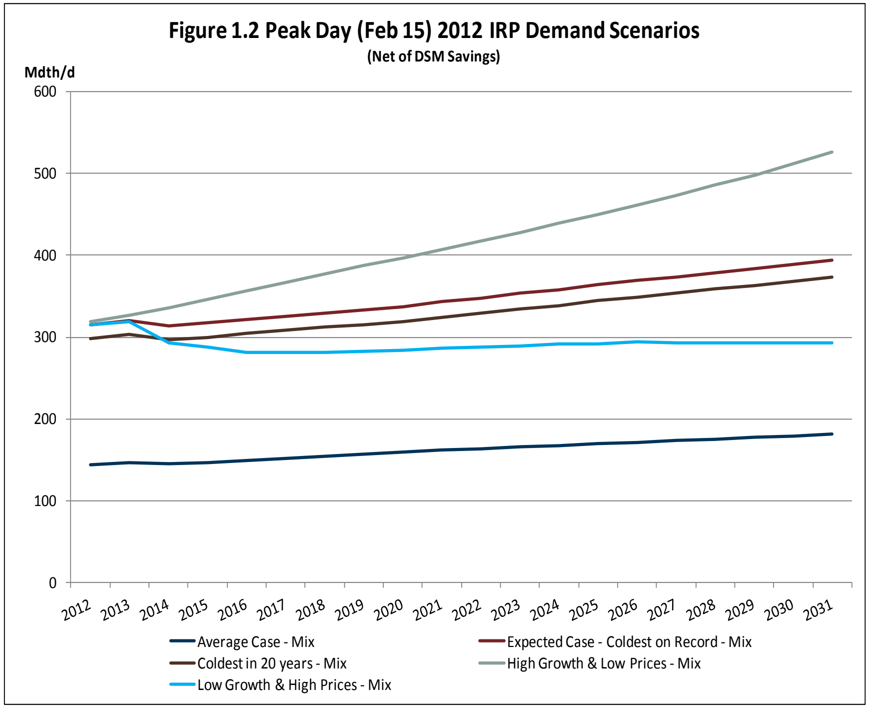
| INPUT ASSUMPTIONS | Reference Case | Reference Plus Peak Case | Low Cust Growth | High Cust Growth | CNG/NGV Vehicles | Alternate Weather Std | DSM Case | Peak plus DSM Case | Alterante Historical UPC Case | Expect Elasticity | Low Prices | High Prices | Carbon Legislation | Exported LNG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DEMAND INFLUENCING - DIRECT | | | | | | | PRICE INFLUENCING - INDIRECT | | | | |
| **Customer Growth Rate** | | | 40% Decrease in Cust Growth Rates | 60% Increase in Cust Growth Rates | | | | | | | | | | |
| Residential WA/ID | | | | | | | | | | | | | | |
| Residential Medford | | | | | | | | | | | | | | |
| Residential Roseburg | | | | | | | | | | | | | | |
| Residential Klamath | | | | | | | | | | | | | | |
| Residential La Grande | | | | | | | | | | | | | | |
| Commercial WA/ID | | | | | | | | | | | | | | |
| Commercial Medford | | | | | | | | | | | | | | |
| Commercial Roseburg | | | | | | | | | | | | | | |
| Commercial Klamath | | | | | | | | | | | | | | |
| Commercial La Grande | | | | | | | | | | | | | | |
| **Use per Customer** | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 15% Growth Cumulative | 3 Year Historical | 3 Year Historical | 3 Year Historical | 5 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical |
| **Weather** | | | | | | | | | | | | | | |
| Planning Standard | Normal plus GW Adj | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest 20yrs | Normal plus GW Adj | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record |
| **Demand Side Management** | | | | | | | | | | | | | | |
| Programs Included | No | No | No | No | No | No | Yes | Yes | No | No | No | No | No | No |
| **Prices** | | | | | | | | | | | | | | |
| Price curve | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Low | High | Expected | Expected |
| Price curve adder ($/Dth) | None | None | None | None | None | None | None | None | None | | | | | $.50 Adder After 5yrs |
| Elasticity | None | None | None | None | None | None | None | None | None | Expected | Expected | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | None | None | None | None | None | None | None | None | None | | | | $14-$22 starting in 2022 | |
| **RESULTS** | | | | | | | | | | | | | | |
| **FIRST YEAR UNSERVED** | | | | | | | | | | | | | | |
| WA/ID | N/A | 2023 | N/A | 2020 | 2024 | 2026 | N/A | 2023 | 2023 | 2031 | 2029 | N/A | N/A | N/A |
| Medford | N/A | 2023 | N/A | 2020 | 2023 | N/A | N/A | 2024 | 2023 | 2029 | 2028 | N/A | 2030 | 2030 |
| Roseburg | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Klamath | N/A | 2022 | N/A | 2019 | 2022 | 2023 | N/A | 2023 | 2022 | 2031 | 2028 | N/A | 2031 | 2031 |
| La Grande | N/A | N/A | N/A | 2027 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

## What do we want to consider for 2014?

# Mix and Match to Make Scenarios

# The Goal – A Bunch of Meaningful Lines



# Forecast Methodology Considerations

- Know the goal – what is the purpose of the forecast?
- Know your data – what you have, what you need
- Is there sufficient quantitative data available?
- Is the change small or large?
- Is their conflict among decision makers?
- Are the relationships among variable complicated?
- Have there been similar situations?

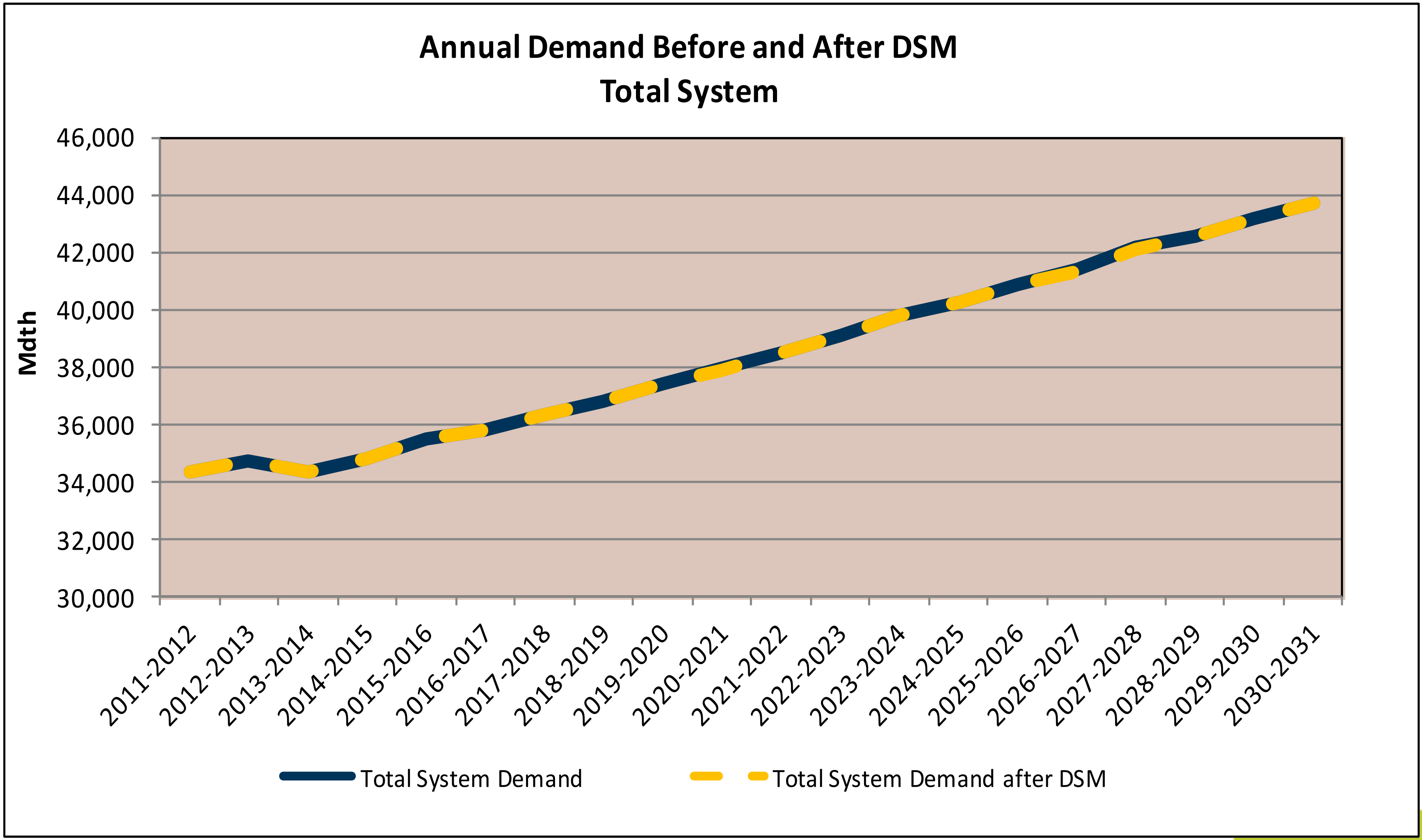
# Demand Side Management

Lori Hermanson
Utility Resource Analyst

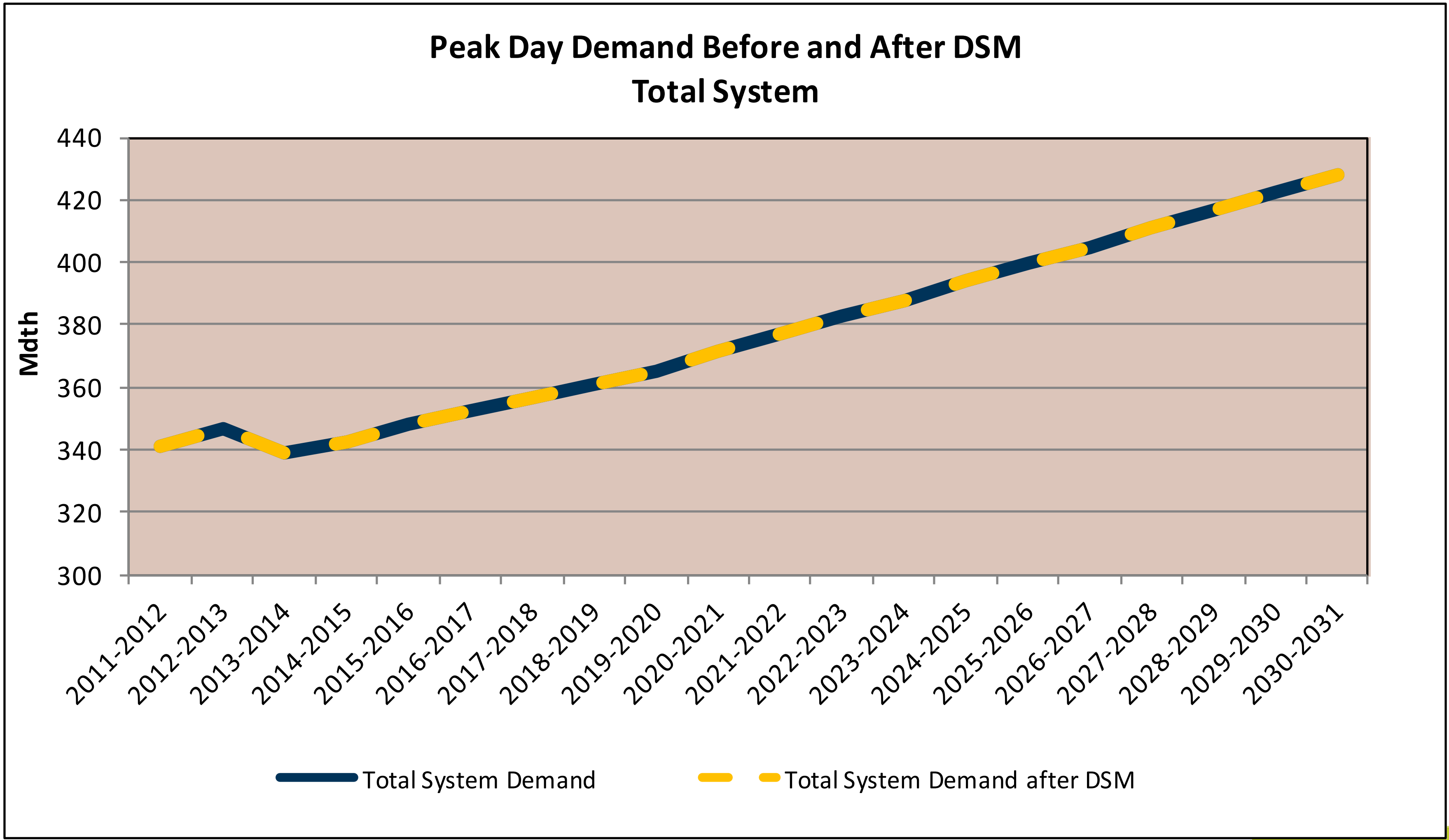
# Agenda

- DSM in the last IRP
  - Target/Acquisition
- What's happened since the last IRP
  - Cost-effectiveness comparison
- What's different with avoided costs?
- Proposed DSM modeling methodology
- Business planning process

# DSM in the 2012 IRP - Annual



# DSM in the 2012 IRP – Peak Day



# 2012 IRP DSM Targets

- 2013 targets & (Unverified) acquisition (achievable potential)

| State | Therms | Target | % Achieved |
|---|---|---|---|
| Idaho | 18,804 | 364,000 | 5.17 |
| Oregon | 217,177 | 289,000 | 75.14 |
| Washington | 595,614 | 893,000 | 66.70 |

- OPUC established “minimum” target

| Therms | Target | % Achieved |
|---|---|---|
| 217,177 | 225,000 | 96.52 |

# Recap of Recent History

- Idaho – Schedule 190 suspended effective 10/1/12
- Oregon – two year cost-effectiveness pass and revised savings expectation for 2013-2014
- Washington – WUTC adopted the gross UCT as the cost-effectiveness test for natural gas DSM

# Cost-effective Test Comparison

- Total Resource Cost (TRC) =

  (avoided costs +
  non-energy benefits)

  ---

  (customer incremental cost +
  non-incentive utility costs)

- Utility Cost Test (UCT) =

  avoided costs

  ---

  incentives +
  non-incentive utility costs

# TRC vs UCT

**TRC**

- Traditional cost-effectiveness metric
- Includes non-energy benefits
- Results in programs that influence customer decisions

**UCT**

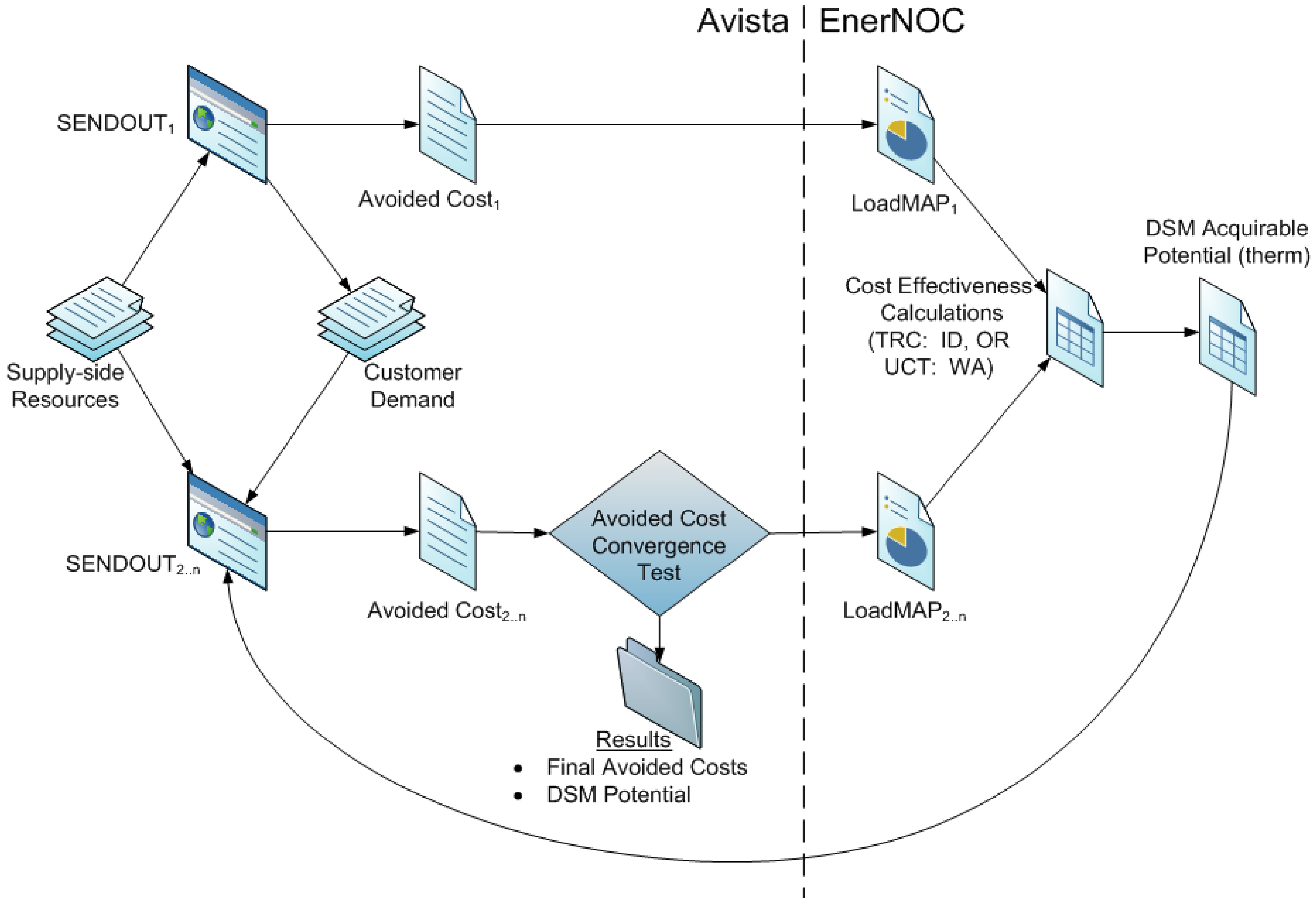
- Customer costs are ignored
- Incentives are reduced in order to offer programs below avoided costs
- Ignore free-riders in order to be cost-effective

# Avoided Costs (2013 $)

| | 2009 IRP | | 2012 IRP | | 2014 IRP* | |
|---|---|---|---|---|---|---|
| | Annual | Winter | Annual | Winter | Annual | Winter |
| WA/ID | $12.56 | $12.88 | $5.31 | $5.40 | ?? | ?? |
| OR | $12.74 | $13.18 | $5.34 | $5.45 | ?? | ?? |

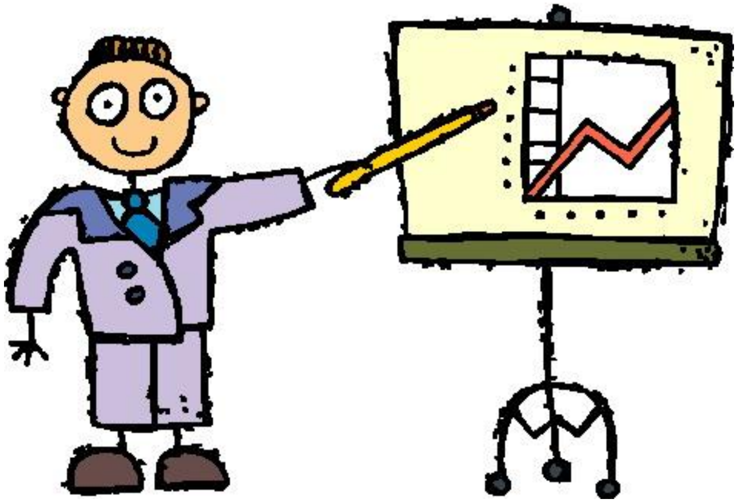
*Similar avoided costs levels anticipated from the upcoming IRP

# Proposed DSM Modeling Methodology



# Business Planning Process

- IRP generated target (CPA achievable potential)
- Bottom-up evaluation of all measures regardless of cost-effectiveness
- Add in non-incentive utility costs
- Evaluate with final avoided costs
- Process results in updated operational plan



# Questions?

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
  - Demand Forecast and Demand Side Management – January 24
  - Supply/Infrastructure, Natural Gas Pricing, and Potential Case Discussion– *February 25*
  - Distribution Planning, SENDOUT® Preliminary Output Results and Further Case Discussion – *March 26*
  - SENDOUT® results – *April 23*
- **May 30, 2014 –** Draft of IRP document to TAC
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
- **August 31, 2014 –** File finalized IRP document

# Tentative Agenda for the Next TAC Meeting

- Natural Gas Prices
- Supply Side Resources (Current and Future)
  - Transportation
  - Storage
  - Other
- Gate Station Analysis

# 2014 Avista Natural Gas IRP

Technical Advisory Committee Meeting 2

February 25, 2014

Portland, Oregon

# Agenda

- Introductions & Logistics
- Update from NWP and GTN
- Regional and Avista's Supply Side Resources/Resource Optimization
- Gate Station Analysis
- Solving Unserved Demand

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
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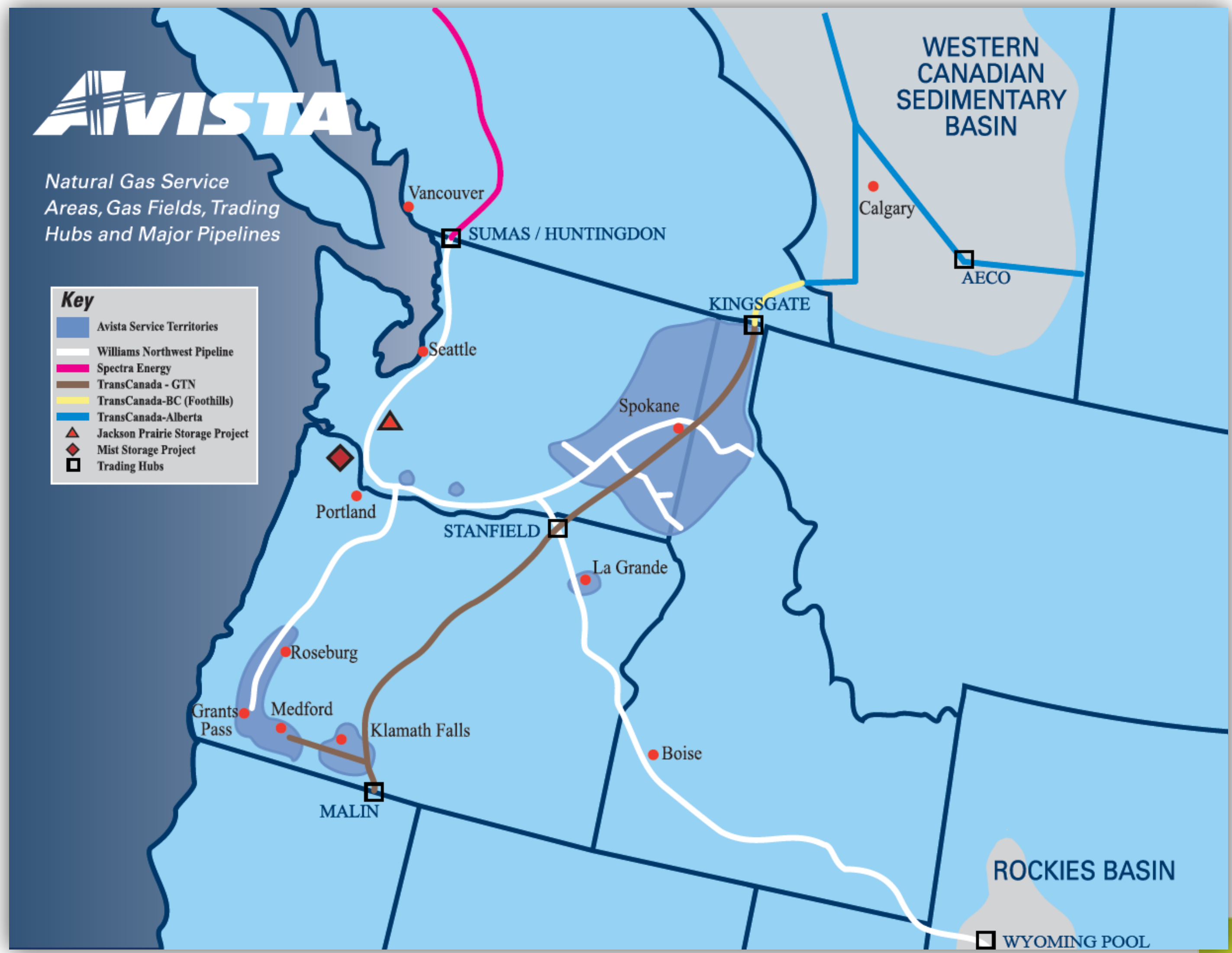
# Regional and Avista's Supply and Infrastructure

# NWP Presentation

# GTN Presentation

# Connecting Supply and Storage with Customers



# Storage – A valuable asset

- Peaking resource
- Improves reliability
- Enables capture of price spreads between time periods
  - Inter seasonal spreads
  - Intra seasonal spreads
- Enables efficient counter cyclical utilization of transportation (i.e. summer injections)
- May require transportation to service territory
- In-service territory storage offers most flexibility

# Regional Natural Gas Storage Resources

Jackson Prairie Natural Gas Facility
Chehalis, Washington

| Facility | Owner | Type | Capacity[1] (MDth) | Max Withdrawal (MDth/day) |
|---|---|---|---|---|
| Jackson Prairie, WA | Avista, PSE, NW Pipeline | Underground | 25,448 | 1,196[2] |
| Mist, OR | NW Natural | Underground | 16,100 | 520[2] |
| | **Underground Subtotal** | | **41,548** | **1,716** |
| Plymouth, WA | NW Pipeline | LNG | 2,388 | 305 |
| Newport, OR | NW Natural | LNG | 1,000 | 60 |
| Portland, OR | NW Natural | LNG | 600 | 120 |
| Tilbury, B.C. | FortisBC Energy | LNG | 591 | 155 |
| Nampa, ID | Intermountain Gas | LNG | 588 | 60 |
| Gig Harbor, WA | PSE | LNG | 13 | 3 |
| Swarr Station, WA | PSE | LPG[3] | 130 | 10 |
| Mt. Hayes, B.C. | FortisBC Energy | LNG | 1,530 | 153 |
| | **LNG/LPG Subtotal** | | **6,858** | **866** |
| | **Total Storage** | | **48,406** | **2,582** |

[1]Working gas capacity; gas that can be used to serve the market.
[2]Start of season or full rate; storage withdrawal rates decline as working gas volumes decline below certain levels.
[3]LPG= Liquid Propane Gas and Air mixture.



AVISTA

# Avista's Storage Resources

**Washington and Idaho**
**Owned Jackson Prairie**

- 7.7 Bcf of Capacity with approximately 346,000 Dth/d of deliverability

**Oregon**

**Owned Jackson Prairie**

- 823,000 Dth of Capacity with approximately 52,000 Dth/d of deliverability

**Leased Jackson Prairie**

- 95,565 Dth of Capacity with approximately 2,654 Dth/d of deliverability

# Interstate Pipeline Resources

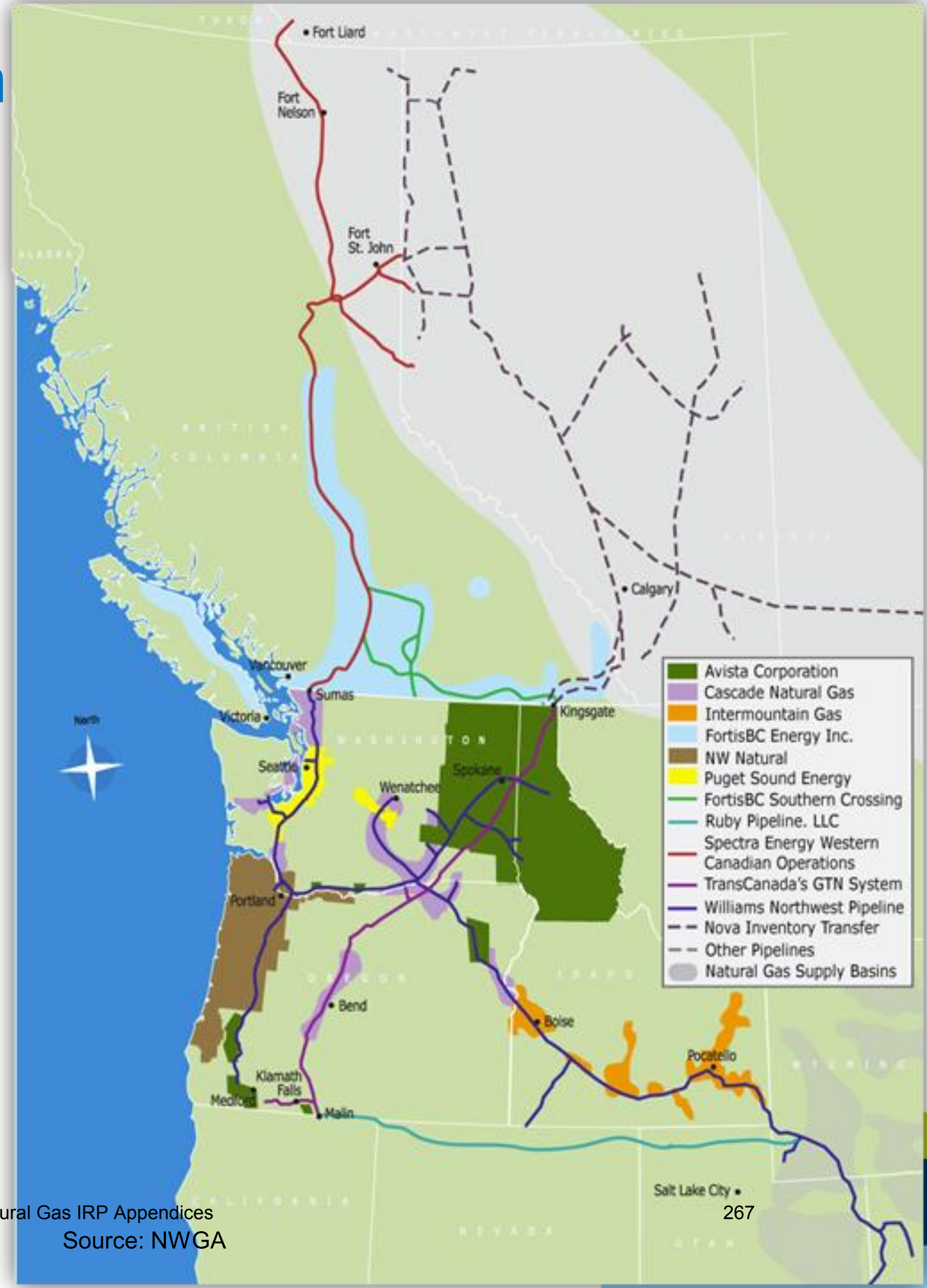
- The Integrated Resource Plan (IRP) brings together the various components necessary to ensure proper resource planning for reliable service to utility customers.

- One of the key components for natural gas service is interstate pipeline transportation.  Low prices, firm supply and storage resources are rendered meaningless to a utility customer without the ability to transport the gas reliably during cold weather events.

- Acquiring firm interstate pipeline transportation provides the most reliable delivery of supply.

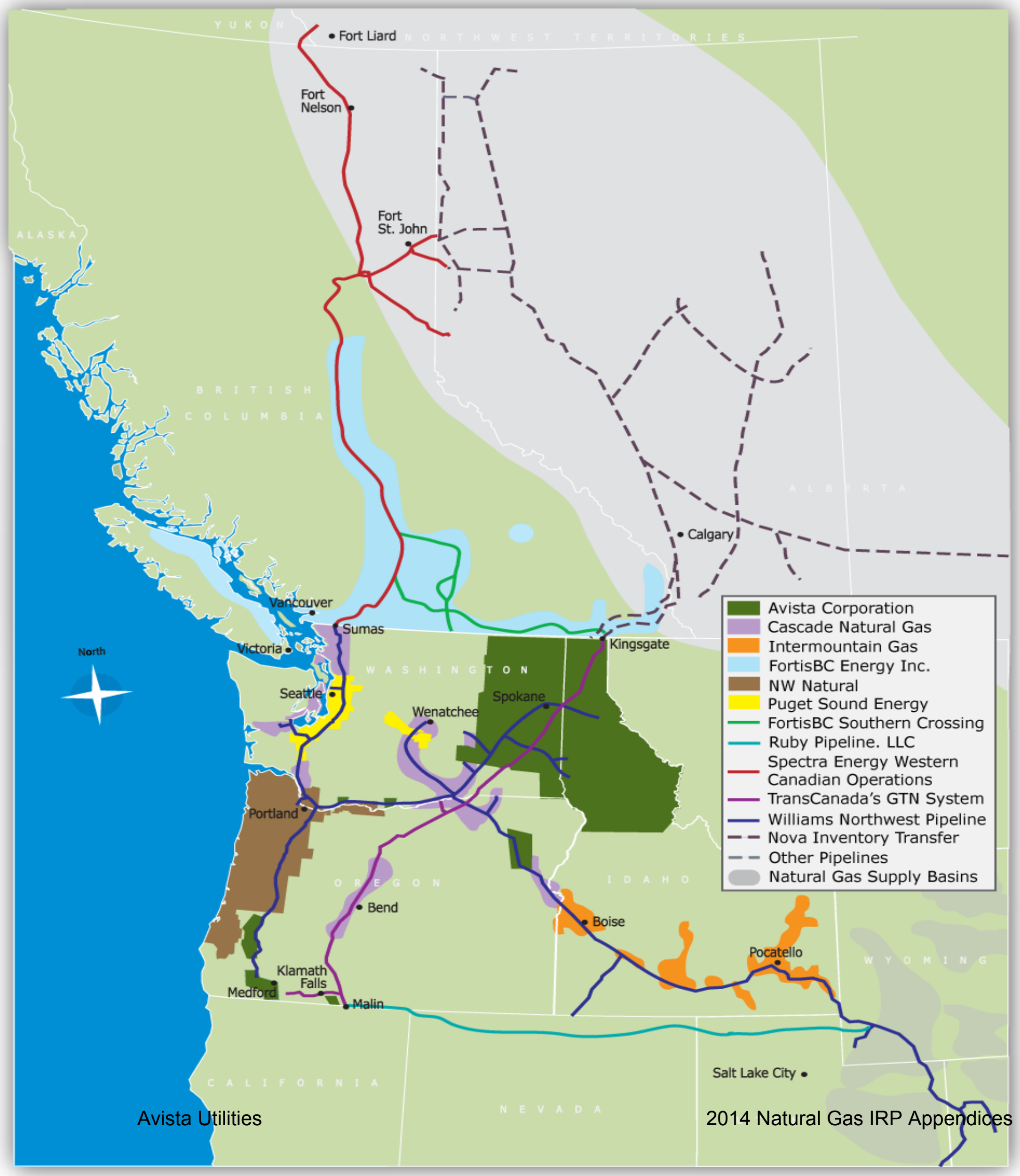
# Regional Transportation Resources

- **TransCanada Alberta (NOVA)**
  - Transporting gas out of Alberta, Canada
- **TransCanada BC (ANG)**
  - Transporting gas through BC, Canada to US
- **Spectra Energy (WestCoast)**
  - Transporting gas from western BC Canada to US
- **Gas Transmission Northwest (GTN)**
  - Transporting gas from Canada/US border to CA
- **Williams Pipeline West (NWP)**
  - Transporting gas from western BC and US Rockies
- **El Paso Ruby Pipeline**
  - Transporting gas from the Rockies to Malin




Source: NWGA

# Overview of Transportation




**AECO**
**Station 2**
**Sumas**
**Stanfield**
**Rockies**
**Jackson Prairie**
**Malin**
**Starr Rd**
**Kingsgate**

# Proposed Pipeline Infrastructure

- •Pacific Connector/Jordan Cove
- •N-Max/Palomar
- •Washington Expansion
- •Oregon LNG

# Pipeline Contracting

Simply stated:  The right to move (transport) a specified amount of gas from Point A to Point B

# Rate Structure

| | |
|---|---|
| Straight Fixed Variable (SFV) | • Pipeline charges a higher demand charge and a lower variable or commodity charge |
| Enhanced fixed variable | • Pipeline charges a lower demand charge and a higher variable or commodity charge |
| Postage Stamp Rate | • Pay the same demand and variable costs regardless of how far the gas is transported |
| Mileage Based | • Pay a variable and demand charge based on how far the gas is transported |

# Types of Pipeline Contracts

## Firm Transport

- Contractual rights to:
  - Receive
  - Transport
  - Deliver
- From point A to point B

## Interruptible Transport

- Contractual rights to:
- Receive
- Transport
- Deliver
- From point A to Point B *AFTER FIRM TRANSPORT HAS BEEN SCHEDULED – and can be BUMPED later!*

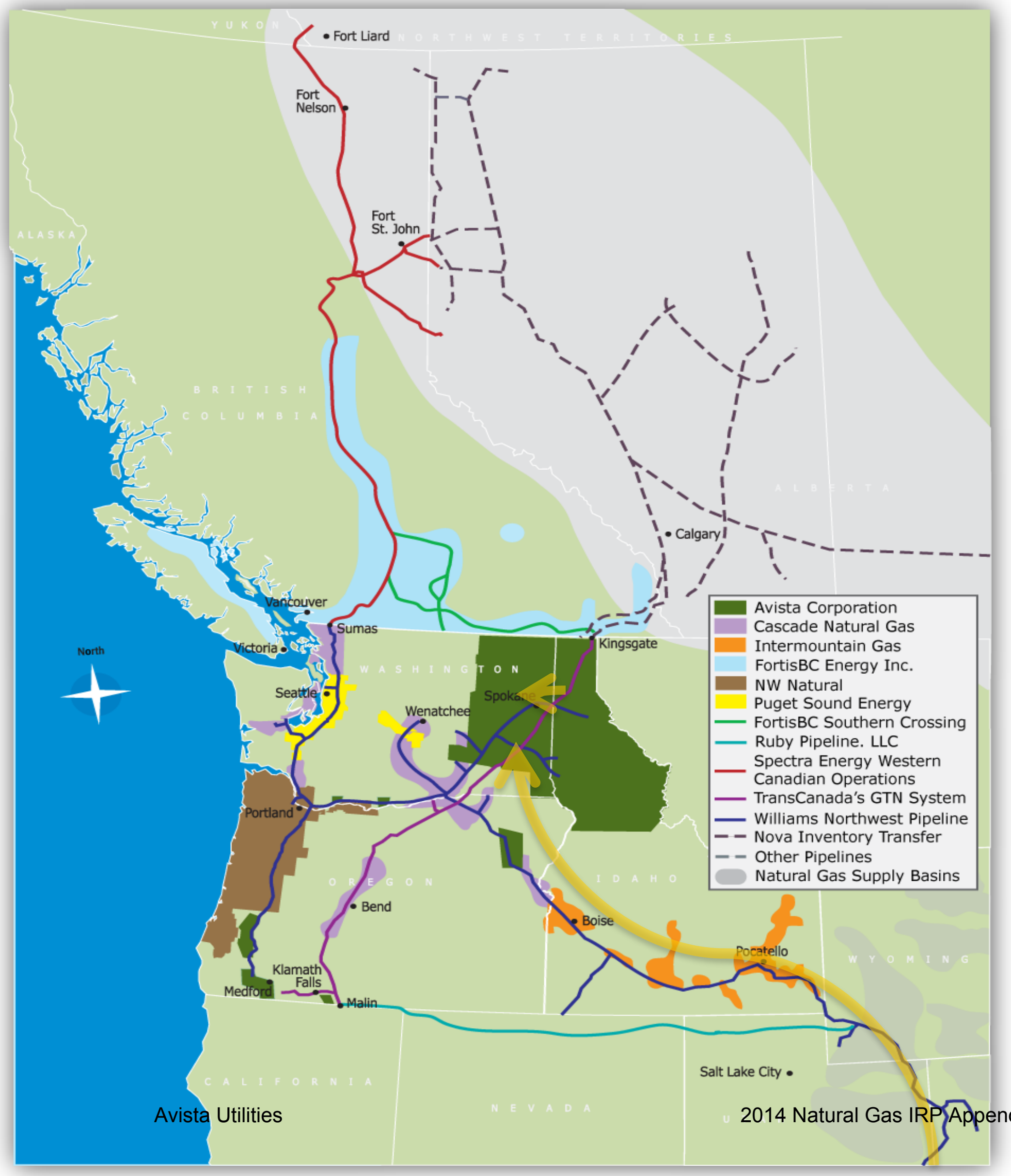
## Seasonal Transport

- Firm service available for limited periods (Nov-Mar) or for a limited amount (TF2 on NWP)
  - Usually matched, paired or utilized with storage.

## Alternate Firm Transport

- The use of firm transport outside of the primary path
- Priority rights below firm
- Priority rights above interruptible

# Postage Stamp Rate



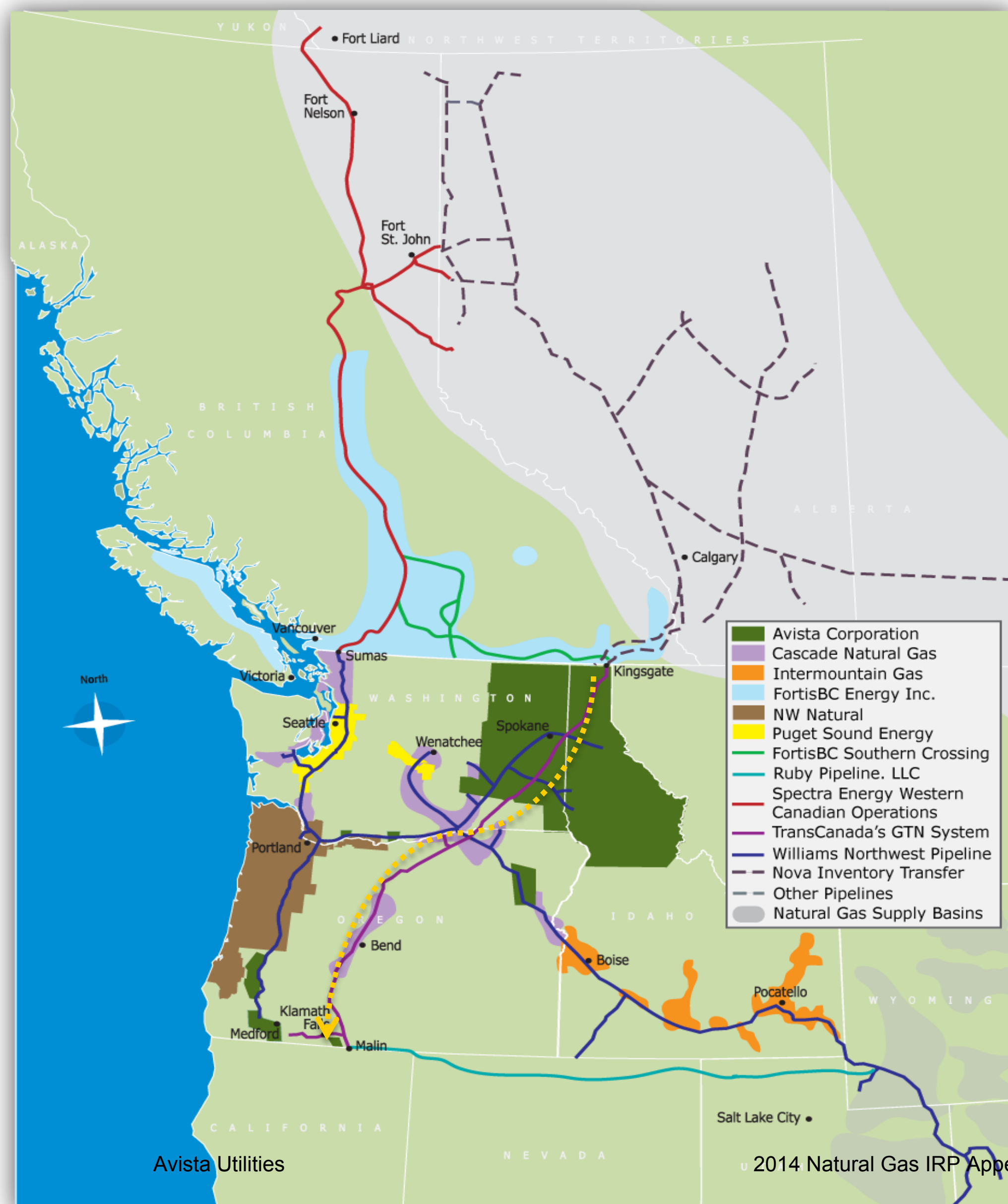

Postage Stamp:

Same costs regardless of distance or locations

# Pipeline Revenue
## NWP Example: Postage Stamp

- Postage Stamp (NWP)
  - Pay $0.37 to reserve the space
    - Whether you use it or not
  - Pay $0.03 when used
    - Only when you use it
  - Net $0.40
- Demand Charge = $0.37
- Commodity Charge = $0.03

# Mileage Rate




Mileage Base:

Pay based on how far you move the gas

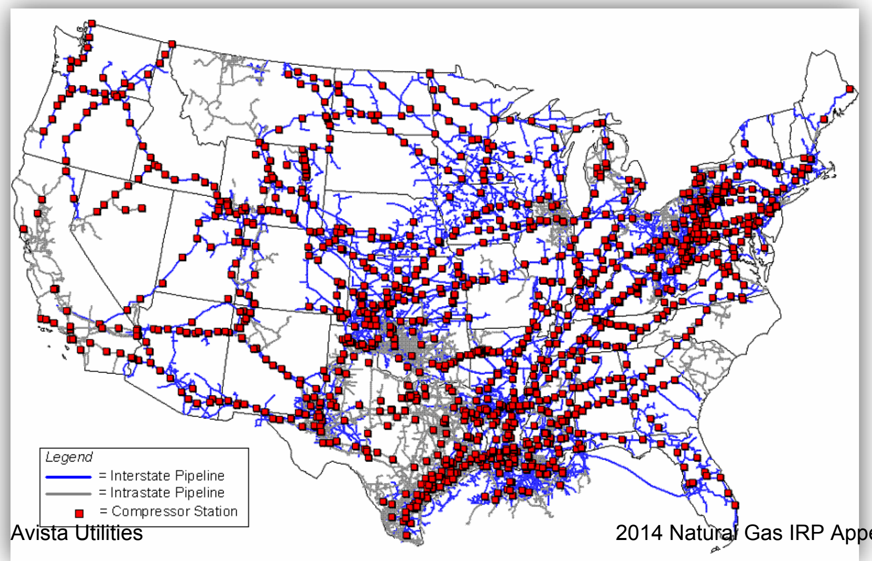
# Pipeline Revenue
## GTN Example: Mileage Based

- Mileage Based (GTN)
  - Pay $0.01 per mile to reserve the space
    - Whether you use it or not
  - Pay $0.002 per mile when used
    - Only when you use it
  - $0.021 per mile when used
- Demand Charge = $0.01
- Commodity Charge = $0.002

# Interruptible Rates

- Pay as you go!
- Pay full firm rate for any gas transported (may be discounted)
  - Pay $0.37 equivalent to cost to reserve the space
  - Pay $0.03 variable charge when used
  - Net $0.40 for all gas transported
    - So IT rate is $0.40
- NO GUARANTEE it will flow.
- Can be "BUMPED" by Firm Shippers

# Fuel Rates

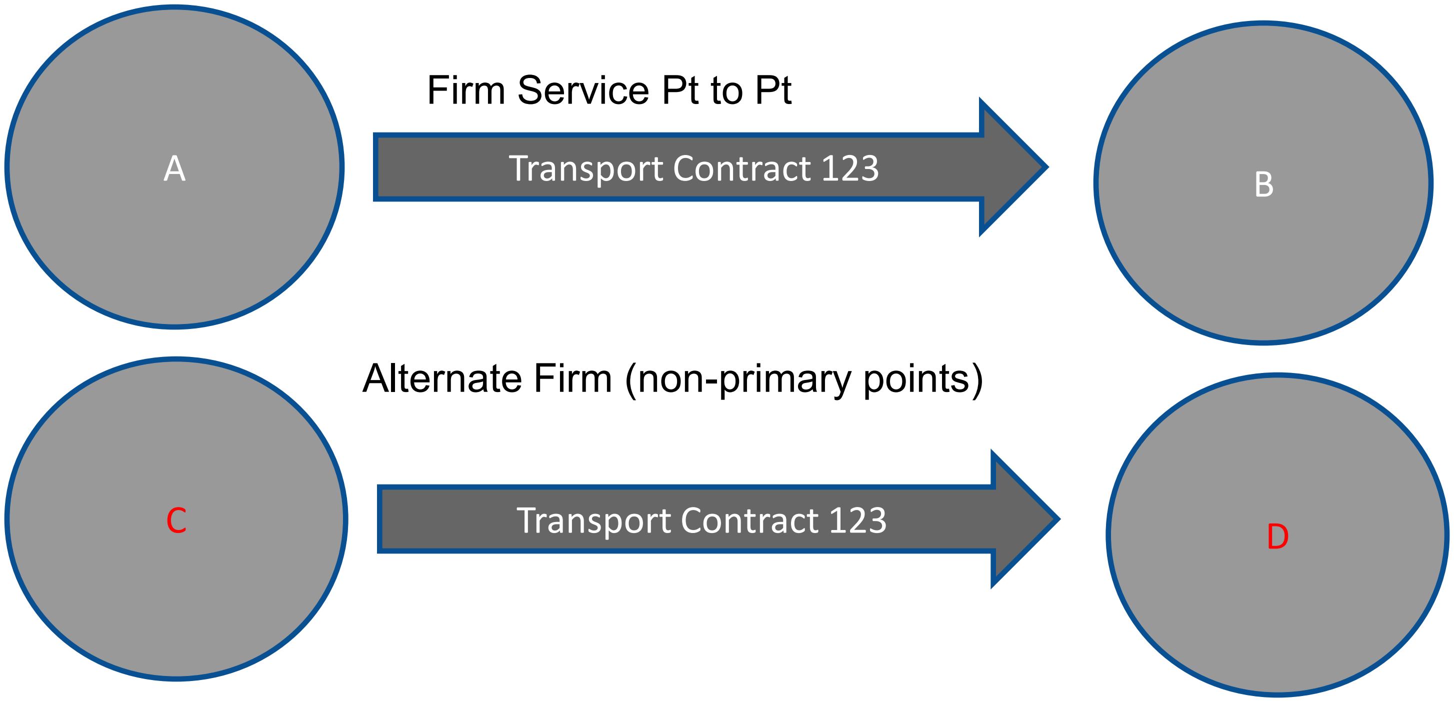

To move gas through the pipelines the gas is compressed to a higher pressure.

To run the compressors, the pipeline takes some of your gas – this is referred to as pipeline fuel.  It is a percent of what you are transporting.

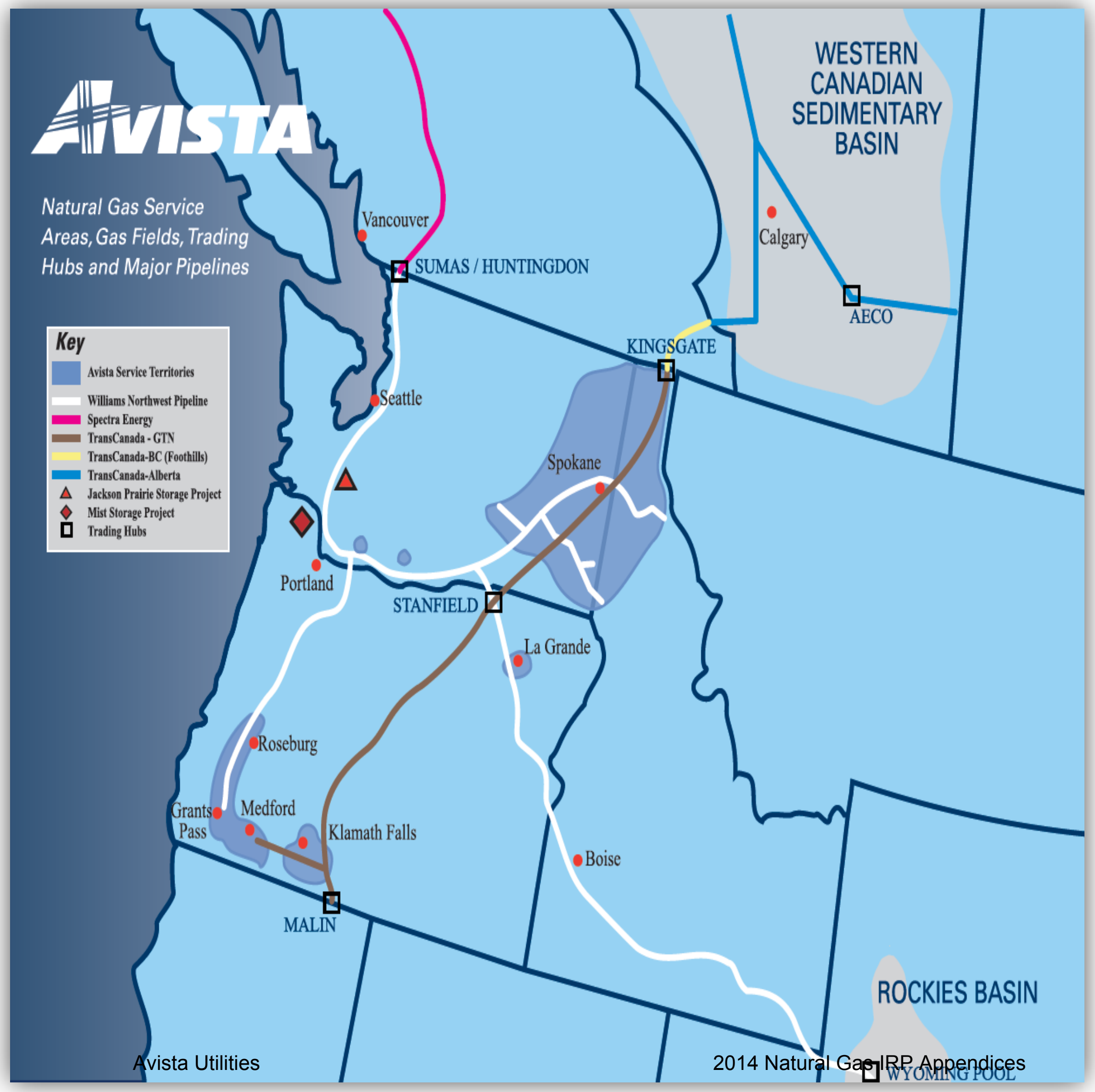
For example, if we purchase 1000 Dth in a supply basin, we will only receive 975 Dth at our gate station for the customers.

# Pipeline Contracting

Transport contract #123 with "primary" points A to B



# Capacity Firm or Not?

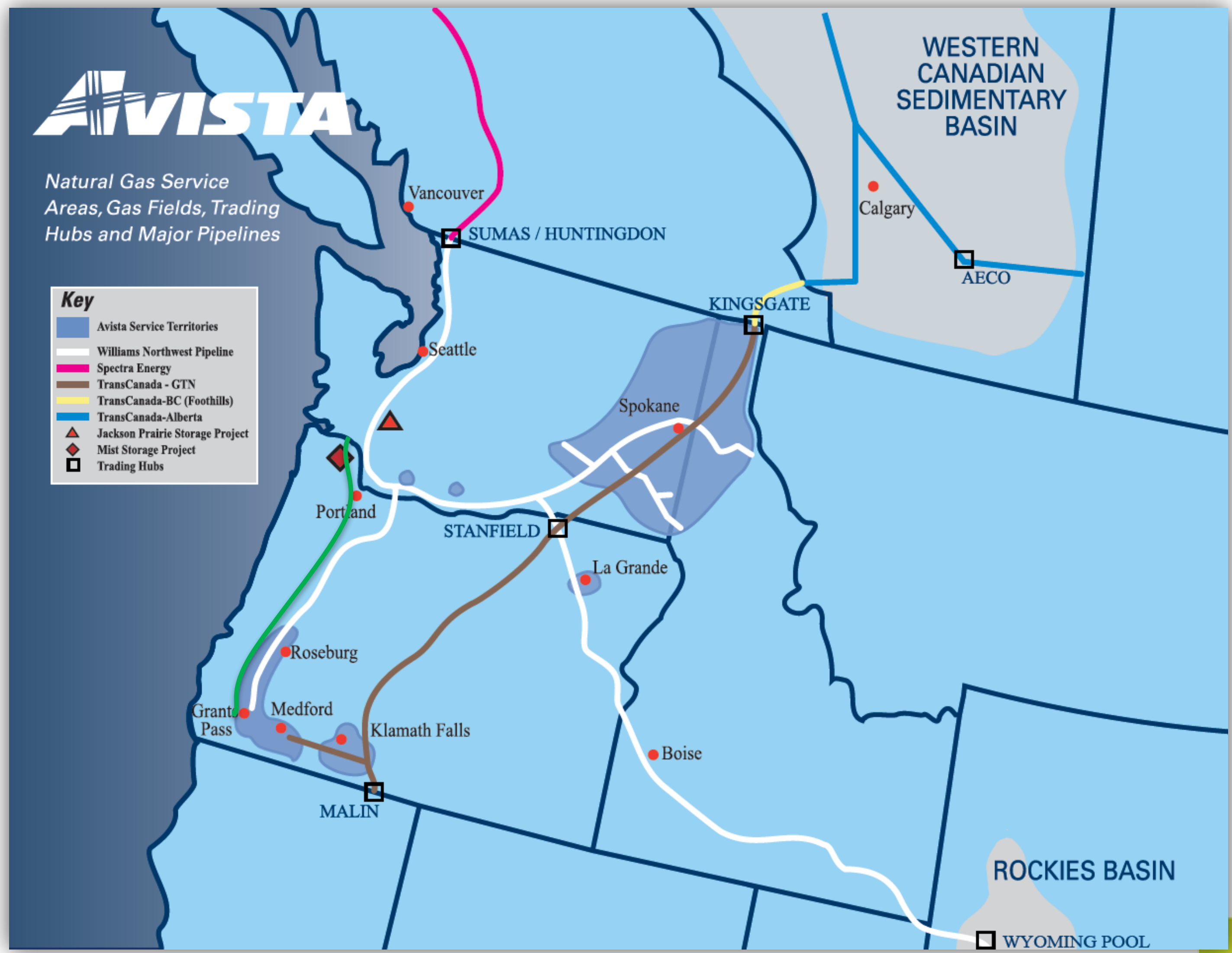



**Firm:**
- Primary Receipt
- Delivery Path

**Secondary:**
- Any part not firm
- Requires knowledge and experience to rely on interruptible

No on NWP
Yes on GTN

# Capacity Firm or Not?



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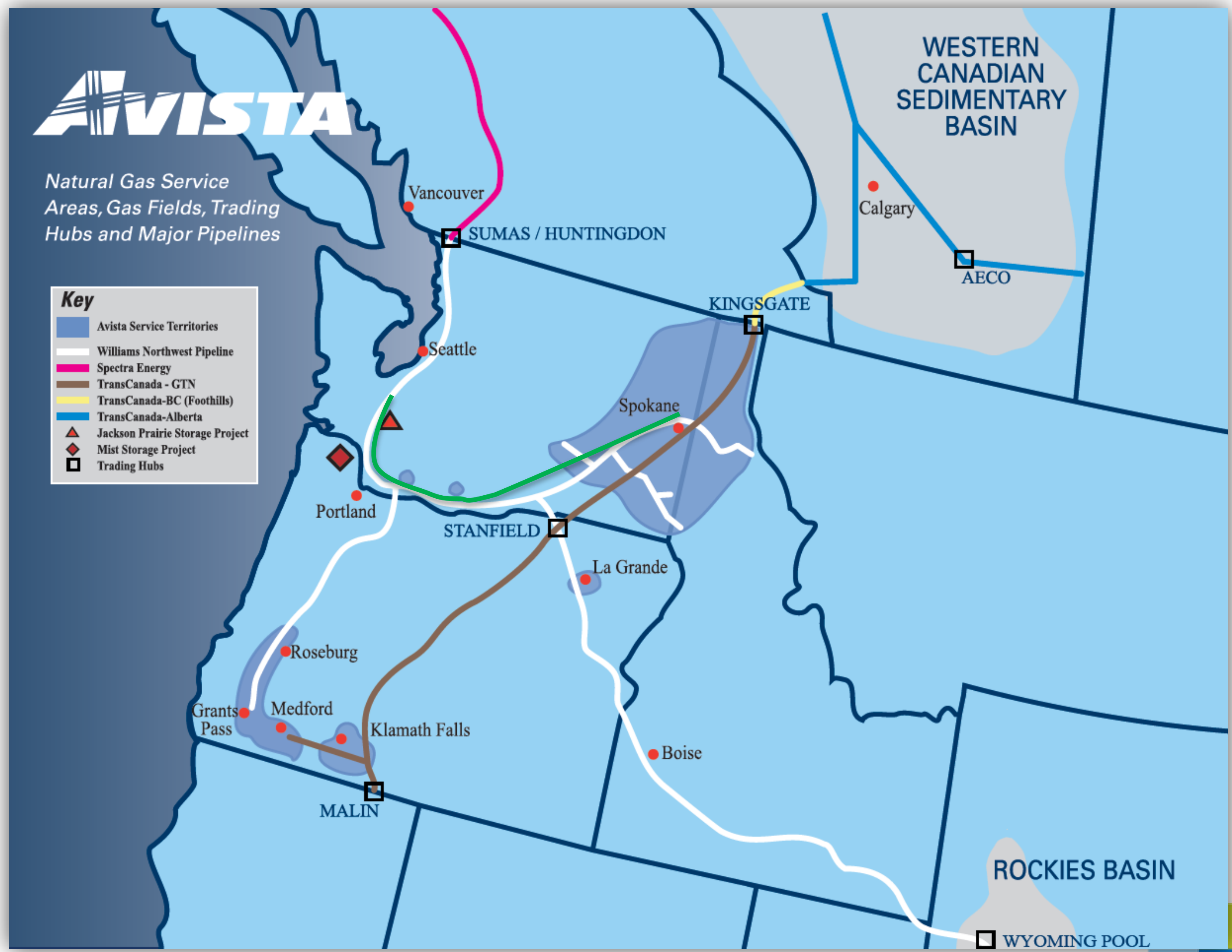

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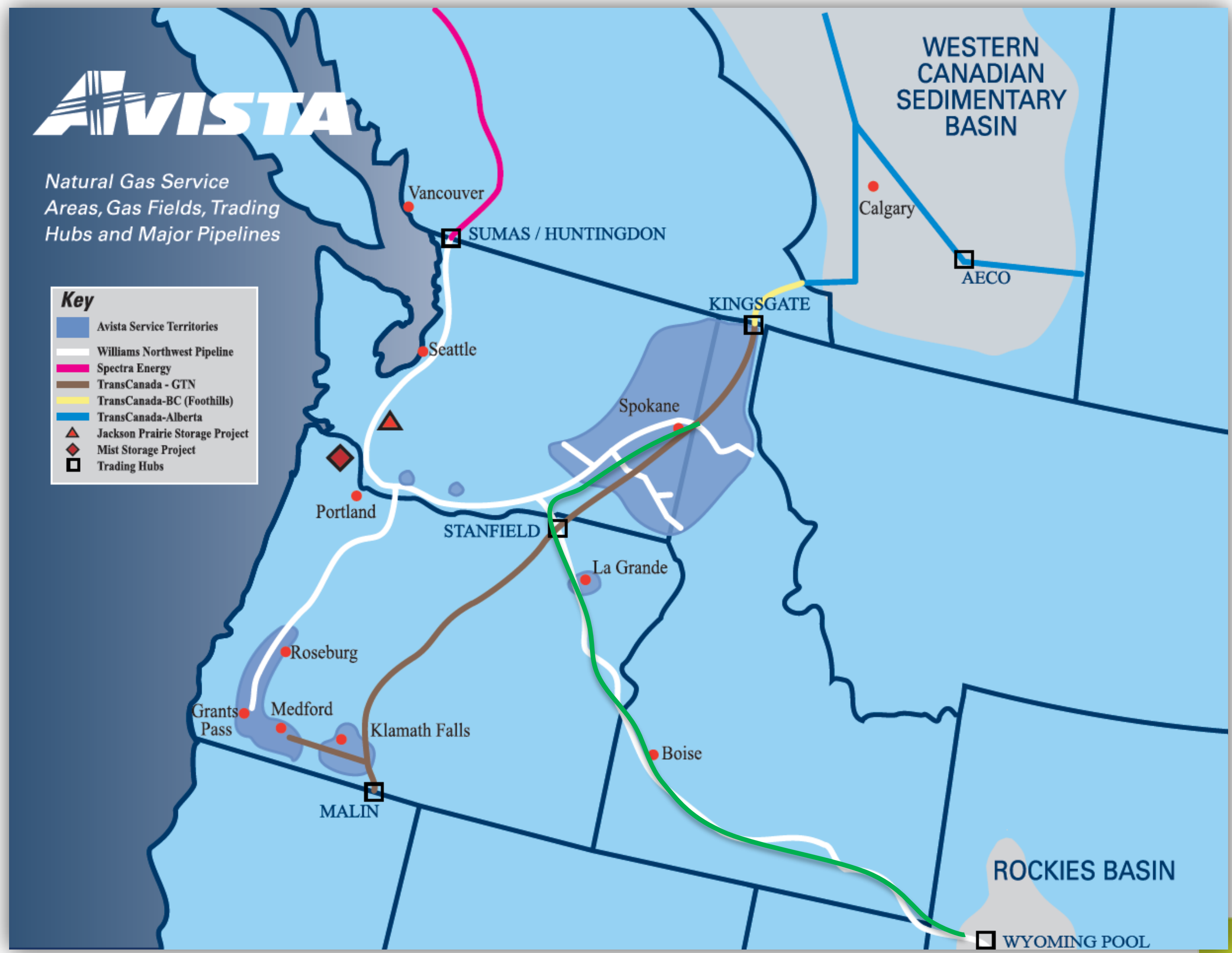
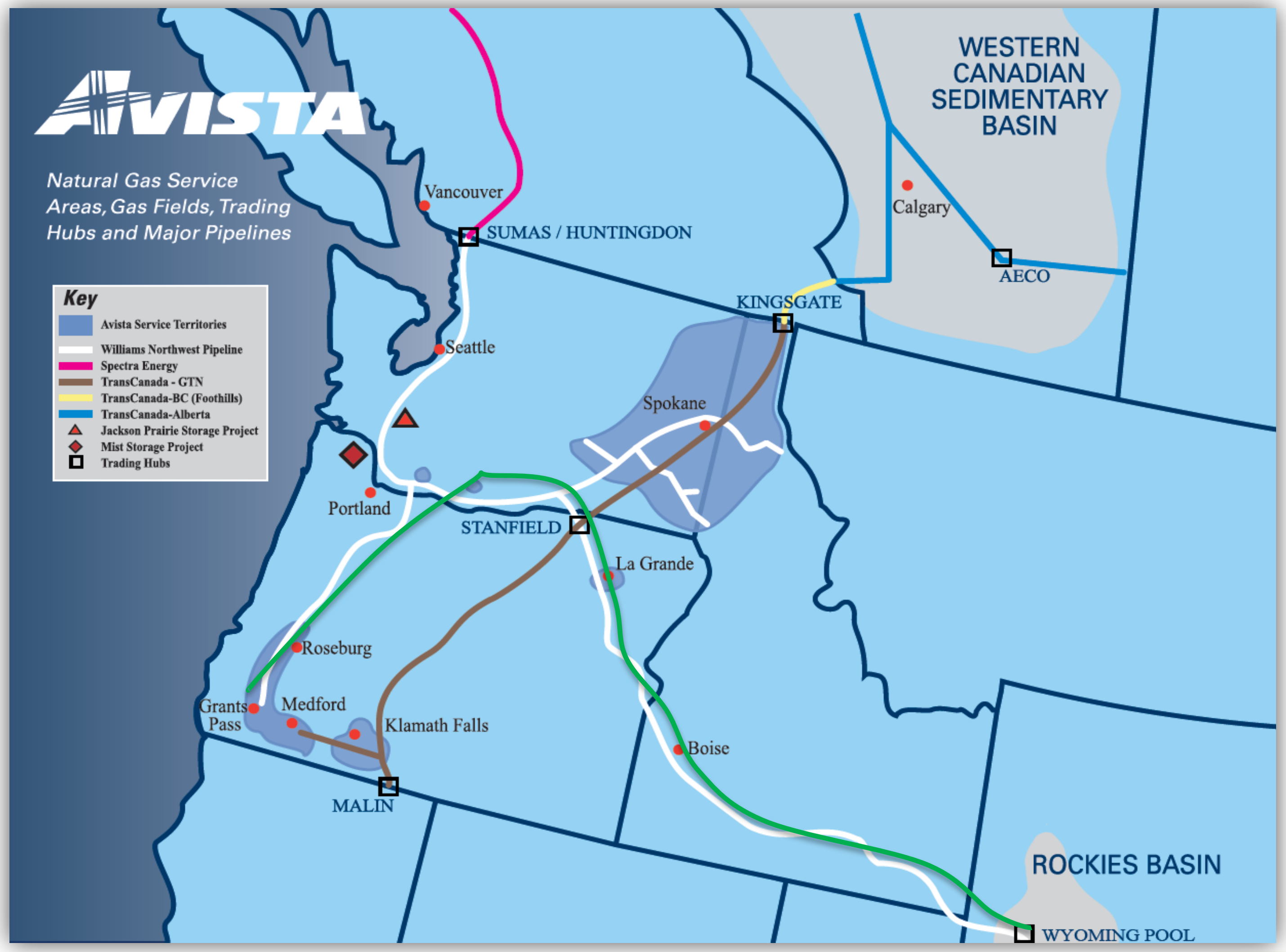



Firm Point to Point

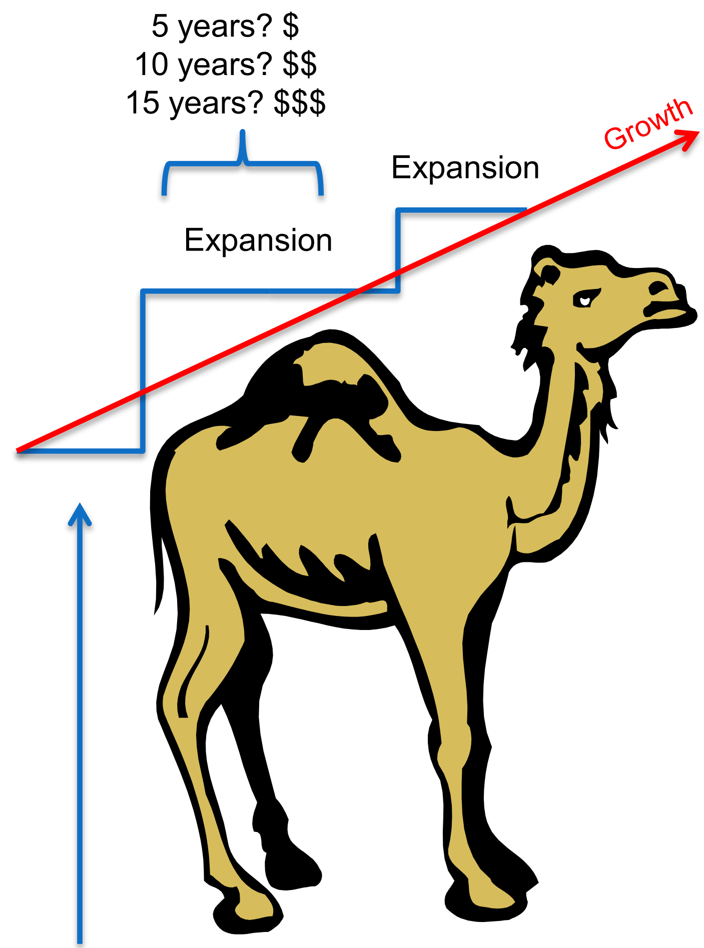
# Capacity Firm or Not?




Alternate capacity – flex delivery point

- Subject to cuts through constraints

# Pipeline Capacity can be "lumpy"

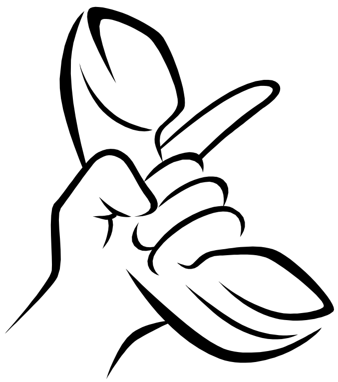




Alternatives can be expensive and timing unknown

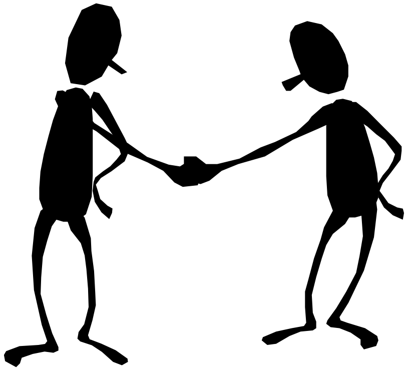
# How to Manage the "LUMPS"

- Transport Optimization
  – Contract Terms (seasonal)
  – Long term releases
  – Short term releases
  – Daily Optimization
  – Segmentation

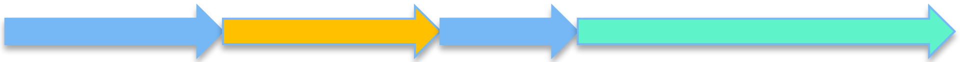

Daily basin spread arbitrage



Short Term



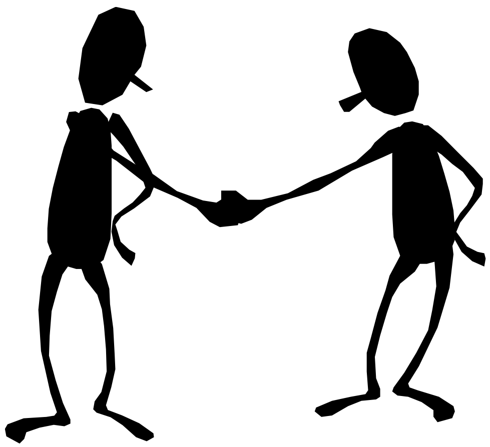
Long Term



Segmentation

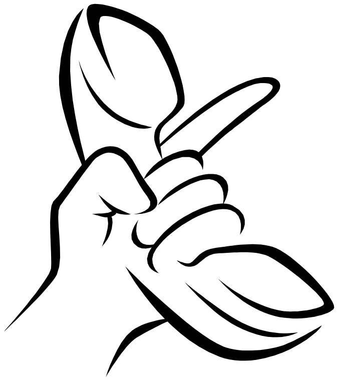
# Long Term Releases

- 1 year – 20 plus years
- Negotiated – but subject to bidding
- Can be subject to recall
- Cannot exceed Maximum Rate

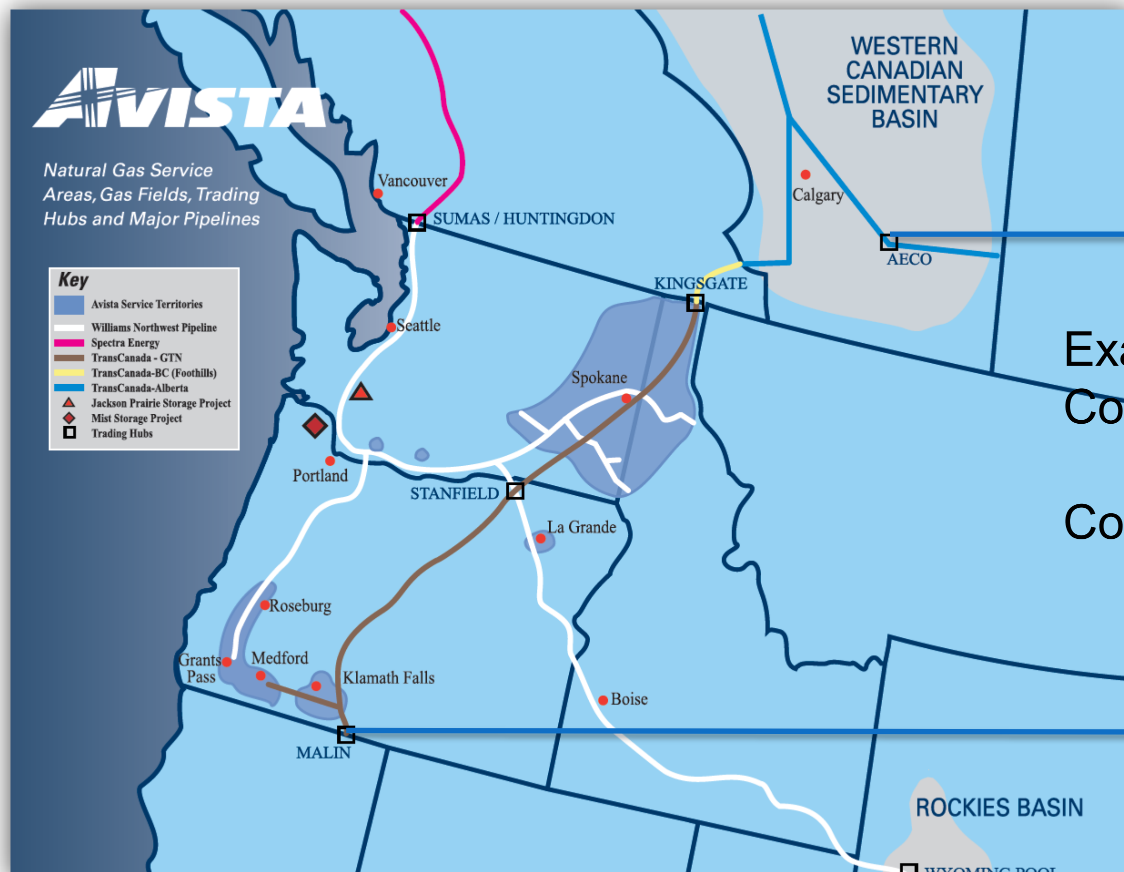


# Short Term Releases

- Less than 1 year (can be for 1 day)
- Negotiated – but subject to bidding
- Can be posted for bidding only
- “Sweet Heart” rules prevent rolling from term to term
- Can be higher than Max Rate



# Daily Transportation Optimization




AECO

Example:

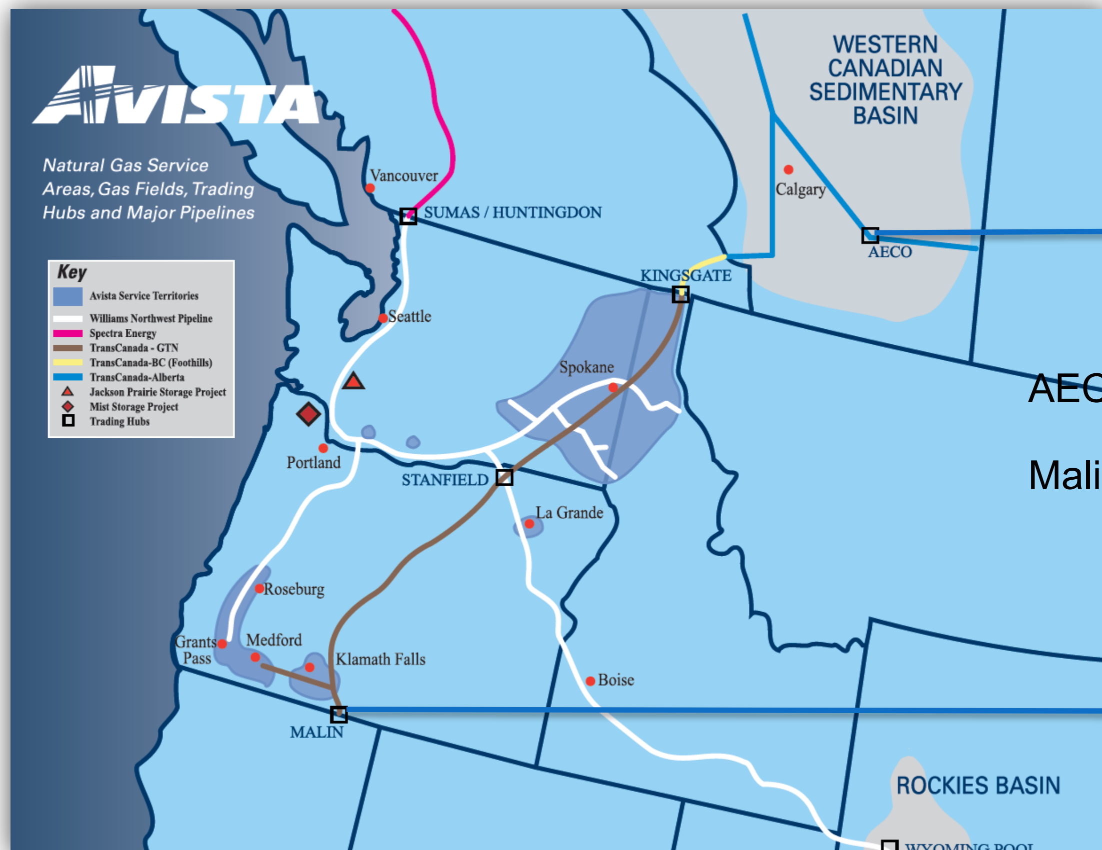
Cost to own transport is $0.70

- Whether used or not (demand)

Cost to actually move gas is $0.10

Malin

# Daily Transportation Optimization




AECO

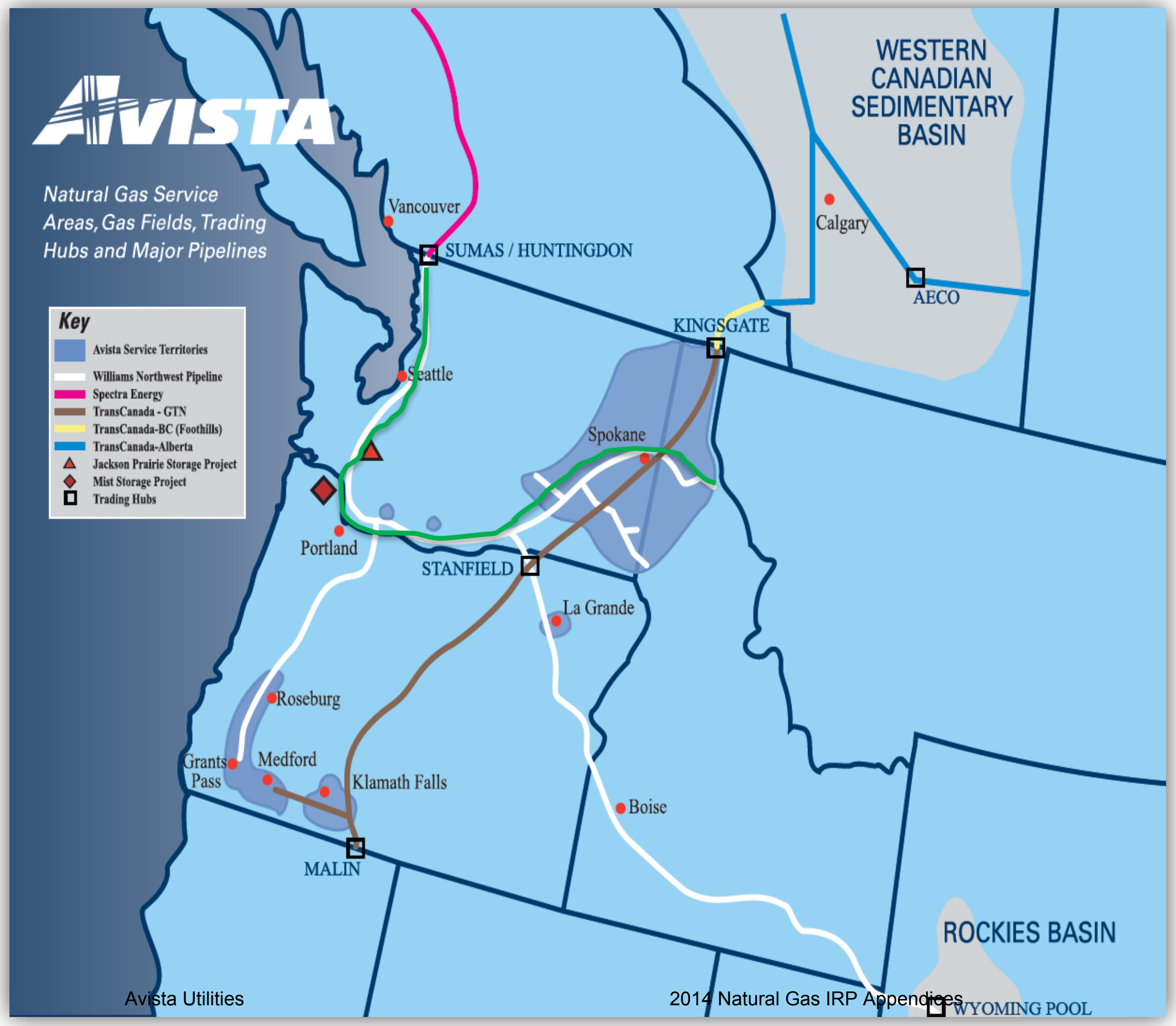
AECO Price is $4.00

Malin Price is $4.50

Malin

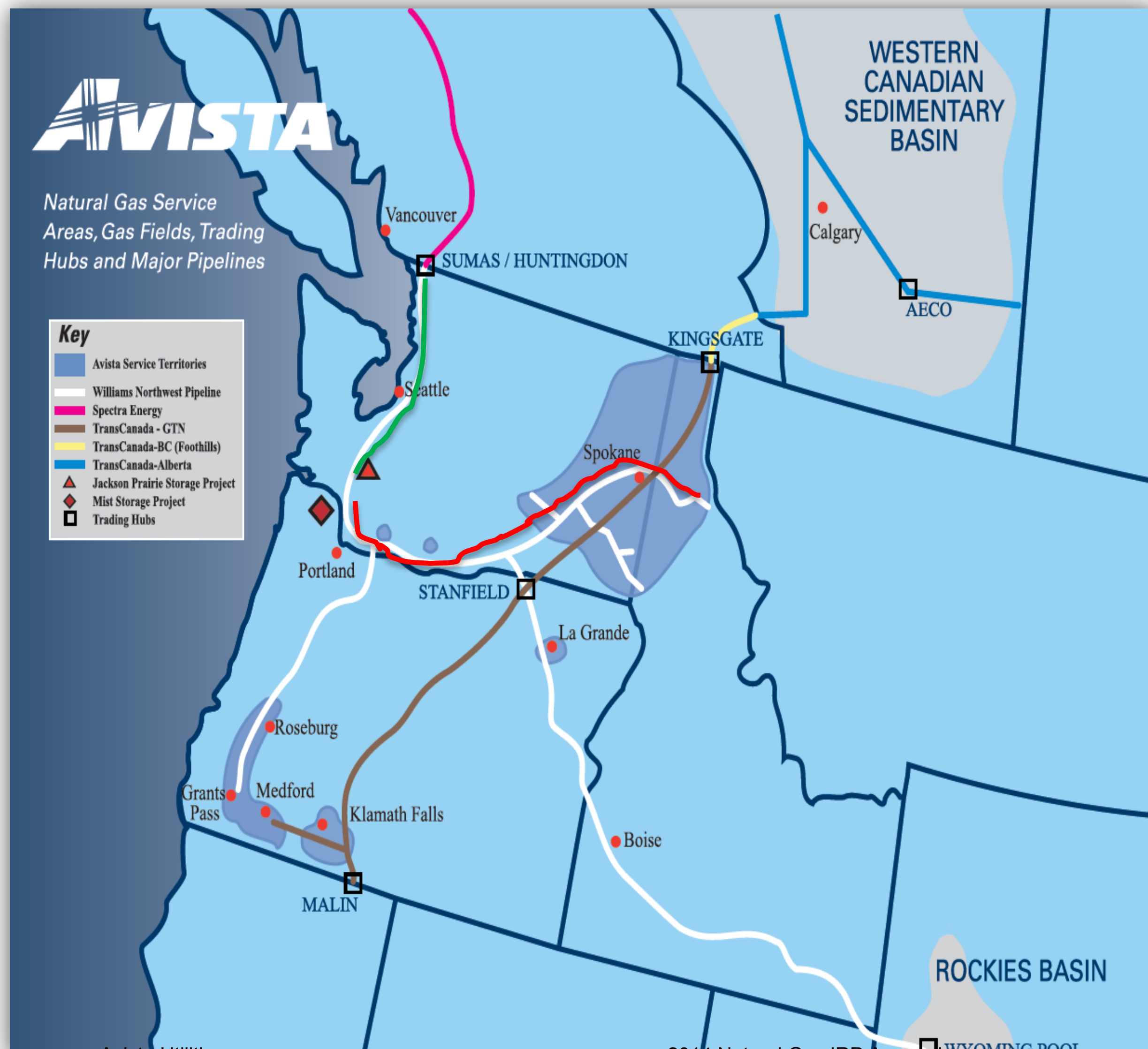
Buy AECO gas at $4.00
Pay $0.10 to transport it (fuel costs)
Sell Malin gas at $4.50
Net is $4.50-$4.00 is $0.50; less $0.10 to transport yields $0.40
We have reduced customer’s costs by $0.40

# Segmentation




**Primary Path:**
Sumas to CDA
10,000 Dth/day
Guaranteed Delivery

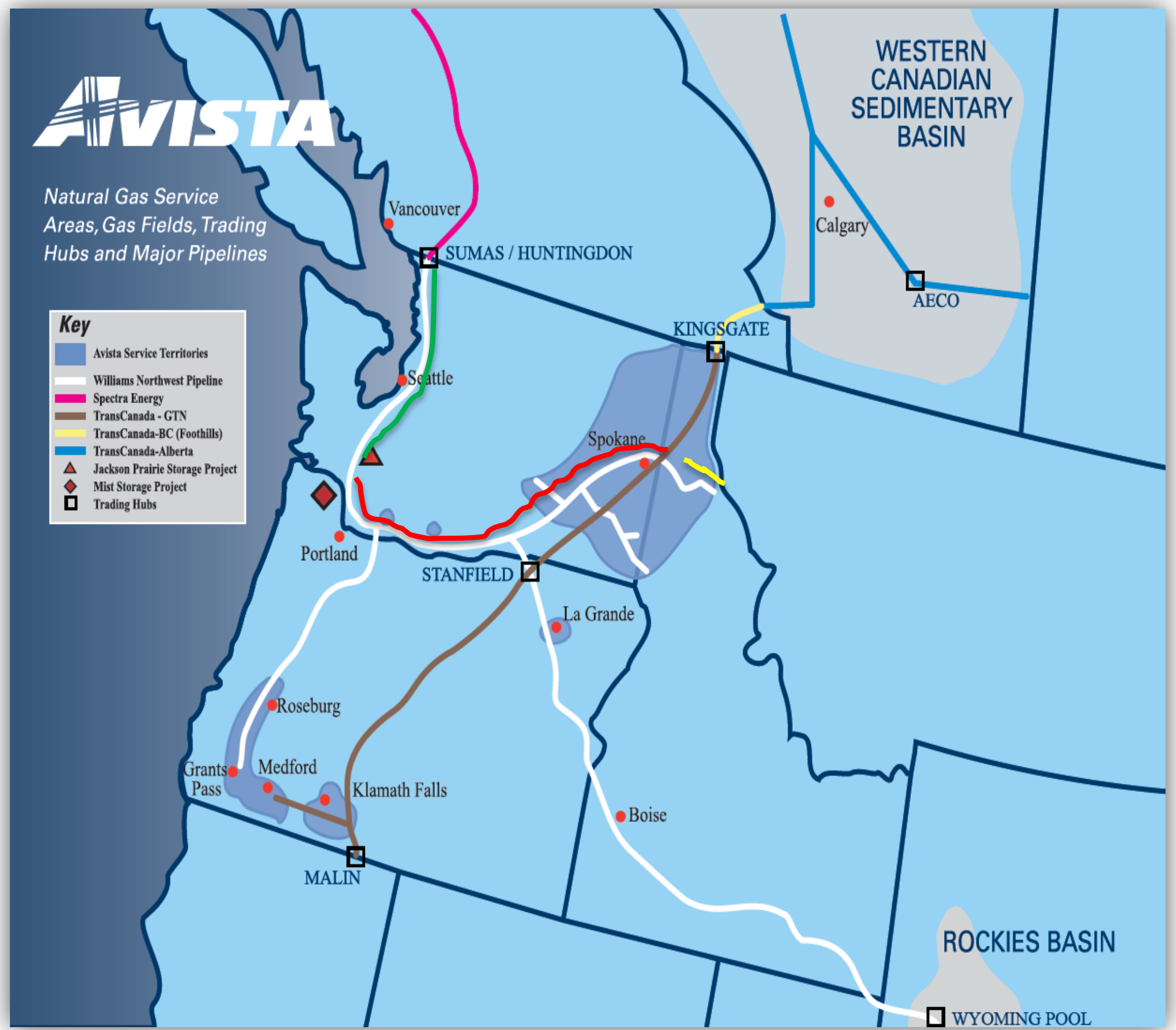
# Segmentation




**Segment:**
Sumas to JP – FIRM
10,000 Dth/day

JP to CDA – FIRM
10,000 Dth/day

# Segmentation




**Segment:**

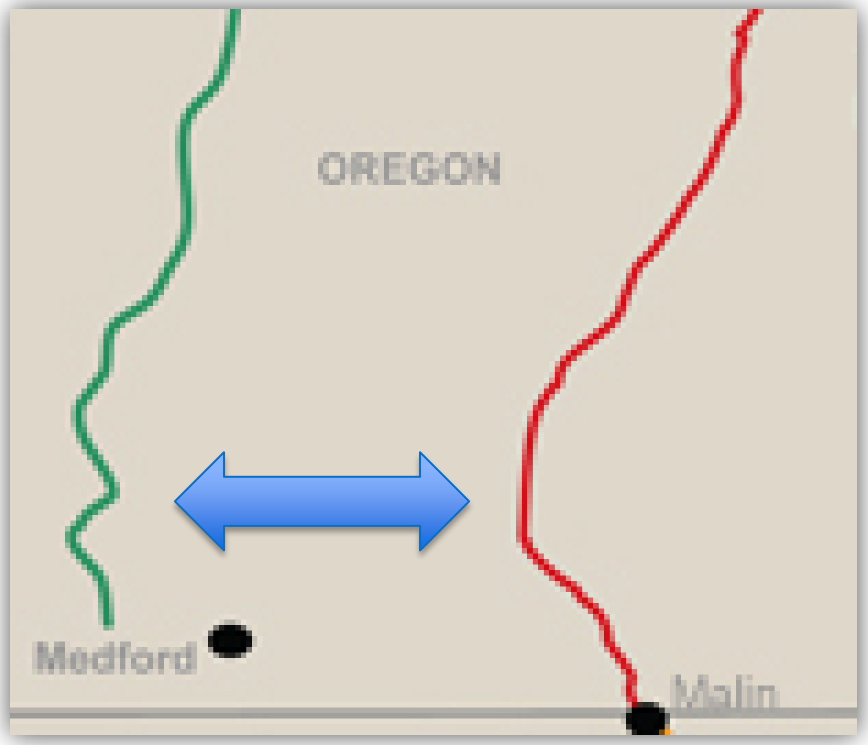
Sumas to JP – FIRM
10,000 Dth/day

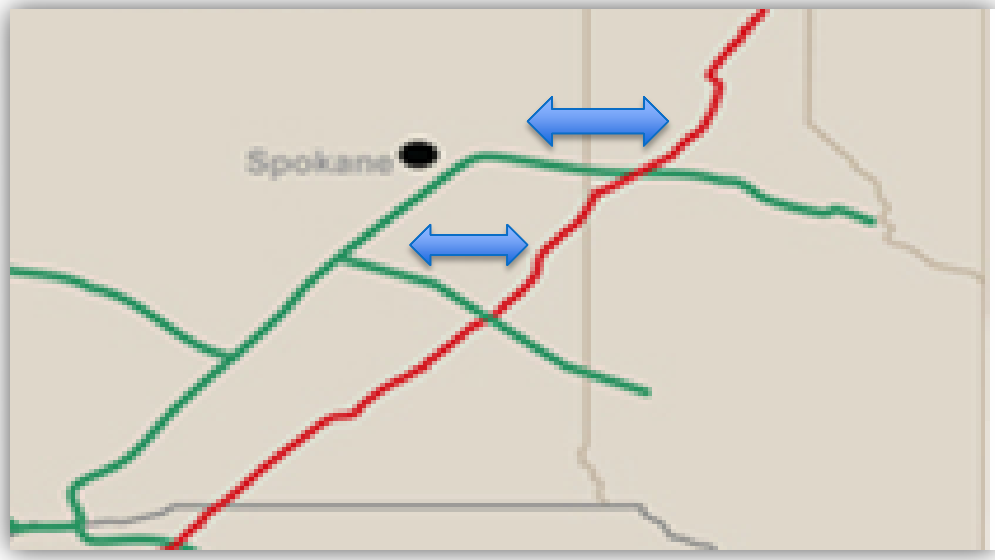
JP to Spokane – FIRM
10,000 Dth/day

Starr Rd to CDA – FIRM
10,000 Dth/day

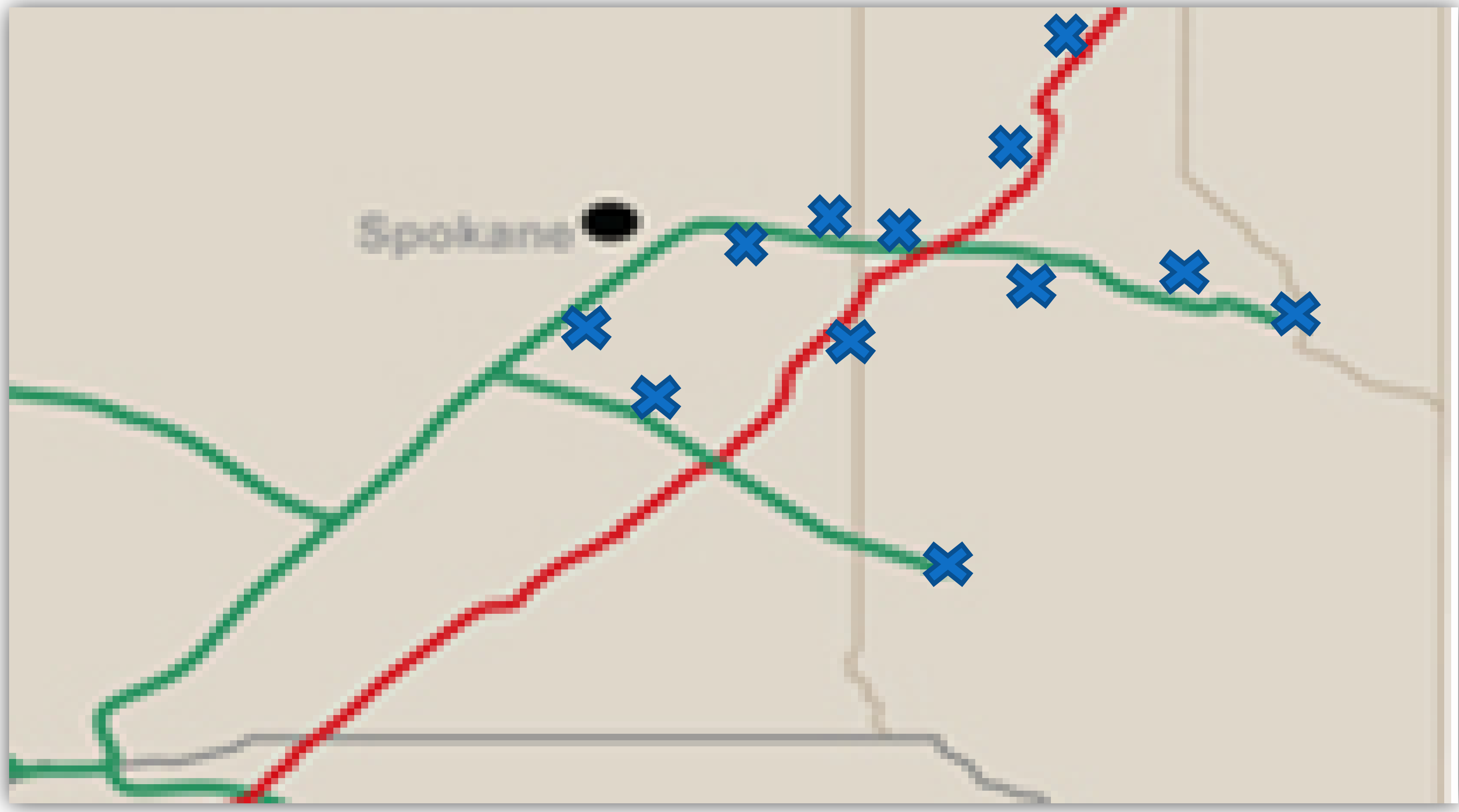
One payment
3 x capacity

# Pipeline Optimization

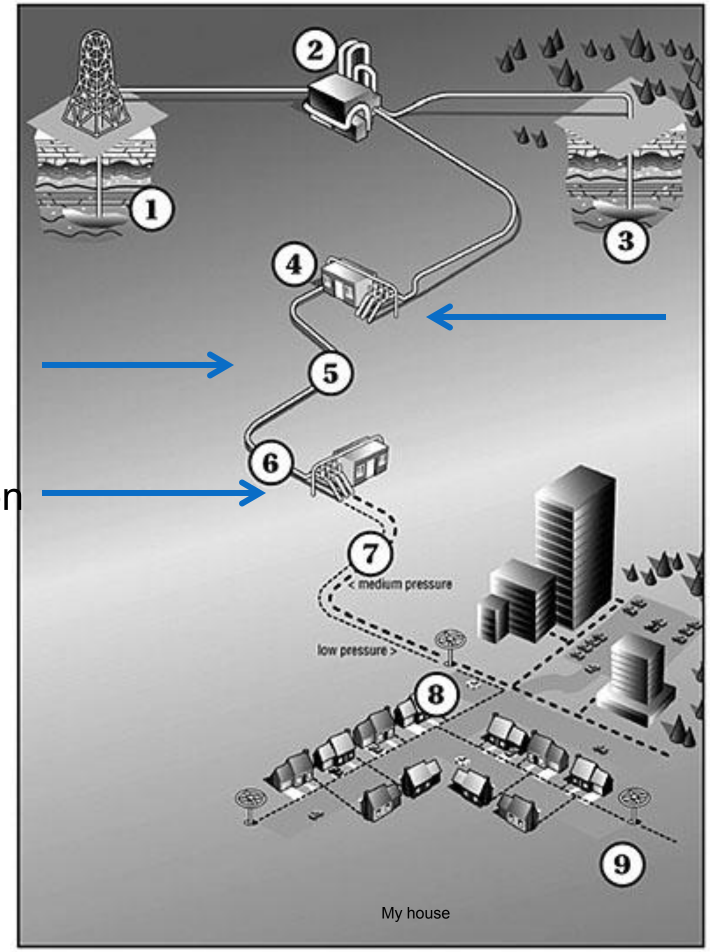


# Points Along the Pipe



# Gate Stations




Receipt Pt

Pipeline

Delivery Pt/Gate Station

# Pipeline Contracting

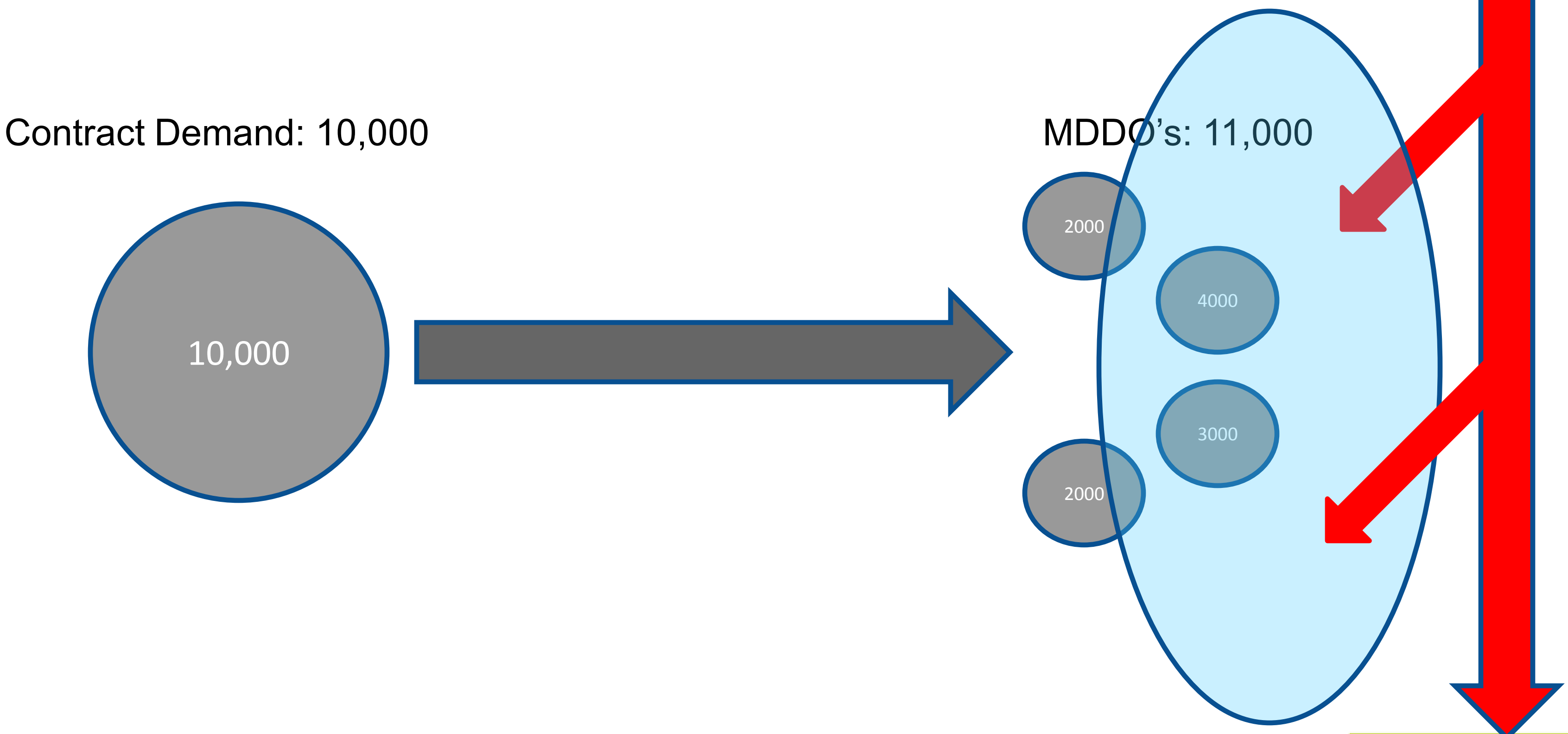
Gate stations may have the ability to deliver volume in excess of contract demand. This may be a result for future growth and construction efficiencies.

Contract Demand: 10,000

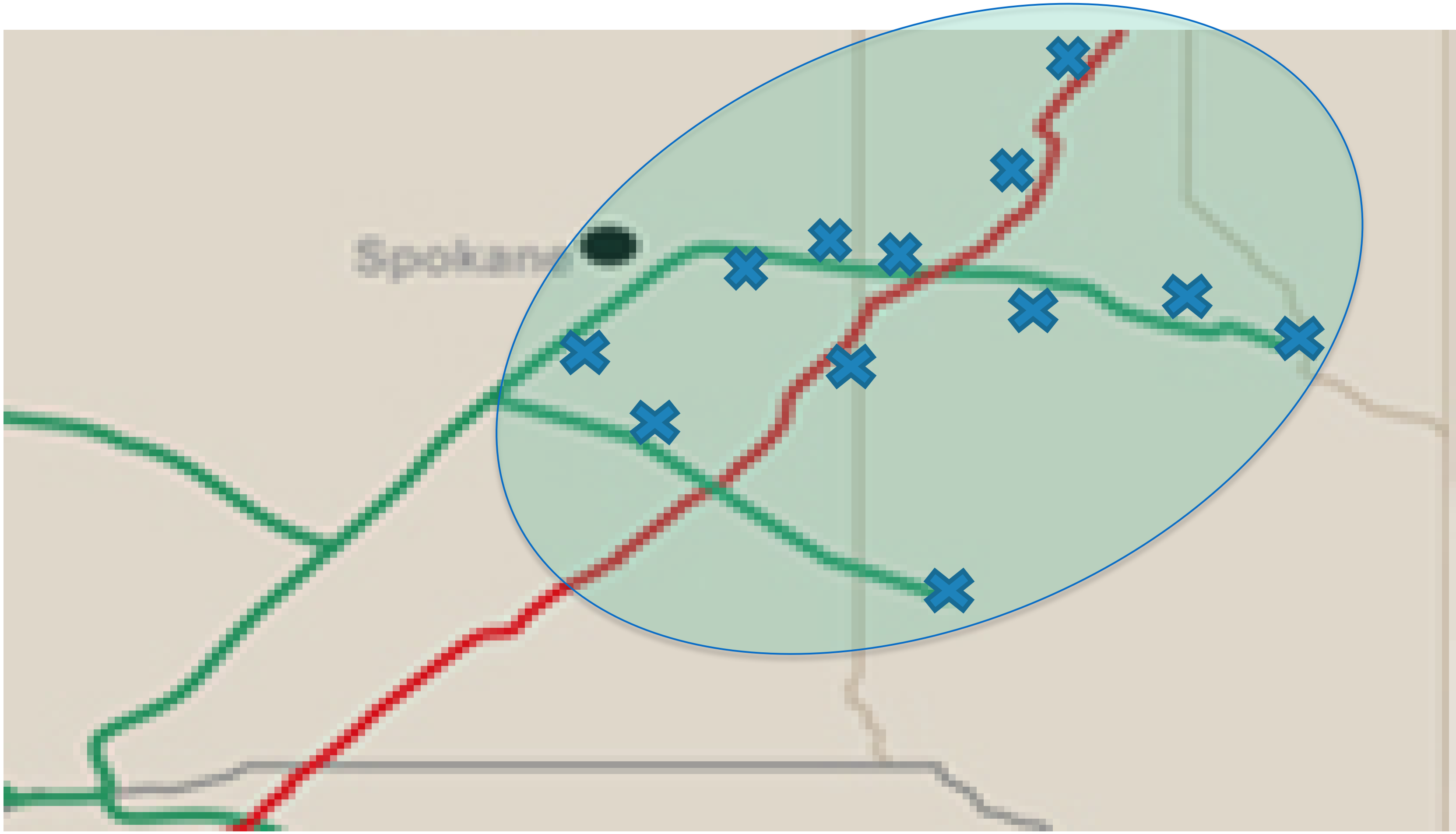
MDDO’s: 11,000

# Pipeline Contracting

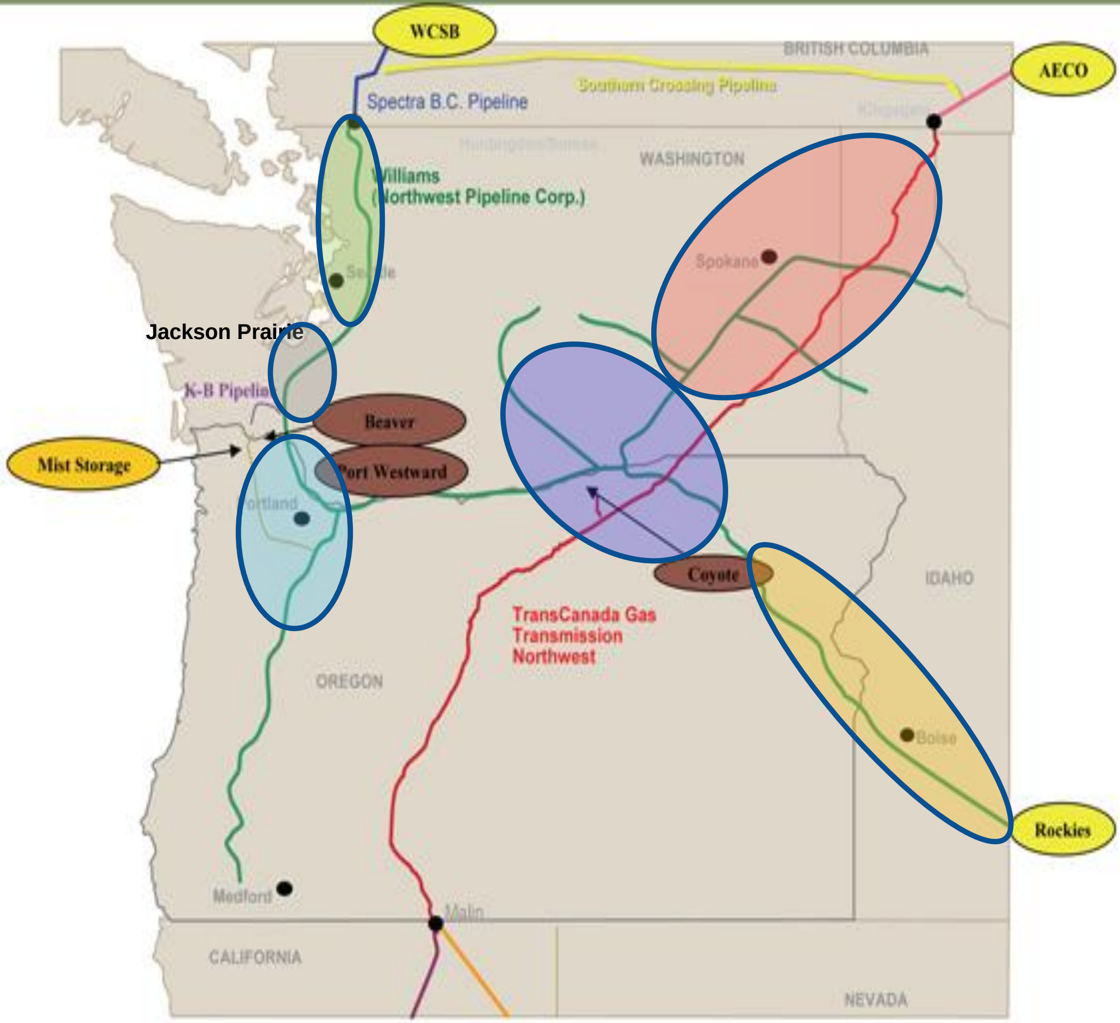
Blending of Pipelines under Avista's service territory has many positive results but dramatically adds to the complexity of planning.



# Zones Along the Pipe



# Natural Gas Transportation



# Modeling Transportation In SENDOUT®

- Start with a point in time look at each jurisdiction's resources
  - Contracts – Receipt and Delivery Points
  - Rates
- Contractual vs. Operational
  - Contractual can be overly restrictive
  - Operational can be overly flexible
- Incorporating operational realities into our modeling can defer the need to acquire new resources.
- Gas Supply's job is to get gas from the supply basin to the pipeline citygate.
- Gas Engineering/Distribution's job is to take gas from the pipeline gate to our customers.
- The **major** limiting factor is receipt quantity – how much can you bring into the system?

# Modeling Challenges

- Supply needs to get gas to the gate.
- Contracts were created years ago, based on demand projections at that point in time.
- Stuff happens (i.e. growth differs from forecast).
- Sum of receipt quantity and aggregated delivery quantity don't identify resource deficiency for quite some time however…..
- The aggregated look can mask individual city gate issues, and the disaggregated look can create deficiencies where they don't exist.
- In many cases operational capacity is greater than contracted.
- Transportation resources are interconnected (two pipes can serve one area).
- WARNING – we need to mindful of the modeling limitations.

# What is in SENDOUT® ?

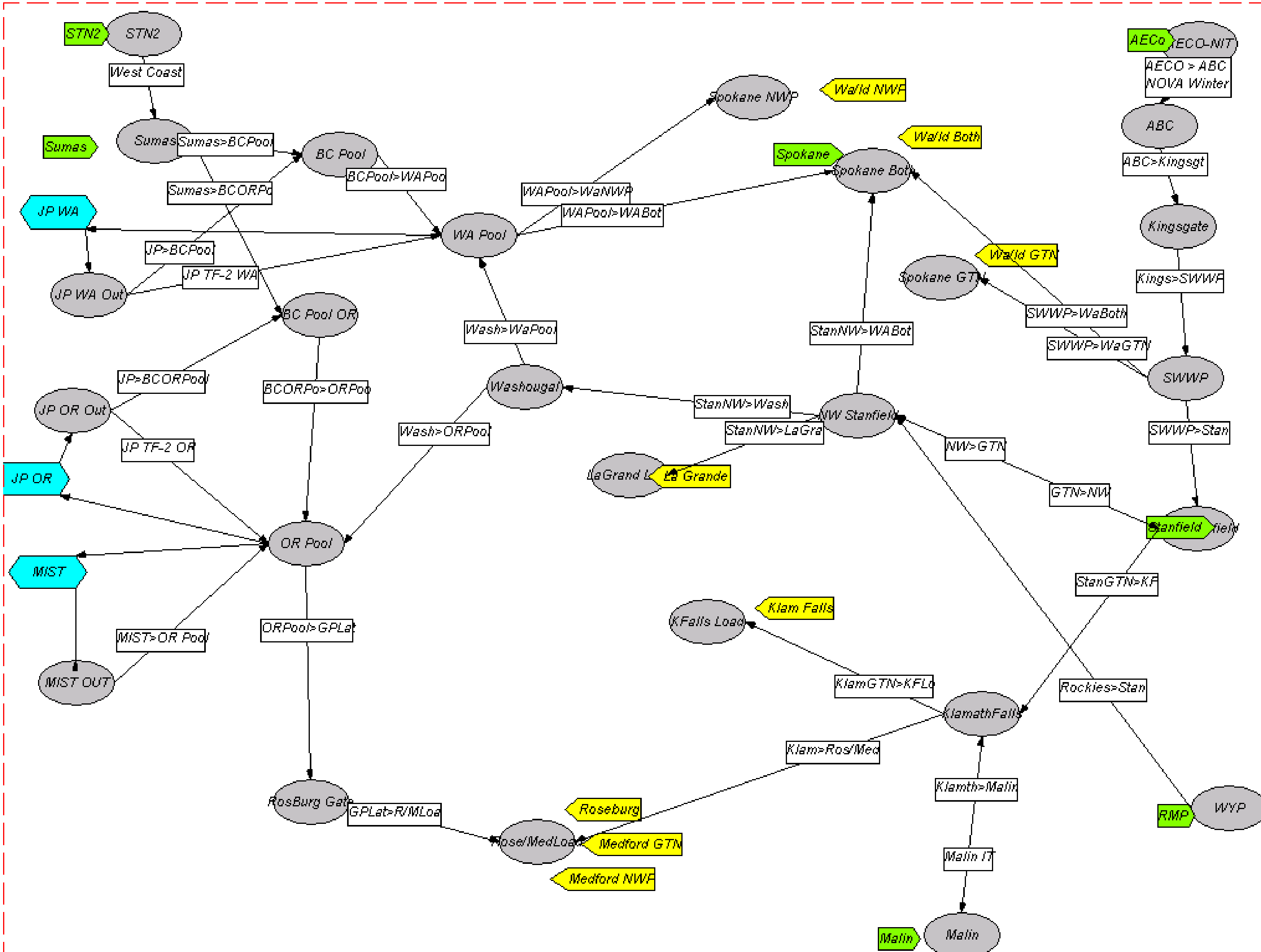
**Inside:**

- Demand forecasts at an aggregated level
- Existing transportation resources and current rates
  - Receipt point to aggregated delivery points/“zone”
  - Jurisdictional considerations
  - Long term capacity releases
- Potential resources, both supply and demand side

# What is outside SENDOUT®?

**Outside:**

- Gate station analysis
  - Forecasted demand behind the gate
    - Growth rates consistent with IRP assumptions
    - Actual hourly/daily city gate flow data
  - Gate station MDDO’s
  - Gate station operational capacities


STN2
STN2
West Coast
Sumas
Sumas
Sumas>BCPool
BC Pool
Sumas>BCORPo
BCPool>WAPoo
JP WA
WA Pool
JP>BCPool
JP TF-2 WA
JP WA Out
BC Pool OR
Spokane NWP
Wa/ld NWP
WAPool>WaNWP
WAPool>WABot
Spokane
Wa/ld Both
Spokane Both
AECo
AECO-NIT
AECO > ABC
NOVA Winter
ABC
ABC>Kingsgt
Kingsgate
Kings>SWWP
Wa/ld GTN
Spokane GTN
SWWP>WaBoth
SWWP>WaGTN
SWWP
StanNW>WABot
Wash>WaPool
Washougal
StanNW>Wash
NW Stanfield
StanNW>LaGra
JP>BCORPool
BCORPo>ORPoo
JP OR Out
JP TF-2 OR
Wash>ORPool
LaGrand L
La Grande
NW>GTN
GTN>NW
SWWP>Stan
JP OR
Stanfield
OR Pool
MIST
StanGTN>KF
KFalls Load
Klam Falls
MIST>OR Pool
ORPool>GPLat
MIST OUT
KlamGTN>KFLo
Rockies>Stan
KlamathFalls
Klam>Ros/Med
Klamth>Malin
RosBurg Gate
GPLat>R/MLoa
Roseburg
Rose/MedLoad
Medford GTN
Medford NWP
Malin IT
RMP
WYP
Malin
Malin

# City Gate Analysis

# City Gate Analysis Issues to Address

- MDQ vs. MDDO
- Our gate vs. Pipeline gate
- Operational capacity vs. contracted capacity
- Pipeline differences
  - Zonal vs. Point Specific
  - Laterals and Mainlines

# Forecasting Demand Behind the Gate

- Our IRP desire has always been to forecast to as granular a level as possible using the available data.

- Attempts to forecast demand behind the gate using existing forecasting methodology has been challenging.
  - Revenue data does not have daily meter reads for core customers making regression analysis on a use per HDD per customer difficult.
  - DSM would become more burdensome than it already is.
  - Some towns can be served by multiple pipelines and the mix can change over time.

# Forecasting Demand Behind the Gate cont.

While there are challenges, there is modeling that we can do to help identify more granular city gate deficiencies.

- Utilize daily/hourly pipeline flow data from each meter station to estimate what demand could be on a peak day or any heating degree day.
- Apply growth factors to estimate what the demand could grow to consistent with IRP assumptions/methodology.

# The Pieces and Parts

**Supply Basin (40,000 MDQ)**

- Contracted MDQ
- Basis for billing (i.e. what we pay for)

**Pipeline Citygate (15,000 MDDO 18,000 Op Cap)**

- Contracted MDDO
- Operational Capacity
- Not always the same volumes, provides flexibility on the system

**Avista Gate**

- Point where the gas enters the LDC's system

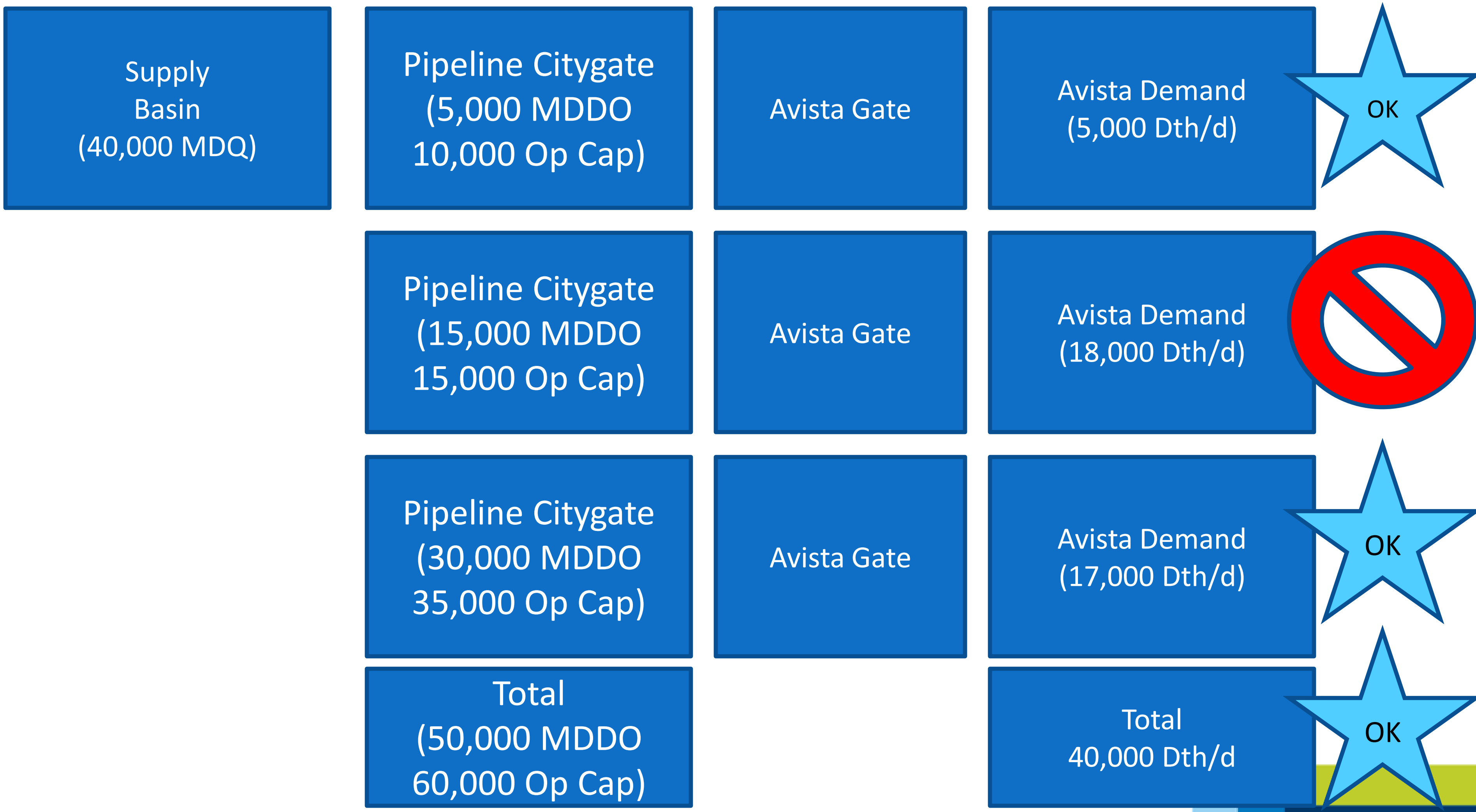
**Avista Demand (5,000 Dth/d)**

- What's behind the gate?

# From Supply Basin to Meet Demand

| | | | |
|---|---|---|---|
| Supply Basin (40,000 MDQ) | Pipeline Citygate (5,000 MDDO 10,000 Op Cap) | Avista Gate | Avista Demand (5,000 Dth/d) |
| | Pipeline Citygate (15,000 MDDO 15,000 Op Cap) | Avista Gate | Avista Demand (18,000 Dth/d) |
| | Pipeline Citygate (30,000 MDDO 35,000 Op Cap) | Avista Gate | Avista Demand (17,000 Dth/d) |
| | Total (50,000 MDDO 60,000 Op Cap) | | Total 40,000 Dth/d |

# Not all gates are created equal



# Where is the deficiency?

## Interstate Pipeline Issue

Supply
Basin
(40,000 MDQ)

Pipeline Citygate
(5,000 MDDO
10,000 Op Cap)

Pipeline Citygate
(15,000 MDDO
15,000 Op Cap)

Pipeline Citygate
(30,000 MDDO
35,000 Op Cap)

Total
(50,000 MDDO
60,000 Op Cap)

## Avista Distribution Issue

Avista Gate

Avista Demand
(5,000 Dth/d)

Avista Gate

Avista Demand
(18,000 Dth/d)

Avista Gate

Avista Demand
(17,000 Dth/d)

Total
40,000 Dth/d

# Where is the deficiency?

Pipeline Issue

Supply
Basin
(40,000 MDQ)

Pipeline Citygate
(5,000 MDDO
10,000 Op Cap)

Pipeline Citygate
(15,000 MDDO
15,000 Op Cap)

Pipeline Citygate
(30,000 MDDO
35,000 Op Cap)

Total
(50,000 MDDO
60,000 Op Cap)

- Can they get you the supply you have contracted for?
- Can they get it through the gate?

**Solutions**

- Mainline expansion
- Upgrade the meter station
- Realignment of MDDO

# Where is the deficiency?

- Do you have enough mainline capacity?
- Is it a gate station design issue?
- What is your demand behind the gate?

**Solutions**

- Distribution system enhancements
    - High pressure looping
    - New gate station
- Recall capacity releases
- Acquire additional pipeline capacity
    - Existing
    - Expansion
- Storage
    - On system vs. Off System
- Peaking agreements

Avista Issue

| | |
|---|---|
| Avista Gate | Avista Demand (5,000 Dth/d) |
| Avista Gate | Avista Demand (18,000 Dth/d) |
| Avista Gate | Avista Demand (17,000 Dth/d) |
| | Total 40,000 Dth/d |

# Solving Unserved Demand

# When unserved demand does show up……

There are few questions we need to ask:

1. Why is the demand unserved?
2. What is the magnitude of the short? (i.e Are we 1 Dth or 1000 Dth's short?)
3. What are my options to meet it?

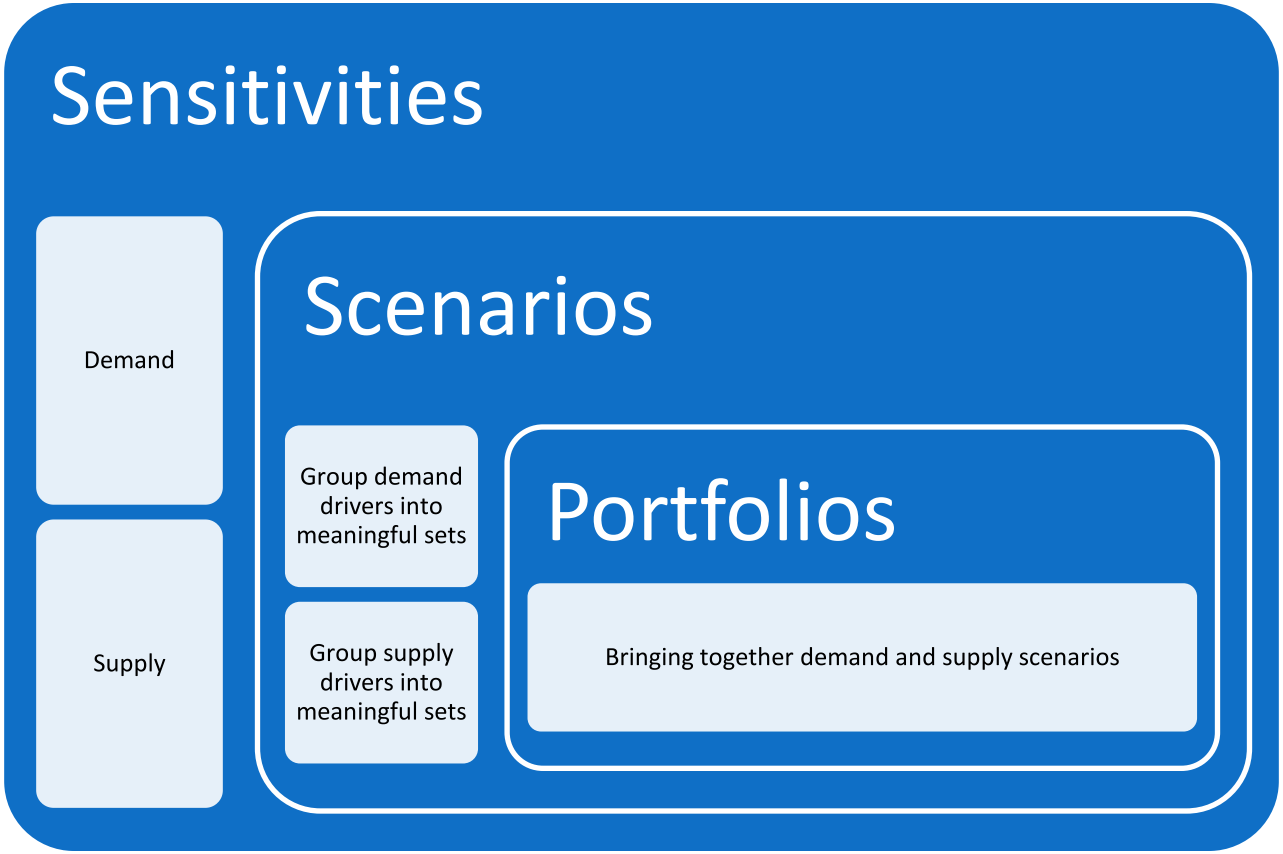
# When current resources don't meet demand what do we consider?

- Transport capacity release recalls
- "Firm" backhauls
- Contract for existing available transportation
- Expansions of current pipelines
- Peaking arrangements with other utilities (swaps/mutual assistance agreements) or marketers
- In-service territory storage
- Satellite/Micro LNG (storage inside service territory)
- Large scale LNG with corresponding pipeline build into our service territory
- Structured products/exchange agreements delivered to city gates
- Biogas
- Avista distribution system enhancements
- Demand side management

# New Resource Risk Considerations

- Does is get supply to the gate?
- Is it reliable/firm?
- Does it have a long lead time?
- How much does it cost?
  - New build vs. depreciated cost
  - The rate pancake
- Is it a base load resource or peaking?
- How many dekatherms do I need?
- What is the “shape” of resource?
- Is it tried and true technology, new technology, or yet to be discovered?
- Who else will be competing for the resource?

# Sensitivities, Scenarios, Portfolios



# Supply Scenarios from the 2012 IRP

| Table 5.2 |
|---|
| Supply Scenarios |
| Existing Resources |
| Existing + Expected Available |
| GTN Fully Subscribed |

# Supply Scenarios for the 2014 IRP

| Supply Scenarios |
|---|
| ????? |
| ????? |
| ????? |
| ????? |

- Do they get gas to the gate?
- Does this affect pricing at the basins?
- Rank the risk of these scenarios.

# Questions?

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
  - Demand Forecast and Demand Side Management – January 24
  - Supply and Infrastructure, Gate Station Analysis, Supply Side Resources, Resource Optimization – *February 25*
  - **Distribution Planning, Natural Gas Pricing, CNG/NGV, SENDOUT® Preliminary Results and Further Case Discussion – *March 26***
  - SENDOUT® results – *April 23*
- **May 30, 2014 –** Draft of IRP document to TAC
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
- **August 31, 2014 –** File finalized IRP document

# 2014 Avista Natural Gas IRP

Technical Advisory Committee Meeting 3

March 26, 2014

Coeur d'Alene, ID

# Agenda

- Introductions & Logistics
- Distribution System Planning
- CNG/NGV Initiatives
- Natural Gas Prices
- Procurement Planning
- Preliminary Results and Scenario Discussion

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
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  - **Distribution Planning, Natural Gas Pricing, CNG/NGV, SENDOUT® Preliminary Results and Further Case Discussion – *March 26***
  - DSM CPA results, further SENDOUT® results and Stochastic analysis – *April 23*
- **May 30, 2014 –** Draft of IRP document to TAC
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
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# Distribution System Planning

## Terrence Browne, Senior Gas Planning Engineer

**Natural Gas Technical Advisory Committee**
**March 26, 2014**

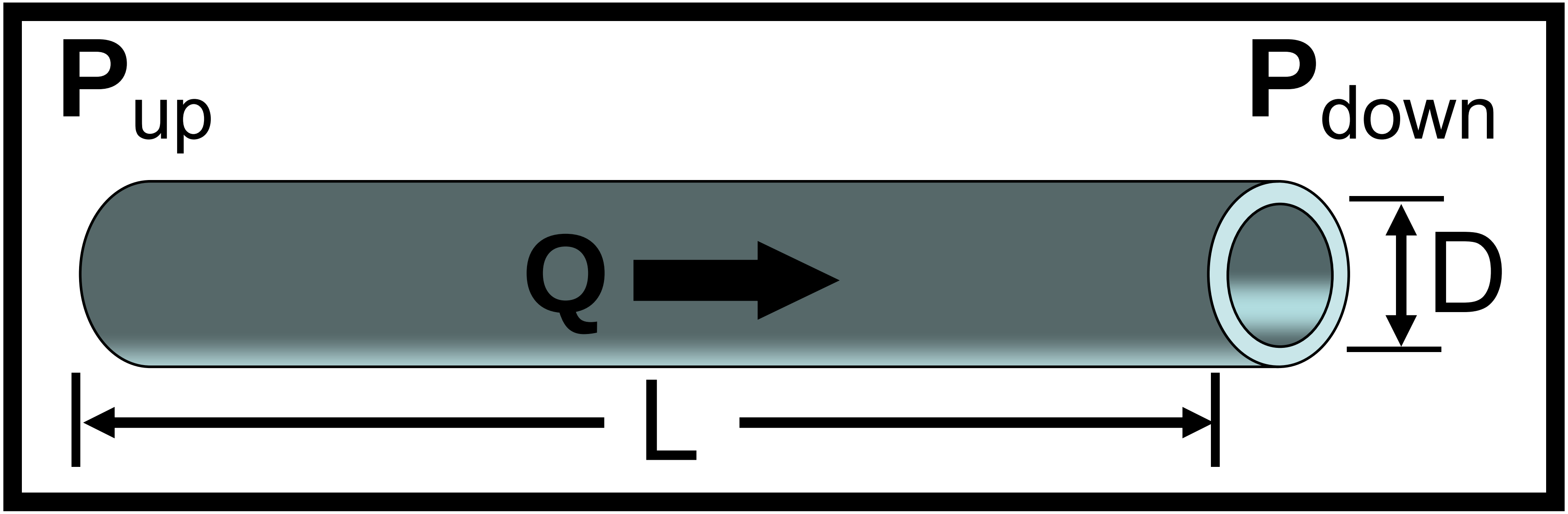
# Mission

- Using technology to plan and design a safe, reliable, and economical distribution system

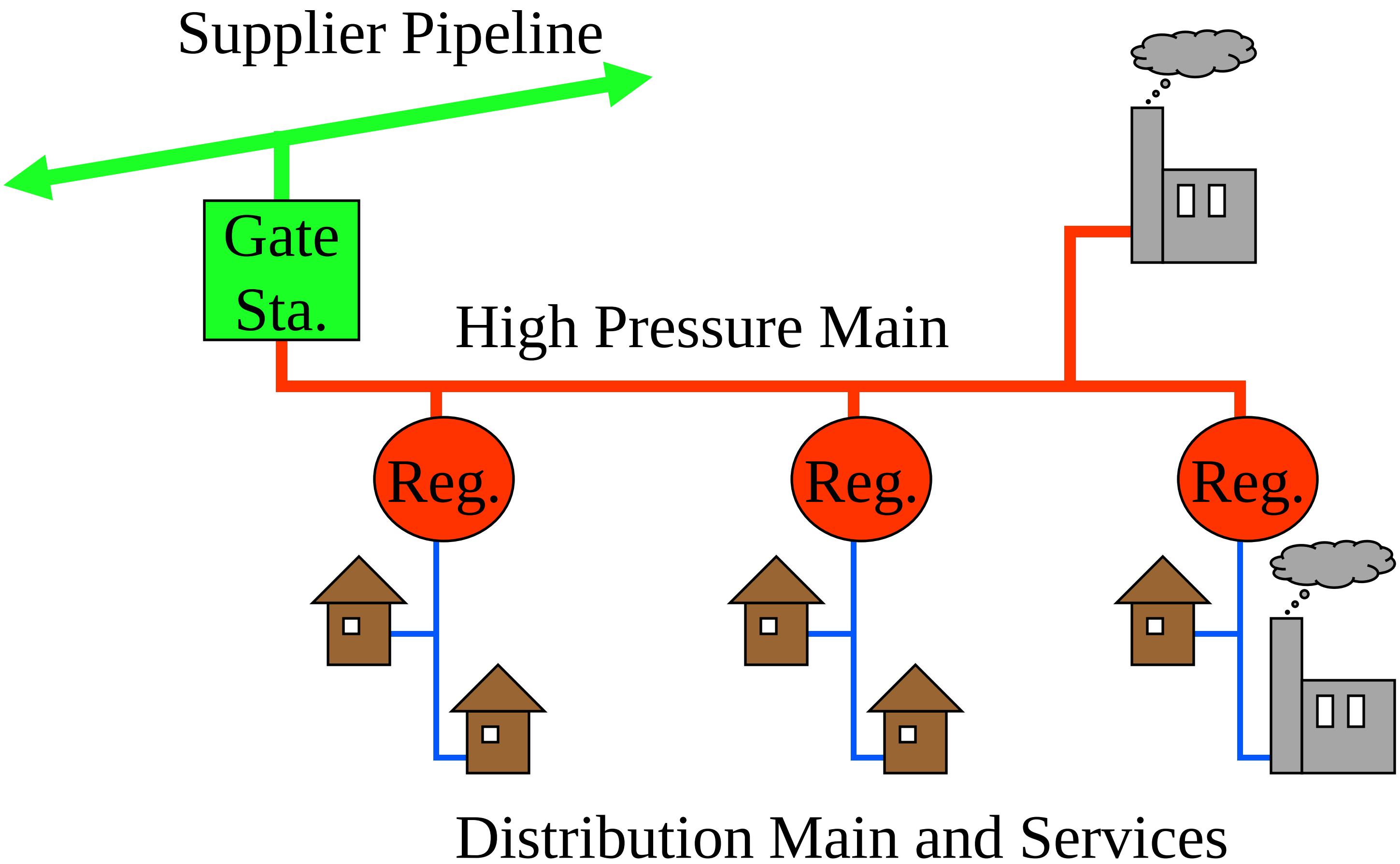
# Gas Distribution Planning Overview

- Scope of Gas Distribution Planning
- SynerGEE Load Study
  - Preparing a Load Study
  - Balancing Model
  - Validating Model
- Planning Criteria
- Interpreting Results
- Long-term Planning Objectives
- Sharing Load Study Results
- Electronic Pressure Recorders
- Project Examples

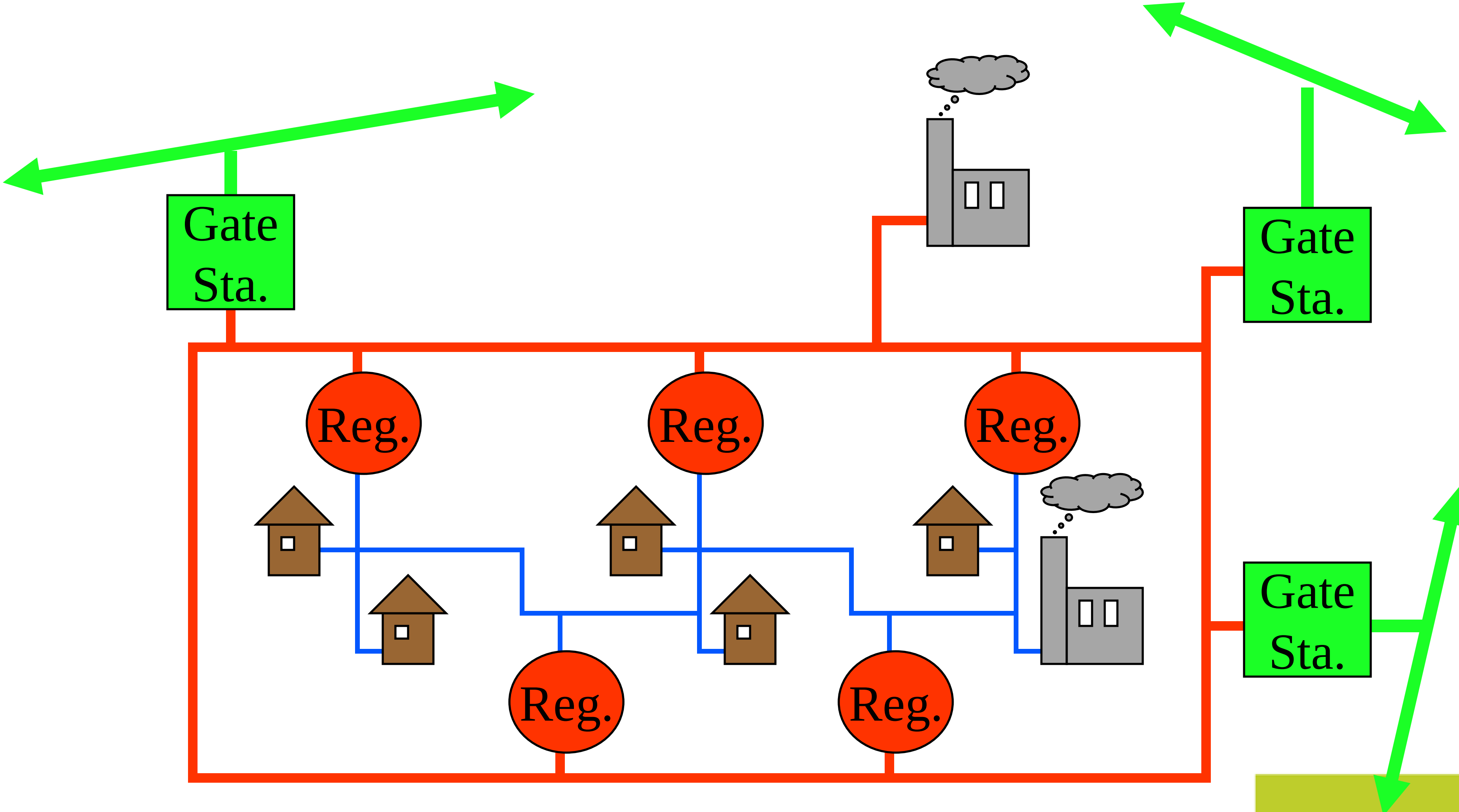
# 5 Variables for Any Given Pipe



# Scope of Gas Distribution Planning

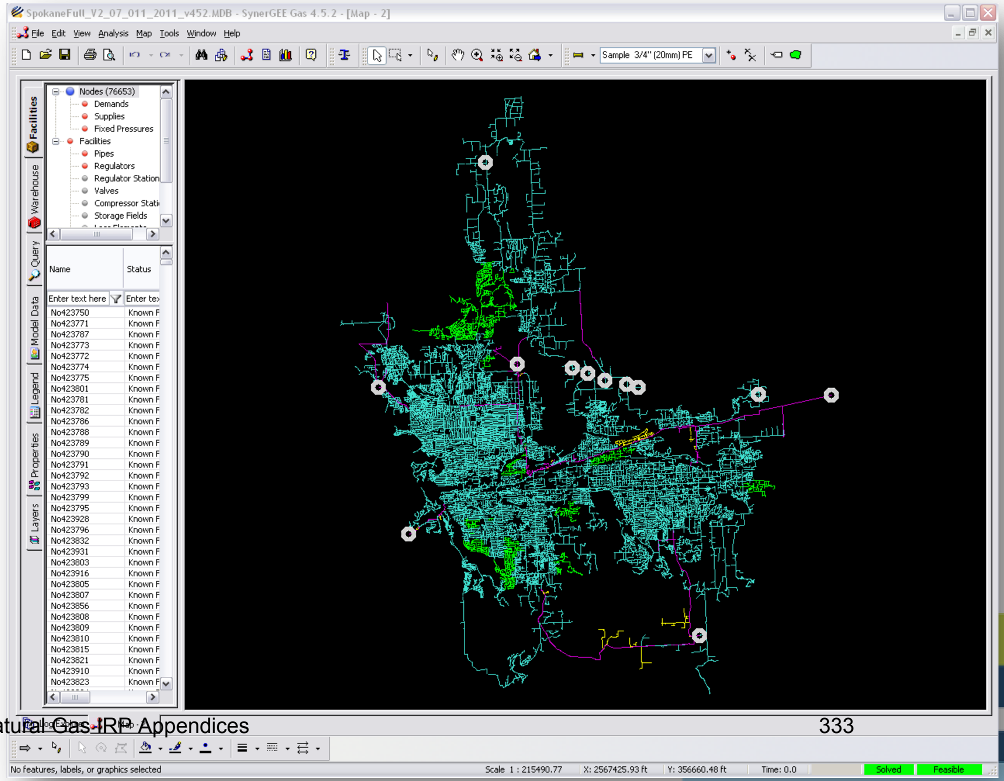


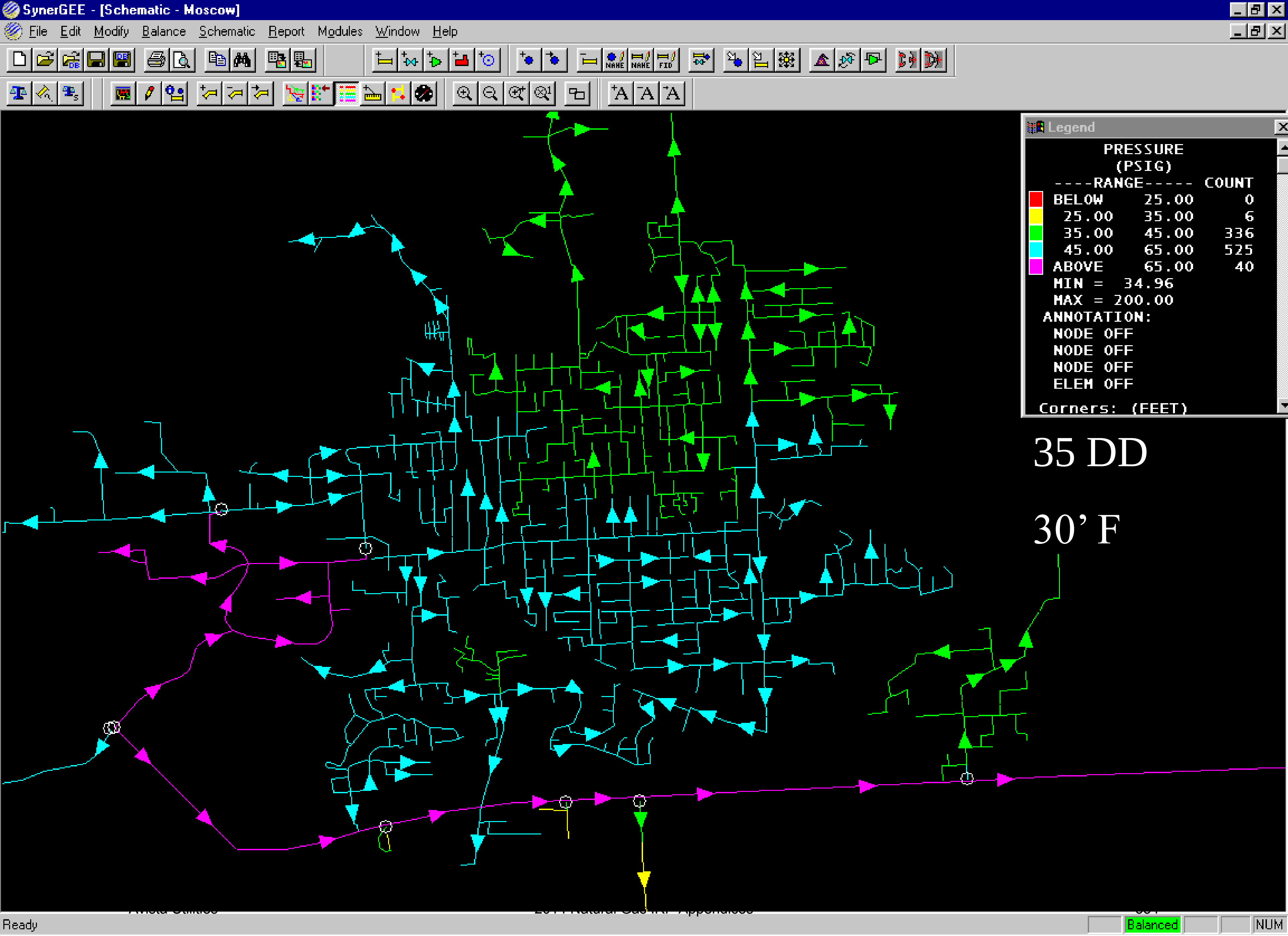
# Scope of Gas Distrib. Planning cont.



# SynerGEE Load Study

- Simulate distribution behavior
- Identify low pressure areas
- Coordinate reinforcements with expansions
- Measure reliability




SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 25.00 0
25.00 35.00 6
35.00 45.00 336
45.00 65.00 525
ABOVE 65.00 40
MIN = 34.96
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
35 DD
30' F
Ready
Balanced
NUM

# Preparing a Load Study

- Estimating Customer Usage
- Creating a Pipeline Network
- Join Customer Loads to Pipes
- Convert to Load Study

# Estimating Customer Usage

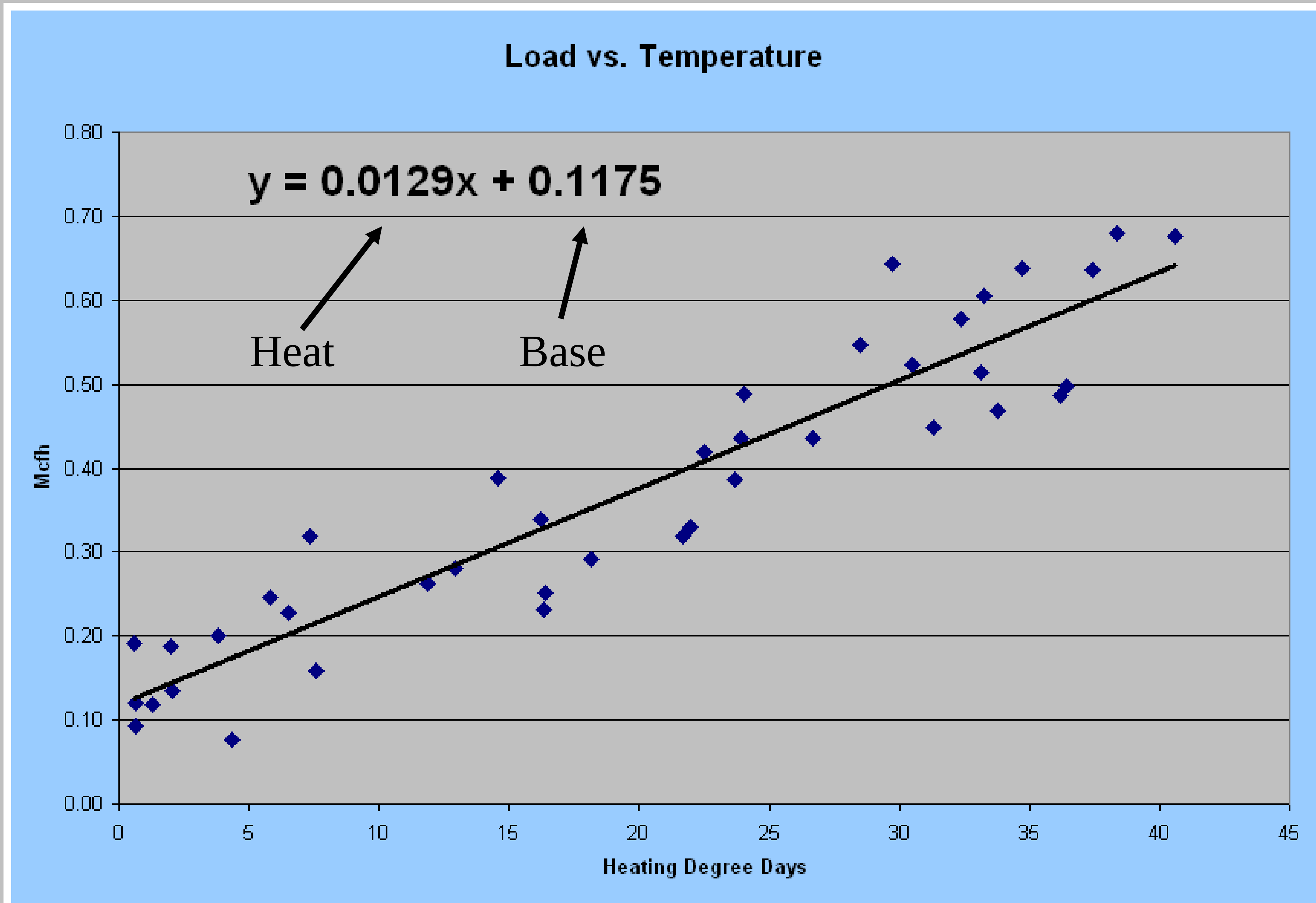
- Gathering Data
  - Days of service
  - Degree Days
  - Usage
  - Name, Address, Revenue Class, Rate Schedule…

# Estimating Customer Usage cont.

- Degree Days
  - Heating (HDD)
  - Cooling (CDD)
- Temperature - Usage Relationship
  - Load vs. HDD's
  - Base Load (constant)
  - Heat Load (variable)
  - High correlation with residential

| Avg. Daily Temperature ('Fahrenheit) | Heating Degree Days (HDD) | Cooling Degree Days (CDD) |
|---|---|---|
| 85 | | 20 |
| 80 | | 15 |
| 75 | | 10 |
| 70 | | 5 |
| ***65*** | ***0*** | ***0*** |
| 60 | 5 | |
| 55 | 10 | |
| 50 | 15 | |
| 45 | 20 | |
| 40 | 25 | |
| 35 | 30 | |
| 30 | 35 | |
| 25 | 40 | |
| 20 | 45 | |
| 15 | 50 | |
| 10 | 55 | |
| 5 | 60 | |
| 4 | 61 | |
| 0 | 65 | |
| -5 | 70 | |
| -10 | 75 | |
| -15 | 80 | |
| -17 | 82 | |

| Begin Date | Read Date | RBC | Dys Svc | Deg Dys | Usage | Therm/Day | *DD/day | mcfh/day |
|---|---|---|---|---|---|---|---|---|
| 01-23-2002 | 02-22-2002 | RR | 30 | 971 | 2775 | 92.5 | 32.36667 | 0.58 |
| 12-21-2001 | 01-23-2002 | RR | 33 | 1195 | 2567 | 77.78788 | 36.21212 | 0.49 |
| 11-20-2001 | 12-21-2001 | RR | 31 | 1028 | 2547 | 82.16129 | 33.16129 | 0.51 |
| 10-24-2001 | 11-20-2001 | RR | 27 | 586 | 1379 | 51.07407 | 21.7037 | 0.32 |
| 09-24-2001 | 10-24-2001 | RR | 30 | 491 | 1208 | 40.26667 | 16.36667 | 0.25 |
| 08-22-2001 | 09-24-2001 | RR | 33 | 67 | 715 | 21.66667 | 2.030303 | 0.14 |
| 07-24-2001 | 08-22-2001 | RY | 29 | 19 | 432 | 14.89655 | 0.655172 | 0.09 |
| 06-22-2001 | 07-24-2001 | RR | 32 | 41 | 611 | 19.09375 | 1.28125 | 0.12 |
| 05-24-2001 | 06-22-2001 | RR | 29 | 219 | 736 | 25.37931 | 7.551724 | 0.16 |
| 04-23-2001 | 05-24-2001 | RY | 31 | 368 | 1301 | 41.96774 | 11.87097 | 0.26 |
| 03-23-2001 | 04-23-2001 | RR | 31 | 734 | 1913 | 61.70968 | 23.67742 | 0.39 |
| 02-22-2001 | 03-23-2001 | RR | 29 | 826 | 2538 | 87.51724 | 28.48276 | 0.55 |
| 01-24-2001 | 02-22-2001 | RY | 29 | 1113 | 3153 | 108.7241 | 38.37931 | 0.68 |
| 12-19-2000 | 01-24-2001 | RY | 36 | 1347 | 3668 | 101.8889 | 37.41667 | 0.64 |
| 11-16-2000 | 12-19-2000 | RY | 33 | 1340 | 3573 | 108.2727 | 40.60606 | 0.68 |
| 10-18-2000 | 11-16-2000 | RR | 29 | 884 | 2424 | 83.58621 | 30.48276 | 0.52 |
| 09-20-2000 | 10-18-2000 | RR | 28 | 408 | 1738 | 62.07143 | 14.57143 | 0.39 |
| 08-22-2000 | 09-20-2000 | RY | 29 | 169 | 1139 | 39.27586 | 5.827586 | 0.25 |





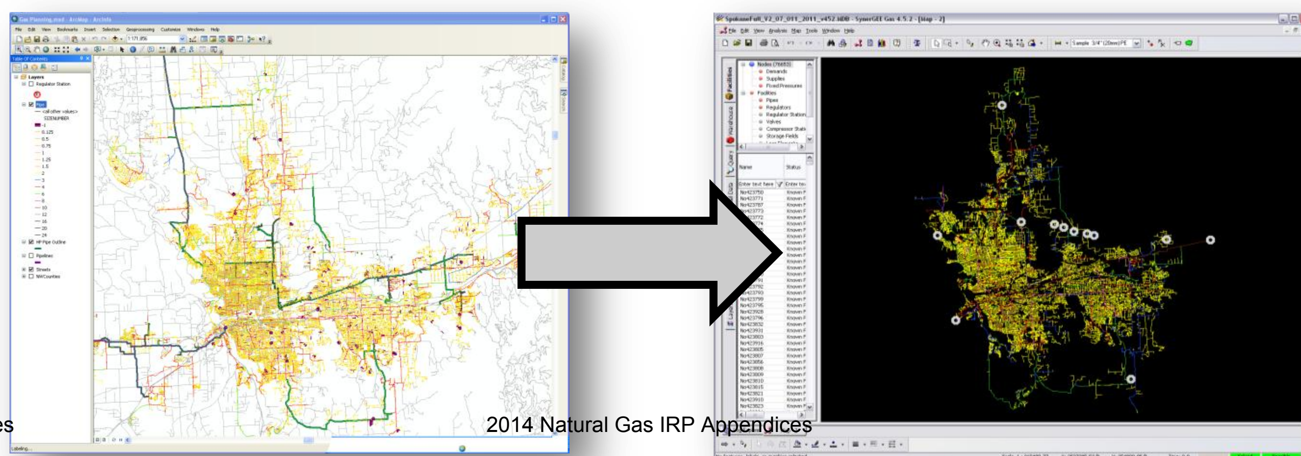

Summary | 109735 | 103678 | 114268 | 114279 | Chart1 | 133049 | 156920 | 161549 | 208478

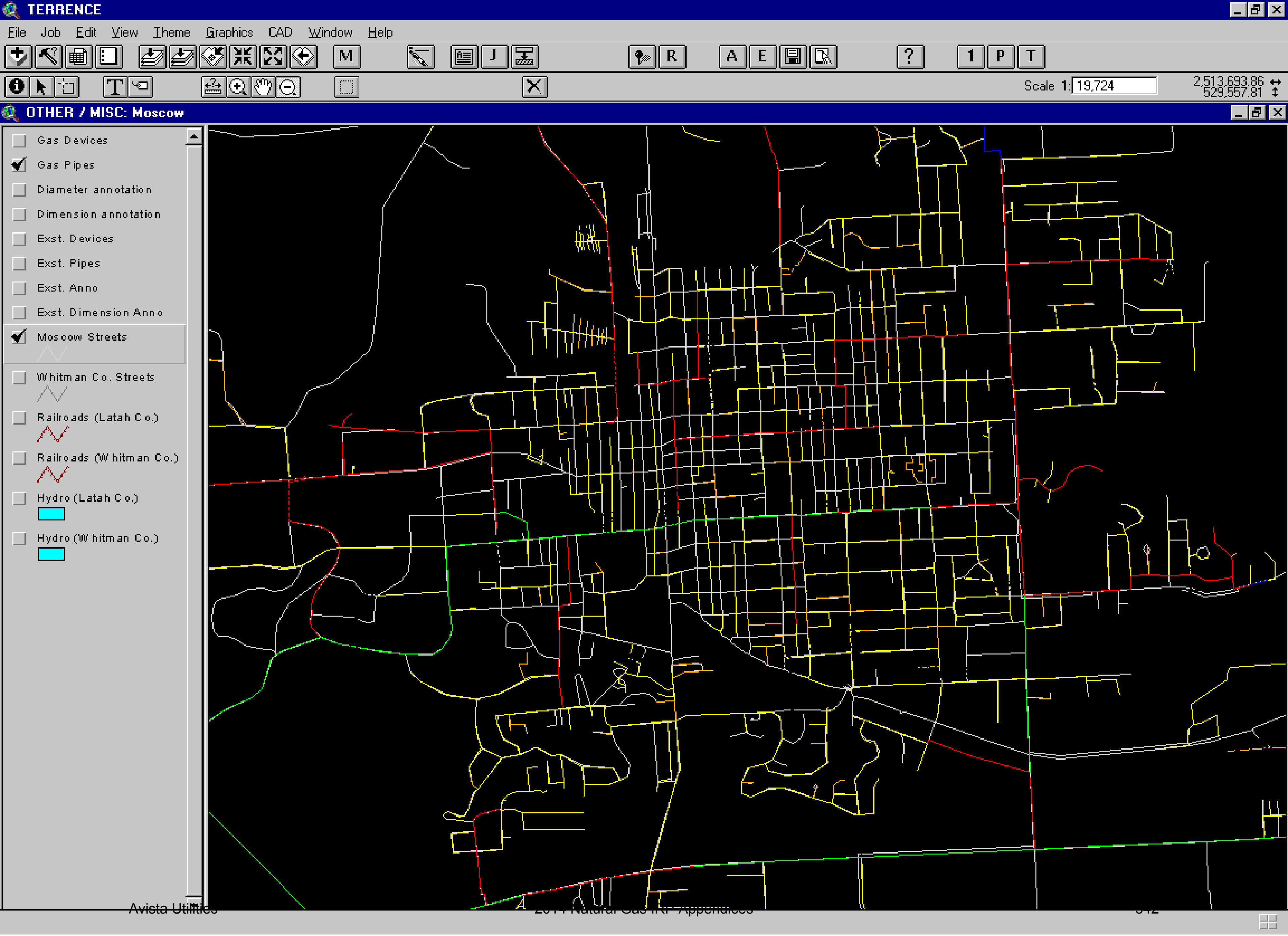
# Estimating Customer Usage cont.

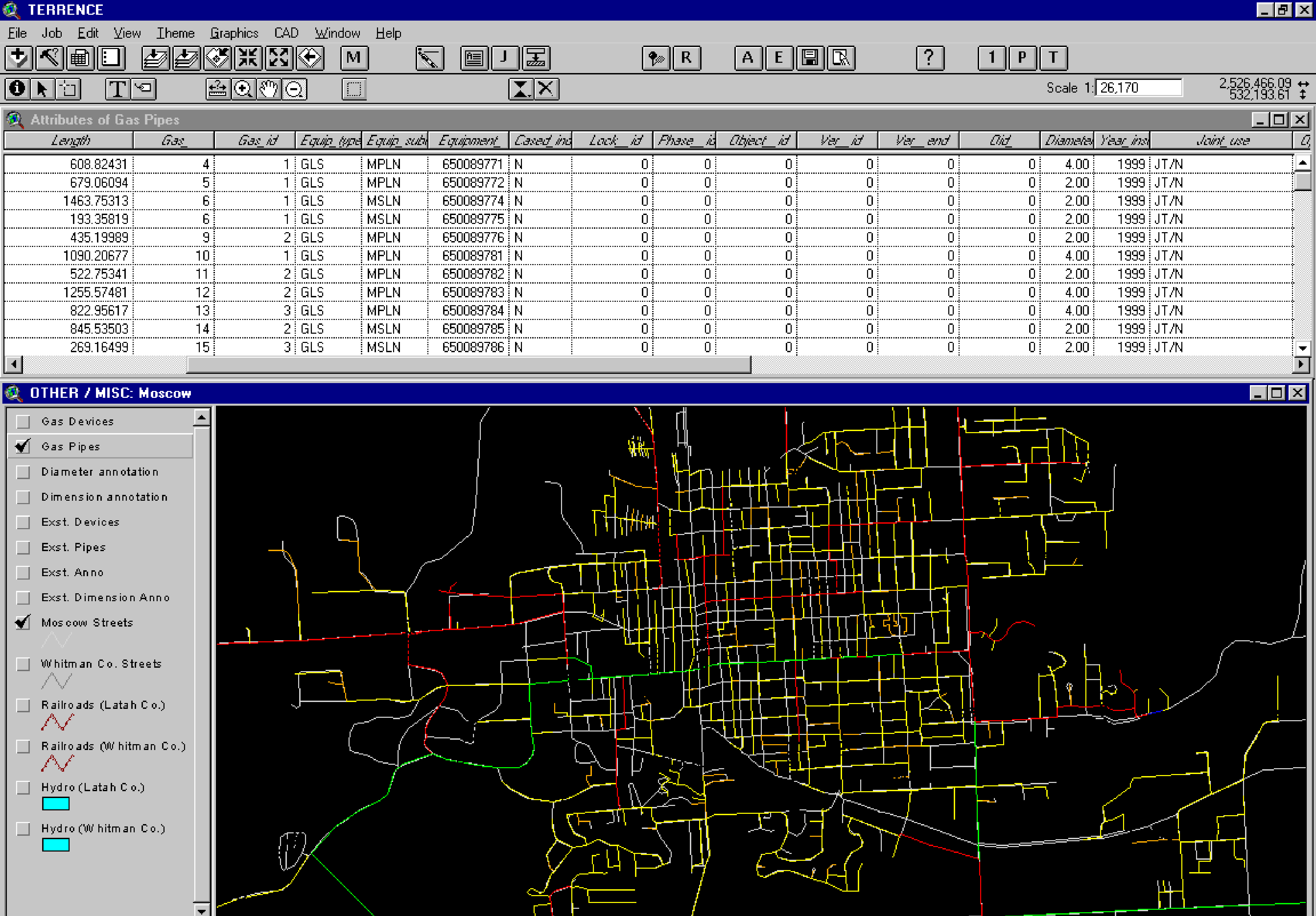
- Peaking Factor
  - Peaking Factor = 6.25% of daily load
  - “Observed ratio” of greatest hourly flow to total daily flow at Gate Stations
- Industrial Customers
  - Model maximum hourly usage per Contractual Agreement
  - Firm Transportation customers only
  - Low Temperature-Usage correlation

# Creating a Pipeline Network

- Elements
  - Pipes, regulators, valves
  - Attributes: Length, internal diameter, roughness
- Nodes
  - Sources, usage points, pipe ends
  - Attributes: Flow, pressure



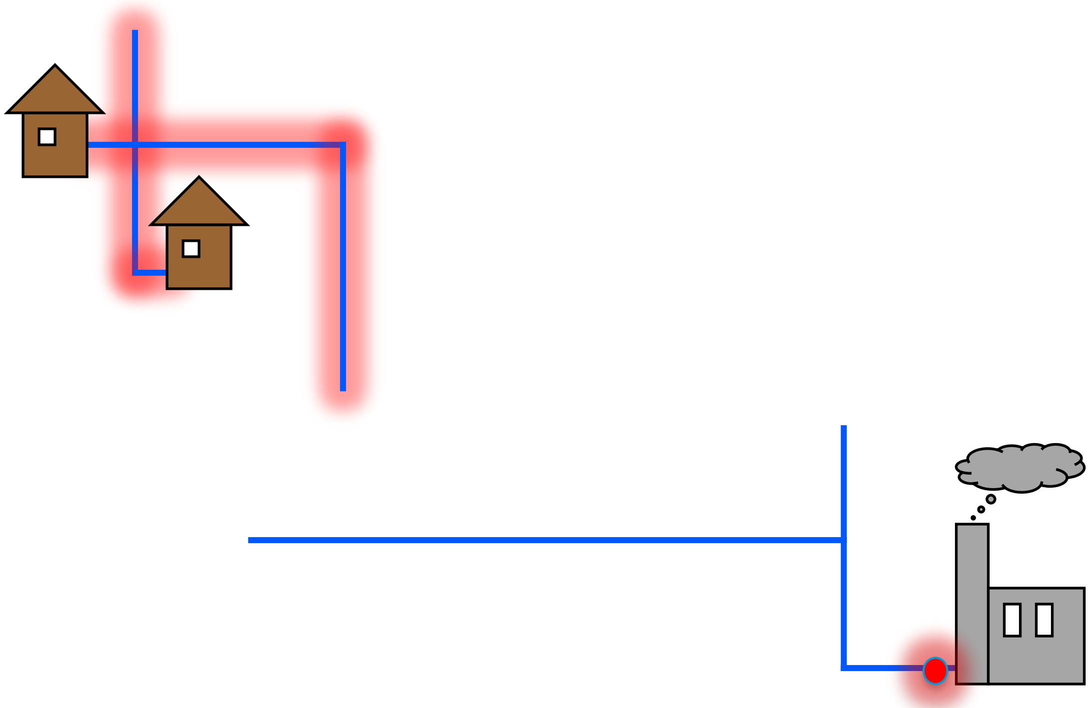

TERRENCE
File Job Edit View Theme Graphics CAD Window Help
Scale 1: 19,724
2,513,693.86
529,557.81
OTHER / MISC: Moscow
Gas Devices
Gas Pipes
Diameter annotation
Dimension annotation
Exst. Devices
Exst. Pipes
Exst. Anno
Exst. Dimension Anno
Moscow Streets
Whitman Co. Streets
Railroads (Latah Co.)
Railroads (Whitman Co.)
Hydro (Latah Co.)
Hydro (Whitman Co.)

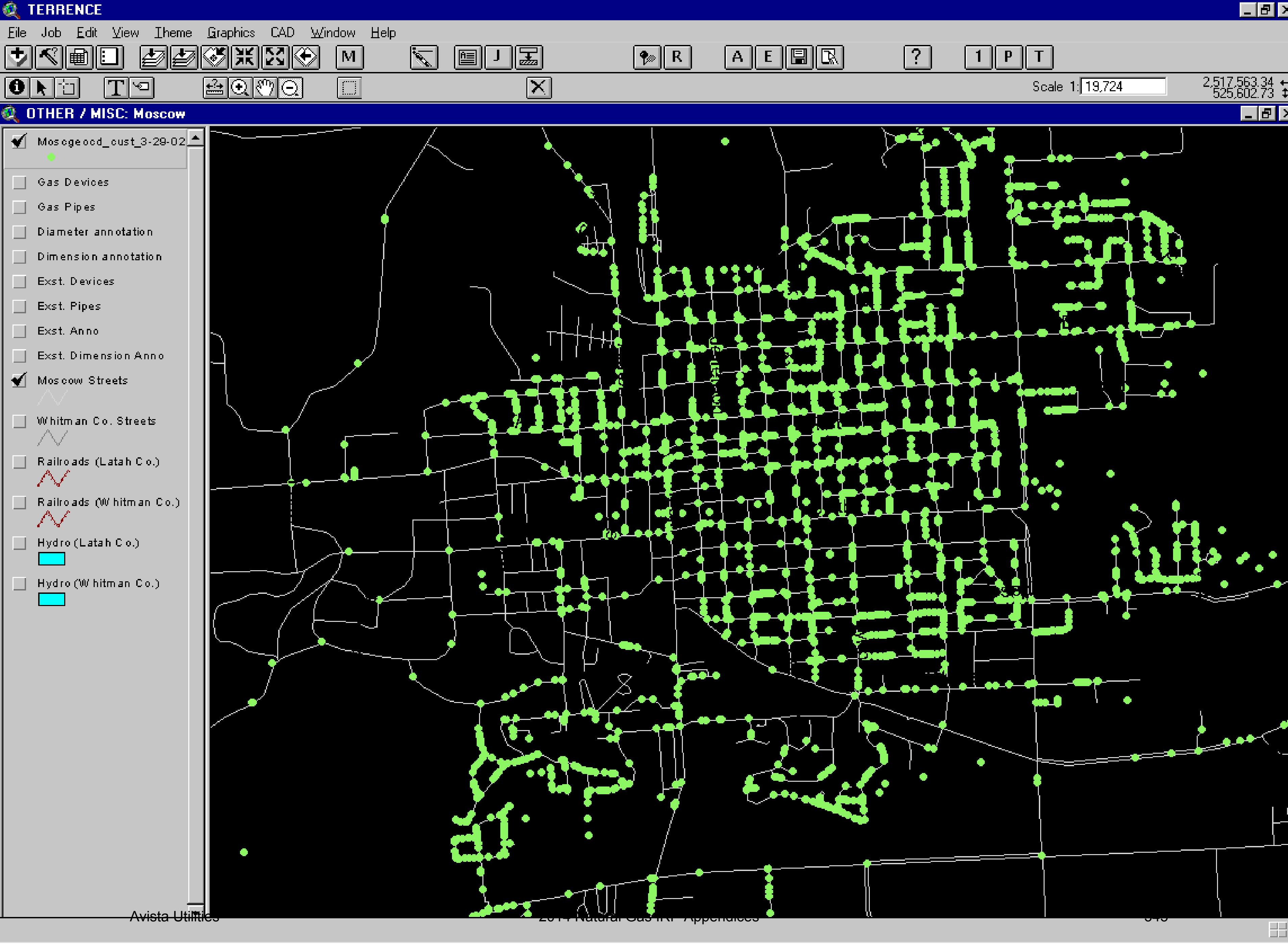



| Length | Gas_ | Gas_id | Equip_type | Equip_sub | Equipment_ | Cased_ind | Lock_id | Phase_id | Object_id | Ver_id | Ver_end | Oid | Diameter | Year_ins | Joint_use |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 608.82431 | 4 | 1 | GLS | MPLN | 650089771 | N | 0 | 0 | 0 | 0 | 0 | 0 | 4.00 | 1999 | JT/N |
| 679.06094 | 5 | 1 | GLS | MPLN | 650089772 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 1463.75313 | 6 | 1 | GLS | MSLN | 650089774 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 193.35819 | 6 | 1 | GLS | MSLN | 650089775 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 435.19989 | 9 | 2 | GLS | MPLN | 650089776 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 1090.20677 | 10 | 1 | GLS | MPLN | 650089781 | N | 0 | 0 | 0 | 0 | 0 | 0 | 4.00 | 1999 | JT/N |
| 522.75341 | 11 | 2 | GLS | MPLN | 650089782 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 1255.57481 | 12 | 2 | GLS | MPLN | 650089783 | N | 0 | 0 | 0 | 0 | 0 | 0 | 4.00 | 1999 | JT/N |
| 822.95617 | 13 | 3 | GLS | MPLN | 650089784 | N | 0 | 0 | 0 | 0 | 0 | 0 | 4.00 | 1999 | JT/N |
| 845.53503 | 14 | 2 | GLS | MSLN | 650089785 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |
| 269.16499 | 15 | 3 | GLS | MSLN | 650089786 | N | 0 | 0 | 0 | 0 | 0 | 0 | 2.00 | 1999 | JT/N |

# Join Customer Loads to a Model

- Residential and commercial loads are assigned to ***pipes***
- Industrial or other large loads are assigned to ***nodes***

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File Job Edit View Theme Graphics CAD Window Help
M J R A E ? 1 P T
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525,602.73
OTHER / MISC: Moscow
Moscgeocd_cust_3-29-02
Gas Devices
Gas Pipes
Diameter annotation
Dimension annotation
Exst. Devices
Exst. Pipes
Exst. Anno
Exst. Dimension Anno
Moscow Streets
Whitman Co. Streets
Railroads (Latah Co.)
Railroads (Whitman Co.)
Hydro (Latah Co.)
Hydro (Whitman Co.)

TERRENCE

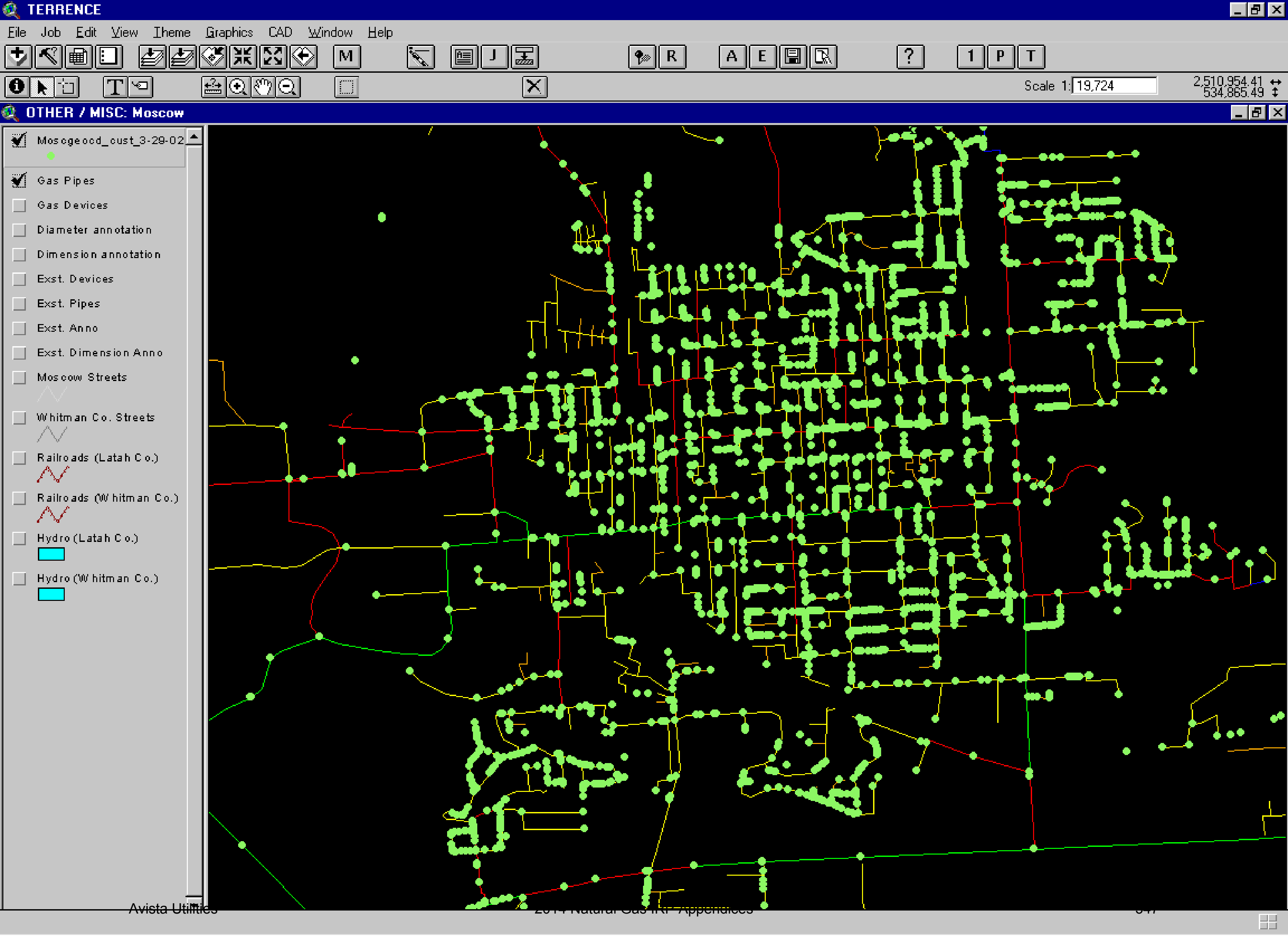
File Job Edit View Theme Graphics CAD Window Help

Scale 1: 26,170 2,512,479.69 533,887.53

Attributes of Moscgeocd_cust_3-29-02.shp

| Matched_is | Customer_n | House_num | Street_nme | Rural_srv_ | G | Geocd_g | Avg_usage_ | Avg_days_o | Avg_degree | Avg_dte |
|---|---|---|---|---|---|---|---|---|---|---|
| False | U OF I | | | U OF I LIFE SCIENCE BLDG | G | | 586.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | U OF I | | | MINES 7TH ST & LINE ST | G | | 0.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | U OF I | | | ART & ARCH BLDG | G | | 210.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | UNIVERSITY OF IDAHO | | | ANIMAL DISEASE RESEARC | G | | 4558.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | U OF I | | | AQUACULTURE INSTITUTE | G | | 92.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | U OF I | | | POULTRY | G | | 0.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | U OF I | | | KIBBIE STADIUM | G | | 688.000000 | 31.000000 | 32.000000 | 2001-08-27 0 |
| False | B P O E NO 249 | 3080 | HIGHWAY 8 | | G | | 6.000000 | 28.000000 | 17.000000 | 2001-08-20 0 |
| False | B P O E NO 249 | 3080 | HIGHWAY 8 | | G | | 71.000000 | 28.000000 | 17.000000 | 2001-08-20 0 |
| False | U OF I | | | MACHINE SHED | G | | 0.000000 | 29.000000 | 17.000000 | 2001-08-20 0 |
| False | JAMESON COMMERCIAL PR | | | PEPPERMILL/DR BOWEN | G | | 9.000000 | 23.000000 | 32.000000 | 2001-08-07 0 |

OTHER / MISC: Moscow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File Job Edit View Theme Graphics CAD Window Help
Scale 1: 19,724
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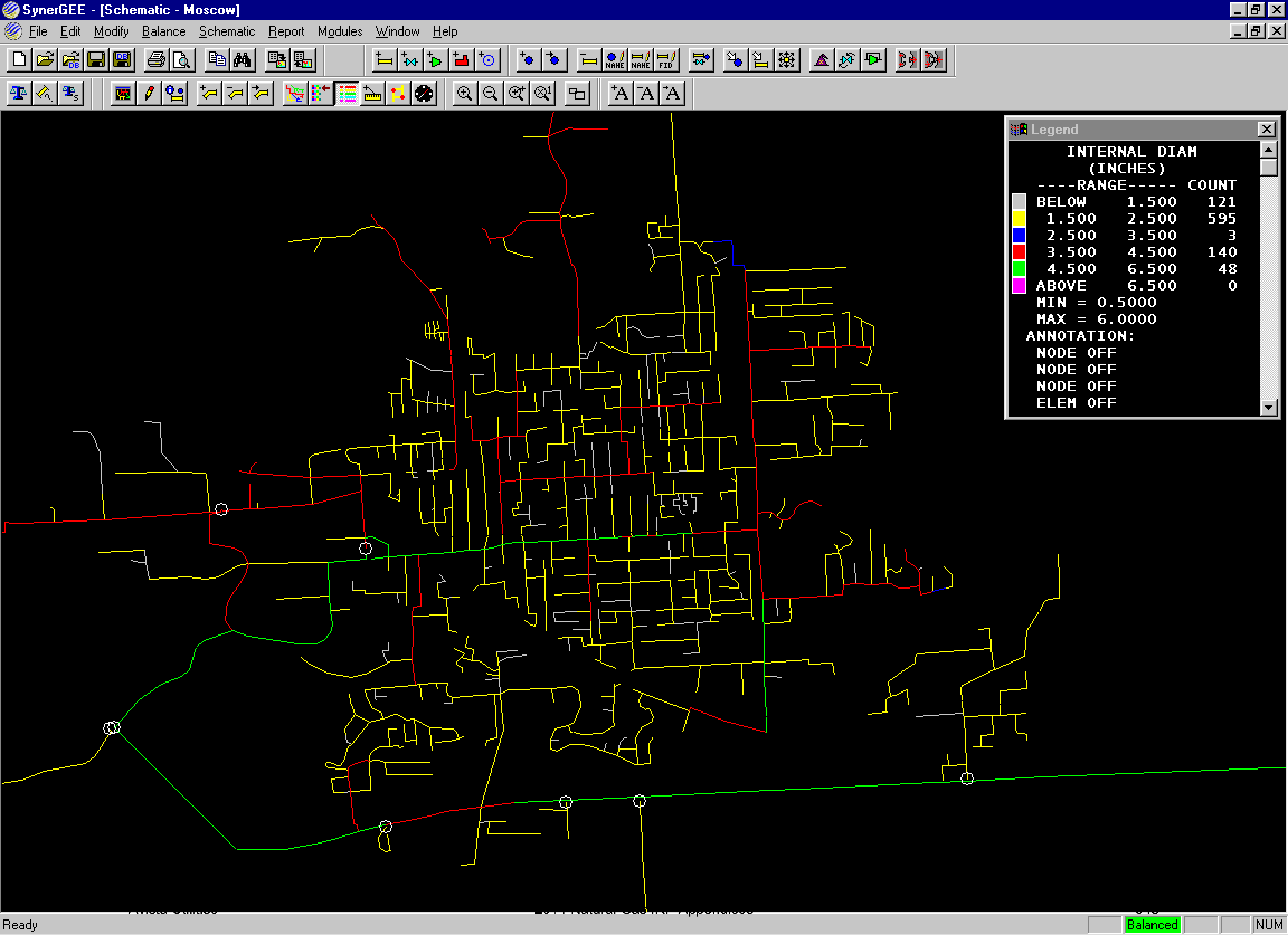
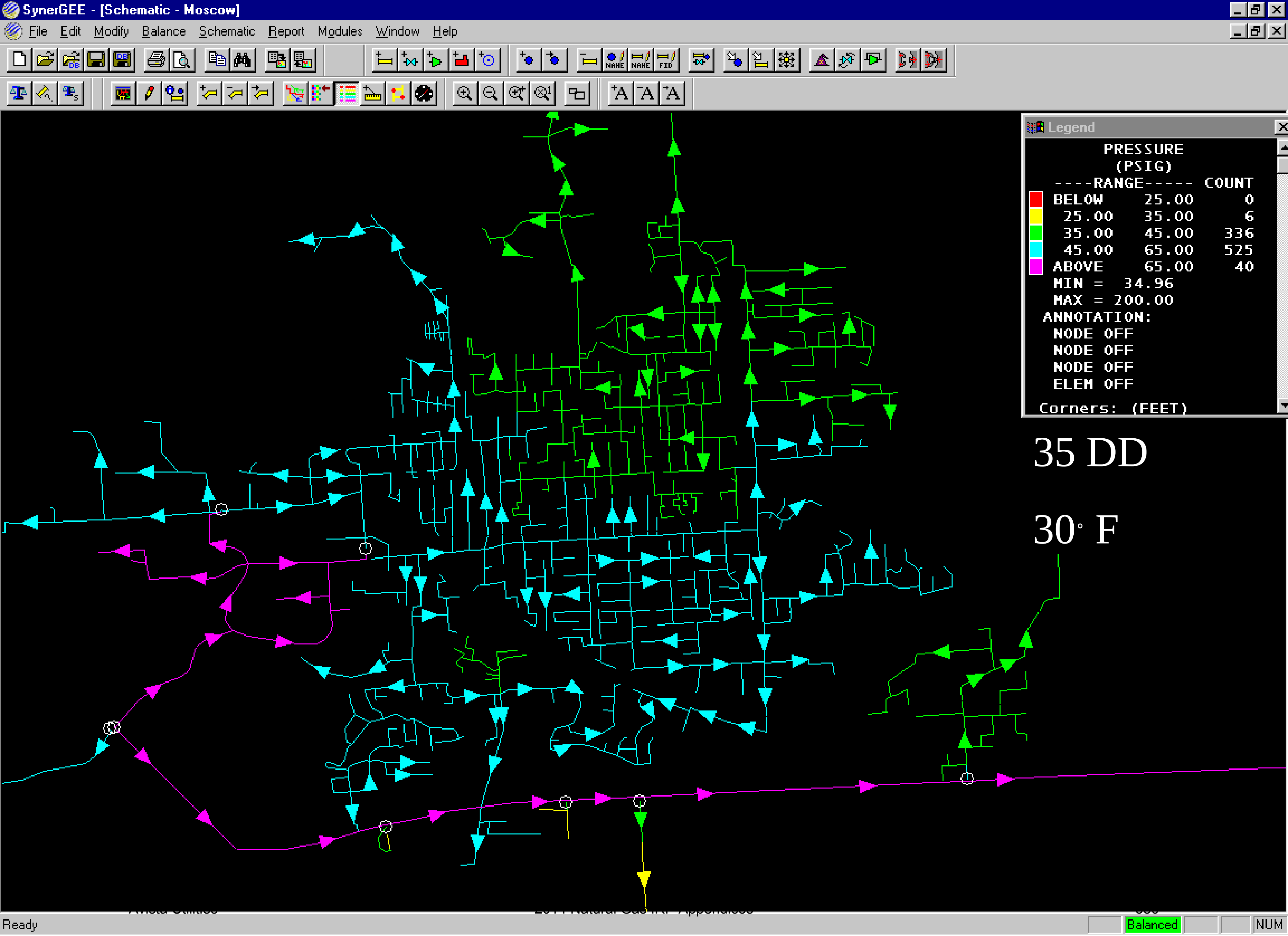
534,865.49
OTHER / MISC: Moscow
Moscgeocd_cust_3-29-02
Gas Pipes
Gas Devices
Diameter annotation
Dimension annotation
Exst. Devices
Exst. Pipes
Exst. Anno
Exst. Dimension Anno
Moscow Streets
Whitman Co. Streets
Railroads (Latah Co.)
Railroads (Whitman Co.)
Hydro (Latah Co.)
Hydro (Whitman Co.)


SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
INTERNAL DIAM
(INCHES)
----RANGE----- COUNT
BELOW 1.500 121
1.500 2.500 595
2.500 3.500 3
3.500 4.500 140
4.500 6.500 48
ABOVE 6.500 0
MIN = 0.5000
MAX = 6.0000
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Ready
Balanced
NUM

# Balancing Model

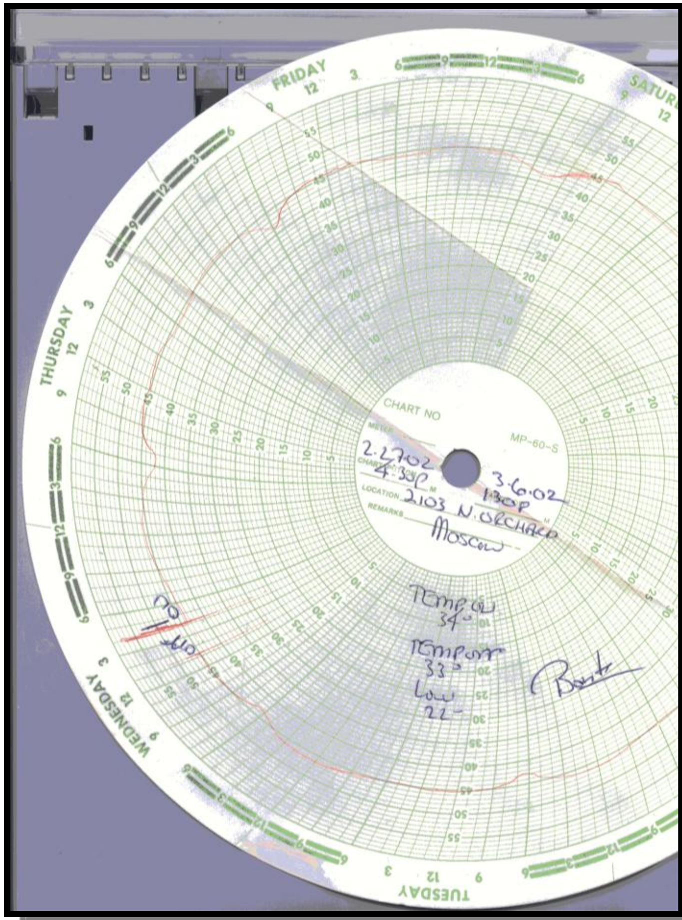
- Simulate system for any temperature
  - HDD's
- Solve for pressure at all nodes

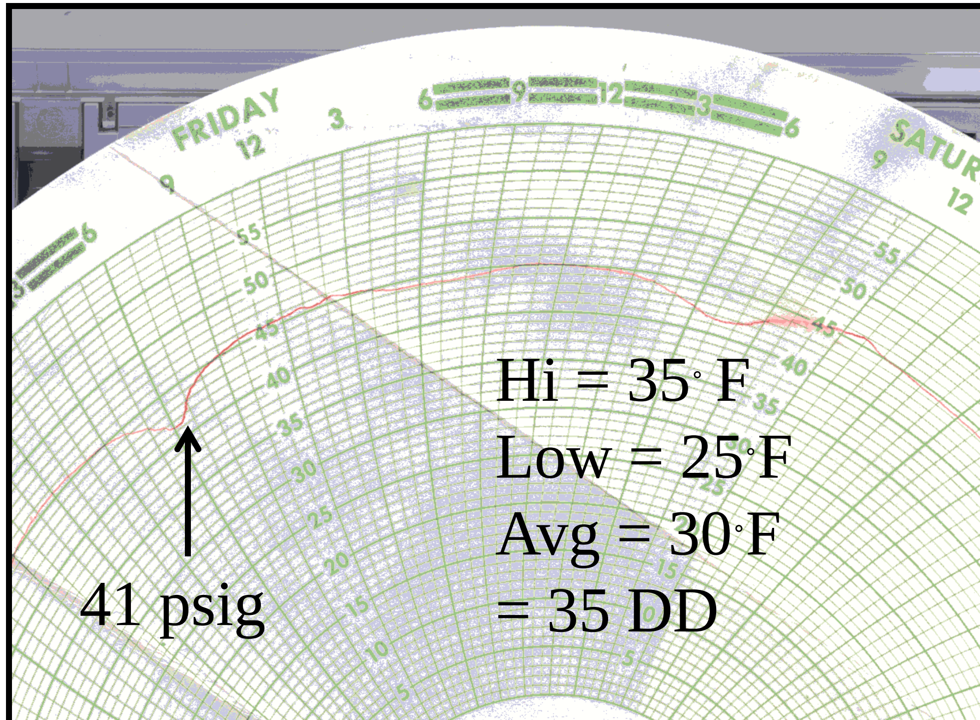

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 25.00 0
25.00 35.00 6
35.00 45.00 336
45.00 65.00 525
ABOVE 65.00 40
MIN = 34.96
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
35 DD
30° F
Ready
Balanced
NUM

# Validating Model

- Simulate recorded condition
- Pressure Recorders
  - Do calculated results match *field* data?
- Gate Station Telemetry
  - Do calculated results match *source* data?
- Possible Errors
  - Missing pipe
  - Source pressure changed
  - Industrial loads

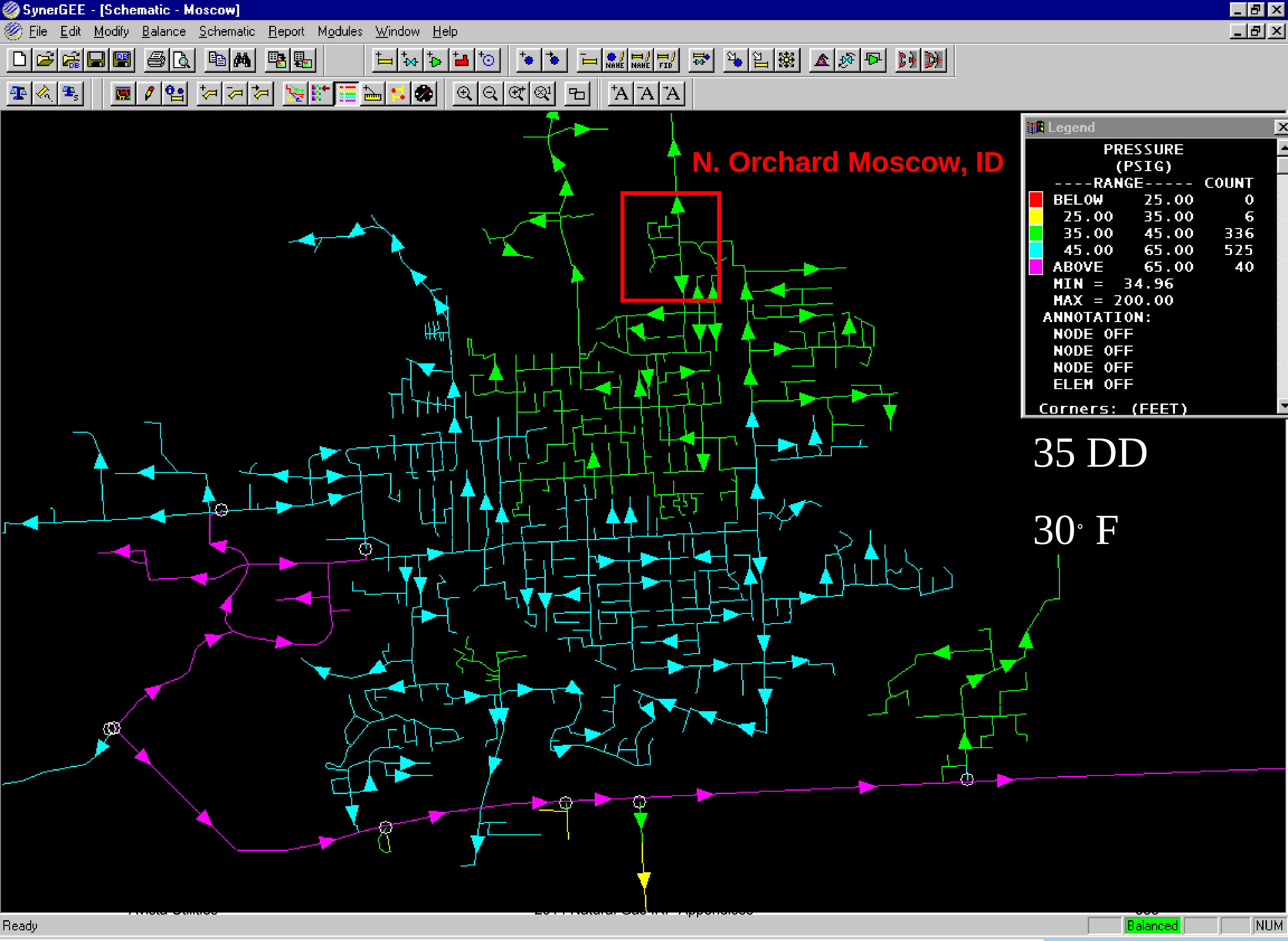
# Validating Model cont.






Location: N. Orchard, Moscow ID

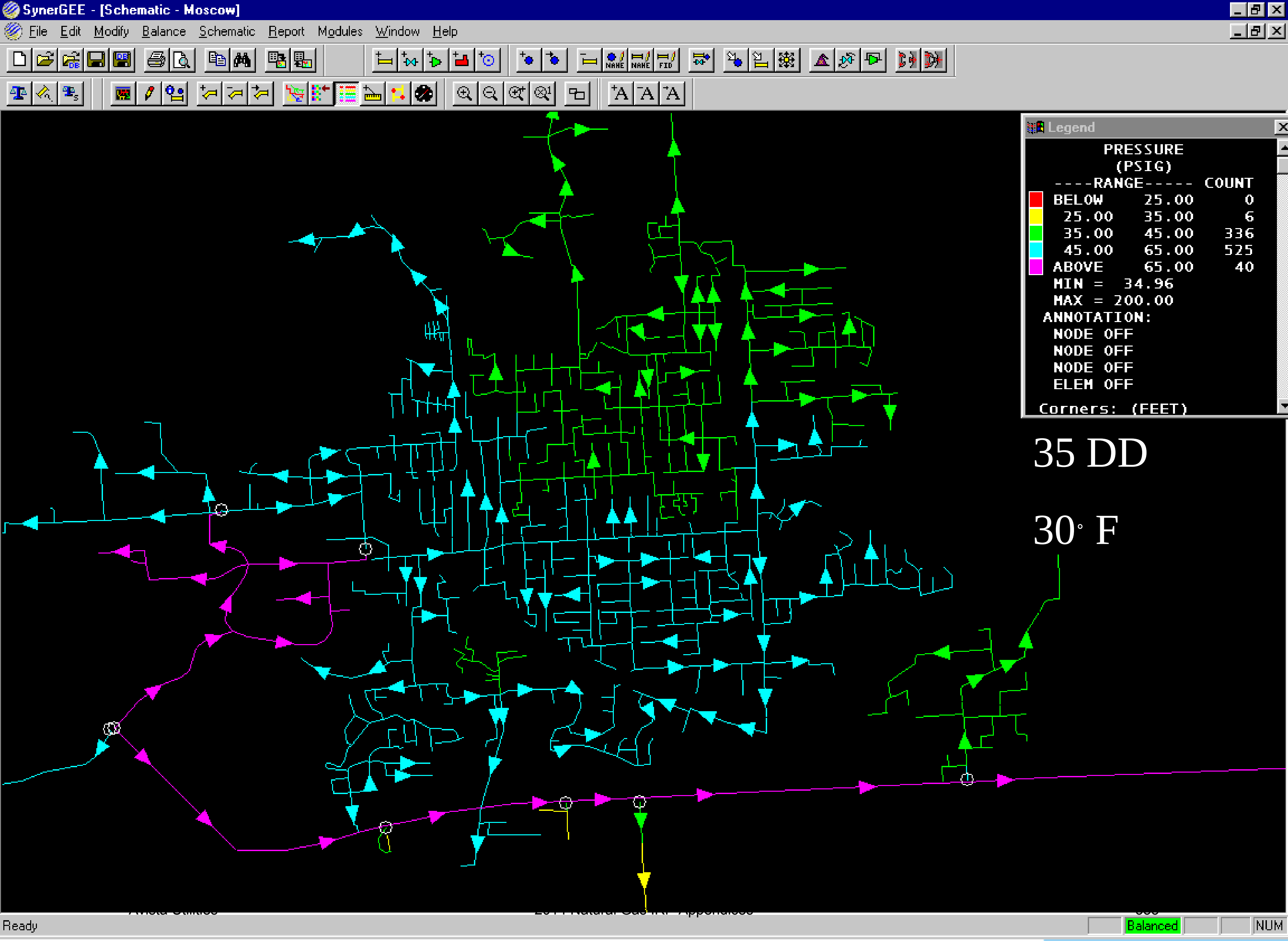
Observation Date: Friday, March 1st

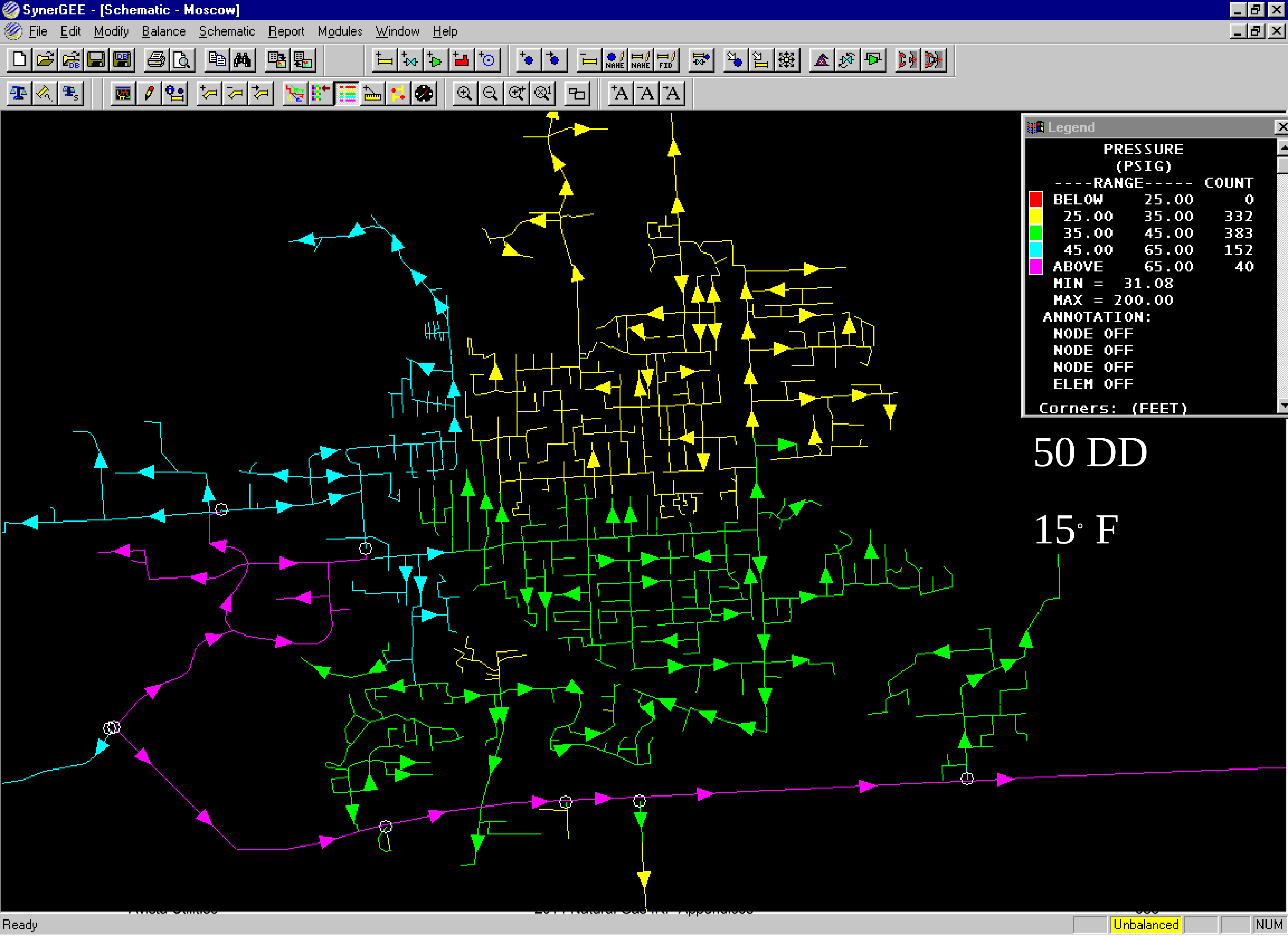

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
N. Orchard Moscow, ID
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 25.00 0
25.00 35.00 6
35.00 45.00 336
45.00 65.00 525
ABOVE 65.00 40
MIN = 34.96
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
35 DD
30° F
Ready
Balanced
NUM

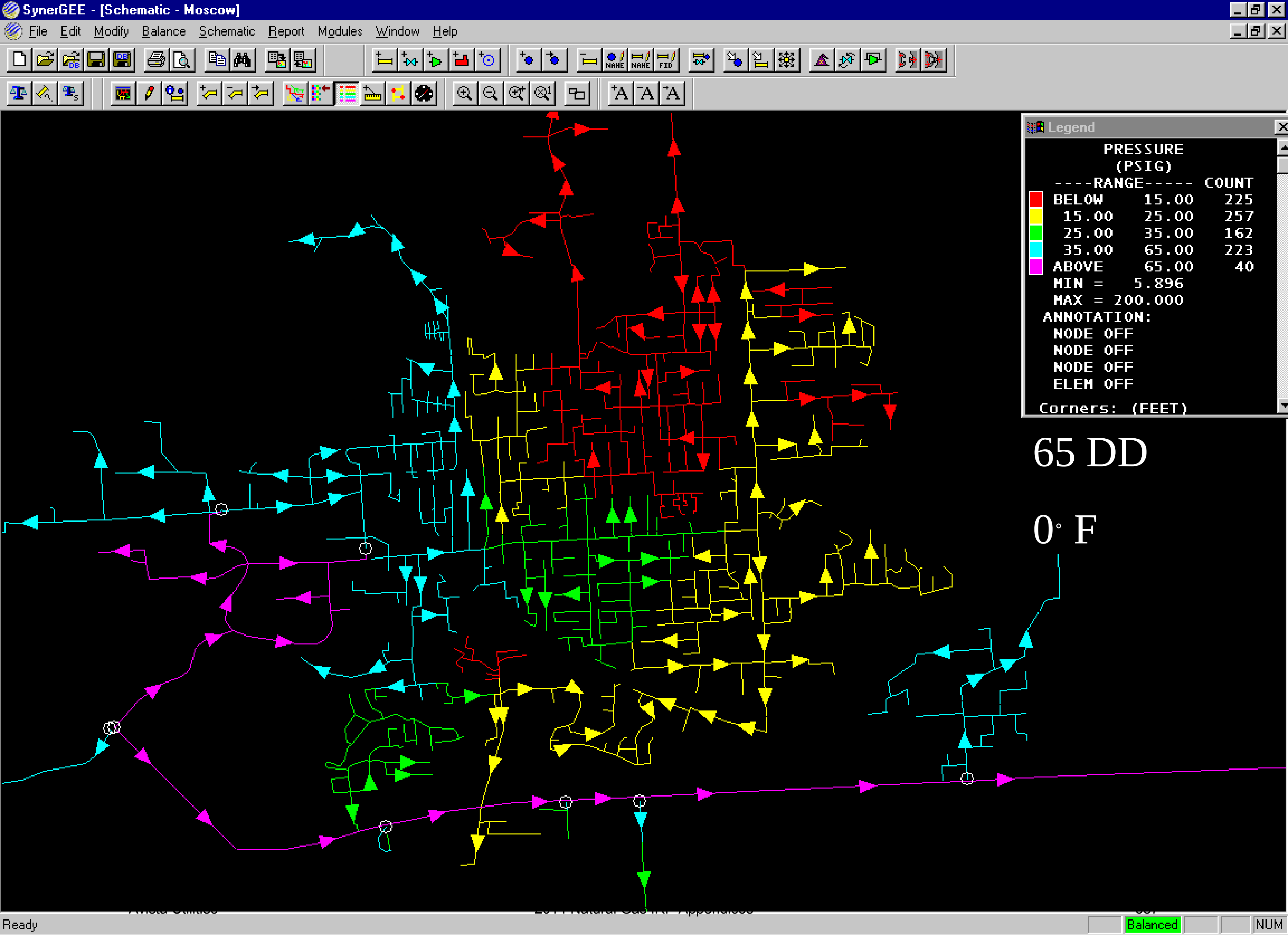
# Planning Criteria

- Reliability during design HDD
  - Spokane 82 HDD
  - Medford 61 HDD
  - Klamath Falls 72 HDD
  - La Grande 74 HDD
  - Roseburg 55 HDD

- Maintain minimum of 15 psig in system at all times
  - 5 psig in lower MAOP areas

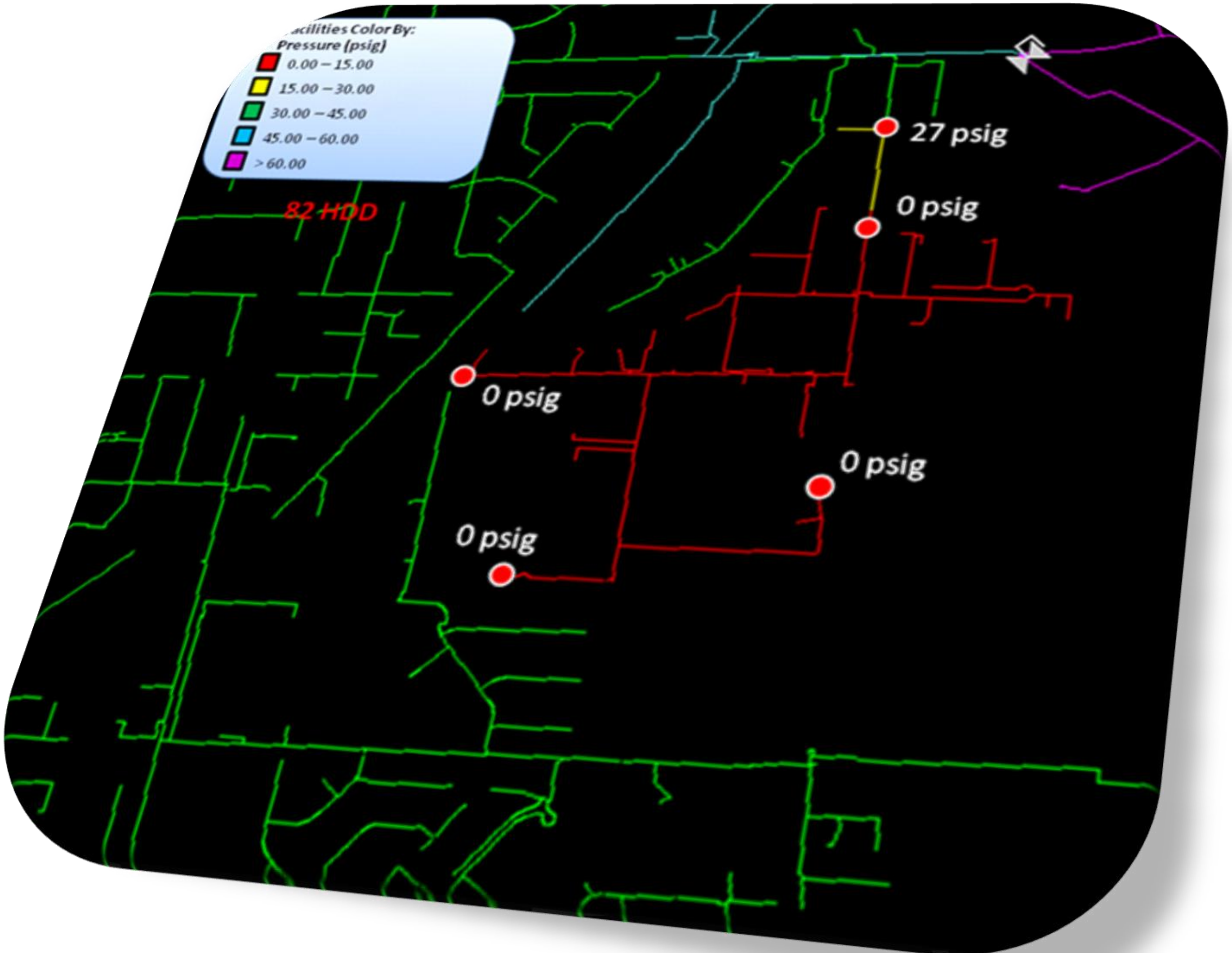

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 25.00 0
25.00 35.00 6
35.00 45.00 336
45.00 65.00 525
ABOVE 65.00 40
MIN = 34.96
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
35 DD
30° F
Ready
Balanced
NUM

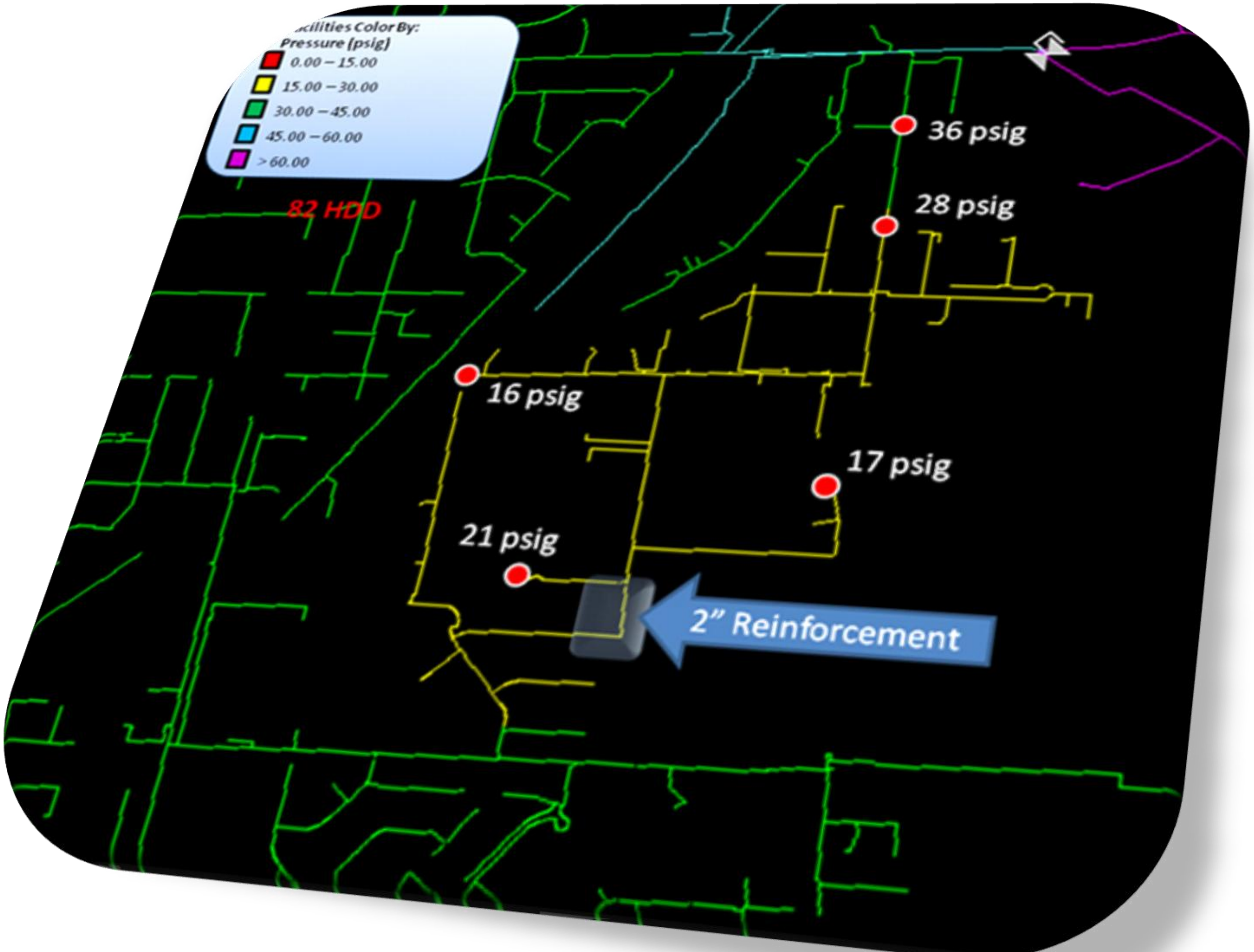

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 25.00 0
25.00 35.00 332
35.00 45.00 383
45.00 65.00 152
ABOVE 65.00 40
MIN = 31.08
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
50 DD
15° F
Ready
Unbalanced
NUM

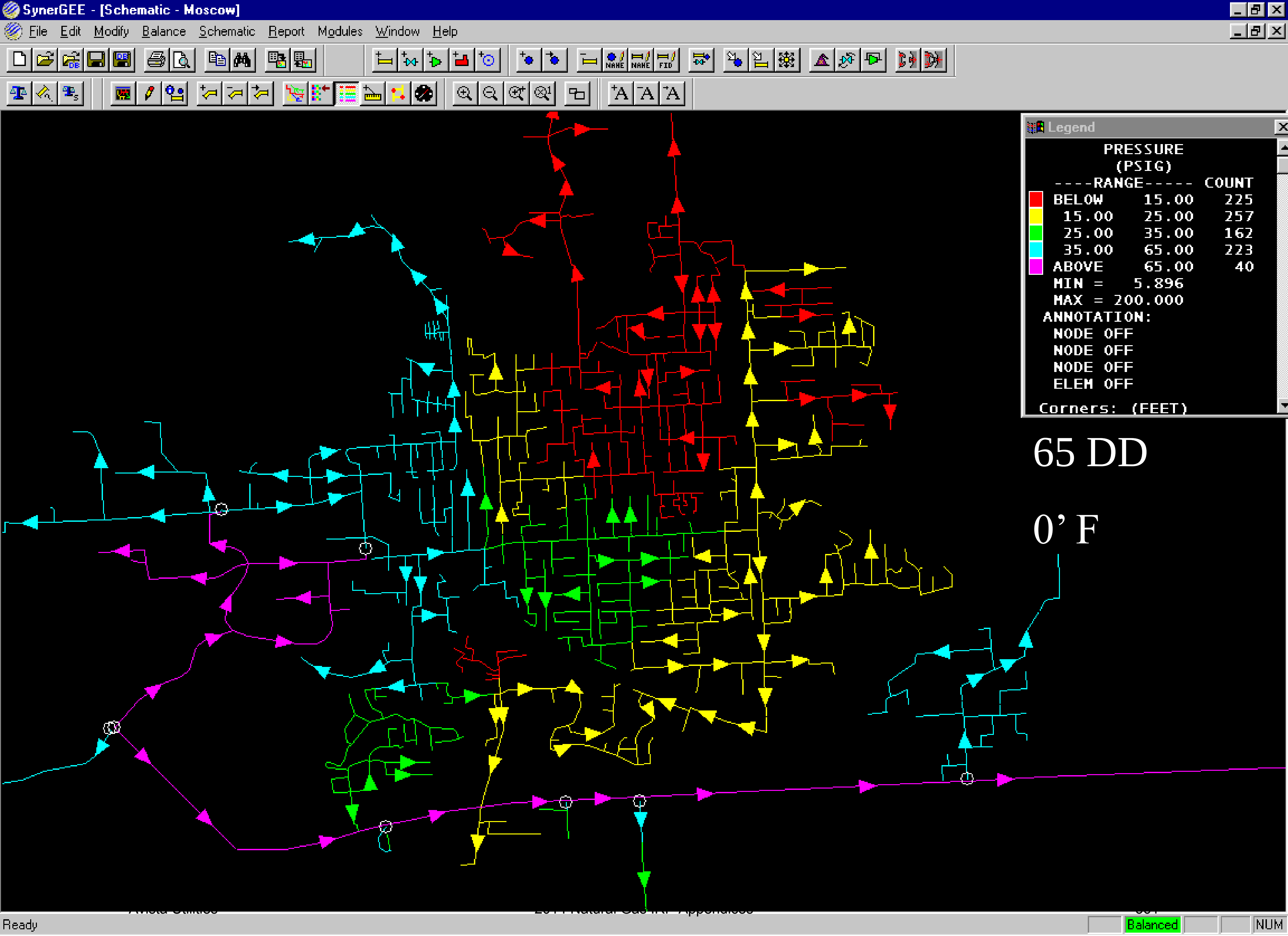

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 15.00 225
15.00 25.00 257
25.00 35.00 162
35.00 65.00 223
ABOVE 65.00 40
MIN = 5.896
MAX = 200.000
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
65 DD
0° F
Ready
Balanced
NUM

# Interpreting Results

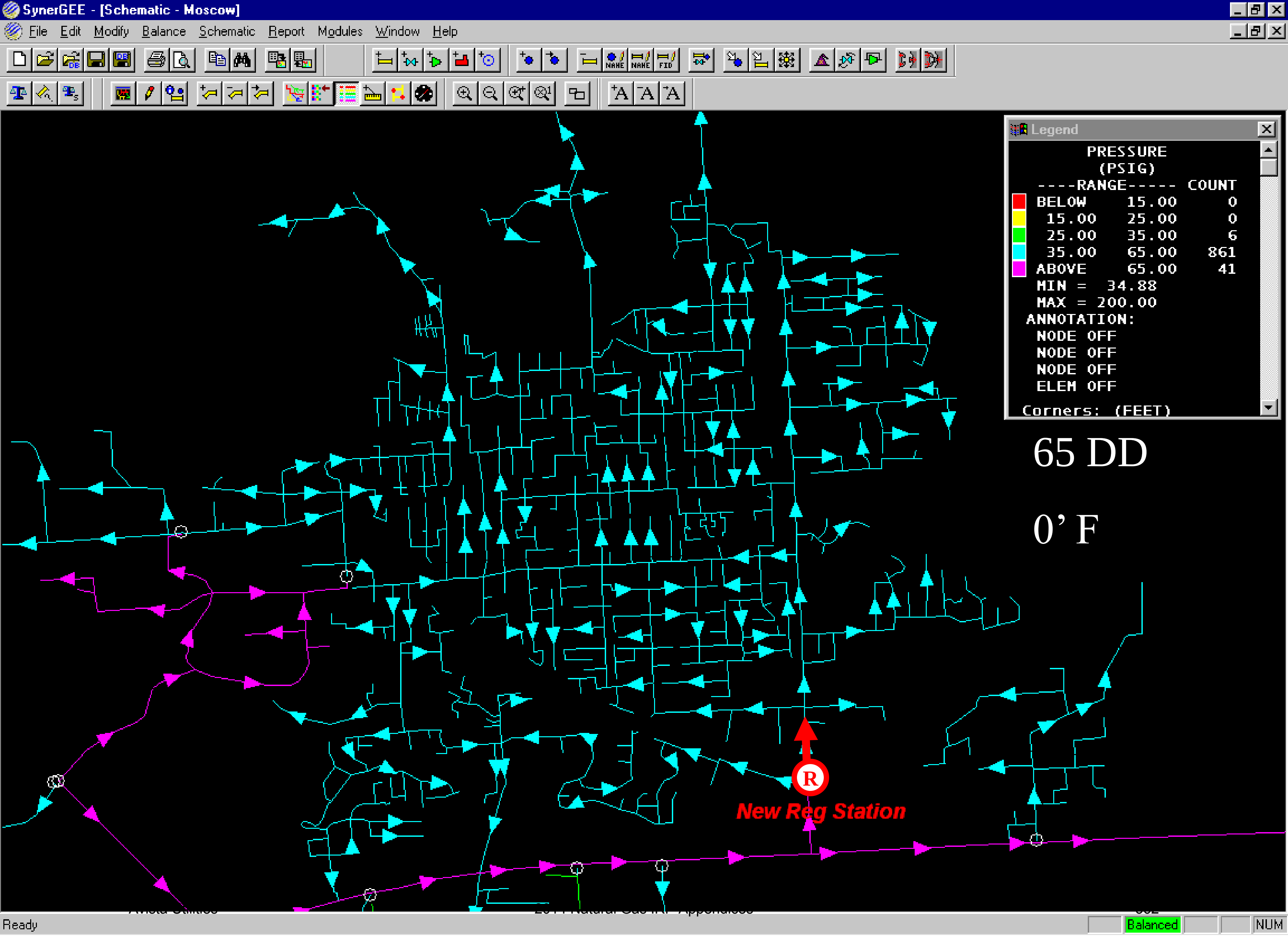
- Identify Low Pressure Areas
  - Number of feeds
  - Proximity to source
- Looking for Most Economical Solution
  - Length (minimize)
  - Construction obstacles (minimize)
  - Customer growth (maximize)

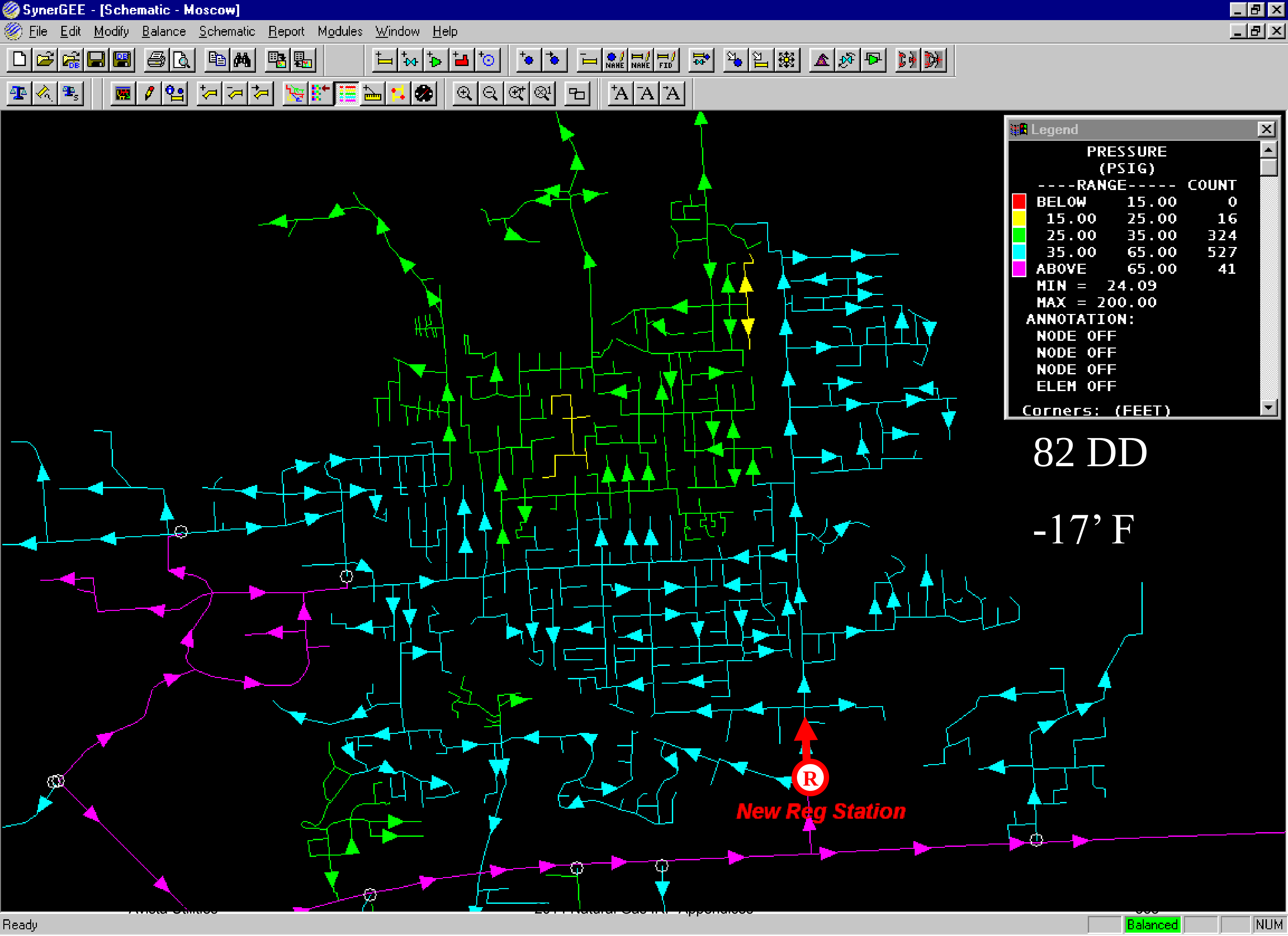

acilities Color By:
Pressure (psig)
0.00 – 15.00
15.00 – 30.00
30.00 – 45.00
45.00 – 60.00
> 60.00
82 HDD
27 psig
0 psig
0 psig
0 psig
0 psig


acilities Color By:
Pressure (psig)
0.00 – 15.00
15.00 – 30.00
30.00 – 45.00
45.00 – 60.00
> 60.00
82 HDD
36 psig
28 psig
16 psig
17 psig
21 psig
2" Reinforcement



SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 15.00 225
15.00 25.00 257
25.00 35.00 162
35.00 65.00 223
ABOVE 65.00 40
MIN = 5.896
MAX = 200.000
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
65 DD
0' F
Ready
Balanced
NUM


SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 15.00 0
15.00 25.00 0
25.00 35.00 6
35.00 65.00 861
ABOVE 65.00 41
MIN = 34.88
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
65 DD
0' F
R
New Reg Station
Ready
Balanced
NUM

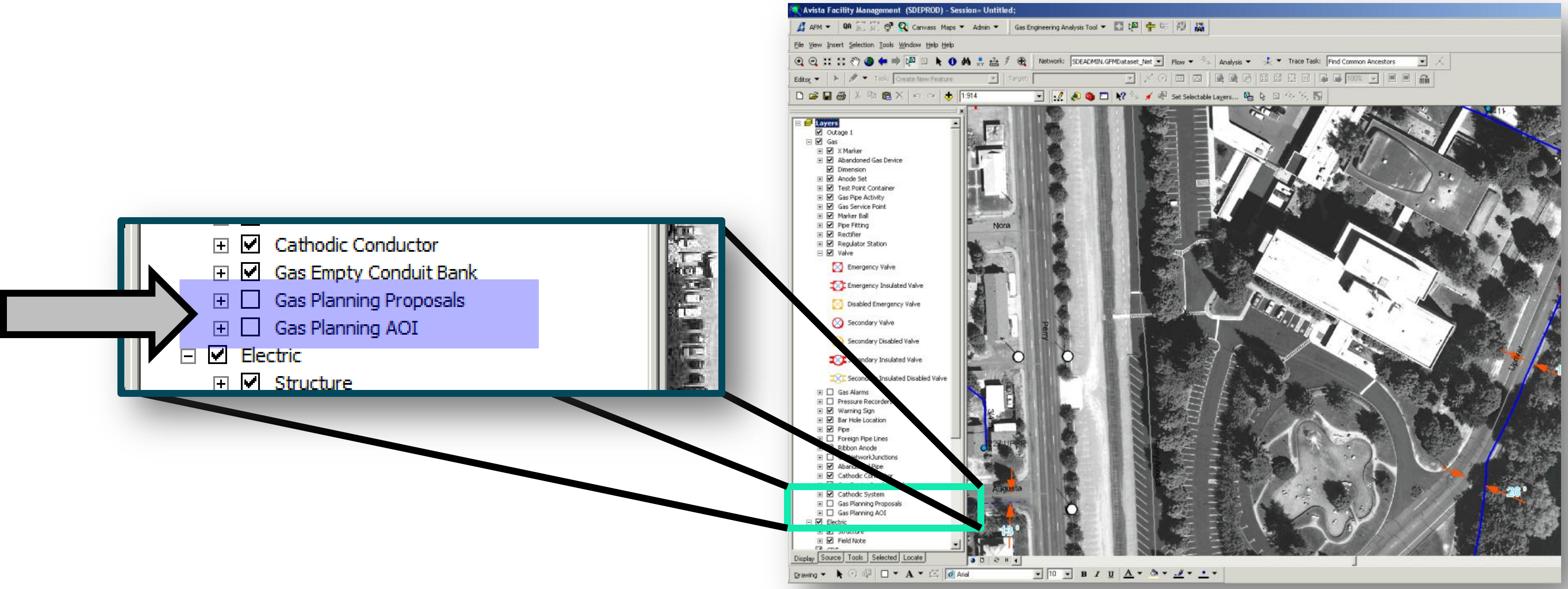

SynerGEE - [Schematic - Moscow]
File Edit Modify Balance Schematic Report Modules Window Help
Legend
PRESSURE
(PSIG)
----RANGE----- COUNT
BELOW 15.00 0
15.00 25.00 16
25.00 35.00 324
35.00 65.00 527
ABOVE 65.00 41
MIN = 24.09
MAX = 200.00
ANNOTATION:
NODE OFF
NODE OFF
NODE OFF
ELEM OFF
Corners: (FEET)
82 DD
-17' F
New Reg Station
Ready
Balanced
NUM

# Long-term Planning Objectives

- Future Growth/Expansion
- Design Day Conditions
- Facilitate Customer Installation Targets

# Sharing Load Study Results

- Gas Planning Proposals
- Gas Planning AOI



# Gas Planning Proposals

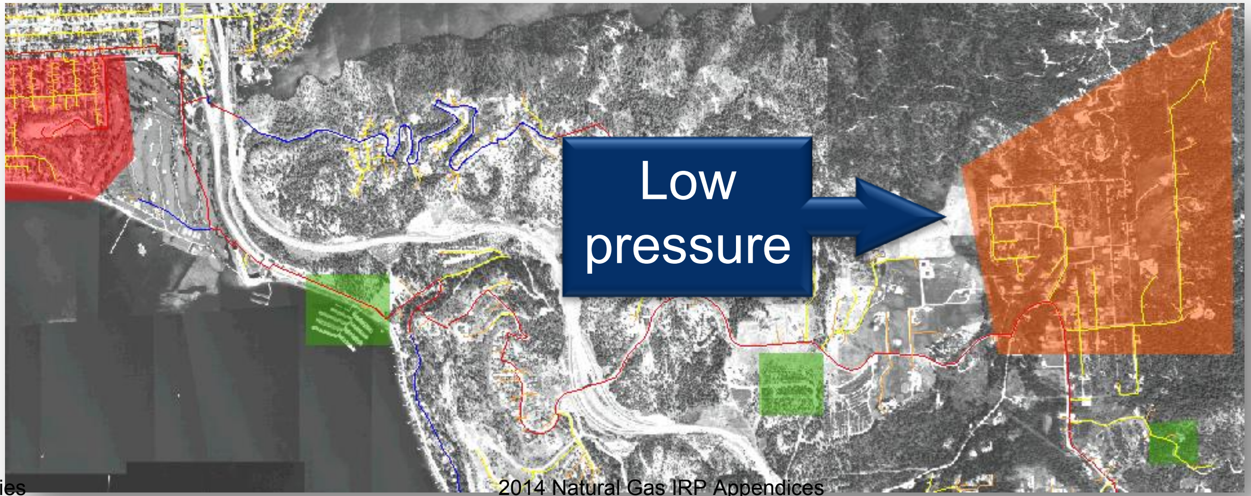
- Proposed pipe - dashed line


- Gas Planning recommendations for main extensions

# Gas Planning AOI

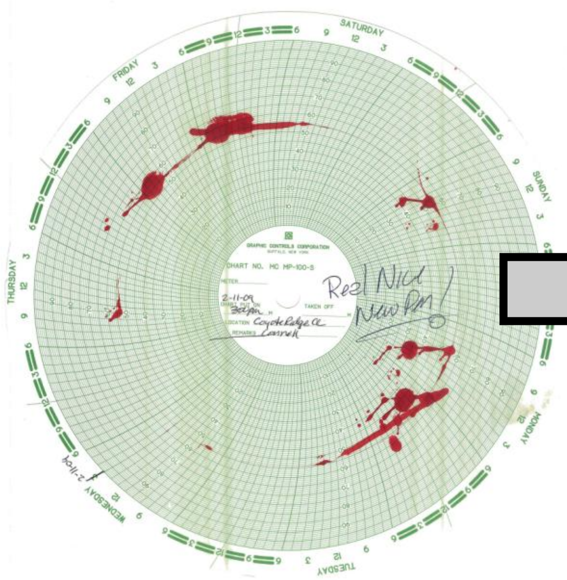
- Different colors to show the types of areas


- Geographic-specific information to help make decisions

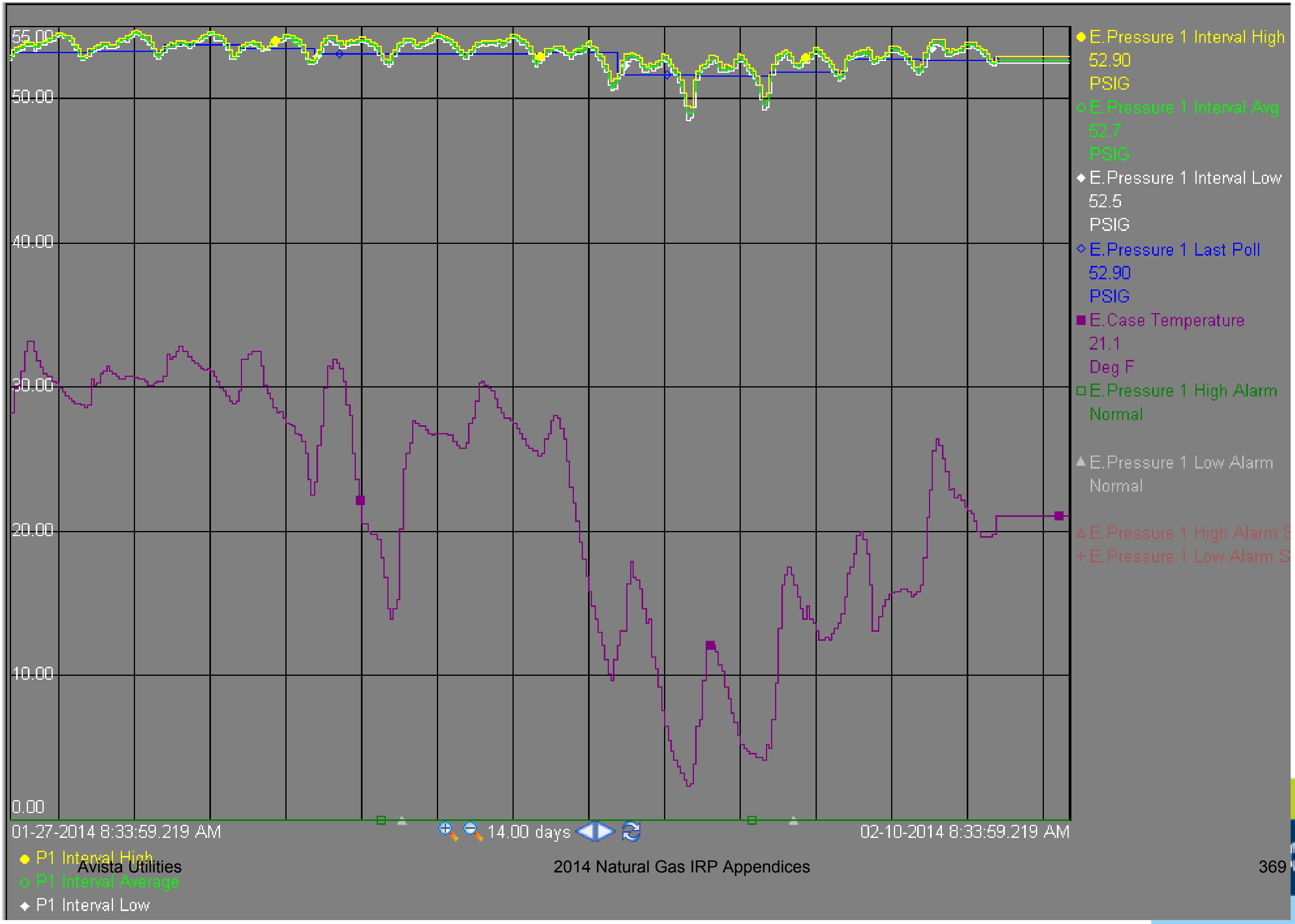


# Electronic Pressure Recorders

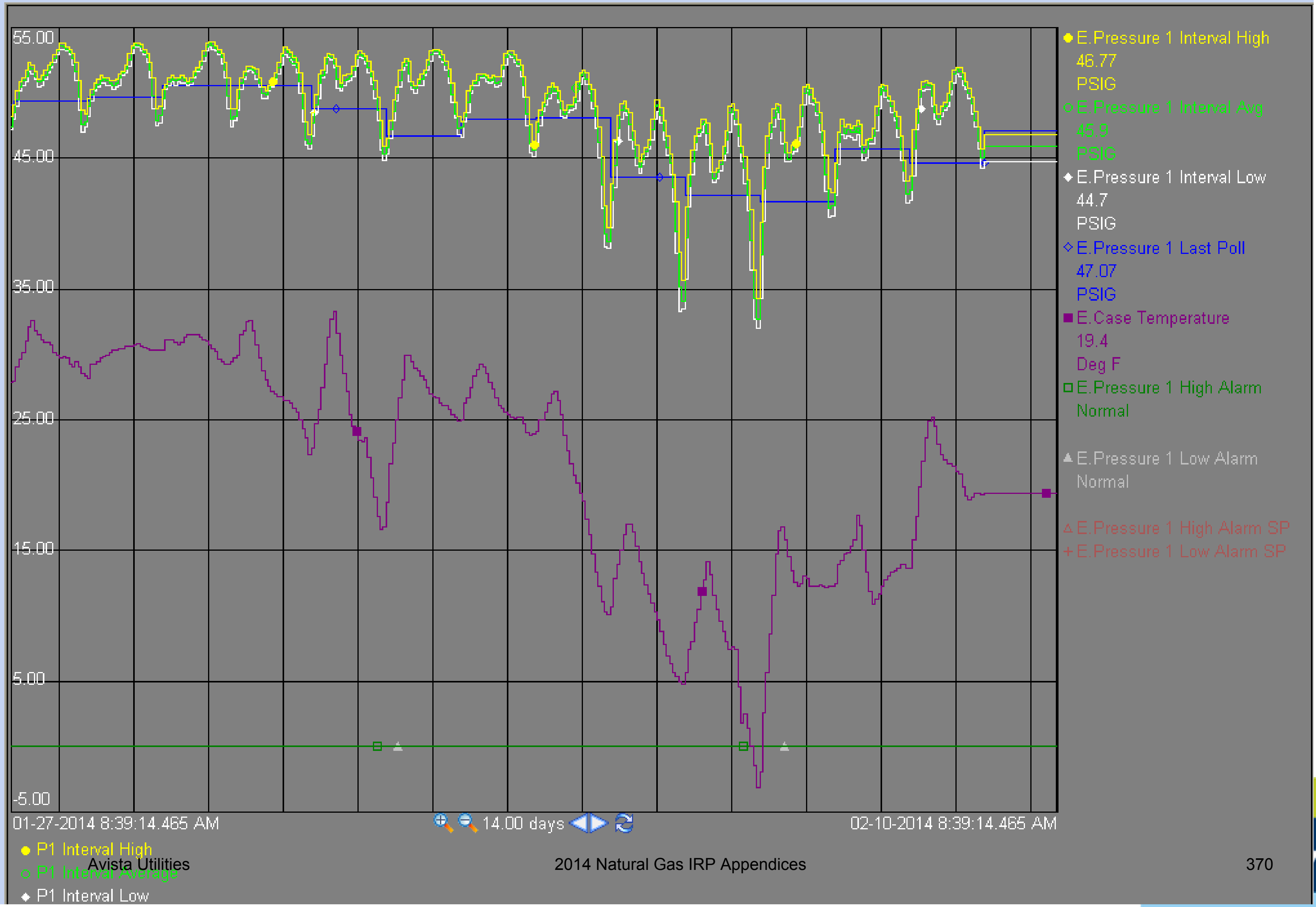
- Daily Feedback
- Real time if necessary




# Post Falls State Line

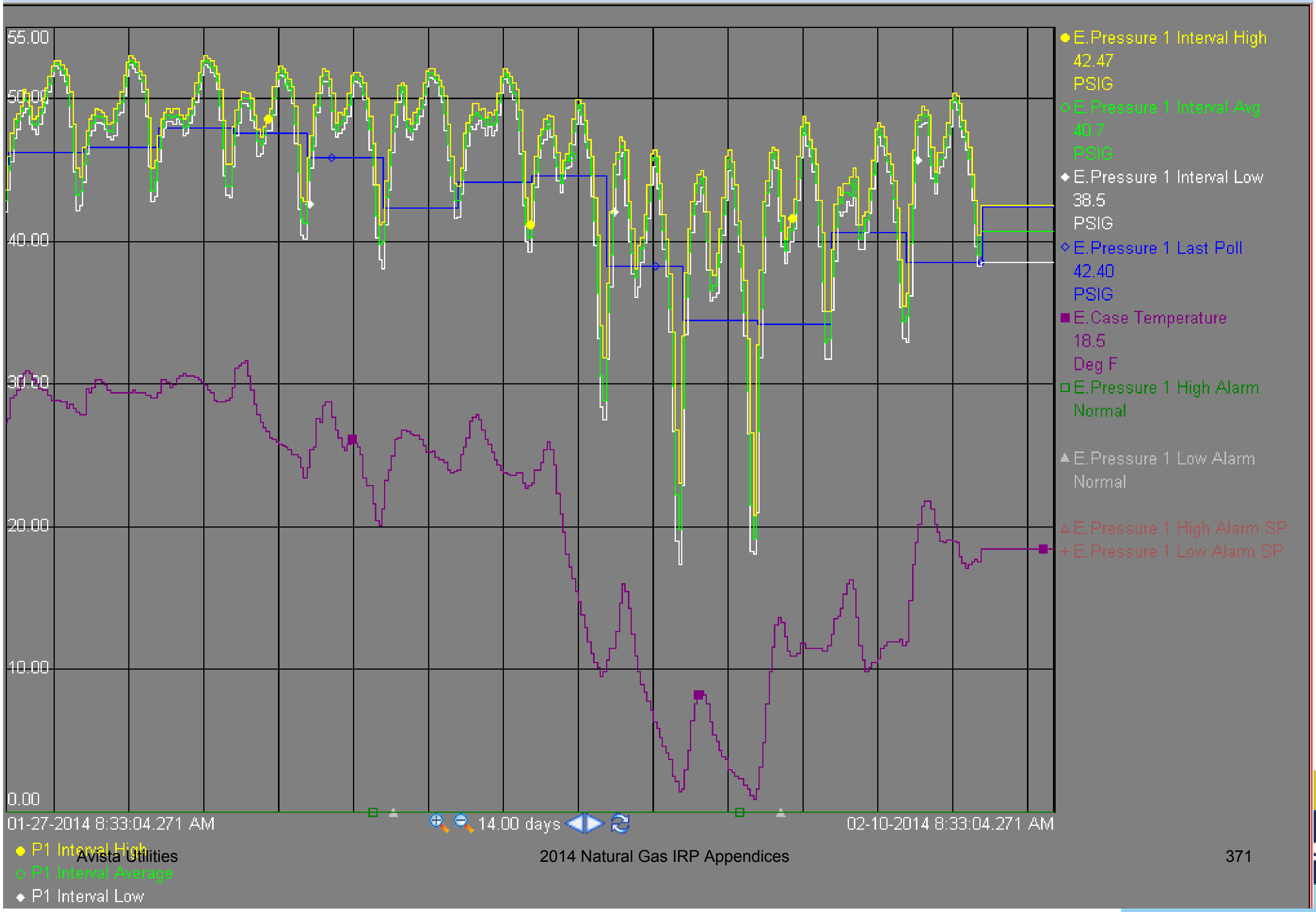


# Hayden Lake



55.00
45.00
35.00
25.00
15.00
5.00
-5.00
E.Pressure 1 Interval High
46.77
PSIG
E.Pressure 1 Interval Avg
45.9
PSIG
E.Pressure 1 Interval Low
44.7
PSIG
E.Pressure 1 Last Poll
47.07
PSIG
E.Case Temperature
19.4
Deg F
E.Pressure 1 High Alarm
Normal
E.Pressure 1 Low Alarm
Normal
E.Pressure 1 High Alarm SP
E.Pressure 1 Low Alarm SP
01-27-2014 8:39:14.465 AM
14.00 days
02-10-2014 8:39:14.465 AM
P1 Interval High
P1 Interval Average
P1 Interval Low

# South Hayden Lake



# Compressed Natural Gas Services

## Marc Schaffner, Strategic Initiatives Manager

**Natural Gas Technical Advisory Committee**
**March 26, 2014**

# Natural Gas Reserves and Utilization

## U.S. Natural Gas Reserves

- The U.S.'s total recoverable resource base at 2,384 trillion cubic feet
- Projected to meet total domestic demand over the next 100 years
- This year's estimates rose significantly at 22.1 percent since 2010

*Source: Potential Gas Committee (PGC)*

## Natural Gas Vehicles (NGV) Worldwide

- Estimated 15 million natural gas vehicles (NGVs)
- Asia and Middle East 8.8M, South America 4.3 M, Africa .16M and North America .14M

## NGVs on U.S. Highways

- Estimated 120,000 NGVs on U.S. highways
- Estimated 15,000 NGVs were added to U.S. highways in 2012

*Source: American Clean Skies*

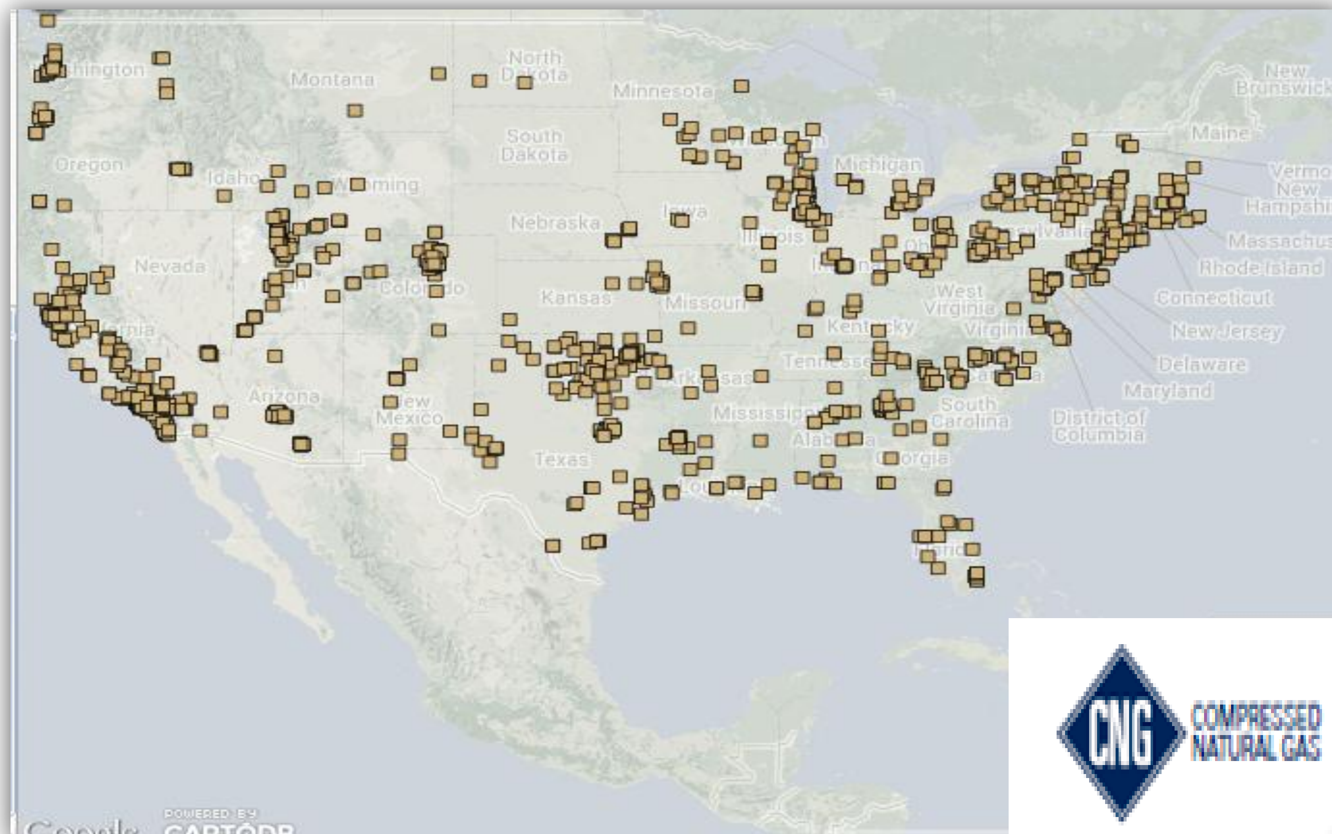
## The Future of NGVs

- Since 2003, the use of natural gas for vehicles has doubled in the U.S.
- The number of natural gas fueling stations is expected to more than double by 2015
- Natural gas is projected to overtake oil as the most-used fuel in the U.S. by 2030

*Source: IEA World Outlook Report*

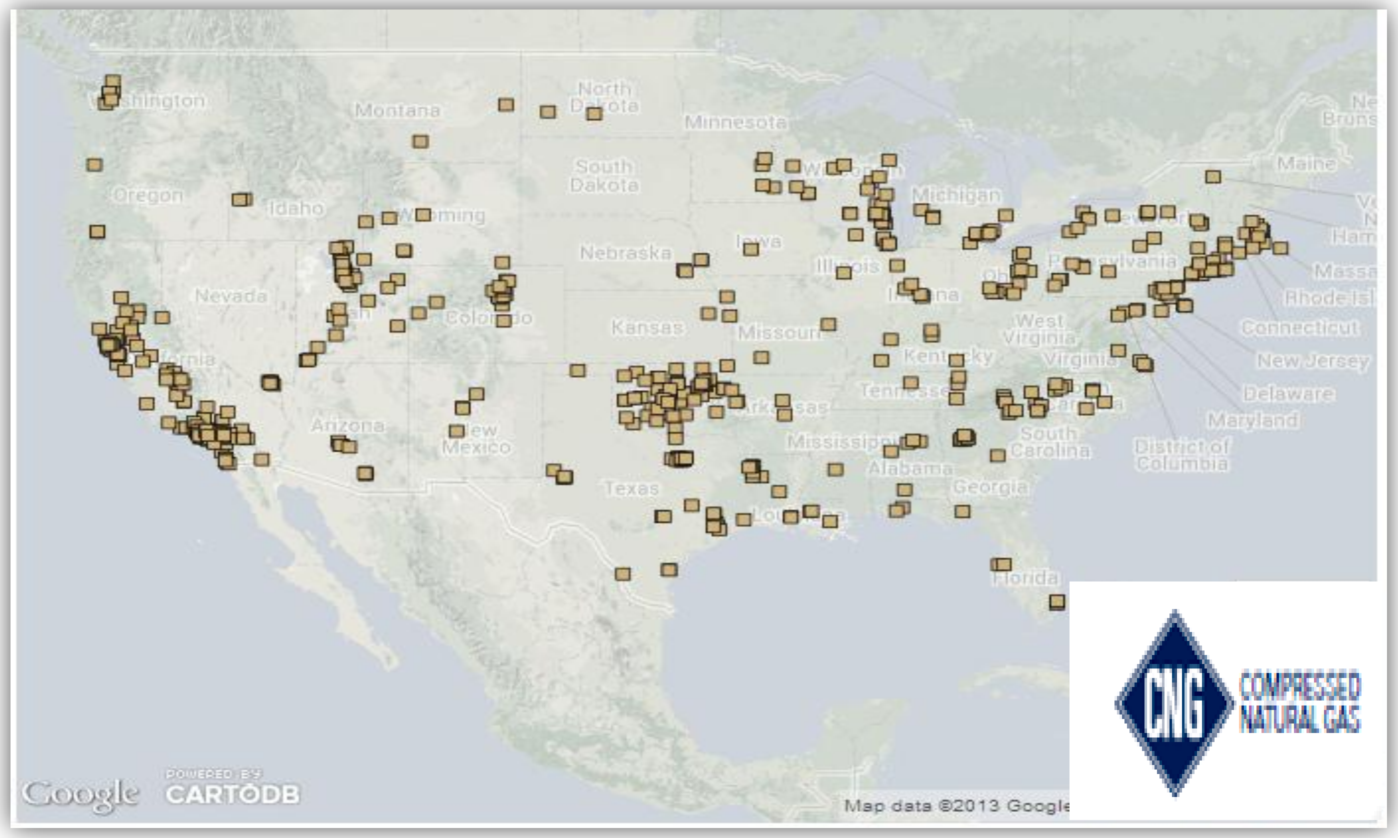
# U.S. CNG Infrastructure
# 1,334 Private and Public Refueling Stations

**<5% in Oregon, Washington and Idaho**




*Source: U.S. Department of Energy, February 2014*

# U.S. CNG Infrastructure
# 585 Public Refueling Stations




*Source: U.S. Department of Energy, March 2013*

# Avista's Investment in Compressed Natural Gas


**Environmentally responsible**

- It's clean and efficient
- 25% less $CO_2$ emissions than gasoline or diesel
- A vital part of an alternative transportation portfolio

**Cost effective**

- Lowers fuel costs
- Tax credits and incentives

**Reduces dependency on imported fuel sources**

- Natural gas is an abundant, domestic resource

**A clean fueling solution across an increasing range of NGV classes**

- Extends benefits to commercial fleets and private operators

**Mobilizes safe and reliable CNG equipment**

- Vehicles
- Public fueling infrastructure

# Avista CNG – Yesterday and Today

- Over the past 25 years Avista has fueled light duty vehicles, service continuity equipment and fork lifts with CNG
- Ten of our gas operating centers have maintained private CNG refueling infrastructure over that time period
- 2011, we began devising plans to upgrade CNG infrastructure at our highest volume service centers in Idaho, Oregon and Washington
- 2012, we completed construction of a new refueling station at our Mission Avenue service center in Spokane, WA
- 2013, we completed a second Spokane refueling station at our Dollar Road gas service center
- Q2 of 2014 we intend to start on construction of a new refueling station at our Coeur d' Alene, ID and begin upgrading an existing station at Klamath Falls, OR
- Q4 of 2014 construction of a new refueling station at White City, OR is projected to begin

**Spokane Refueling Stations**
**Mission Avenue (top)**
**Dollar Road (bottom)**

# Avista's CNG Station Schedule

| CNG Refueling Location | Project Status | Compression Capability | Storage Capacity | Public Access * |
|---|---|---|---|---|
| Mission Avenue SC Spokane, Wash. | Completed 2012 | 125 HP Compressor 202 SCFM | 280 GGE at 4500 psi | |
| Dollar Road SC Spokane, Wash. | Completed 2013 | 125 HP Compressor 202 SCFM | 280 GGE at 4500 psi | X |
| Coeur d'Alene SC Coeur d'Alene, Idaho | Construction 2014 | (2) 50 HP Compressors 75 SCFM | 280 GGE at 4500 psi | X |
| Klamath Falls SC Klamath Falls, Ore. | Upgrade 2013-14 | 30 HP Compressor 60 SCFM | 90 GGE at 4500 psi | |
| White City Industrial Medford, Ore. | Construction 2014-15 | 200 HP Dual Compressor 300 SCFM | 450 GGE at 4500 psi | X |

* Public access subject to regulatory approval

# CNG Investment Recovery

**CNG fueling equipment can be effectively treated like conventional utility infrastructure**

- gas pipe and regulators, power poles and transformers
- compressors, storage vessels and dispensers

**The financial tests and investment recovery mechanisms are familiar**

- standard service agreements may be offered to anchor fleet operators with special provisions that define annual consumption minimum, schedule and deficiency requirements

**However…**

CNG fueling infrastructure offers an average operating life of 20 years

The service life of commercial grade NGVs ranges from 5 to 10 years

# Investment Recovery Illustration

| | |
|---|---|
| Avista's Investment | $1M capital to fund a turn key CNG station |
| Consumption minimum annually* | 350k gas gallon equivalents (GGE) |
| Consumption schedule | 10 years |
| CNG Rate | $2.00 per GGE |

**Dollar Road**
**CNG Fuel Dispenser**

* *eq ... ste hauling vehicles*

# Natural Gas Vehicle Investment Recovery

## Waste Hauling NGV

| | |
|---|---|
| Customer Investment | $35,000 per vehicle |
| Miles per gallon | 3 |
| Annual mileage | 25,000 |
| CNG per gallon | $2.00 |
| Diesel per gallon | $4.00 |
| Estimated payback | 25 months |
| Annual  fuel savings | $16,800 |
| Five–year ROI | 238% |

# Make or Buy Decisions

**CNG Station Maintenance and Service Continuity**

- Technical expertise and equipment monitoring systems
- Planned maintenance - resources and costs
- Unplanned repairs and restoration - resources and costs
- Outage response and service continuity

**Point of Sale Customer Billing**

- Availability of full service providers
- Transaction processors
- Billing cost per unit of measure
- Required menu of services

# Avista Contributors

Energy Solutions Account Executives

Customer Solutions Regional Business Managers

Government Relations Lobbyists

Legal Counsel Risk Real Estate

Contract Administration

Real Estate Legal Property Acquisition

Regulatory Rates & Tariffs

Treasury Billing Analysis

Financial Planning & Analysis

Facilities Project Management

Fleet NGV Management CNG Infrastructure Maintenance

Distribution Infrastructure Gas Engineering

# Organizational Capability

**What are we learning?**

- The value of broad-based collaboration occurring across a dynamic natural gas for transportation marketplace. Private & public sector customers, industry associations, government, contractors and vendors

**What skills are we developing?**

- NGV acquisition and maintenance
- CNG fueling infrastructure planning, construction and maintenance
- CNG/NGV consultation

**What value does Avista's CNG capability provide our employees, customers and business community?**

- A more robust portfolio of energy offerings
- Enhanced revenue and cost saving opportunities for regional businesses
- An innovative, sustainable way to positively affect environmental quality and energy independence

# Thank You

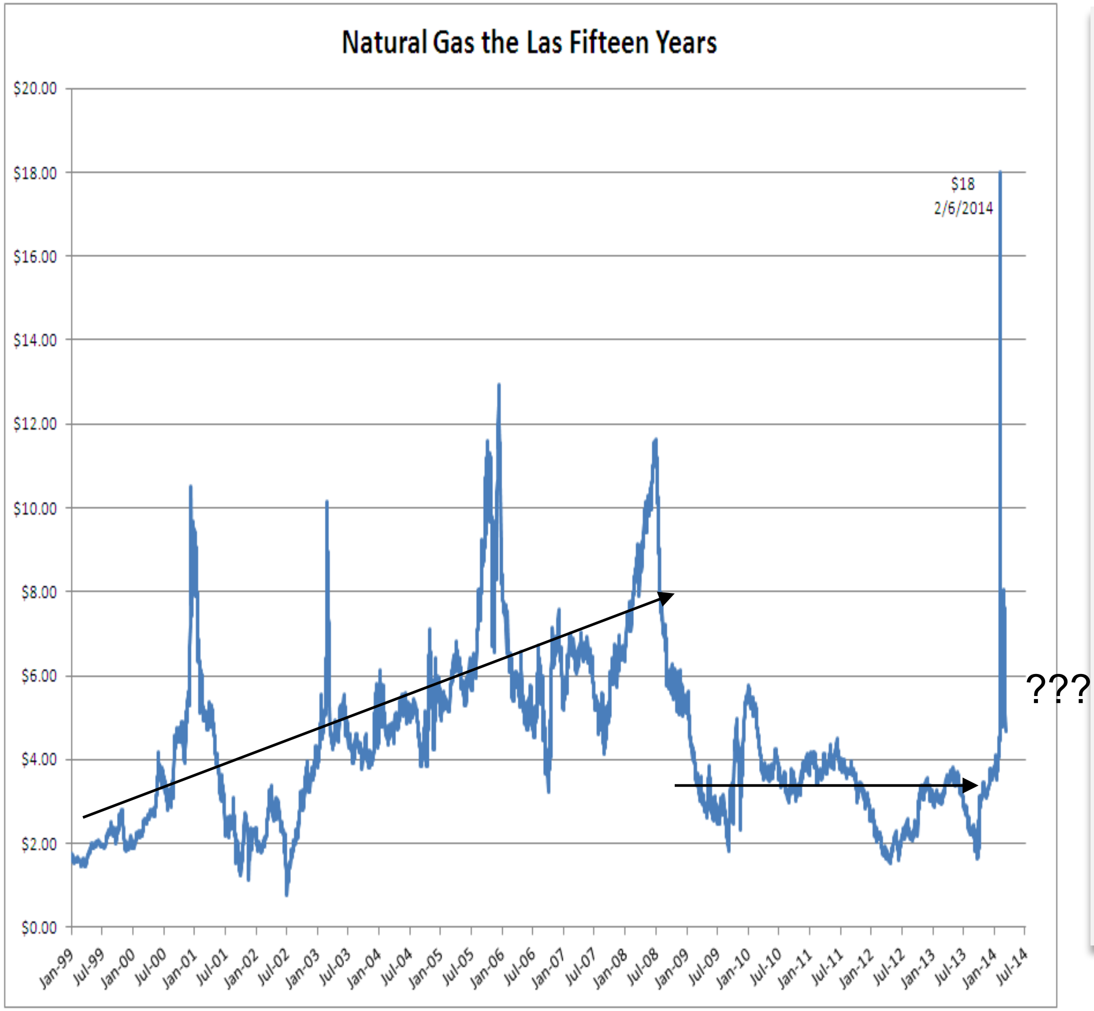
# Natural Gas Prices

## Kelly Fukai, Manager of Natural Gas Planning

Natural Gas Technical Advisory Committee
March 26, 2014

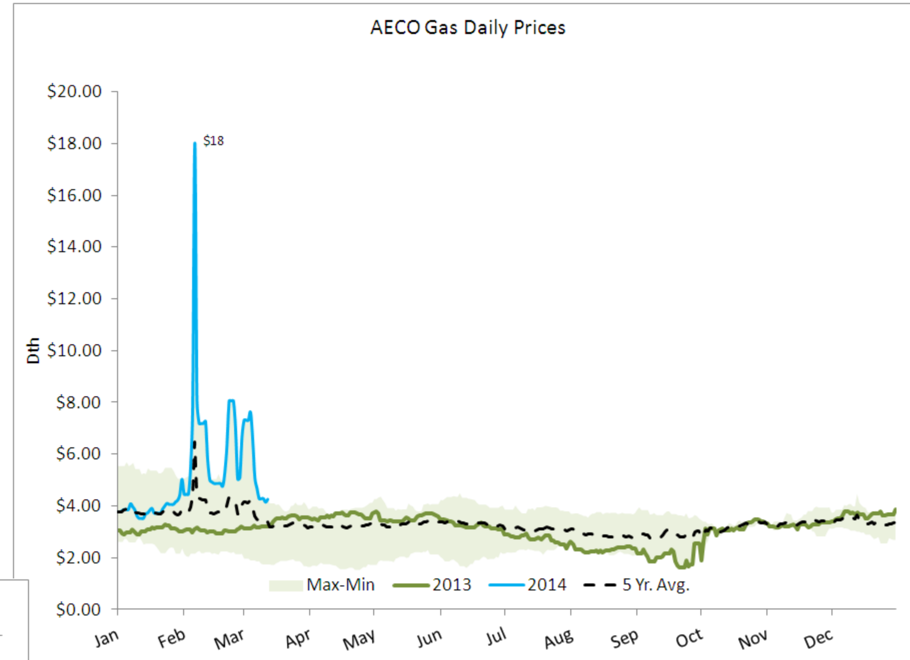
# What Drives the Natural Gas Market?

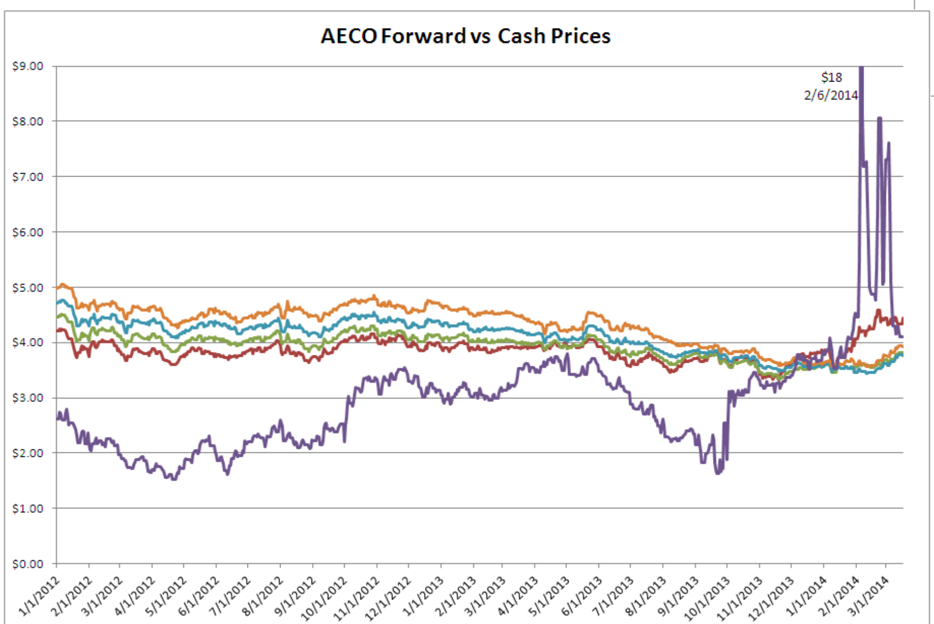
## *Natural Gas Spot Prices (Henry Hub)*




- **Supply**
  - Type: Conventional vs. Non-conventional
  - Location
  - Cost
- **Demand**
  - Residential/Commercial/Industrial
  - Power Generation
  - Natural Gas Vehicles
- **Legislation**
  - Environmental
- **Energy Correlations**
  - Oil vs. Gas
  - Coal vs. Gas
  - Natural Gas Liquids
- **Weather**
- **Storage**

# Short Term Market Perspective


# The Long Term Fundamentals

Demand
- Economy (Recession, Depression, Inflation, etc.)
- Industrial Demand
- Power Generation
- Any NG (LNG, NGV, CNG)

US Natural Gas Supply and Production
- Resource Base
- Drilling Efficiency
- Associated Gas

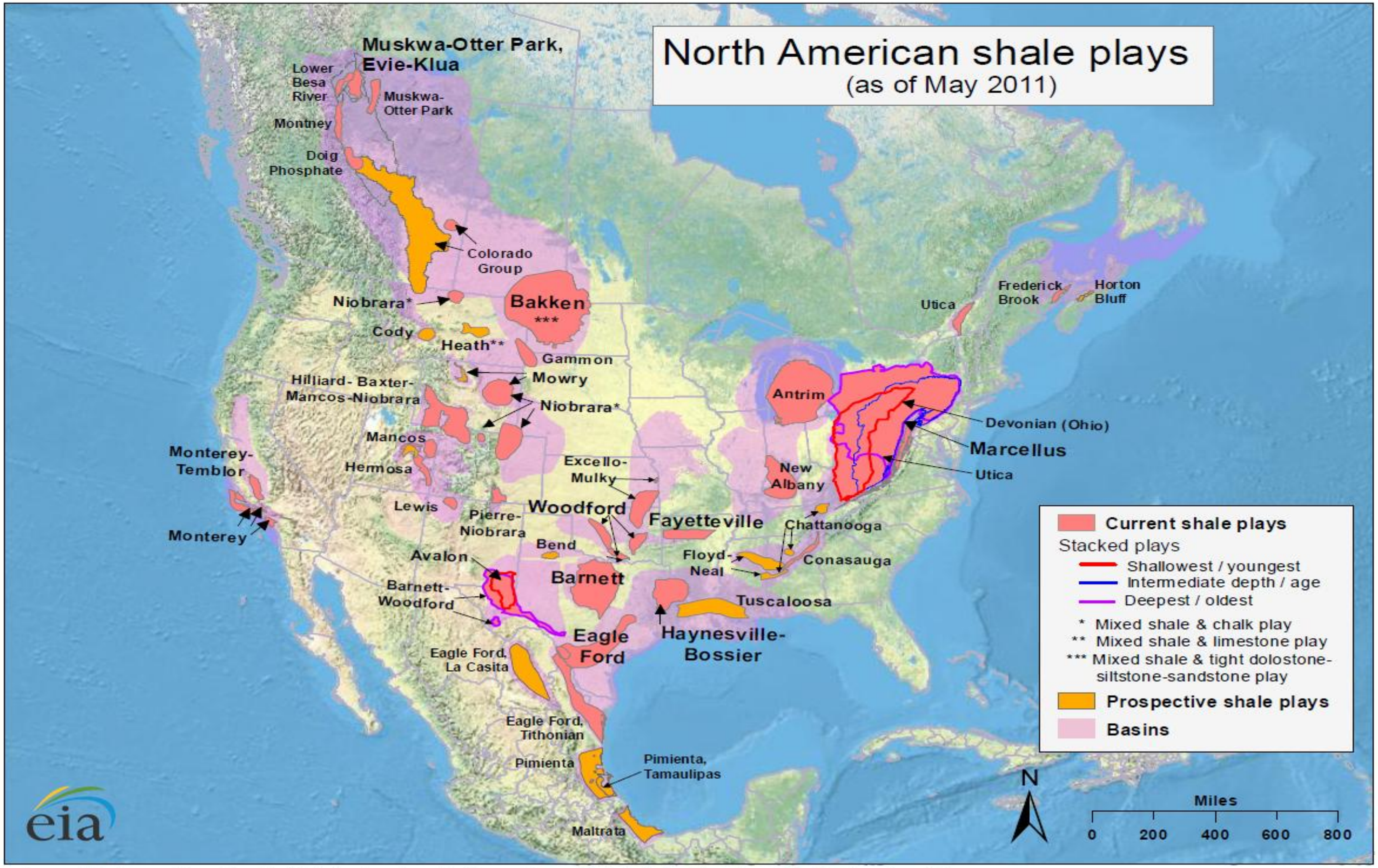
Global Dynamics – LNG Imports and Exports

North American Storage Capacity

Correlation (or lack thereof) with other energy products

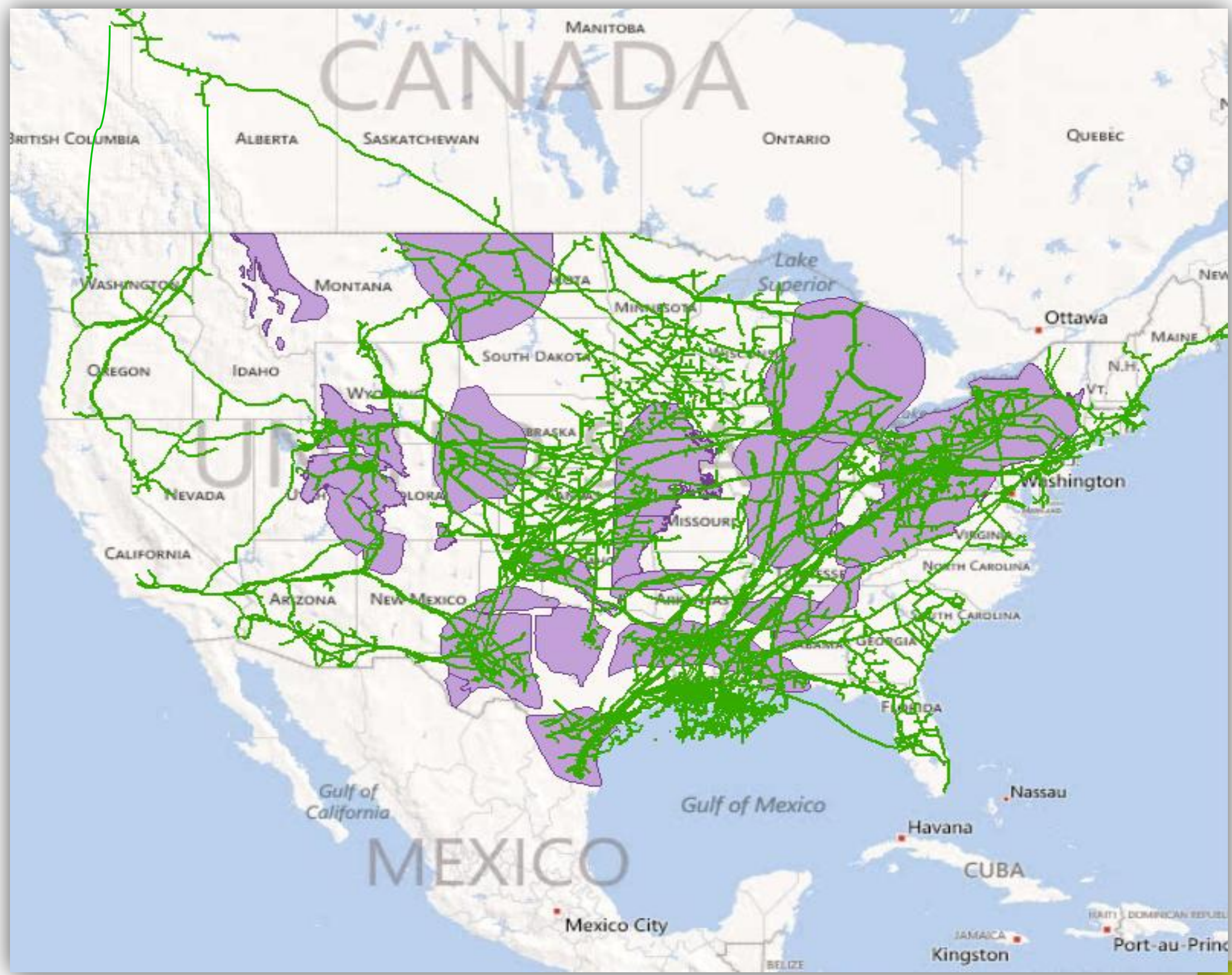
The Environment
- Carbon Legislation
- The "F" Word – FRACKING
- Renewable Portfolio Standards

# Shale is almost EVERYWHERE




Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
Updated: May 9, 2011

# Changing the Flow Dynamics



# NGL's Impact on the Cost to Produce

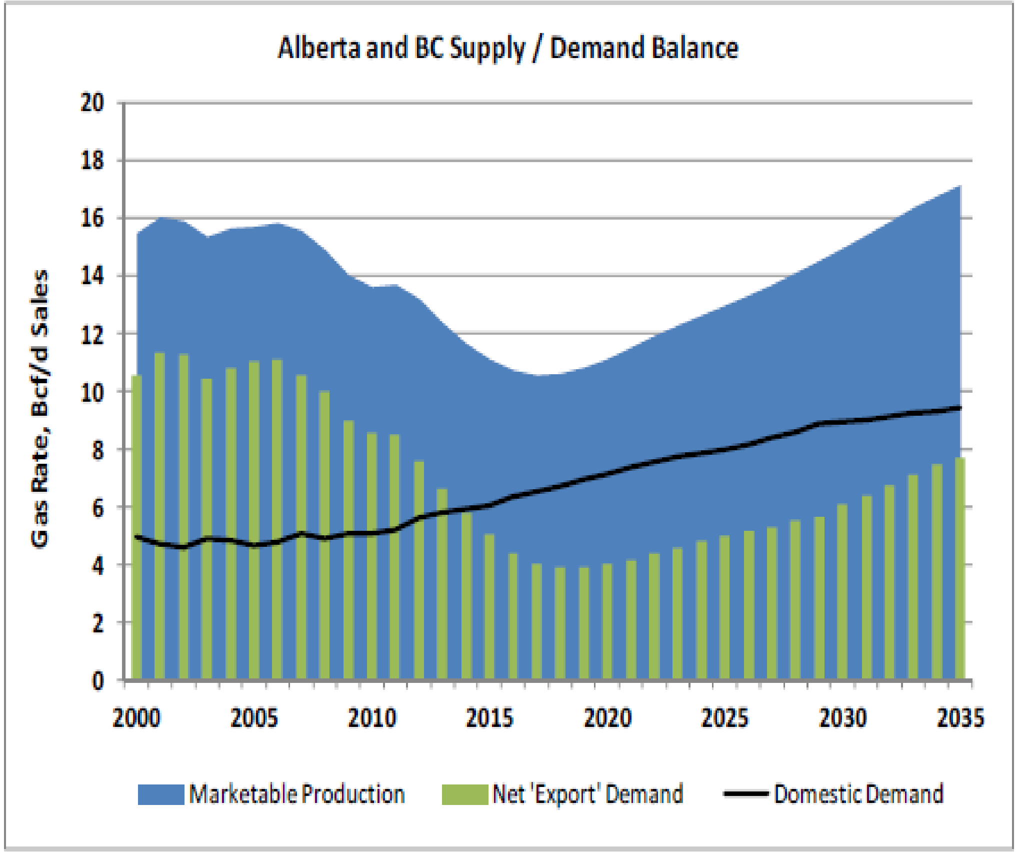
NGL's enhance the production economics for producers. NGL's are a main contributor to understanding why gas production companies continue to produce even with gas prices at very low levels.

The following table illustrates how the economics can improve with a credit for NGL's.

| Shale Play | Cost to Produce without NGL's Credit | Cost to Produce including NGL's Credit |
|---|---|---|
| Marcellus | $4.81 | $2.83 |
| Montney | $3.85 | $0.57 |
| Barnett | $5.39 | $2.41 |

*Note: These costs are indicative of the historical impact. The costs can vary from play to play and company to company and will change as market conditions change.*

# Canada Dry vs. Canada Not Dry

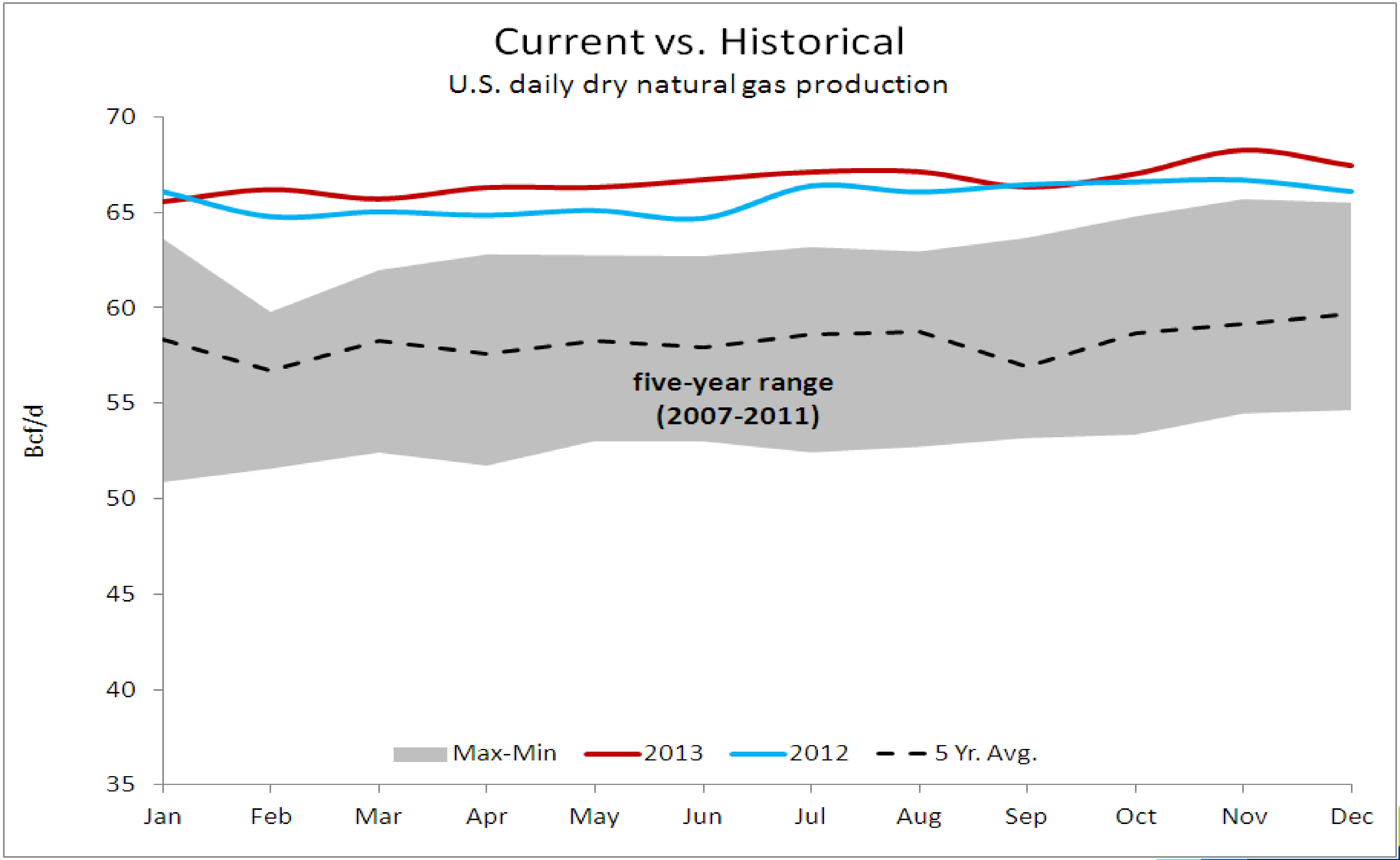



*Source: NEB Canada's Energy Future 2013*

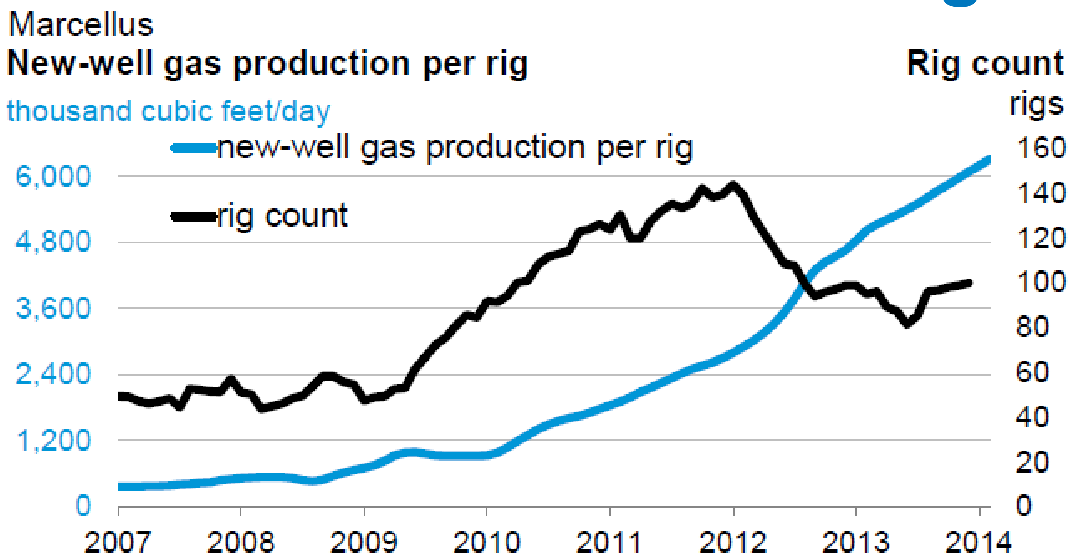
**Why won't Canada be dry?**

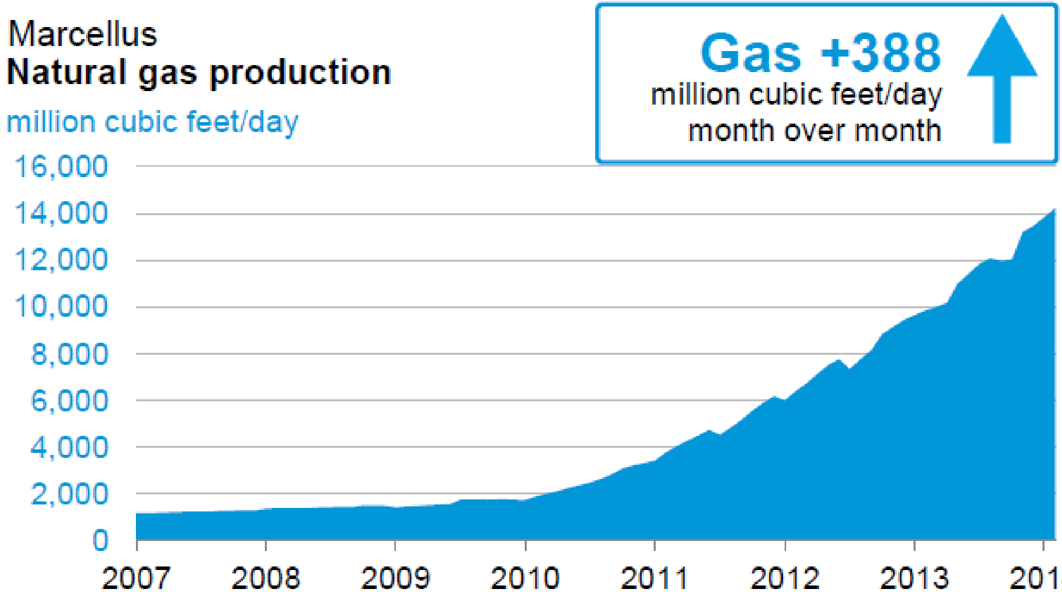
- Tons of JV money
- IP rates are proving to be better than anticipated.
  - Horn River IP rates have increased 150%
- Economics are pretty good too.
  - Duverney in particular is liquids rich.

# Current vs. Historical US Dry Gas Production



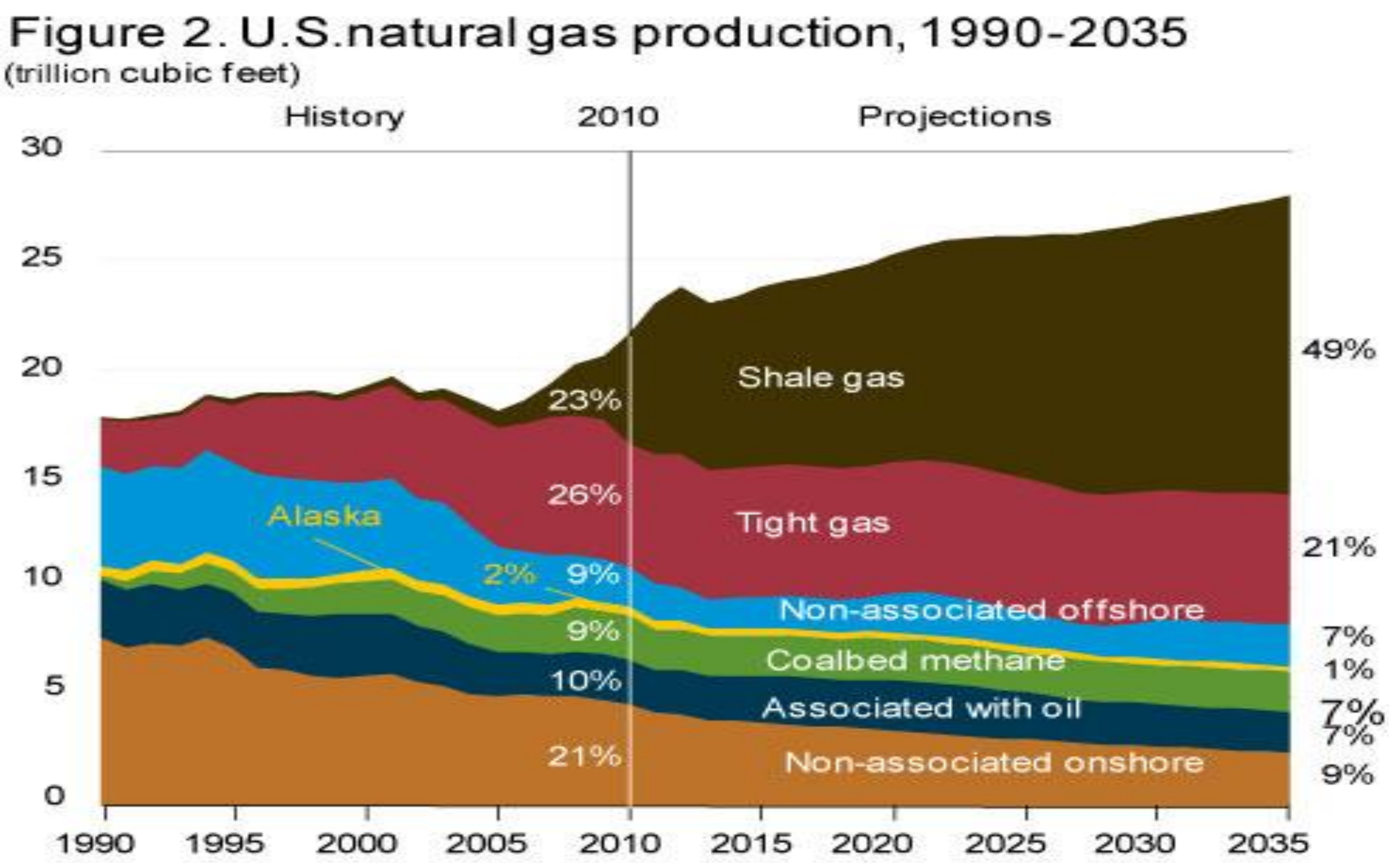
# The Learning Curve



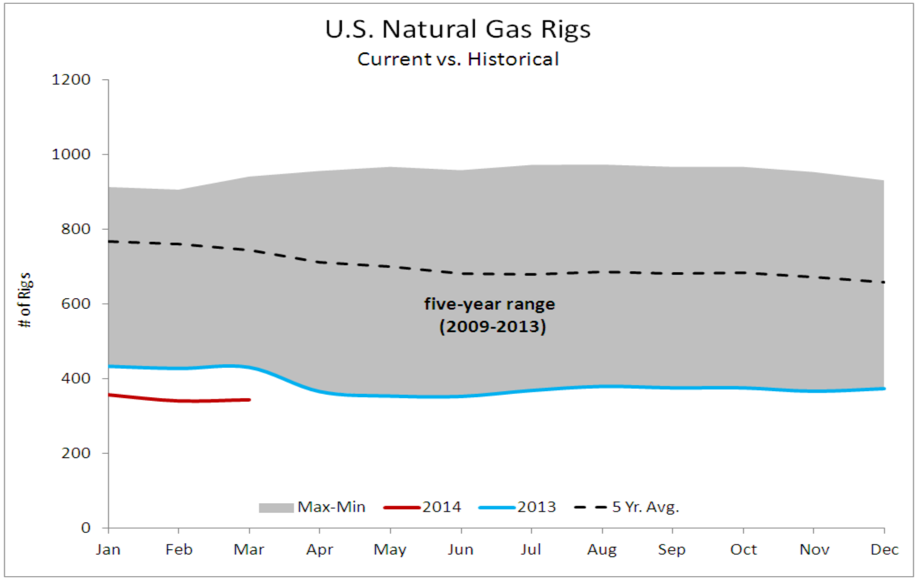



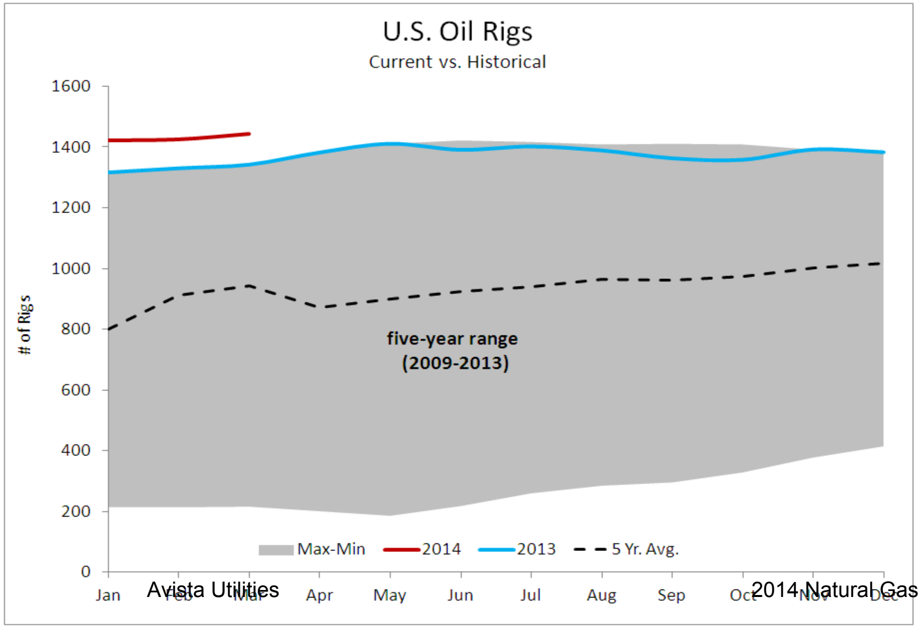

*Source: EIA January Drilling Productivity Report*

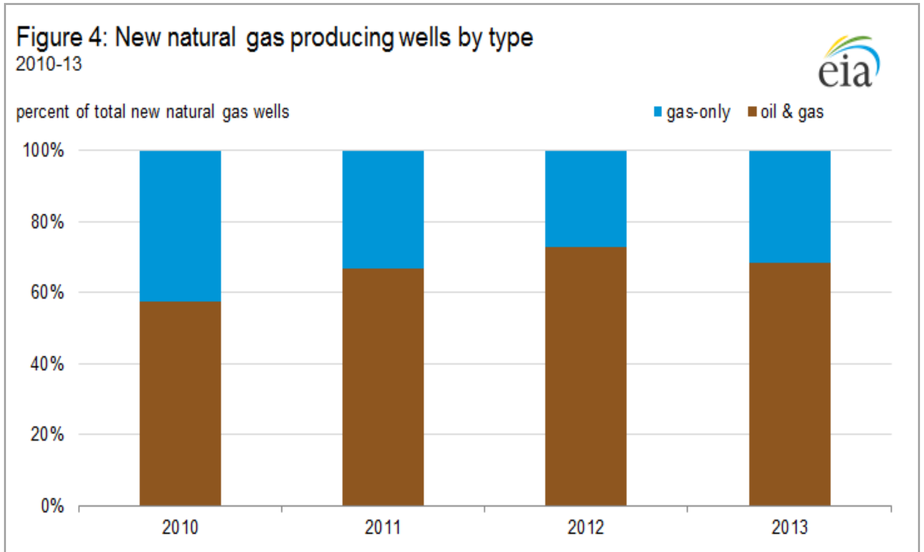
# Forecasted Natural Gas Production



# Oil and Gas Production are like Peas and Carrots




Source: U.S. Energy Information Administration calculations based on data from Drillinginfo.
Note: Data exclude wells in Alaska and offshore fields. As with Figure 3, the new production breakout is only available through June 2013. Gross withdrawals data from Figure 2 are compared with each basin's breakout between gas only and gas and oil wells to estimate data through December 2013.

More oil = More gas

# Carbon Prices

- Currently our consultant forecasts include carbon tax adders to the Henry Hub gas price.
  - Adders start in early 2020's
  - Modest adders
- One will drop carbon in next long term forecast.
- Primarily a demand effect
  - Can result in demand change due to price elastic response, however tax must be significant enough to trigger.
  - Could possibly trigger increased usage due to fuel switching.
  - May increase the DSM potential.
- Changes total portfolio costs but does not necessarily change the resource mix.

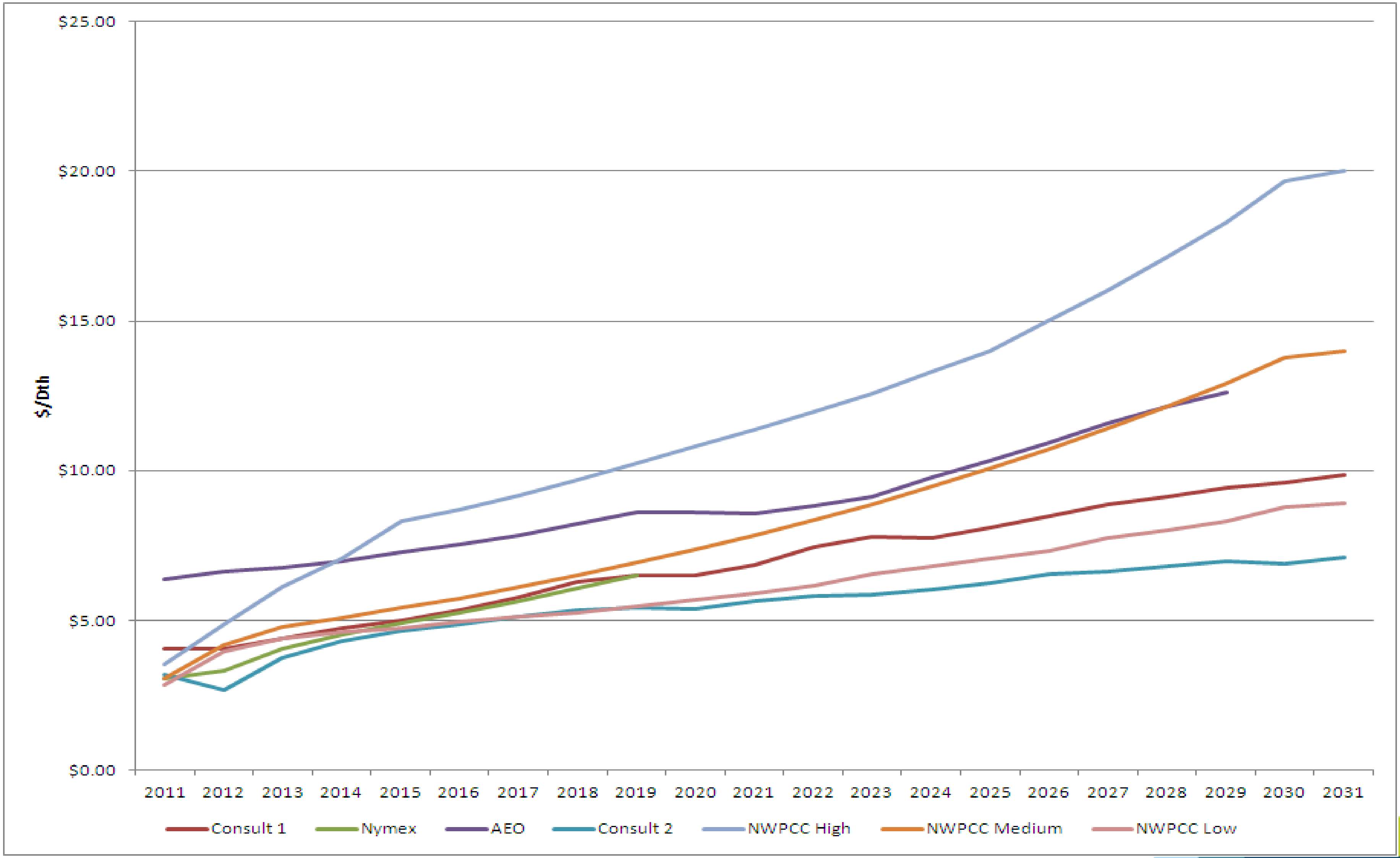
# How prices affect IRP Planning?

- Major component of the total cost
- Change in price **can** trigger price elastic response
- **THE** major piece of avoided costs and therefore cost effectiveness of DSM
- Can change resource selection based on basin differentials
- Storage utilization

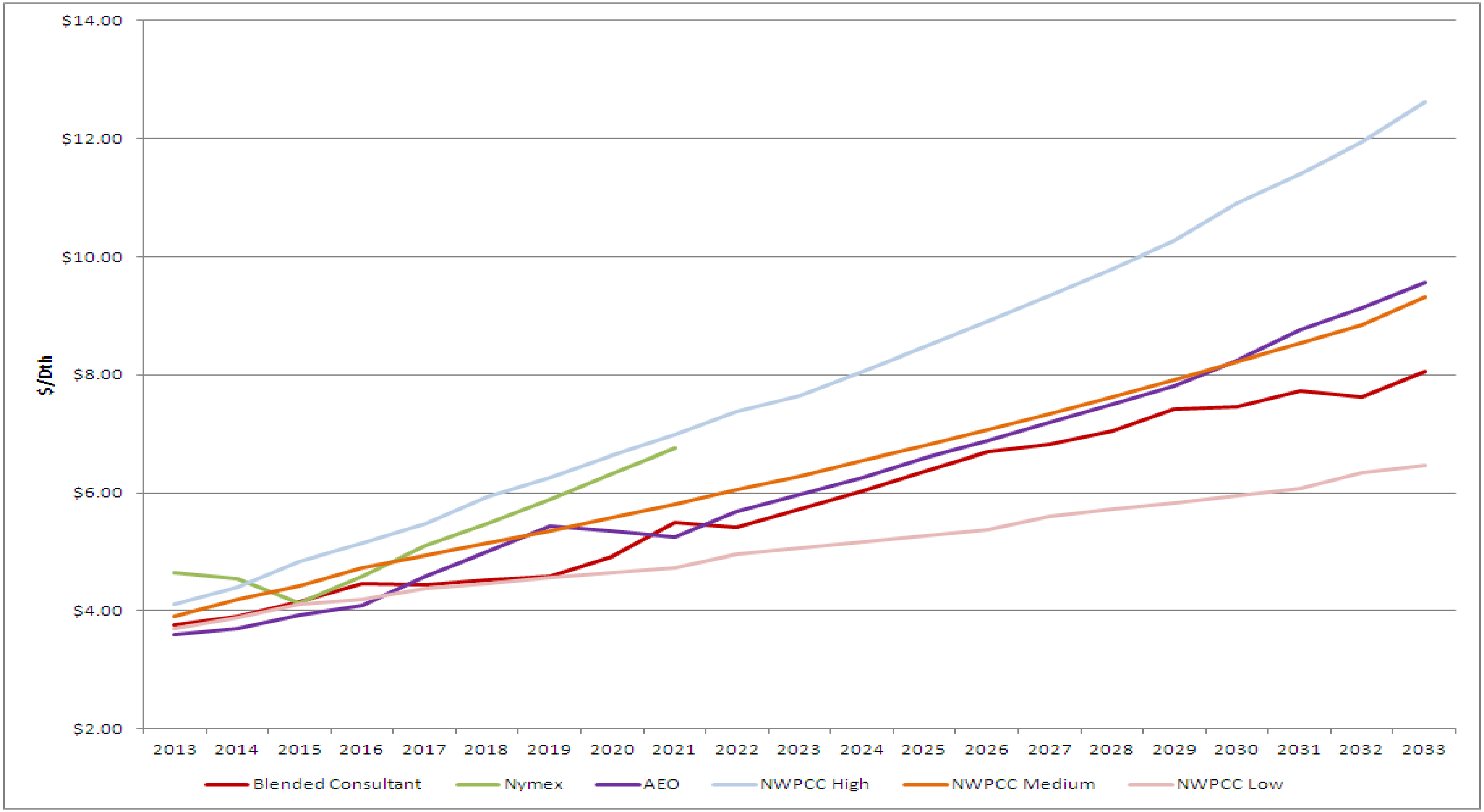
# IRP Natural Gas Price Forecast Methodology

1. Examine fundamental forecasts (Consultant #1, Consultant #2, EIA, etc.)
2. Forward prices
3. Carbon legislation adder beginning in 2022 ($8.49/ton grows to $15.24/ton)
4. Basin adjusted based on forecasted
5. Monthly shape set based on forecasted
6. 50% Nymex, 50% blended Consultants Year 1
7. 40% Nymex, 60% blended Consultants Year 2
8. 30% Nymex, 70% blended Consultants Year 3
9. 20% Nymex, 80% blended Consultants Year 4
10. 10% Nymex, 90% blended Consultants Year 5
11. 100% blended Consultants Year 6 – 18
12. 100% Consultant #1 year 18 - 20

# 2012 IRP Forecasted Prices

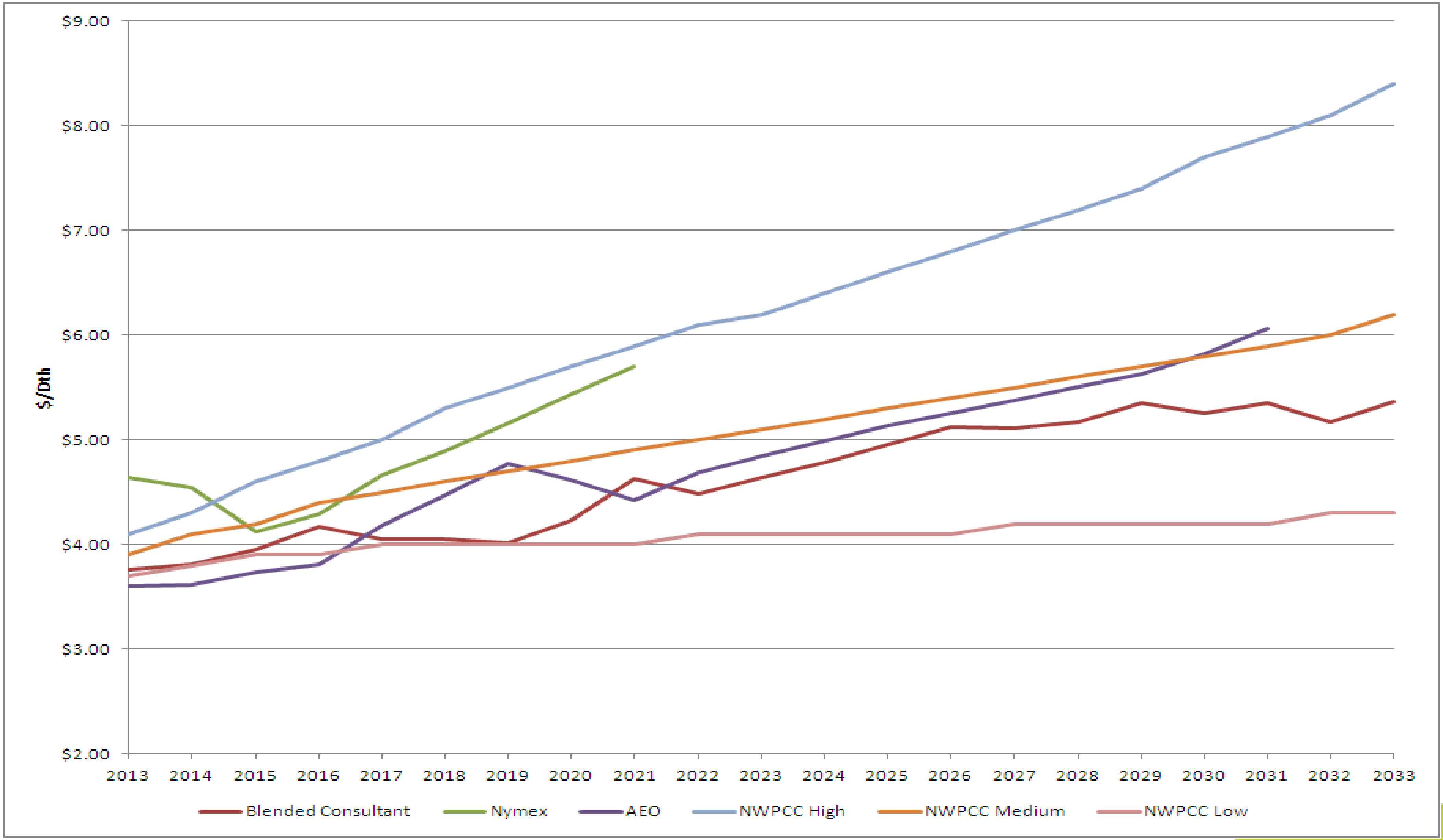


# Current Long Term Henry Hub Forecasts NOMINAL



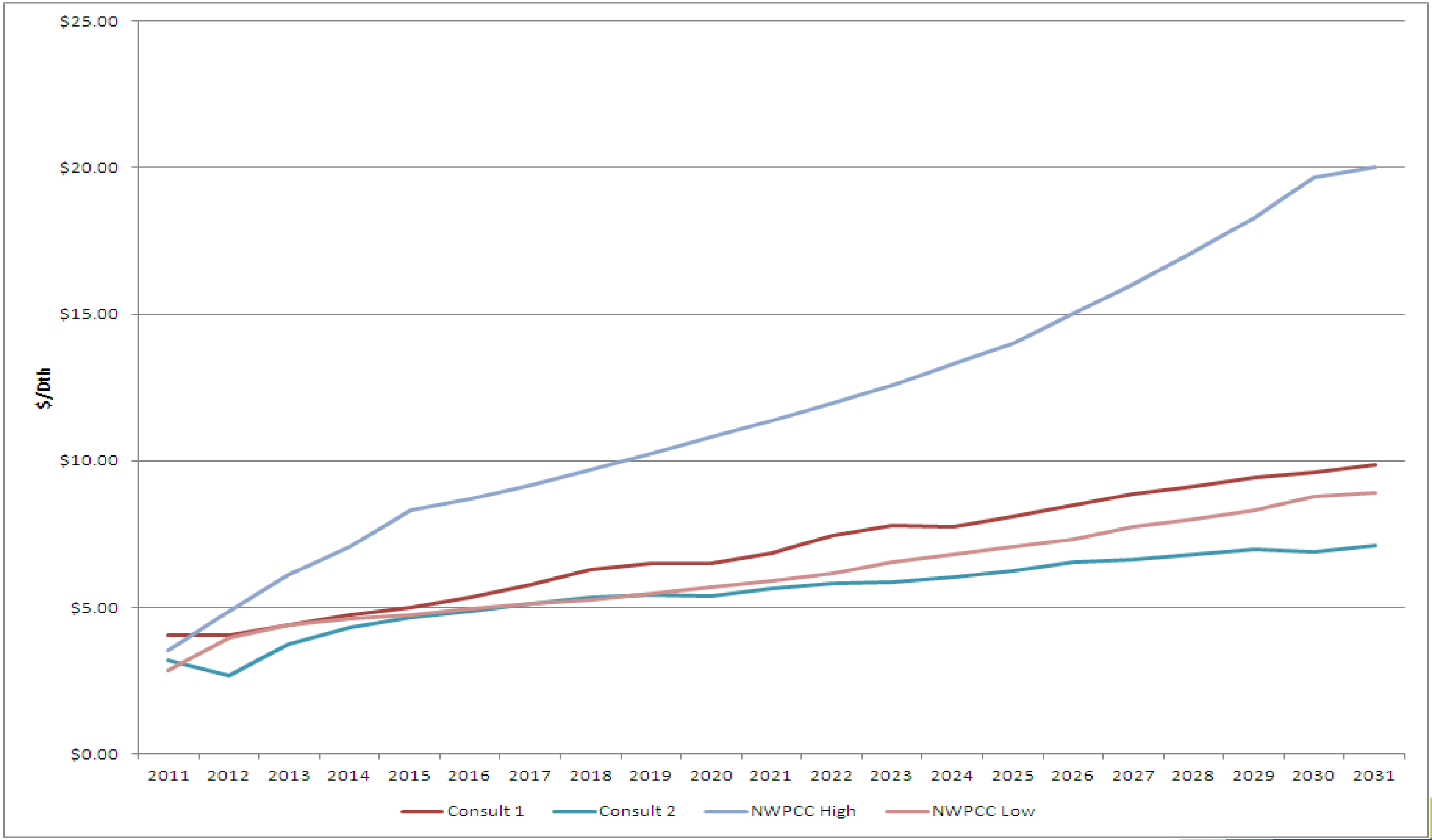
# Current Long Term Henry Hub Forecasts

## REAL

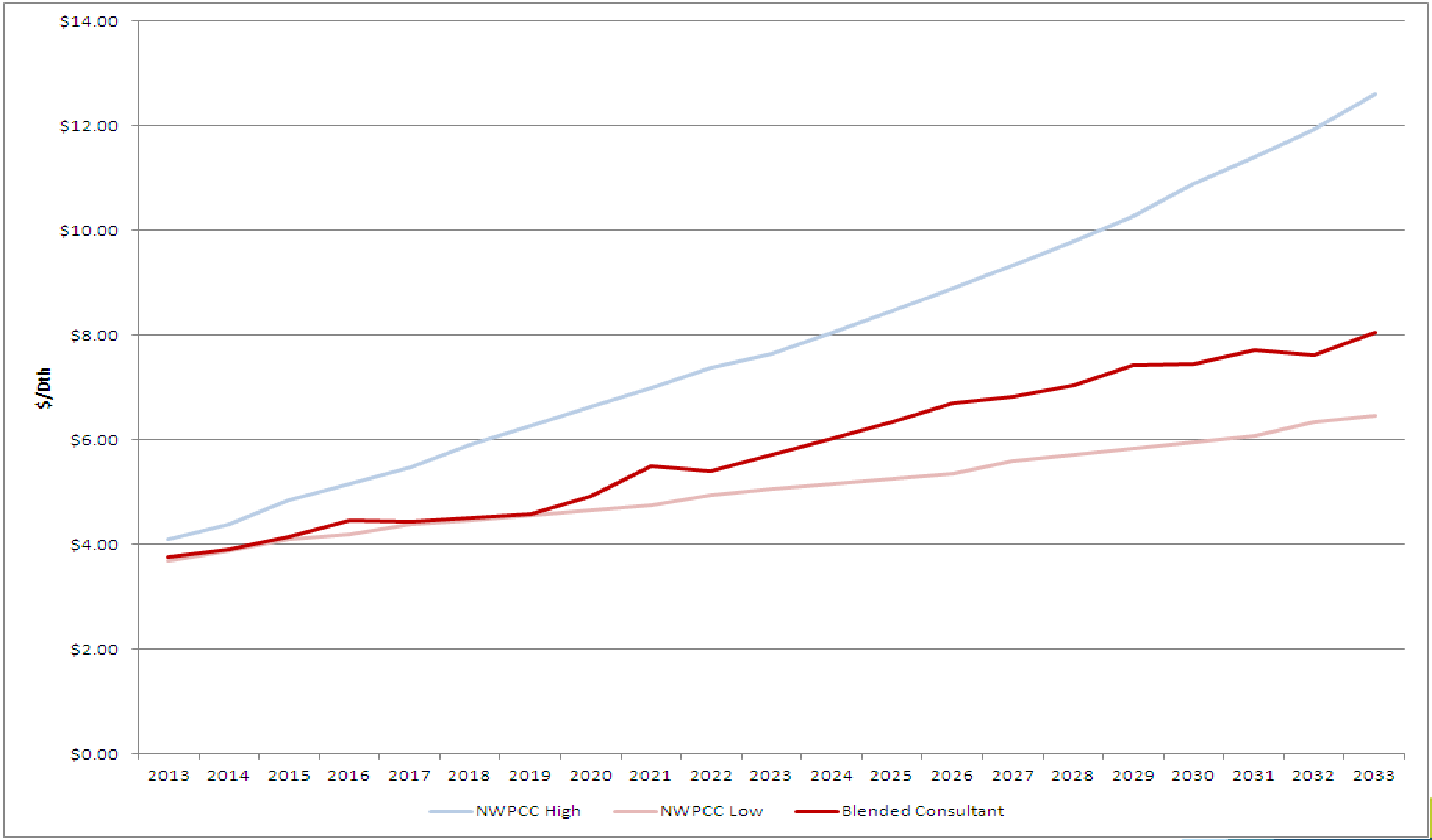


# Low – Med – High from 2012 IRP

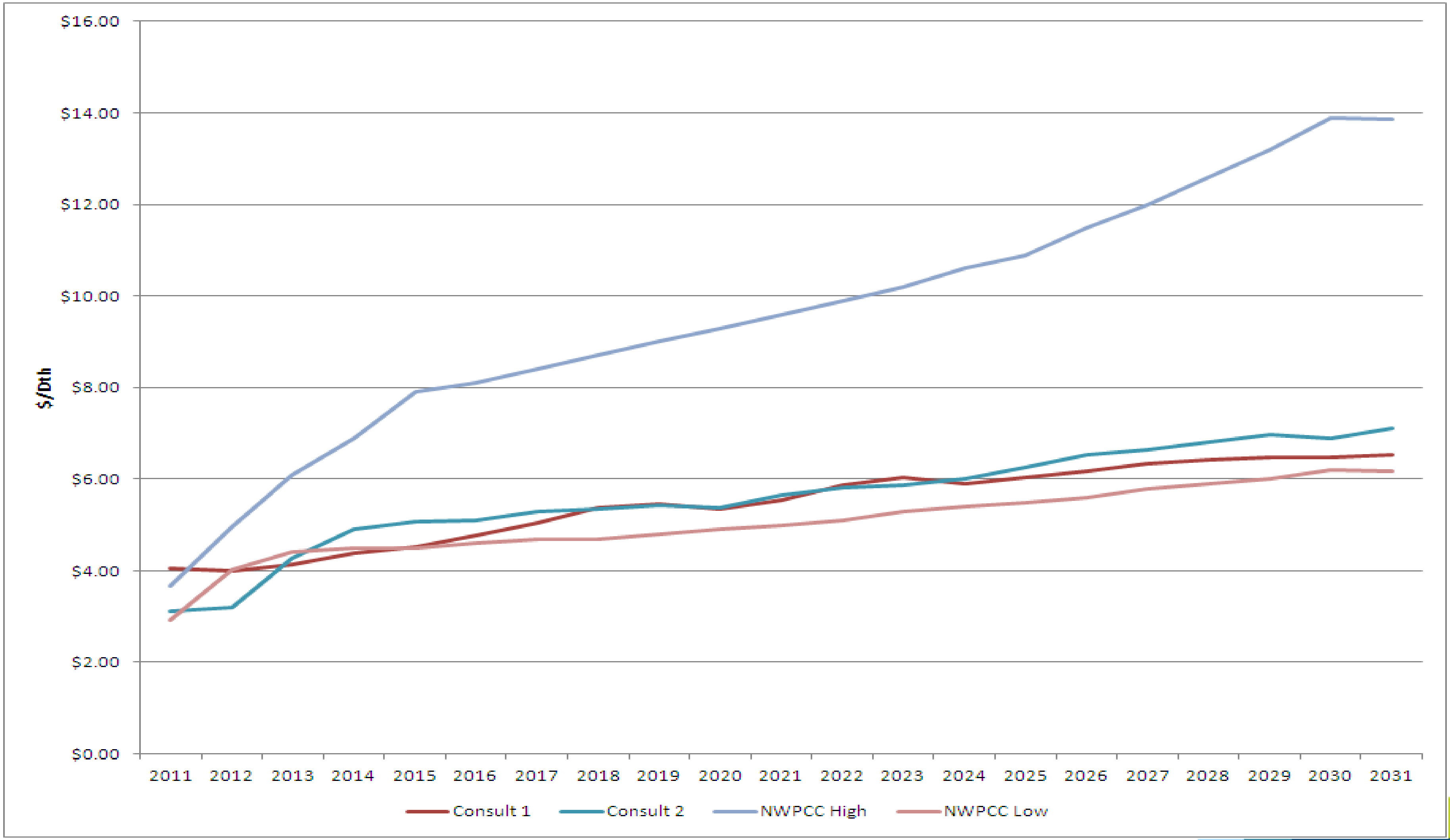
## NOMINAL



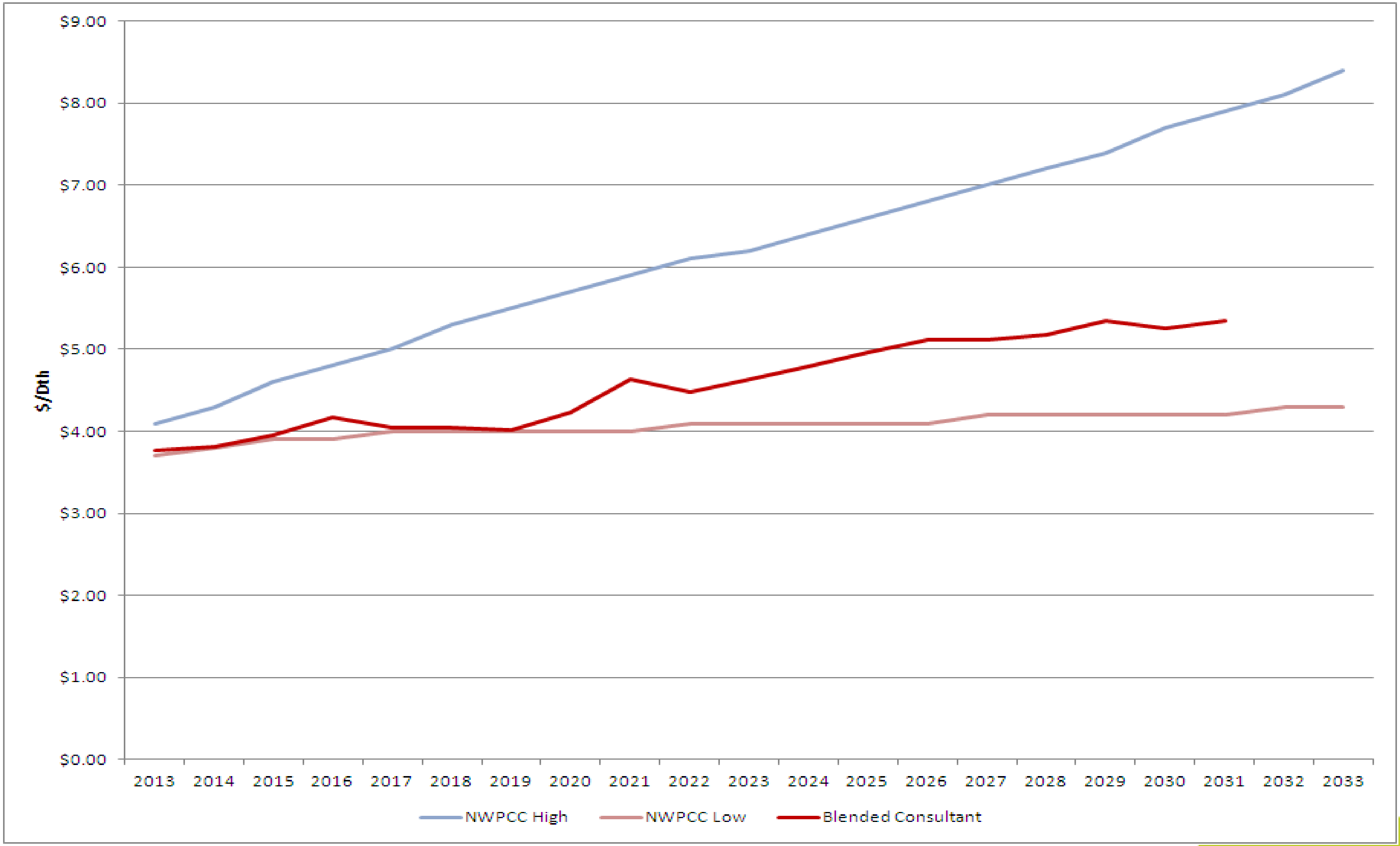
# Proposed Price Forecasts
## NOMINAL



# Low – Med - High from 2012 IRP
## REAL



# Proposed Price Forecasts
## REAL



# Regional Price Assumptions

| Regional Price as a percent of Henry Hub Price | | | | | |
|---|---|---|---|---|---|
| | AECO | Sumas | Rockies | Malin | Stanfield |
| Consultant1 Forecast Average | 84.0% | 92.0% | 90.6% | 95.4% | 93.2% |
| Consultant2 Forecast Average | 88.5% | 94.4% | 95.1% | 97.0% | 95.0% |
| Historic Cash Three Yr Average | 87.4% | 98.4% | 96.9% | 99.2% | 97.5% |
| Prior IRP | 87.0% | 88.3% | 89.4% | 91.1% | 90.2% |

# Monthly Price Shape

| Monthly Price as a percent of Average Price | | | | | | |
|---|---|---|---|---|---|---|
| | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** |
| Consult1 | 104.7% | 104.2% | 96.8% | 95.9% | 96.6% | 98.2% |
| Consult2 | 101% | 101.6% | 101.5% | 98.9% | 98.8% | 98.5% |
| Prior IRP | 102% | 101.5% | 98.5% | 98.0% | 98.5% | 100.5% |
| | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| Consult1 | 99.2% | 99.7% | 98.9% | 99.4% | 101% | 105.2% |
| Consult2 | 99.3% | 99.3% | 100.3% | 99.3% | 100.5% | 101.1% |
| Prior IRP | 101.5% | 102.0% | 98.5% | 98.5% | 99.0% | 103% |

# Procurement Planning

## Kelly Fukai, Manager of Natural Gas Planning

**Natural Gas Technical Advisory Committee**
**March 26, 2014**

# Procurement Plan Philosophy

## Mission

*To provide a diversified portfolio of reliable supply and a level of price certainty in volatile markets.*

We cannot accurately predict what natural gas prices will do, however we can use experience, market intelligence, and fundamental market analysis to structure and guide our procurement strategies.

Our goal is to develop a plan that utilizes customer resources (storage and transportation), layers in pricing over time for stability (time averaging), allows discretion to take advantage of pricing opportunities should they arise, and appropriately manages risk.

# Comprehensive Review of Previous Plan

Review conducted with SOG includes:

- Mission statement and approach
- Current and future market dynamics
- Hedge percentage
- Resources available (i.e. storage and transportation)
- Hedge windows (how many, how long)
- Long term hedging approach
- Storage utilization
- Analysis (volatility, past performance, scenarios, etc.)

# A Thorough Evaluation of Risks

# Procurement Plan Structure

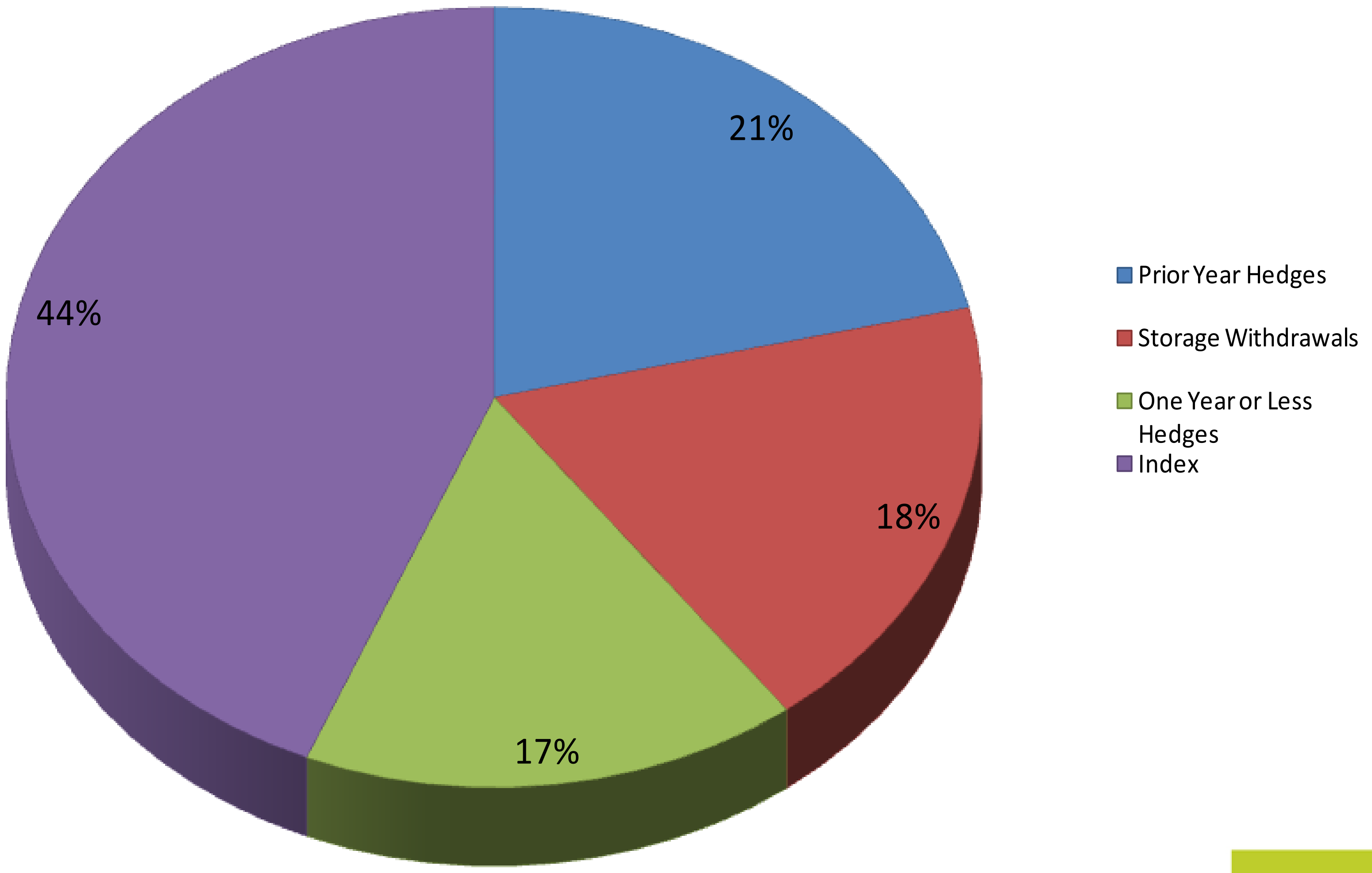
The procurement plan incorporates a portfolio approach that is diversified in terms of:

- **Components:** The plan utilizes a mix of index, fixed price, and storage transactions.
- **Transaction Dates:** Hedge windows are developed to distribute the transactions throughout the plan.
- **Supply Basins:** Plan to primarily utilize AECO, execute at lowest price basis at the time.
- **Delivery Periods:** Hedges are completed in annual and/or seasonal timeframes. Long-term hedges may be executed.

Transactions are executed pursuant to a plan and process; however, the procurement plan allows Avista to be flexible to market conditions and opportunistic when appropriate.

# 2014-2015 Procurement Plan Components

## All Jurisdictions



# Preliminary Modeling Results

## Kelly Fukai, Manager of Natural Gas Planning

**Natural Gas Technical Advisory Committee**
**March 26, 2014**

# Developing a Reference Case

Customer count forecast + Use per customer coefficients + Weather = Reference Case Demand

1. Customer annual growth rates:

| | Residential | Commercial | Industrial |
|---|---|---|---|
| Washington - Idaho | 1.0% | 1.0% | -0.53% |
| Klamath Falls | 0.66% | 0.66% | 0.0% |
| LaGrande | 0.40% | 0.40% | 0.0% |
| Medford | 1.1% | 1.1% | 0.0% |
| Roseburg | 0.8% | 0.02% | 0.0% |

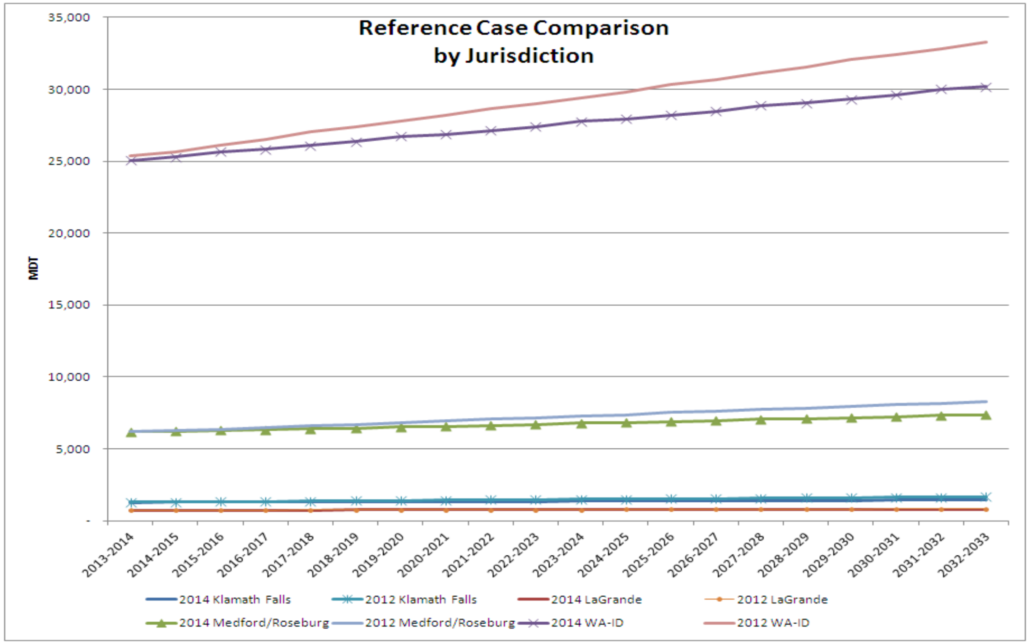
2. Use per customer coefficients –3 year average use per HDD per customer

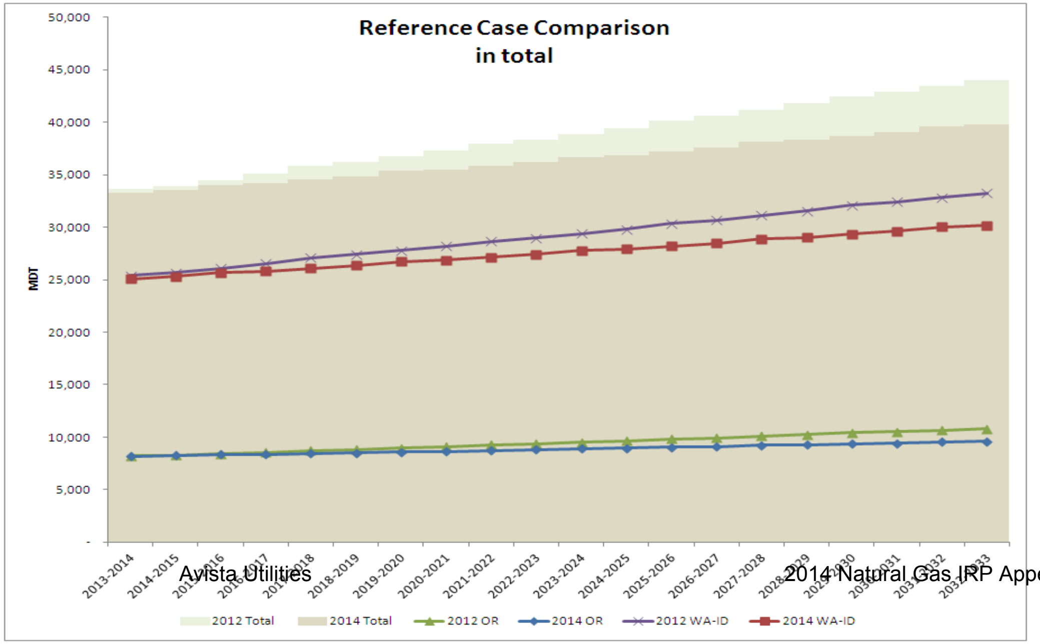
3. Weather planning standard – coldest day on record

   - WA/ID 82; Medford 61; Roseburg 55; Klamath 72; La Grande 74

# Reference Demand Case

| Year | 2012 | 2014 | Delta |
|---|---|---|---|
| 1 | 33,603 | 33,249 | -1% |
| 2 | 33,929 | 33,538 | -1% |
| 3 | 34,475 | 33,996 | -1% |
| 4 | 35,074 | 34,174 | -3% |
| 5 | 35,796 | 34,520 | -4% |
| 6 | 36,235 | 34,850 | -4% |
| 7 | 36,765 | 35,335 | -4% |
| 8 | 37,311 | 35,513 | -5% |
| 9 | 37,948 | 35,849 | -6% |
| 10 | 38,342 | 36,189 | -6% |
| 11 | 38,902 | 36,693 | -6% |
| 12 | 39,460 | 36,878 | -7% |
| 13 | 40,198 | 37,228 | -8% |
| 14 | 40,617 | 37,582 | -8% |
| 15 | 41,195 | 38,106 | -8% |
| 16 | 41,775 | 38,300 | -9% |
| 17 | 42,495 | 38,664 | -10% |
| 18 | 42,897 | 39,032 | -10% |
| 19 | 43,456 | 39,577 | -10% |
| 20 | 44,015 | 39,779 | -11% |

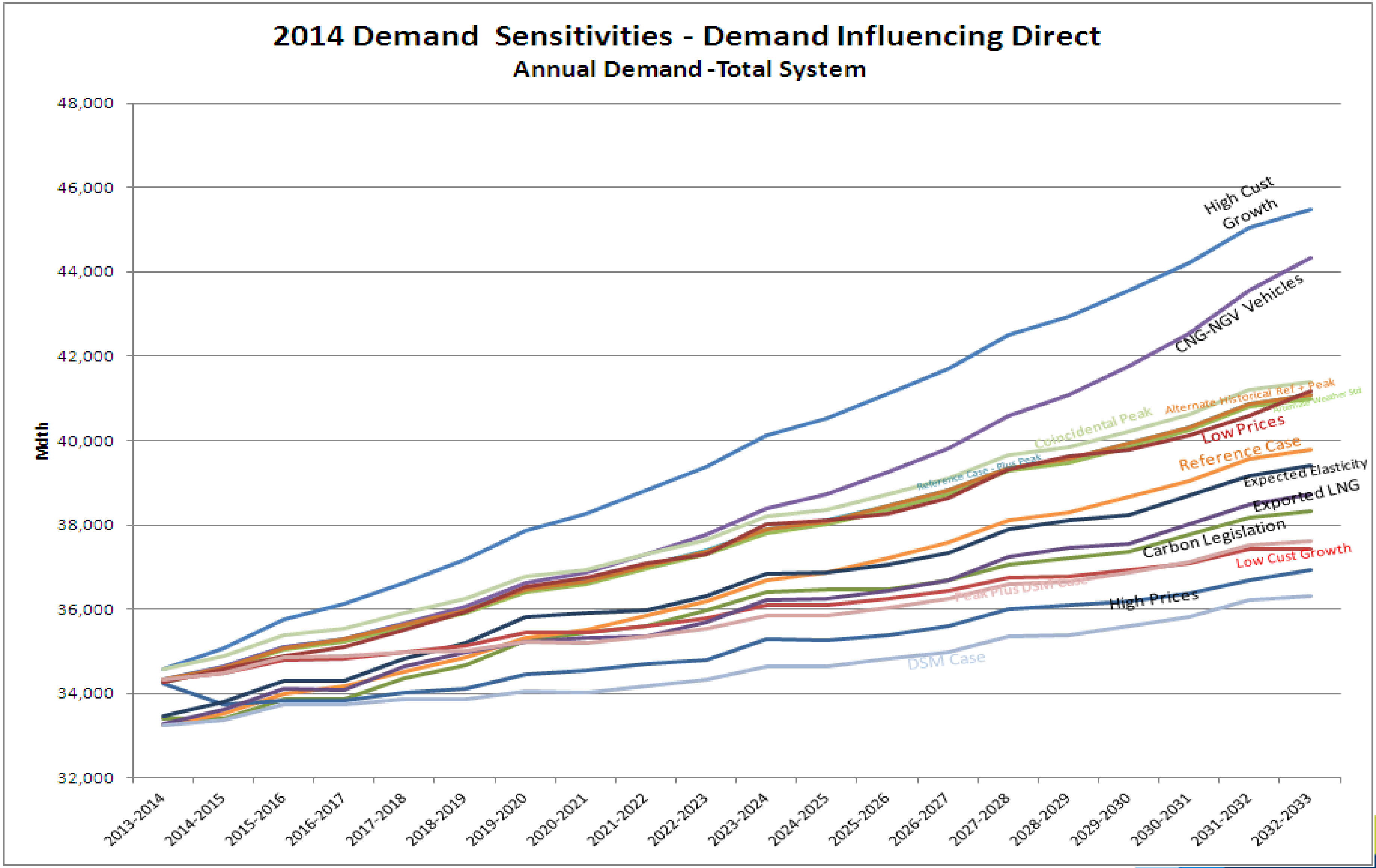



# Demand Sensitivities

| Model Sensitivities | | | | DEMAND INFLUENCING - DIRECT | | | | | | | PRICE INFLUENCING - INDIRECT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Reference Case | Reference Plus Peak Case | Low Cust Growth | High Cust Growth | CNG/NGV Vehicles | Alternate Weather Std | DSM Case | Peak plus DSM Case | Alterante Historical UPC Case | Expect Elasticity | Low Prices | High Prices | Carbon Legislation | Exported LNG |
| INPUT ASSUMPTIONS | | | | | | | | | | | | | | | |
| **Customer Growth Rate** | | | | | | | | | | | | | | | |
| Residential | WA/ID | | | 40% Decrease in Cust Growth Rates | 60% Increase in Cust Growth Rates | | | | | | | | | | |
| Residential | Medford | | | | | | | | | | | | | | |
| Residential | Roseburg | | | | | | | | | | | | | | |
| Residential | Klamath | | | | | | | | | | | | | | |
| Residential | La Grande | | | | | | | | | | | | | | |
| Commercial | WA/ID | | | | | | | | | | | | | | |
| Commercial | Medford | | | | | | | | | | | | | | |
| Commercial | Roseburg | | | | | | | | | | | | | | |
| Commercial | Klamath | | | | | | | | | | | | | | |
| Commercial | La Grande | | | | | | | | | | | | | | |
| **Use per Customer** | | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 15% Growth Cumulative | 3 Year Historical | 3 Year Historical | 3 Year Historical | 5 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical | 3 Year Historical |
| **Weather** | | | | | | | | | | | | | | | |
| Planning Standard | | 20 Year Normal | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest 20yrs | Normal | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record | Coldest on Record |
| **Demand Side Management** | | | | | | | | | | | | | | | |
| Programs Included | | No | No | No | No | No | No | Expected | Expected | No | No | No | No | No | No |
| **Prices** | | | | | | | | | | | | | | | |
| Price curve | | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Expected | Low | High | Expected | Expected |
| Price curve adder ($/Dth) | | None | None | None | None | None | None | None | None | None | | | | | $.50 Adder After 5yrs |
| Elasticity | | None | None | None | None | None | None | None | None | None | Expected | Expected | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | | None | None | None | None | None | None | None | None | None | | | | $5 starting in 2022 | |

# Demand Sensitivities- Preliminary Results

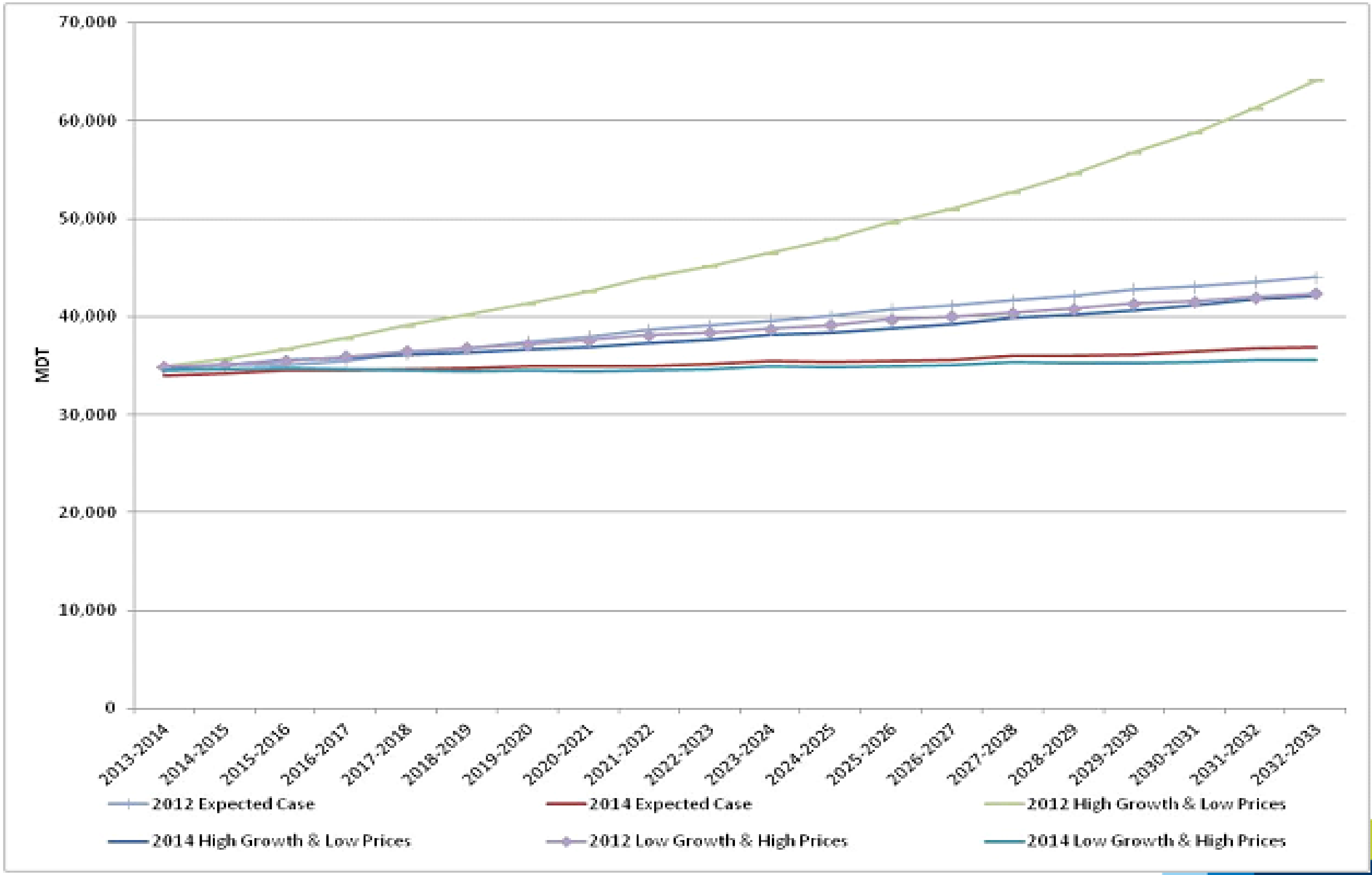


# Mix and Match to Make Scenarios

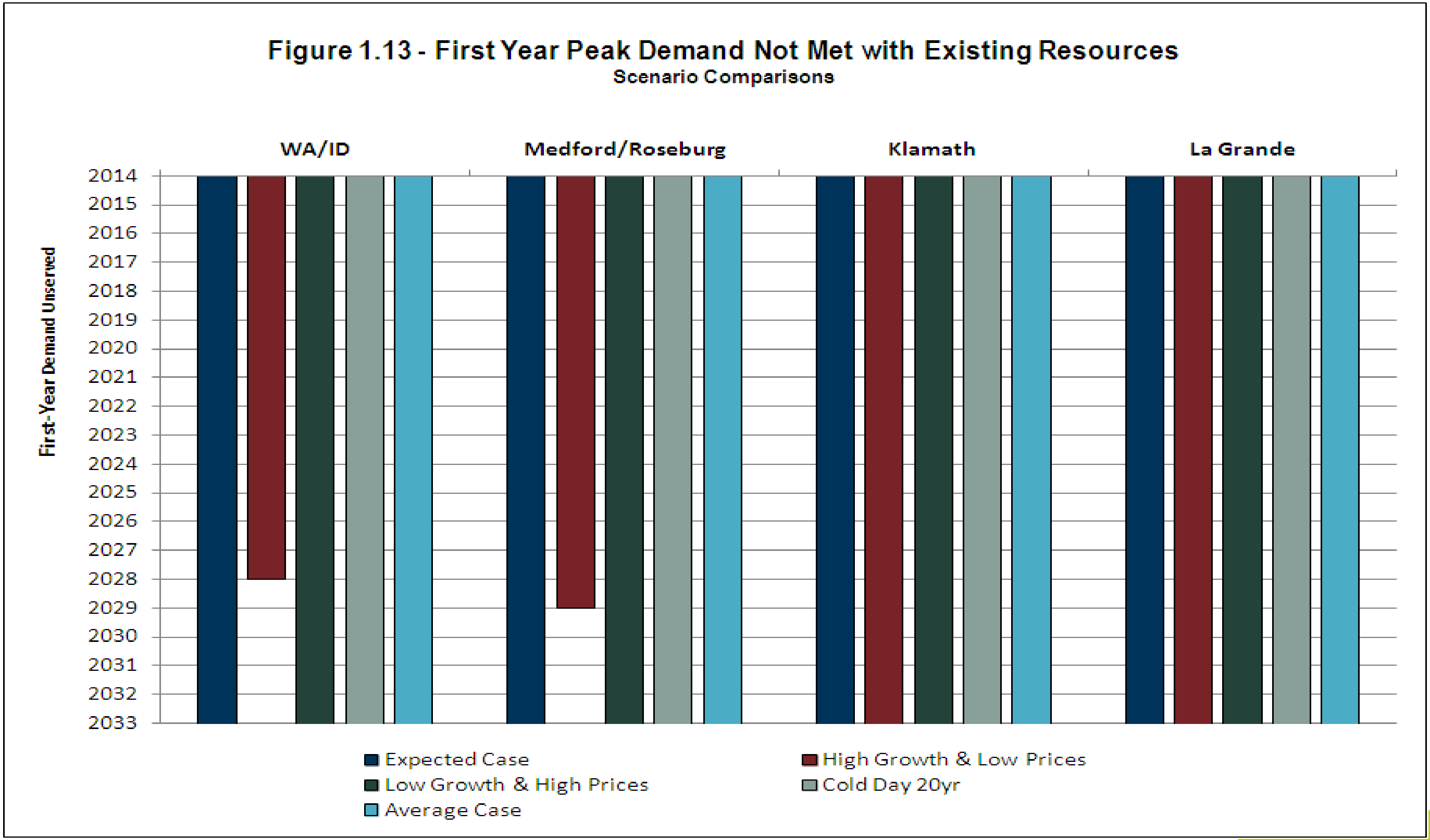
# Demand Scenarios – Proposed

| **Proposed Scenarios** | | Expected Case | High Growth & Low Prices | Low Growth & High Prices | Cold Day 20yr Weather Std | Average Case |
|---|---|---|---|---|---|---|
| INPUT ASSUMPTIONS | | | | | | |
| **Customer Growth Rate** | | Reference Case Cust Growth Rates | 60% Increase in Cust Growth Rates | 40% Decrease in Cust Growth Rates | Reference Case Cust Growth Rates | Reference Case Cust Growth Rates |
| **Use per Customer** | | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. + CNG/NGV | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. | 3 yr Flat + Price Elast. |
| **Demand Side Management** | | Yes | Yes | Yes | Yes | Yes |
| **Weather Planning Standard** | | Coldest Day | Coldest Day | Coldest Day | Alternate Planning Standard | Normal |
| **Prices** | | | | | | |
| Price curve | | Expected | Low | High | Expected | Expected |
| Elasticity | | Expected | None | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | | $5 | None | $5 | $5 | $5 |
| RESULTS | | | | | | |
| **First Gas Year Unserved** | | | | | | |
| | WA/ID | N/A | 2027 | N/A | N/A | N/A |
| | Medford | N/A | 2029 | N/A | N/A | N/A |
| | Roseburg | N/A | N/A | N/A | N/A | N/A |
| | Klamath | N/A | N/A | N/A | N/A | N/A |
| | La Grande | N/A | N/A | N/A | N/A | N/A |

# Demand Scenarios – Preliminary Results



# First Year Unserved – Preliminary Results



# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
  - Demand Forecast and Demand Side Management – January 24
  - Supply and Infrastructure, Gate Station Analysis, Supply Side Resources, Resource Optimization – *February 25*
  - Distribution Planning, Natural Gas Pricing, CNG/NGV, SENDOUT® Preliminary Results and Further Case Discussion – *March 26*
  - **DSM CPA results, further SENDOUT® results and Stochastic analysis –** ***April 23***
- **May 30, 2014 –** Draft of IRP document to TAC
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
- **August 31, 2014 –** File finalized IRP document

# 2014 Avista Natural Gas IRP

Technical Advisory Committee Meeting 4

April 23, 2014

Spokane, WA

# Agenda

- Introductions & Logistics
- Demand Side Management Potential
- Assumptions Review
- Demand Sensitivities and Scenarios Updates
- Supply Side Resource Options
- Stochastic Analysis
- Key Issues & Document Discussion

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# Demand Side Management CPA Results

# Assumptions Review

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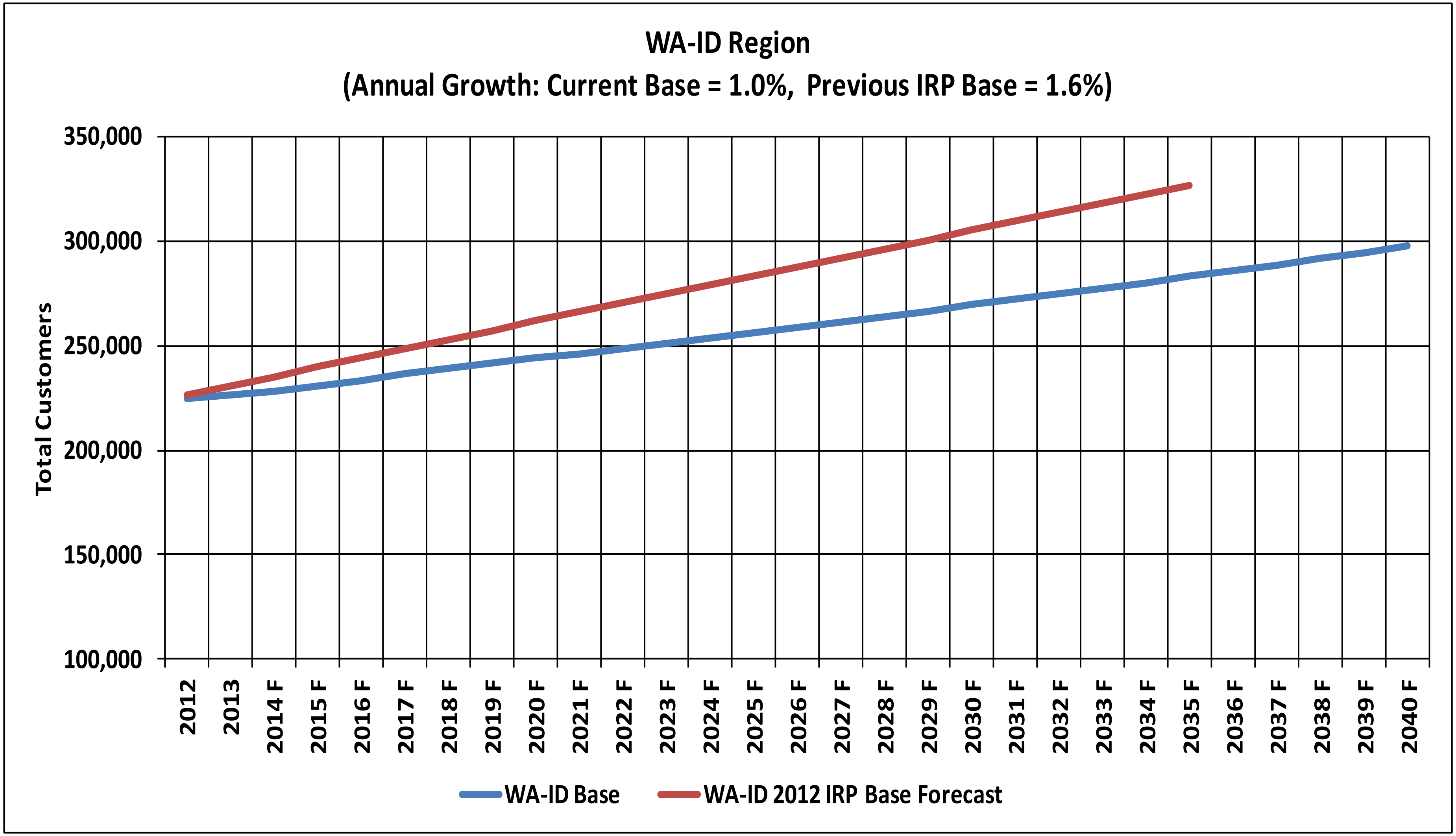
2. Use per customer coefficients – 3 year historical use per customer by class

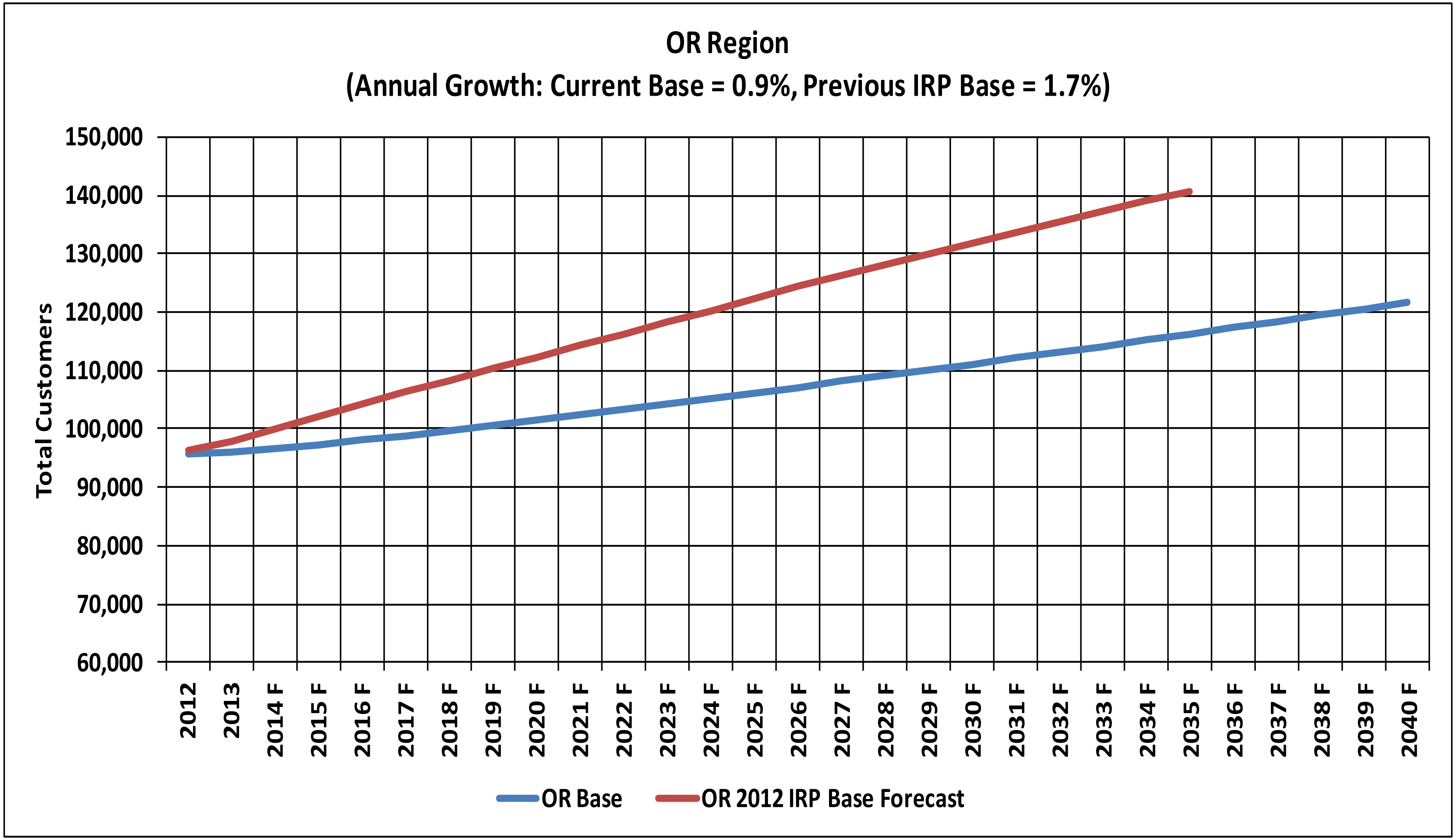
3. Weather planning standard – coldest day on record

   - WA/ID 82; Medford 61; Roseburg 55; Klamath 72; La Grande 74

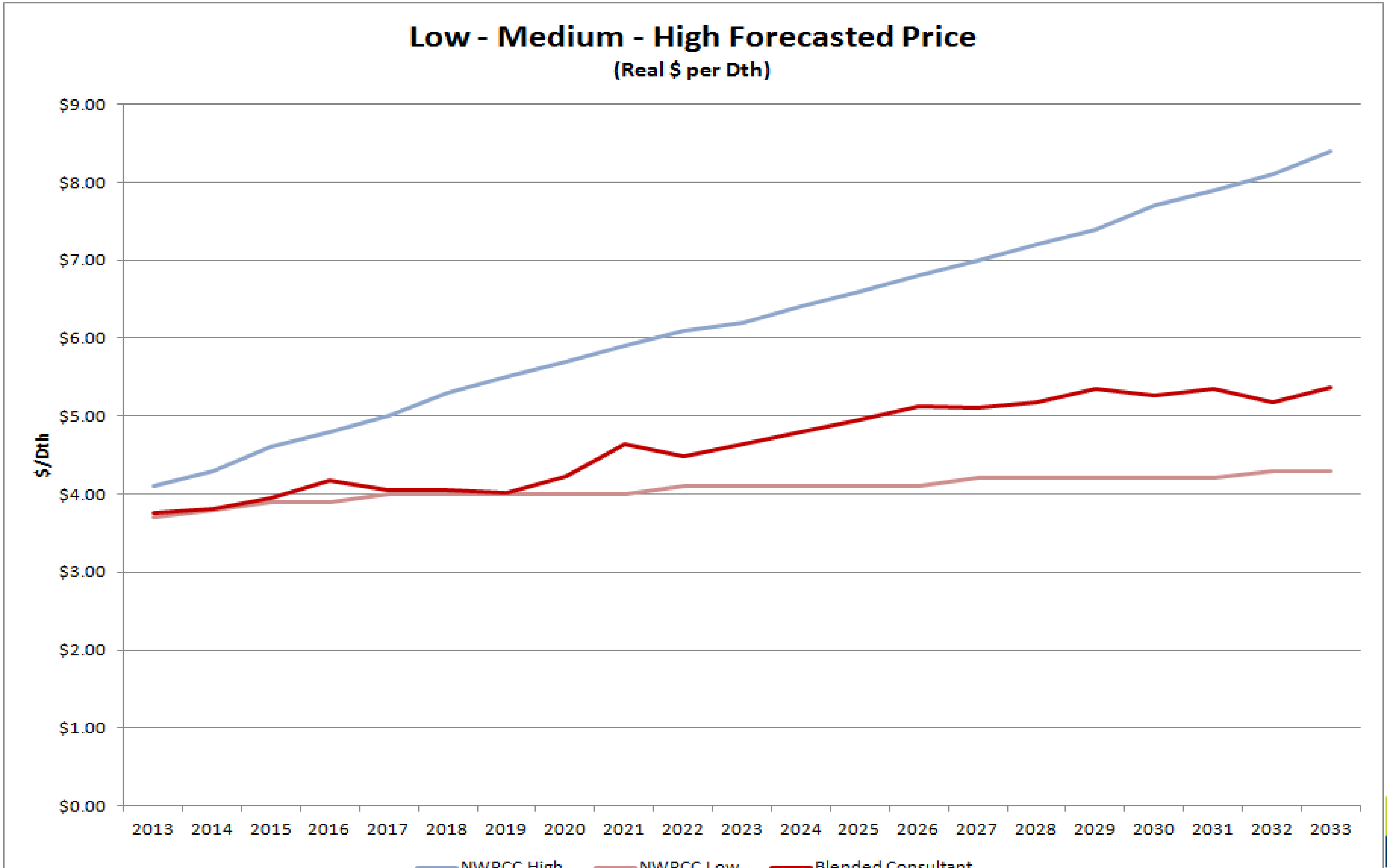
# WA-ID Region: 2014 IRP and 2012 IRP



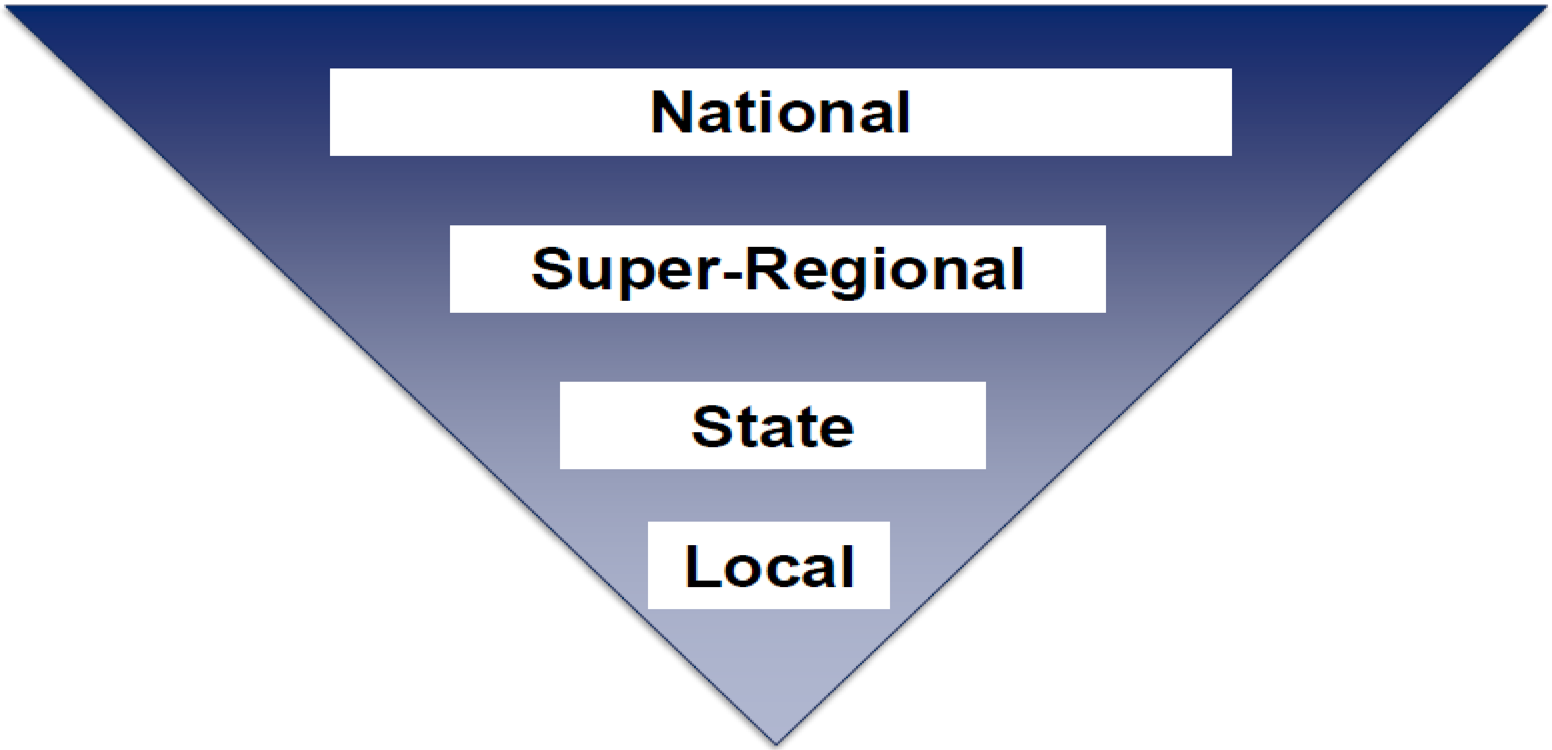
# OR Region: 2014 IRP and 2012 IRP



# Natural Gas Prices



# Price Elasticity: What does the research show?




**Statistical significance of own-price becomes more uncertain as geographic area of measurement shrinks.***

*Bernstein, M.A. and J. Griffin (2005). *Regional Differences in Price-Elasticity of Demand for Energy*, Rand Corporation

# Price Elasticity Proposed Assumptions

- The data is a mixed bag at best:
  - 8 of 9 super regions have statistically significant short and long run elasticities.
  - At a state level only 10 of 50 show statistical significant elasticities.
  - In some cases, the estimated elasticities are positive.

We incorporated a -.15 price elastic response for our expected elasticity assumption.

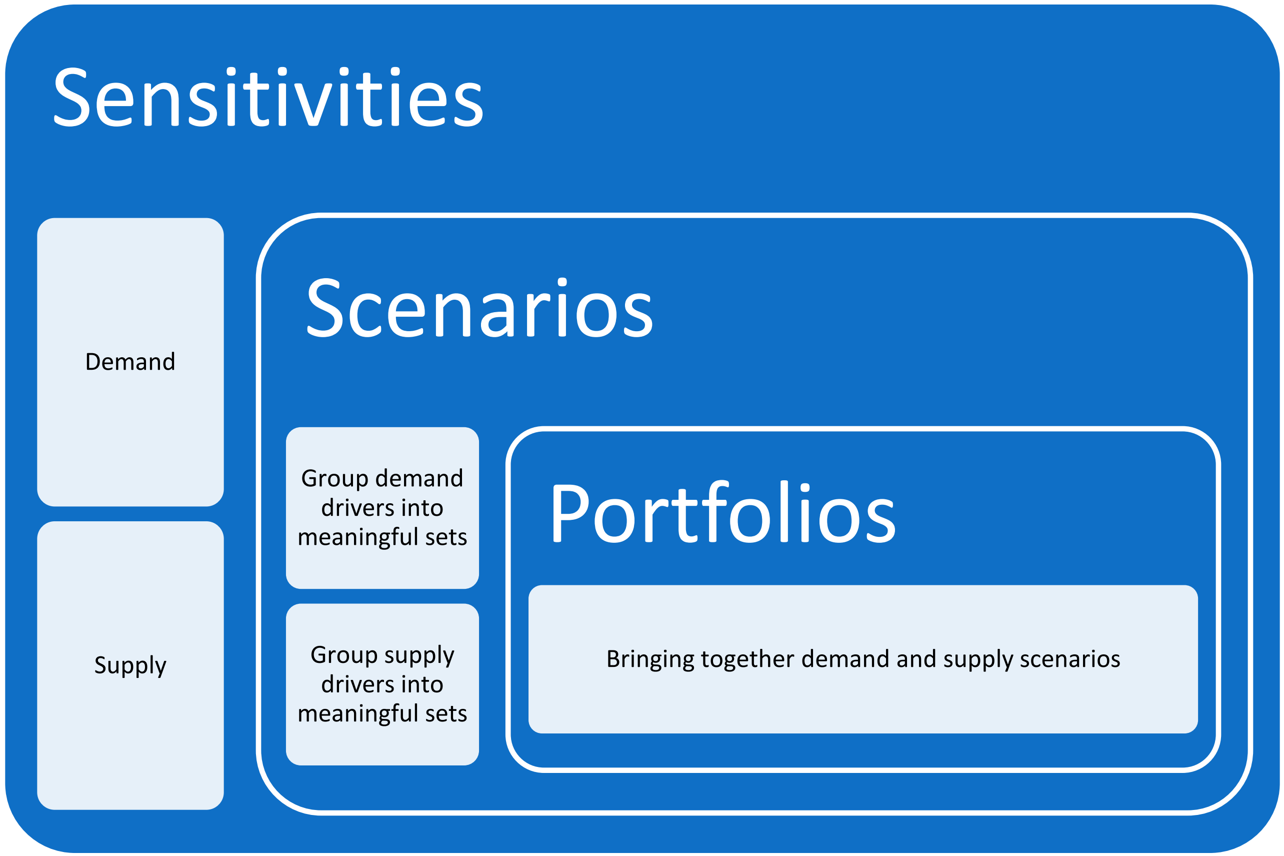
# Carbon Legislation Sensitivities

| Carbon Legislation Case | 2013 | 2033 |
|---|---|---|
| Low | $ 5.00 | $ 5.00 |
| Medium | $ 8.32 | $ 14.83 |
| High | $ 16.00 | $ 28.00 |

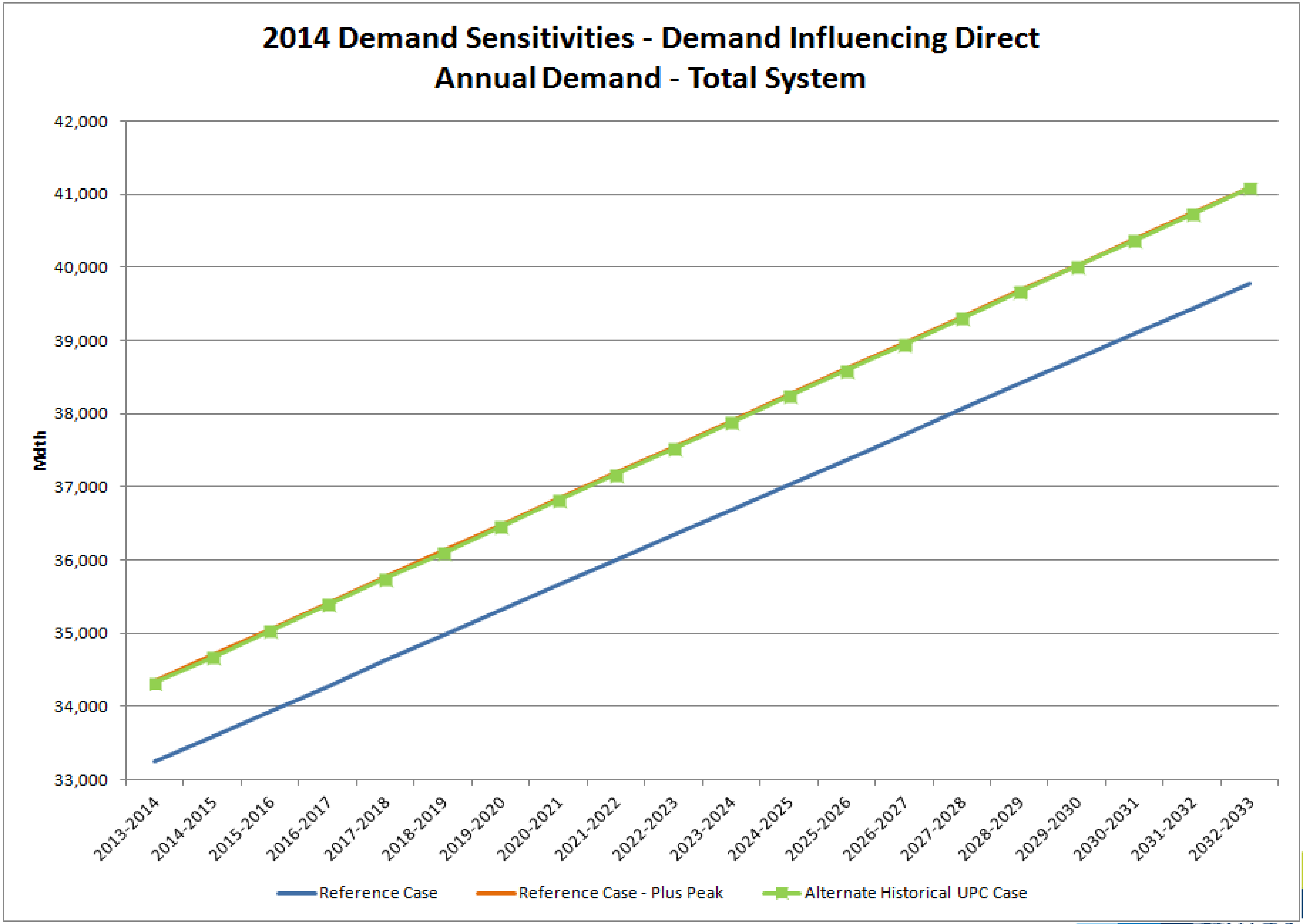
*Real Dollars per Ton of CO2

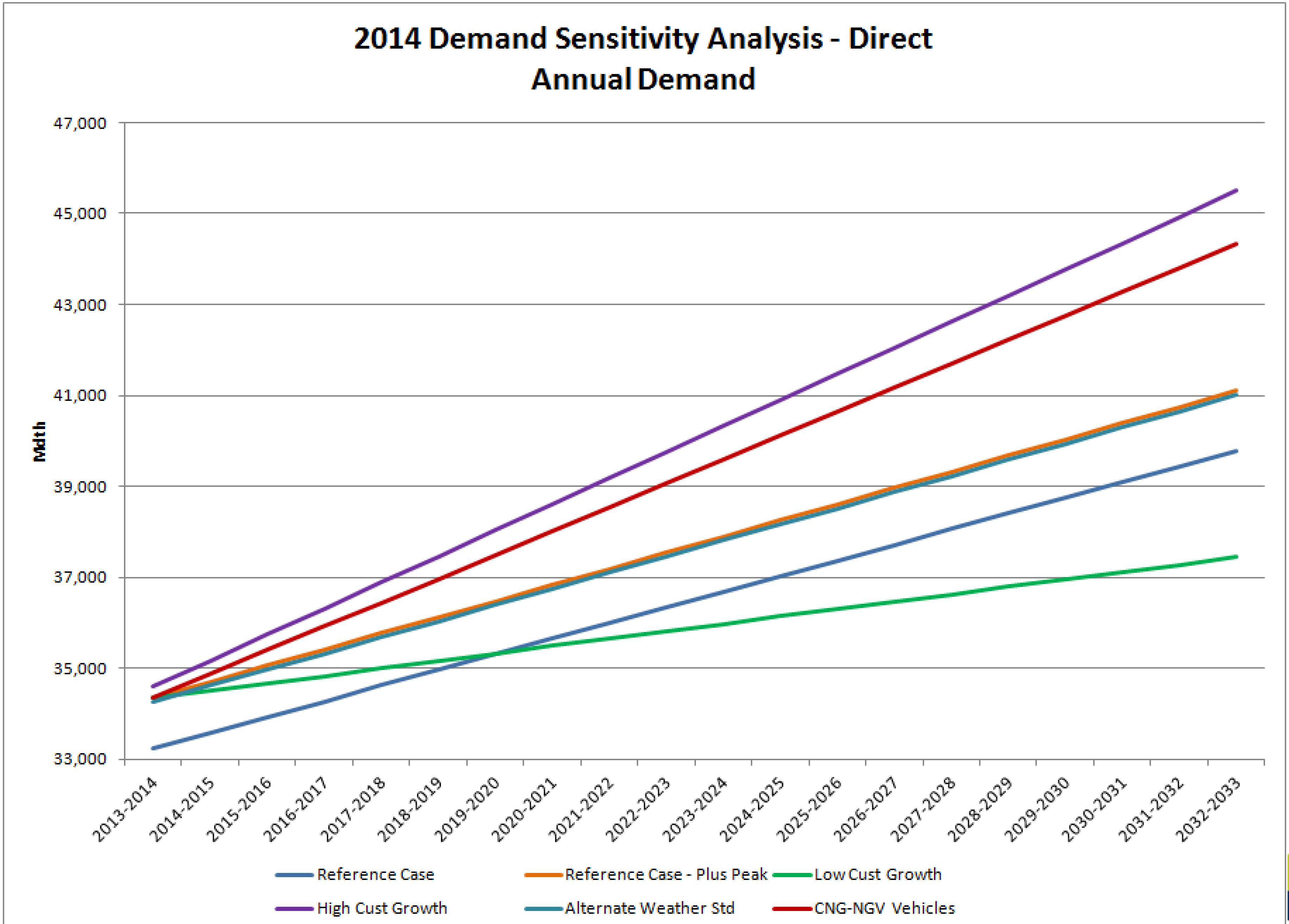
# Demand Sensitivities & Scenarios Update

# Sensitivities, Scenarios, Portfolios

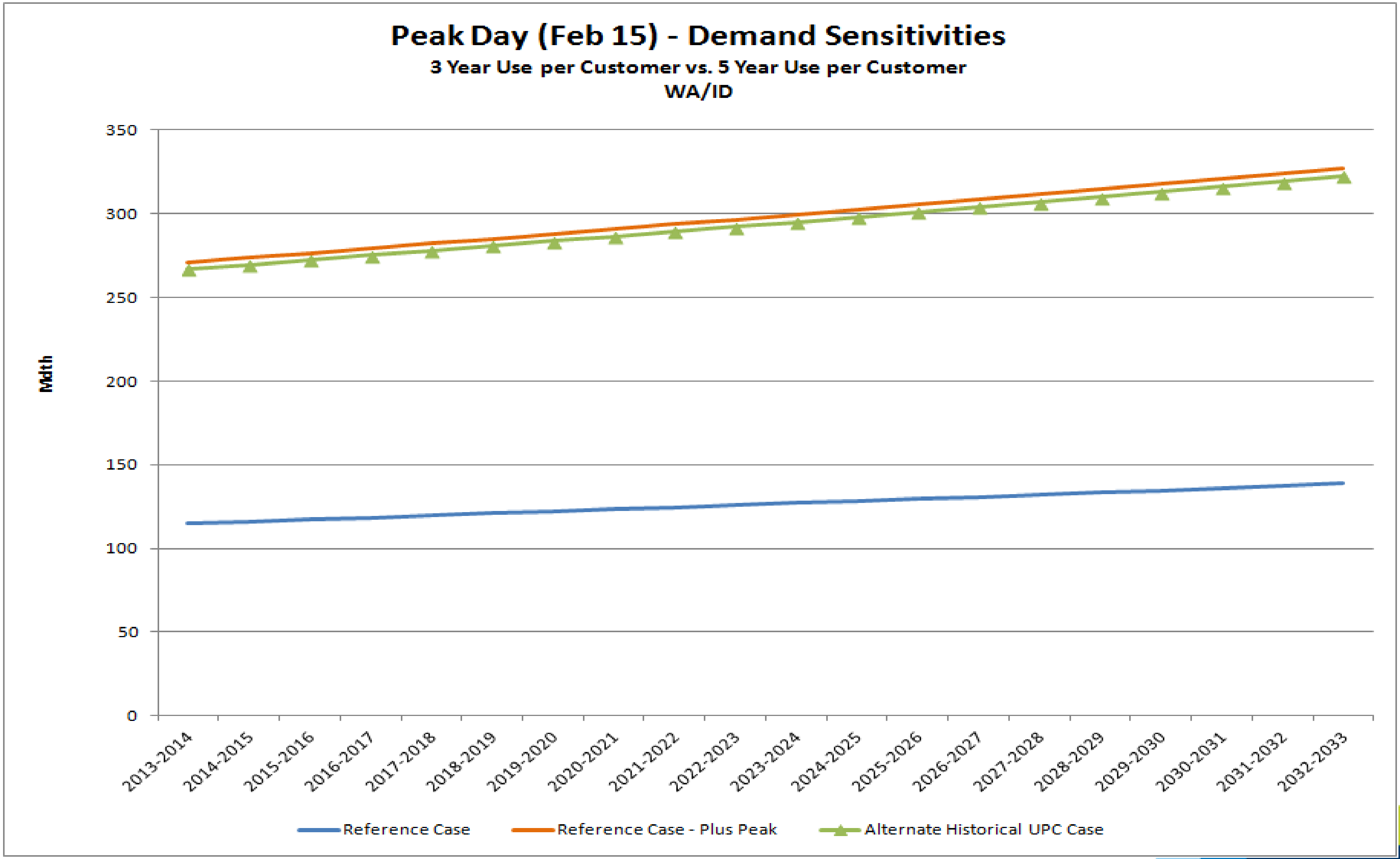


# Sensitivity Analysis

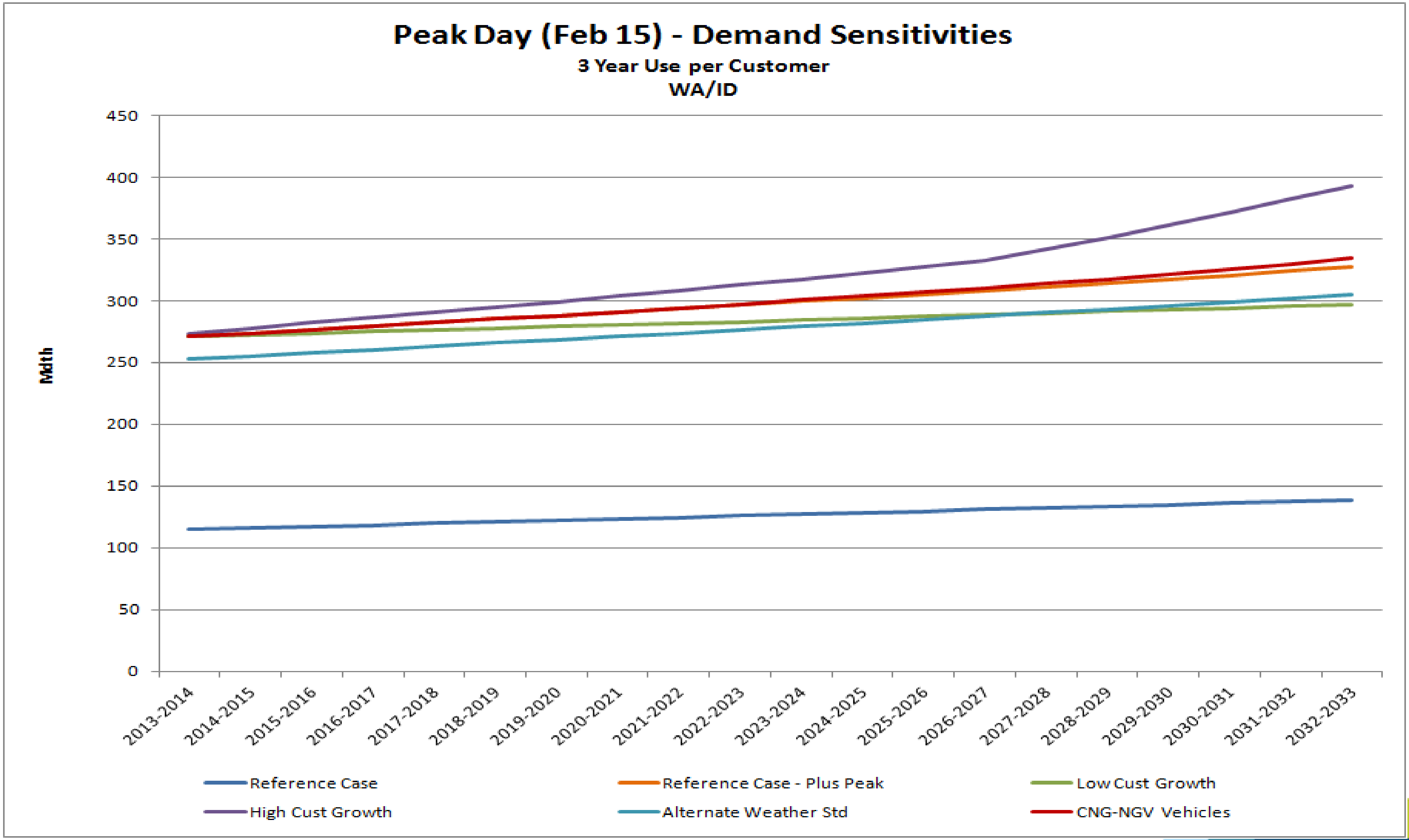

2014 Demand Sensitivities - Demand Influencing Direct
Annual Demand - Total System
Mdth
42,000
41,000
40,000
39,000
38,000
37,000
36,000
35,000
34,000
33,000
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
2020-2021
2021-2022
2022-2023
2023-2024
2024-2025
2025-2026
2026-2027
2027-2028
2028-2029
2029-2030
2030-2031
2031-2032
2032-2033
Reference Case
Reference Case - Plus Peak
Alternate Historical UPC Case


2014 Demand Sensitivity Analysis - Direct
Annual Demand
Mdth
47,000
45,000
43,000
41,000
39,000
37,000
35,000
33,000
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
2020-2021
2021-2022
2022-2023
2023-2024
2024-2025
2025-2026
2026-2027
2027-2028
2028-2029
2029-2030
2030-2031
2031-2032
2032-2033
Reference Case
Reference Case - Plus Peak
Low Cust Growth
High Cust Growth
Alternate Weather Std
CNG-NGV Vehicles

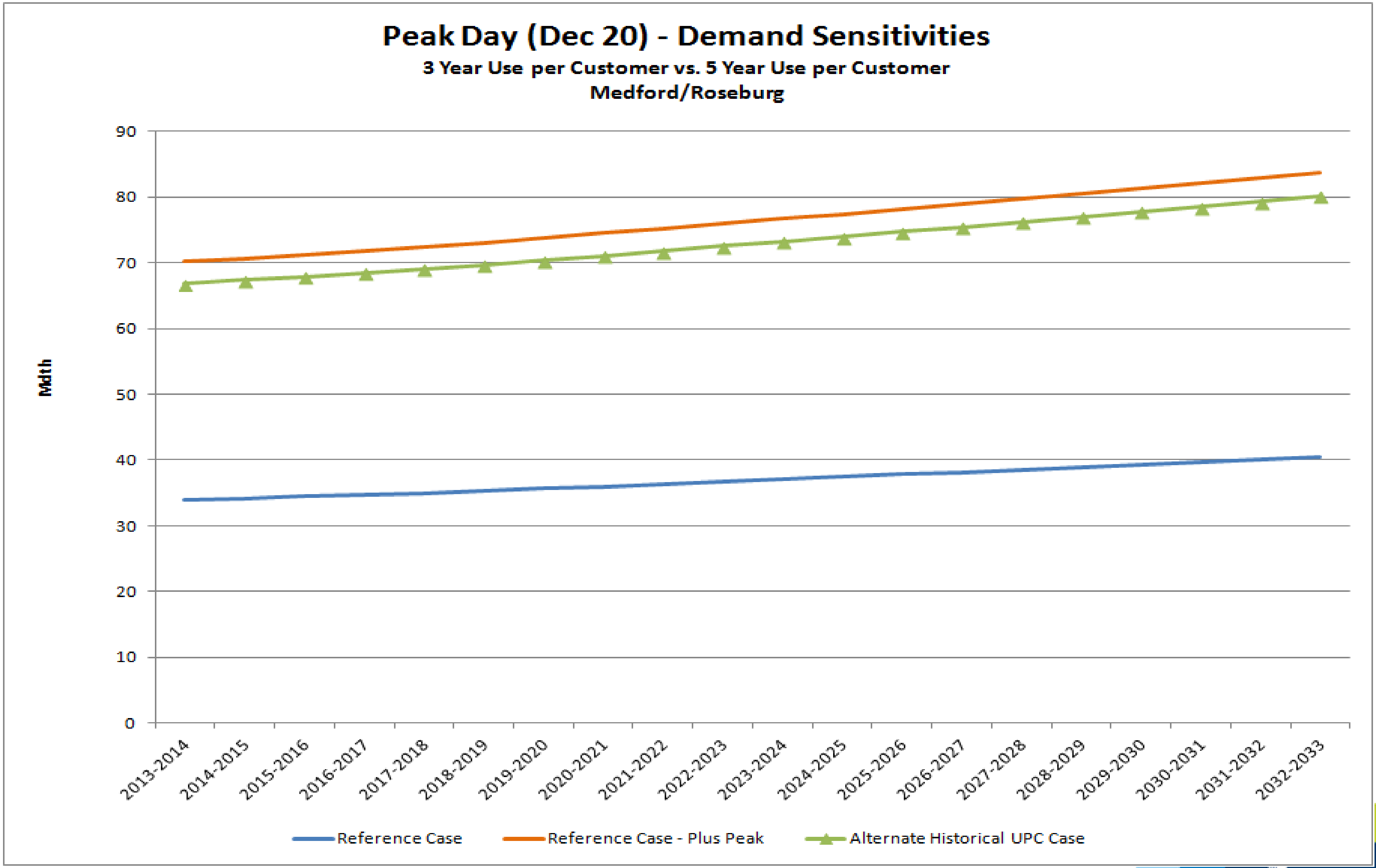
# Demand Sensitivity Analysis – DIRECT
# Peak Day Demand



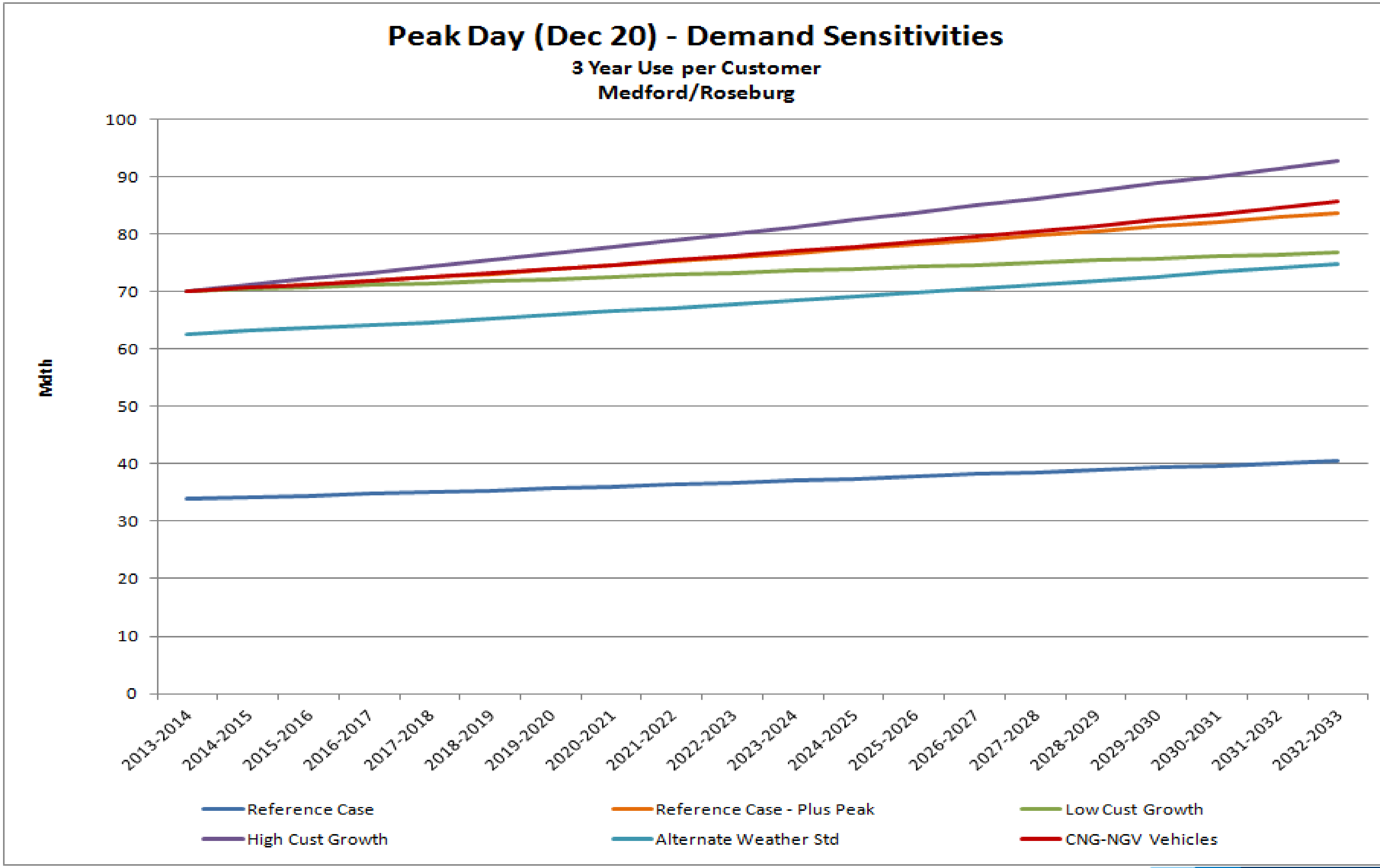
# Demand Sensitivity Analysis – DIRECT
# Peak Day Demand



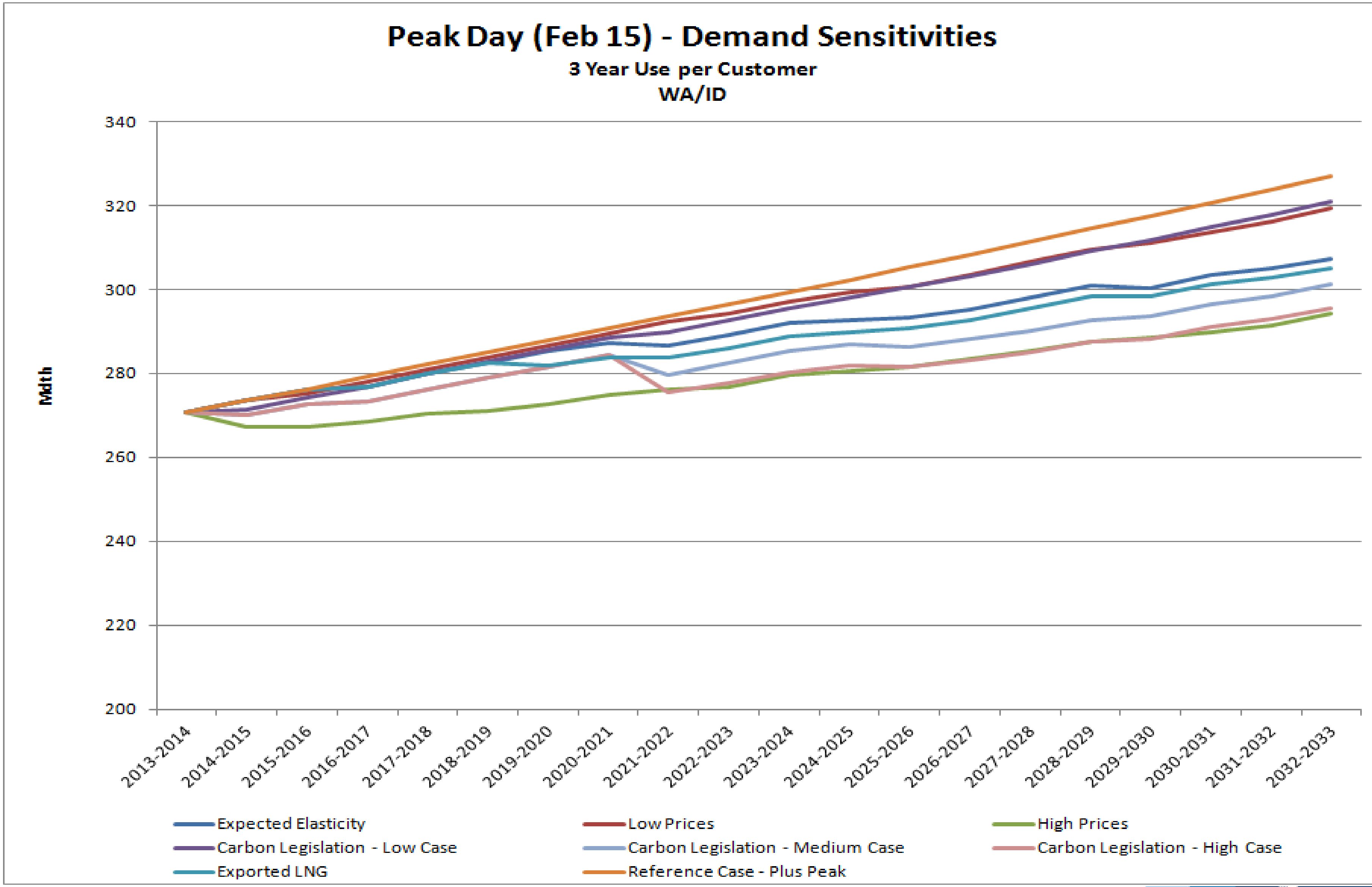
# Demand Sensitivity Analysis – DIRECT
# Peak Day Demand



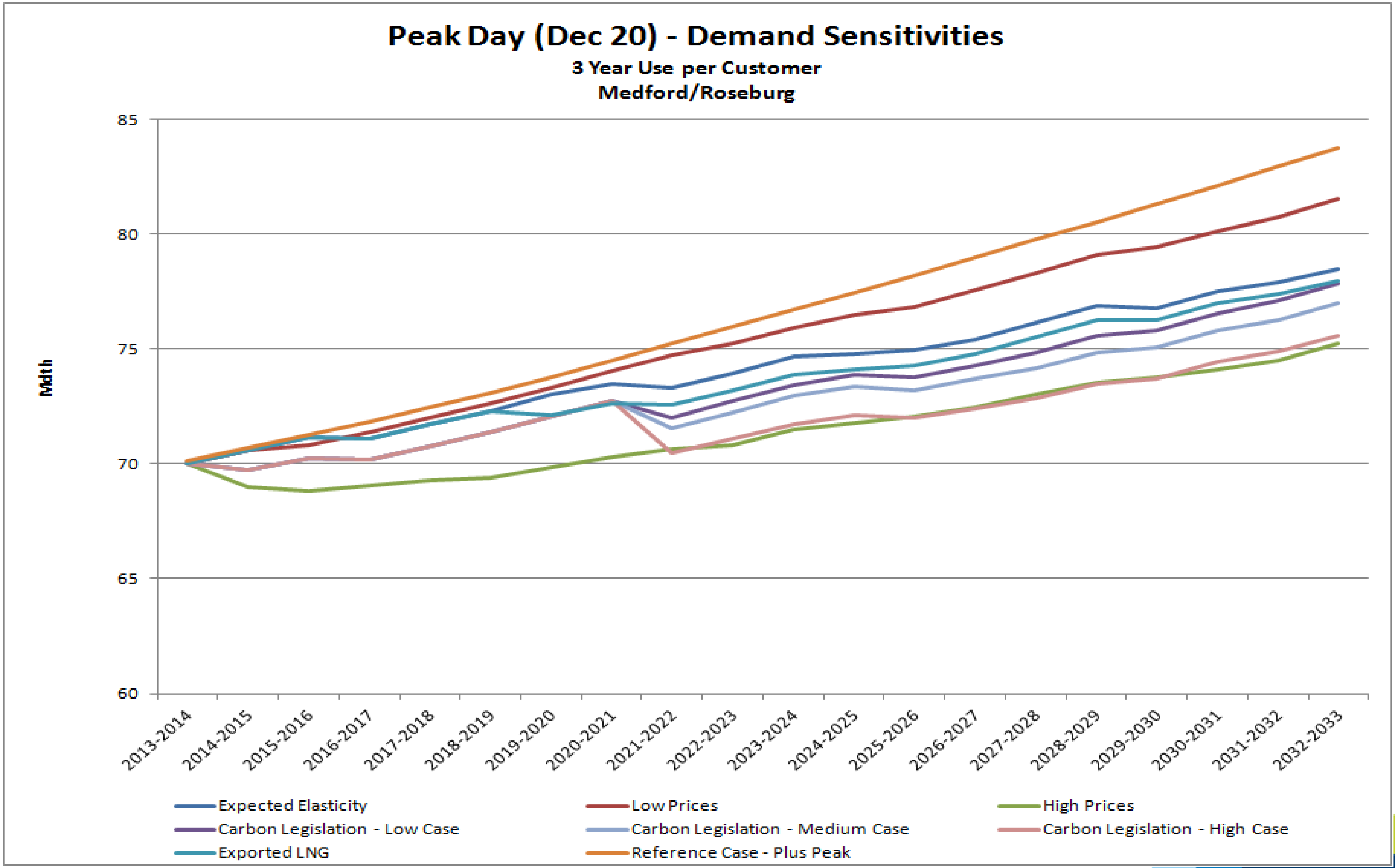
# Demand Sensitivity Analysis – DIRECT
# Peak Day Demand

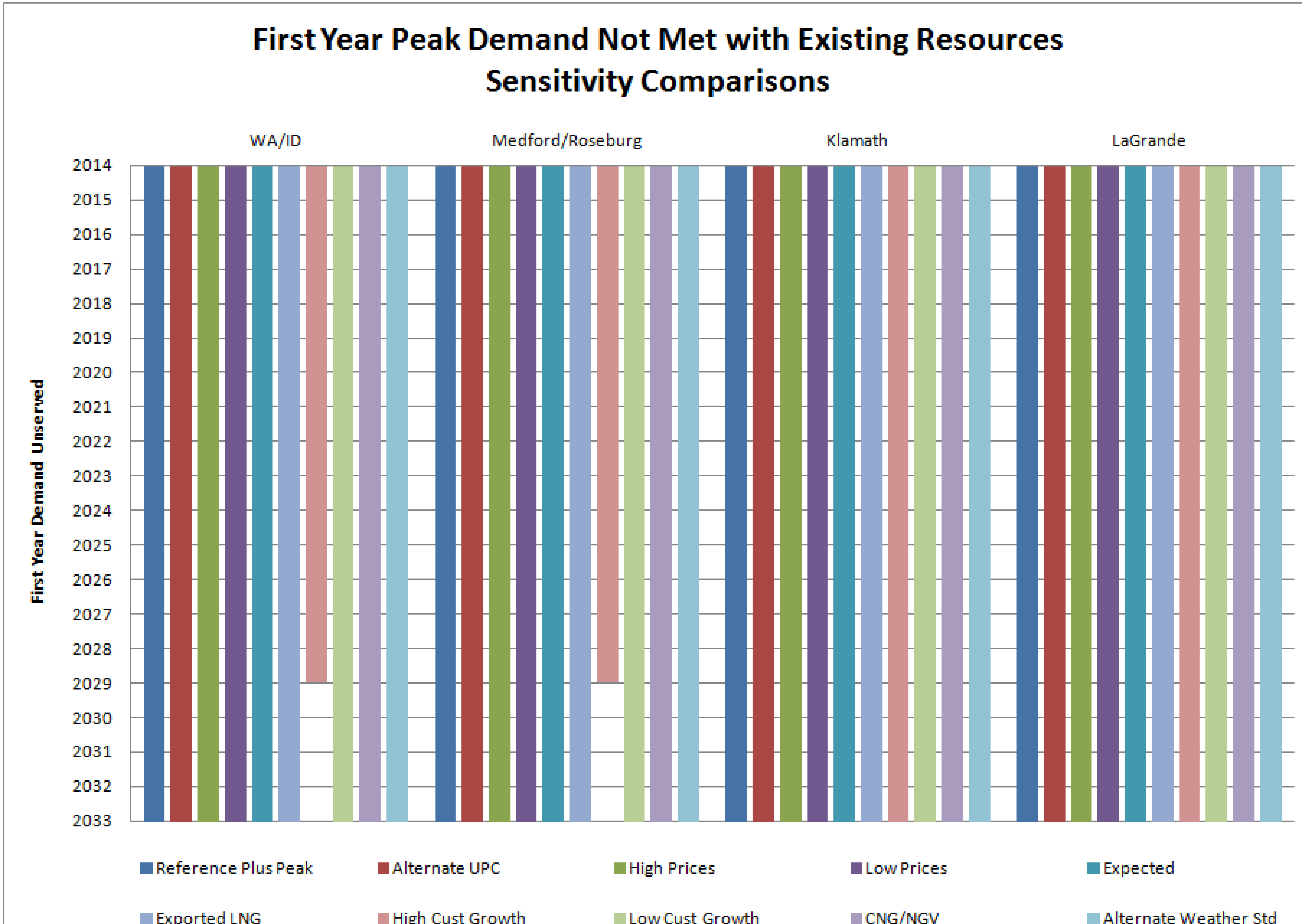


# Demand Sensitivity Analysis – INDIRECT
# Peak Day Demand



# Demand Sensitivity Analysis – INDIRECT
# Peak Day Demand



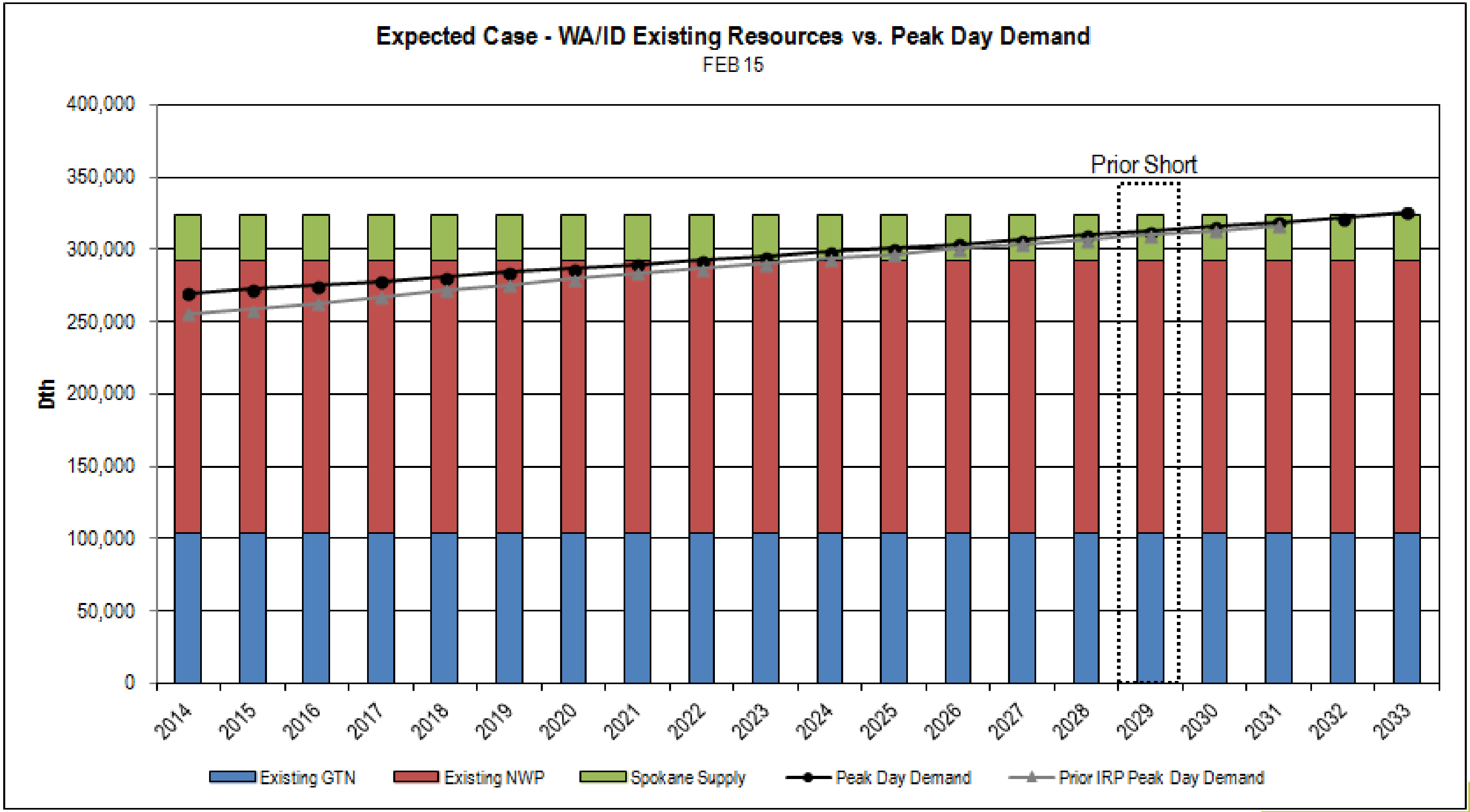

First Year Peak Demand Not Met with Existing Resources
Sensitivity Comparisons
WA/ID
Medford/Roseburg
Klamath
LaGrande
First Year Demand Unserved
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
Reference Plus Peak
Alternate UPC
High Prices
Low Prices
Expected
Exported LNG
High Cust Growth
Low Cust Growth
CNG/NGV
Alternate Weather Std

# Scenario Analysis

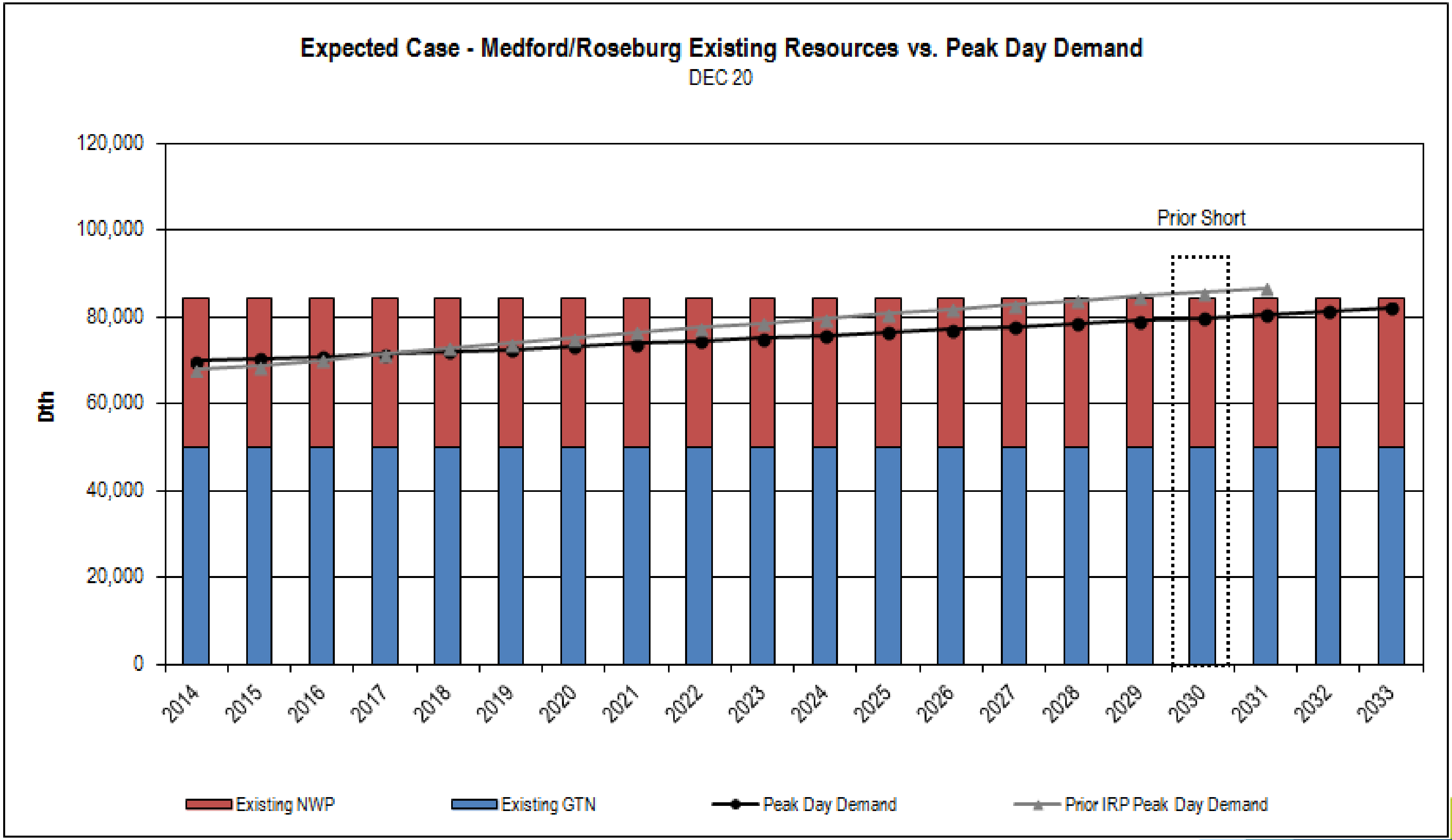
# Proposed Scenarios

| Proposed Scenarios | Expected Case | High Growth & Low Prices | Low Growth & High Prices | Cold Day 20yr Weather Std | Average Case |
|---|---|---|---|---|---|
| **Input Assumptions** | | | | | |
| **Customer Growth Rate** | Reference Case Cust Growth Rates | High Growth Rate | Low Growth Rate | Reference Case Growth Rate | Reference Case Growth Rate |
| **Use Per Customer** | 3 Yr Flat + Price Elast. | 3 Yr Flat + Price Elast. + CNG/LNG | 3 Yr Flat + Price Elast. | 3 Yr Flat + Price Elast. | 3 Yr Flat + Price Elast. |
| **Demand Side Management** | Yes | Yes | Yes | Yes | Yes |
| **Weather Planning Standard** | Coldest Day | Coldest Day | Coldest Day | Alternate Planning Std. | Normal |
| **Prices** | | | | | |
| Price curve | Expected | Low | High | Expected | Expected |
| Price curve adder ($/Dth) | None | None | None | None | None |
| Elasticity | Expected | None | Expected | Expected | Expected |
| Carbon Adder ($/Ton) | $14-$22 | | $14-$22 | $14-$22 | |

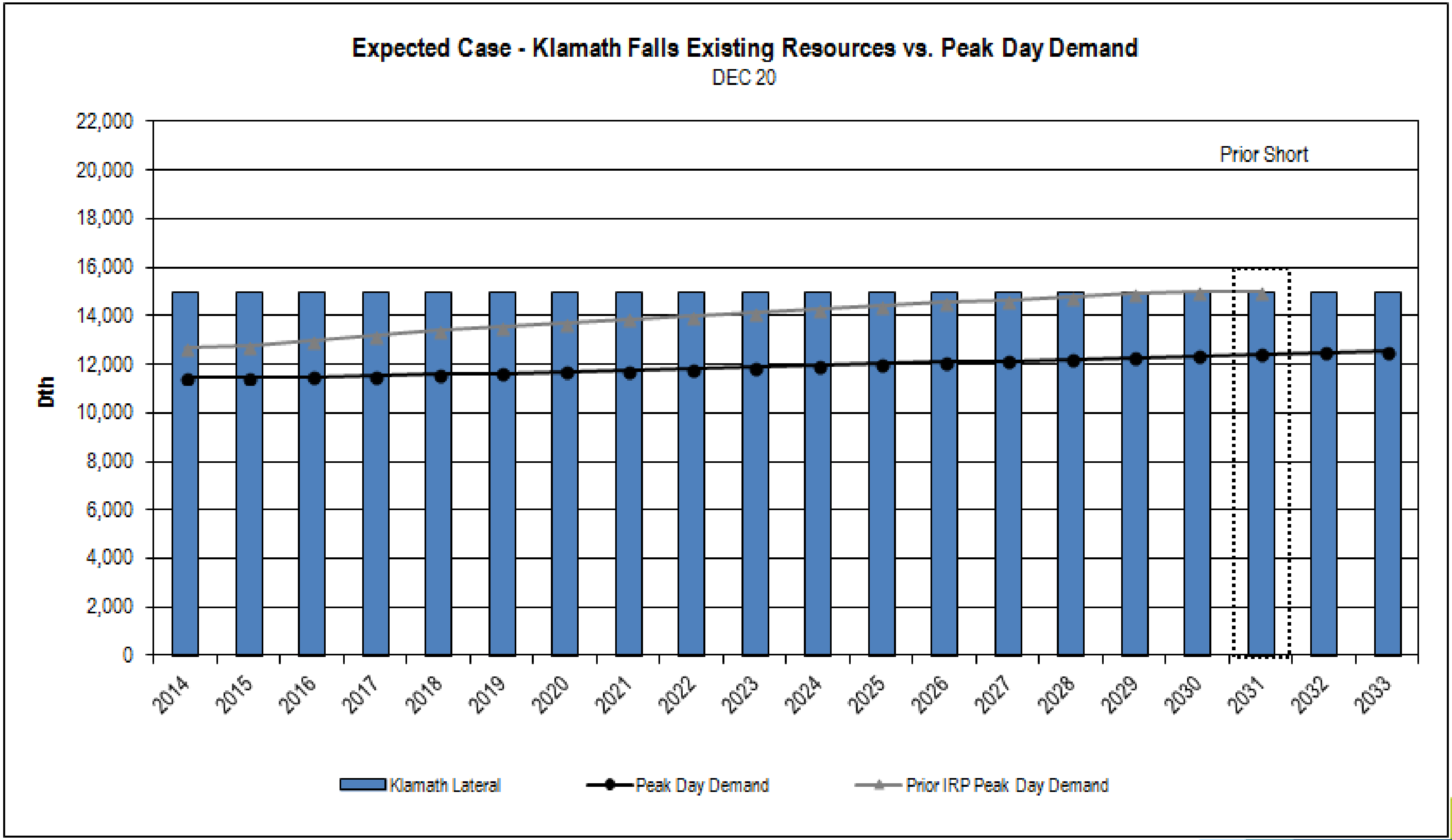
# Existing Resources vs. Peak Day Demand



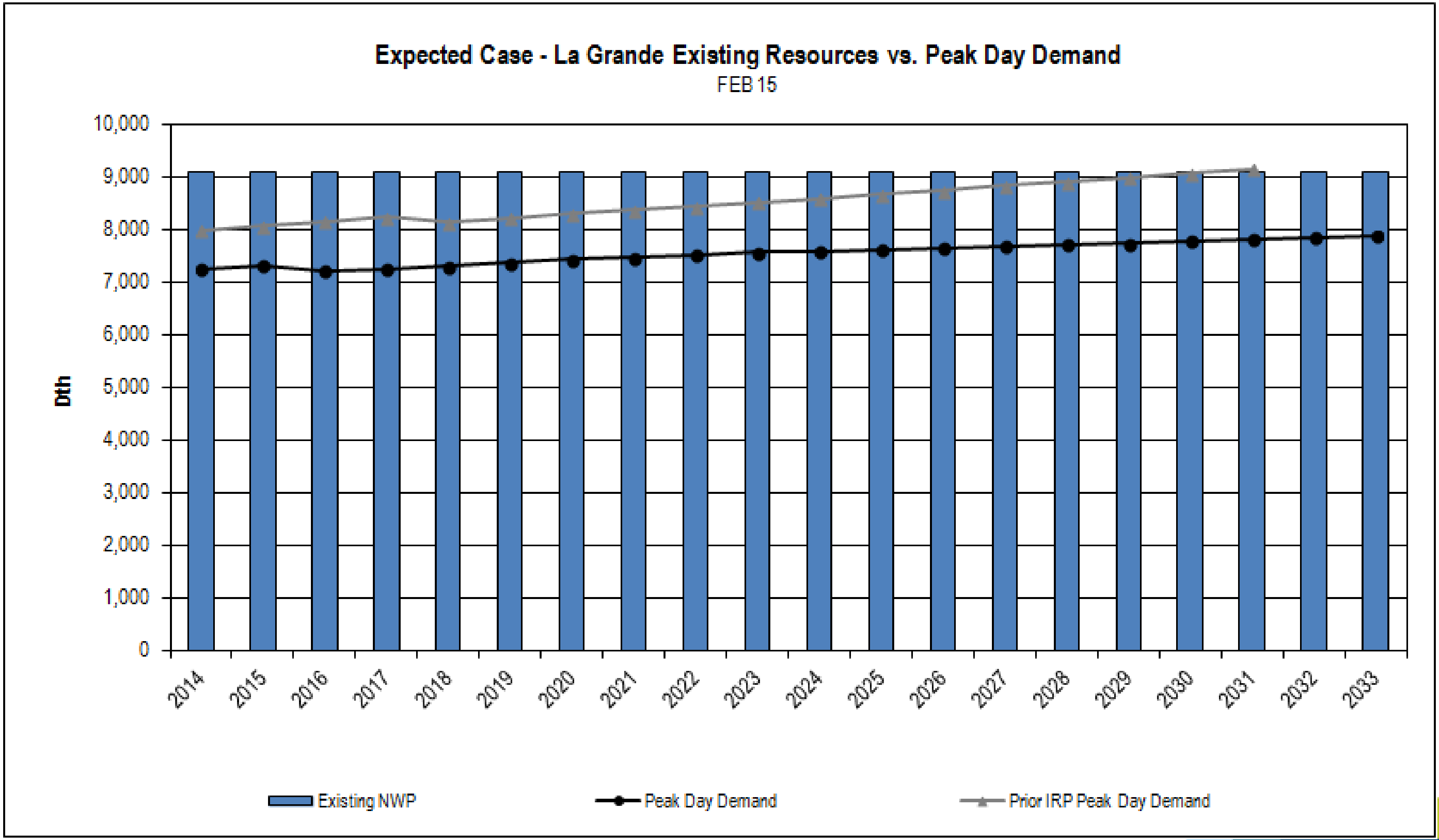
# Existing Resources vs. Peak Day Demand

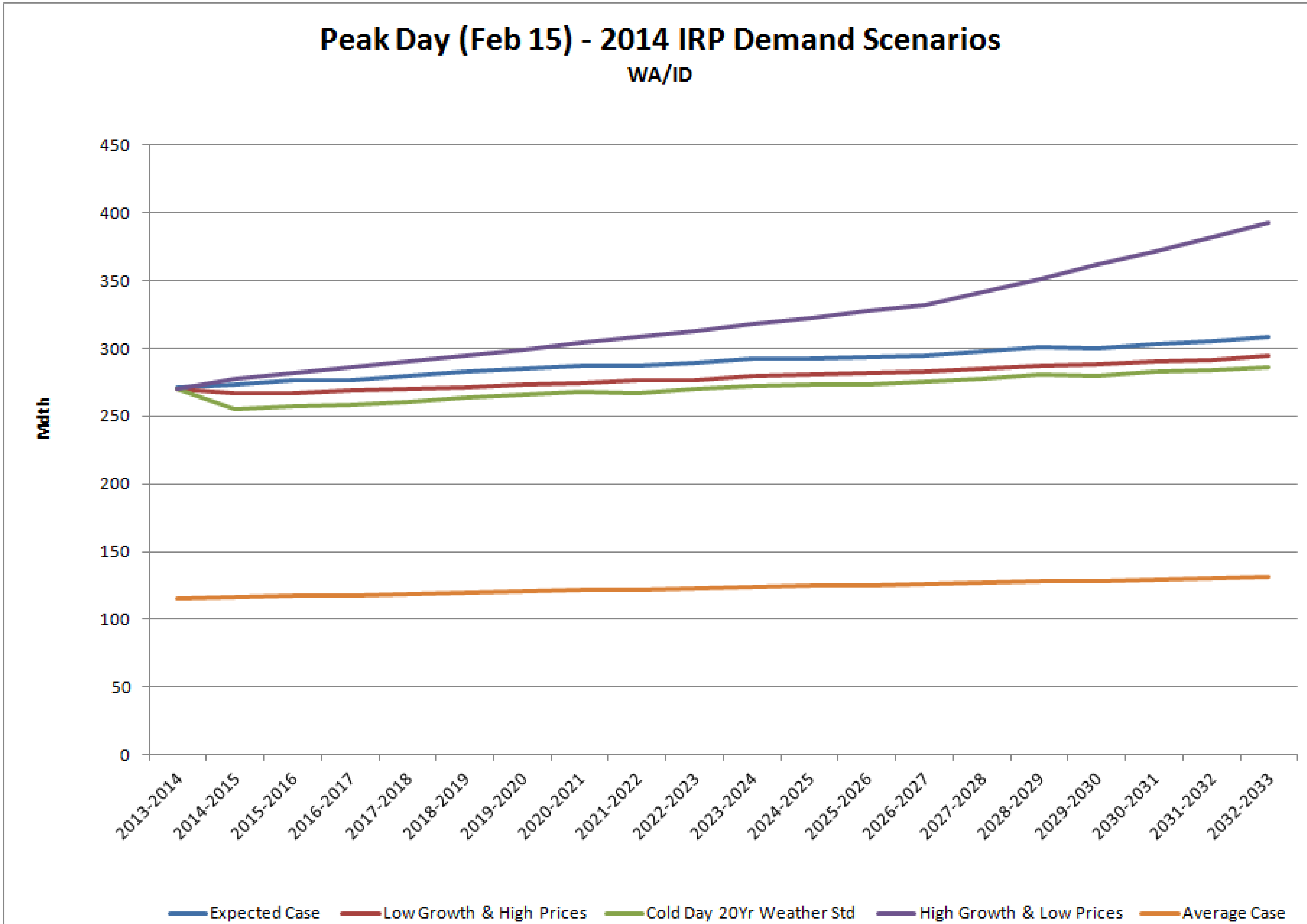


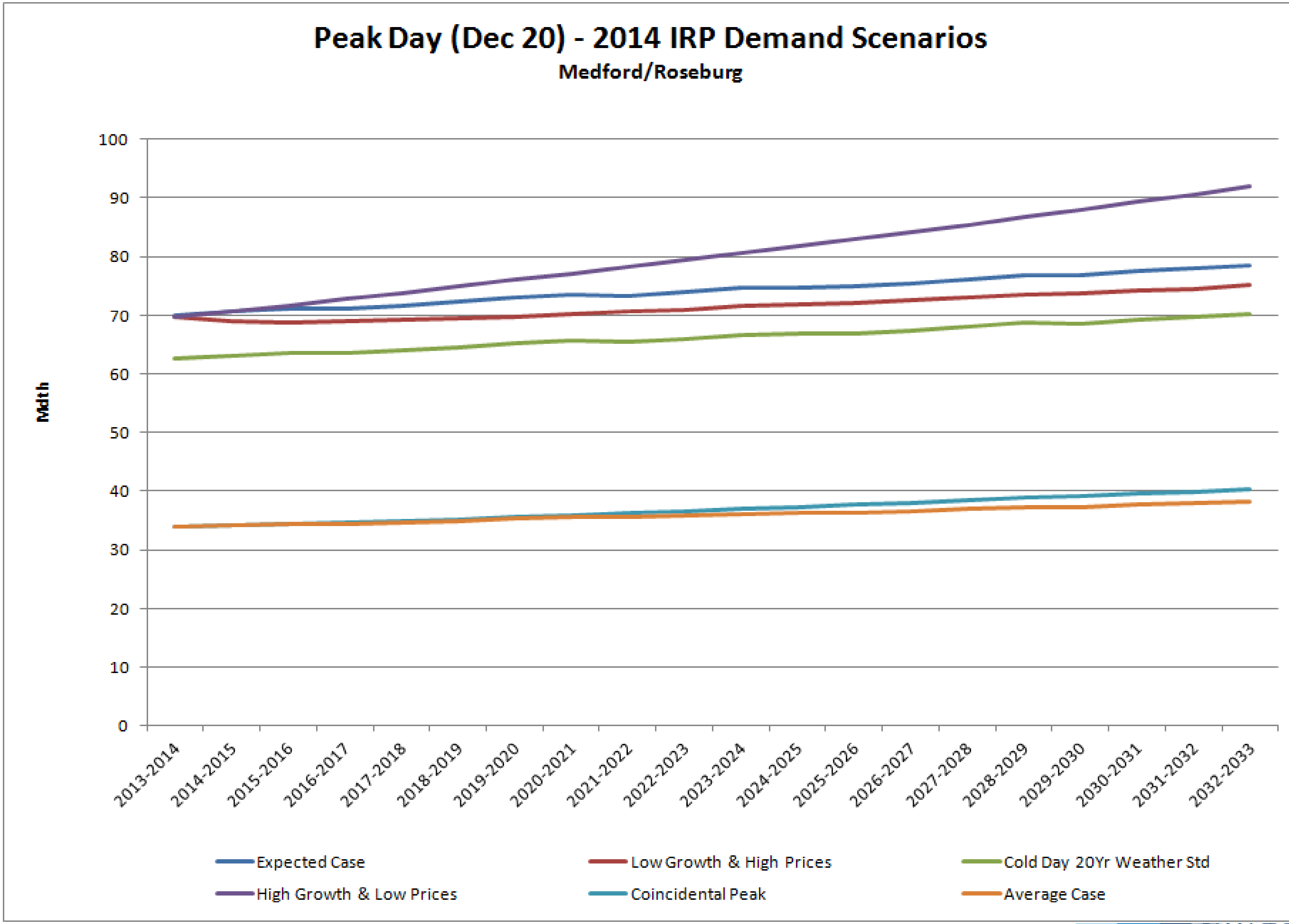
# Existing Resources vs. Peak Day Demand

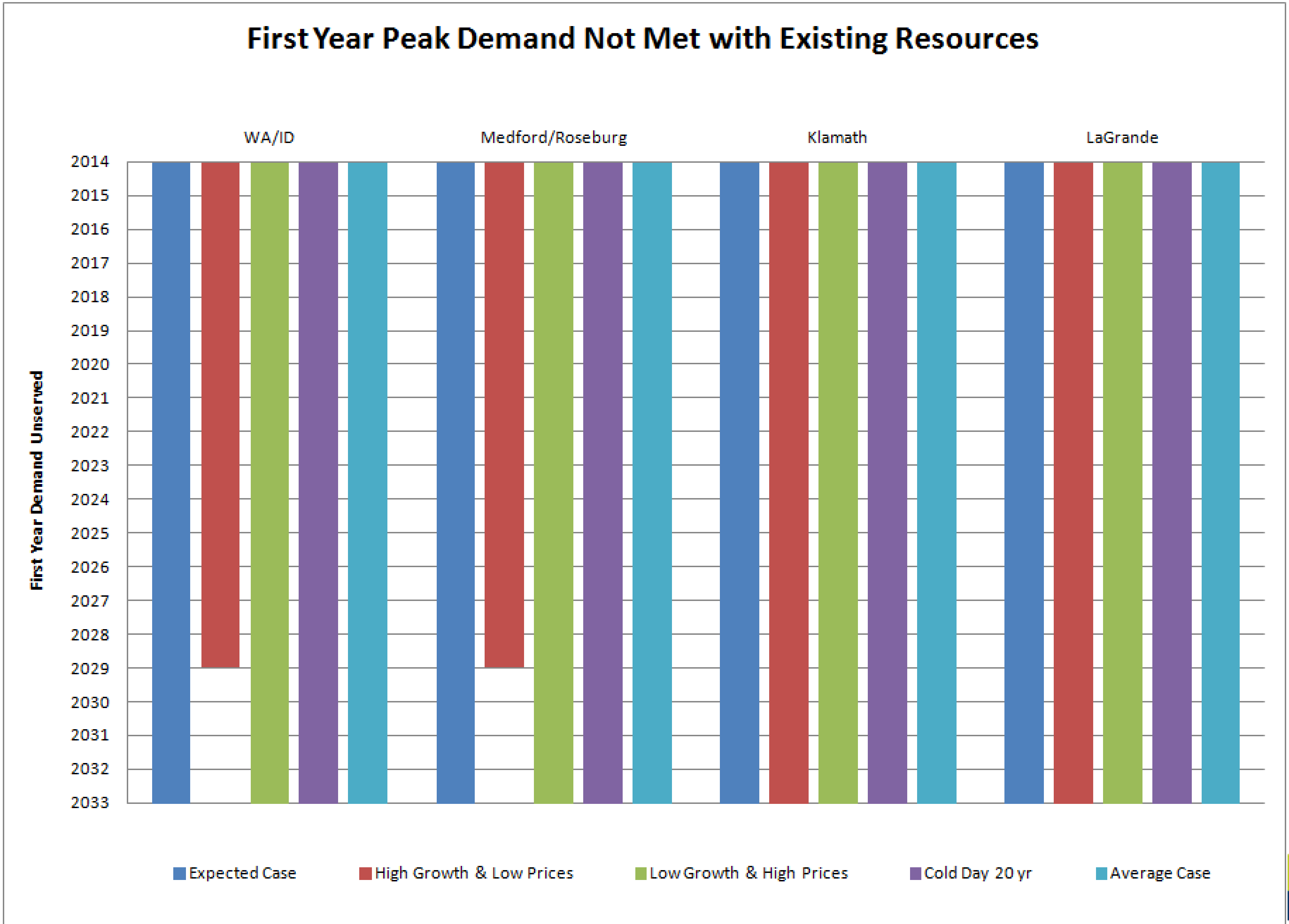


# Existing Resources vs. Peak Day Demand




Peak Day (Feb 15) - 2014 IRP Demand Scenarios
WA/ID
Mdth
450
400
350
300
250
200
150
100
50
0
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
2020-2021
2021-2022
2022-2023
2023-2024
2024-2025
2025-2026
2026-2027
2027-2028
2028-2029
2029-2030
2030-2031
2031-2032
2032-2033
Expected Case
Low Growth & High Prices
Cold Day 20Yr Weather Std
High Growth & Low Prices
Average Case


Peak Day (Dec 20) - 2014 IRP Demand Scenarios
Medford/Roseburg
Mdth
100
90
80
70
60
50
40
30
20
10
0
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
2018-2019
2019-2020
2020-2021
2021-2022
2022-2023
2023-2024
2024-2025
2025-2026
2026-2027
2027-2028
2028-2029
2029-2030
2030-2031
2031-2032
2032-2033
Expected Case
Low Growth & High Prices
Cold Day 20Yr Weather Std
High Growth & Low Prices
Coincidental Peak
Average Case


First Year Peak Demand Not Met with Existing Resources
WA/ID
Medford/Roseburg
Klamath
LaGrande
First Year Demand Unserved
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
Expected Case
High Growth & Low Prices
Low Growth & High Prices
Cold Day 20 yr
Average Case

# Resource Options for Meeting Unserved Demand

# Potential New Supply Resources Considerations

- Availability
  - By Region – which region(s) can the resource be utilized?
  - Lead time considerations – when will it be available?
- Type of Resource
  - Peak vs. Baseload
  - Firm or Non-Firm
  - "Lumpiness"
- Usefulness
  - Does it get the gas where we need it to be?
  - Last mile issues
- Cost

# Supply Resources Available

| Additional Resource | Size | Cost/Rates | Availability | Notes |
|---|---|---|---|---|
| Capacity Release Recall | 30,000 Dth | NWPL Rate | 2018 | Recall of previously released capacity |
| Unsubscribed GTN Capacity | Up to 50,000 Dth | GTN Rate plus Upstream TCPL | Now | Currently available unsubscribed capacity from Kingsgate to Stanfield or Malin plus associated Alberta transport |
| NWP Expansion | Up to 50,000 Dth | NWPL Rate x 4 | 2016 | Expansion from Sumas/JP to WA/ID or Sumas/JP to OR |
| Citygate Deliveries | Variable | Varies | Now | Represents the ability to buy a delivered product from another utility or marketer. Limited counterparties |
| Satellite LNG | 90,000 Dth w/30,000 Dth deliverability | $6.5 Million capital cost plus $350K O&M | 2016 | Provides for peaking services and alleviates the need for costly pipeline expansions. |

# Supply Resources Available

| Additional Resource | Size | Cost/Rates | Availability | Notes |
|---|---|---|---|---|
| Medford Lateral Exp | 25,000 Dth | GTN Rate | 2016 | Additional compression to facilitate more gas to flow from mainline GTN to Medford. |
| Malin Backhauls | 25,000 | GTN Rate | Now | Currently available |

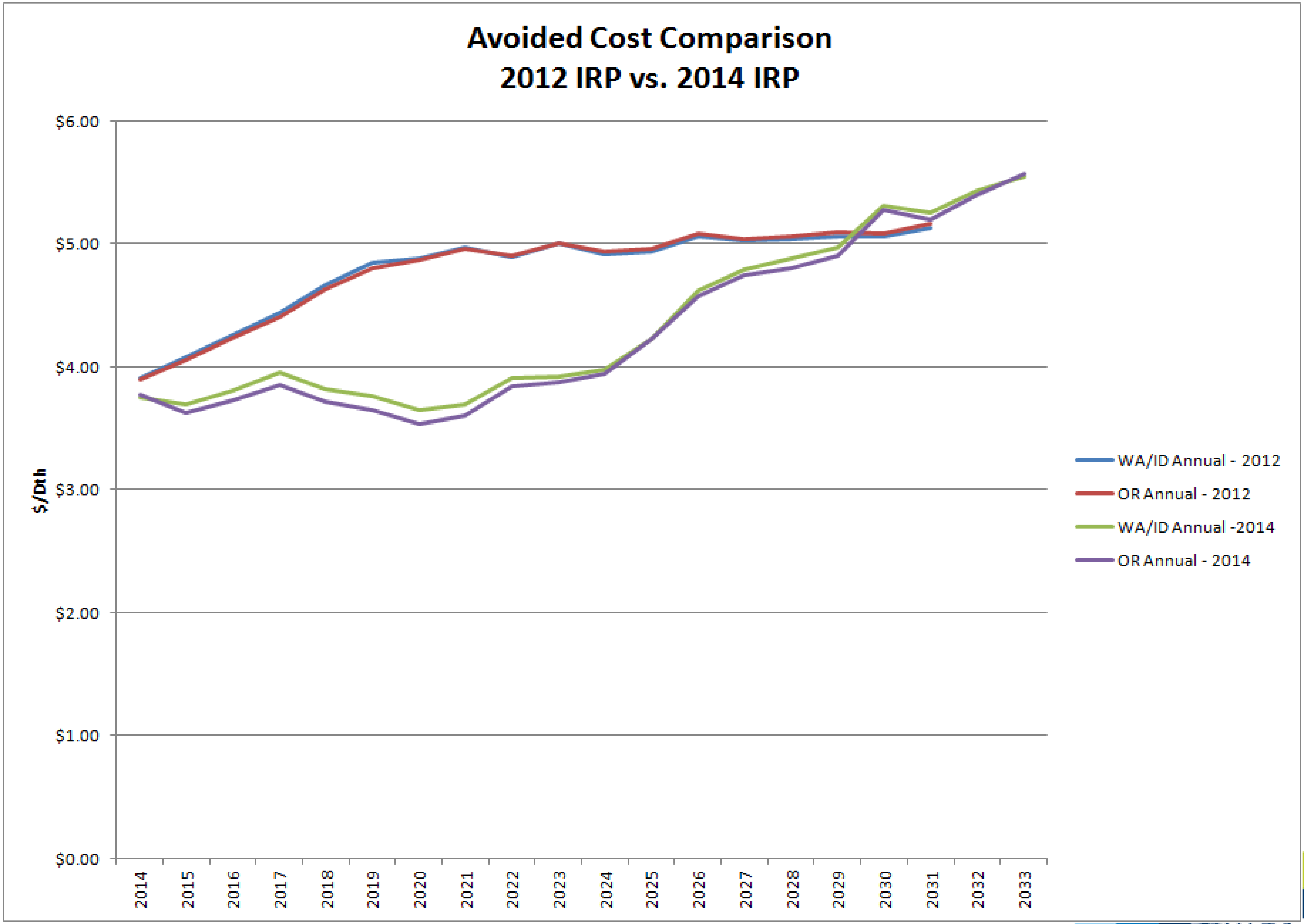
# Future Supply Resources

## Other Resources Considered

| Additional Resource | Size | Cost/Rates | Availability | Notes |
|---|---|---|---|---|
| Co. Owned LNG | 600,000 Dth w/ 150,000 of deliverability | $75 Million plus $2 Million annual O&M | 2020 | On site, in service territory liquefaction and vaporization facility |
| Various pipelines – Pacific Connector, Cross-Cascades, etc. | Varies | Precedent Agreement Rates | 2018 | Requires additional mainline capacity on NWPL or GTN to get to service territory |
| Large Scale LNG | Varies | Commodity less Fuel | 2018 | Speculative, needs pipeline transport |
| In Ground Storage | Varies | Varies | Varies | Requires additional mainline transport to get to service territory |

# DSM Avoided Cost

- Avoided cost determined by comparison to the marginal supply side resources to meet incremental demand, primarily commodity costs.
- Preliminary avoided costs were provided to Enernoc for cost effectiveness testing and development of the DSM acquirable potential.
- Potential is then input into SENDOUT® and avoided costs are re-evaluated.


Avoided Cost Comparison
2012 IRP vs. 2014 IRP
$6.00
$5.00
$4.00
$3.00
$2.00
$1.00
$0.00
$/Dth
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
WA/ID Annual - 2012
OR Annual - 2012
WA/ID Annual -2014
OR Annual - 2014

# Stochastic Analysis

# What is it?

- Stochastic vs. Deterministic
- Facilitates a statistical approach to analysis
- Reiterative runs of SENDOUT (e.g. 200 “Draws”)
- Utilizes statistically generated price curves and weather patterns derived from historical data
- Develops a distribution of the “draws” results
  - Normal and lognormal distribution

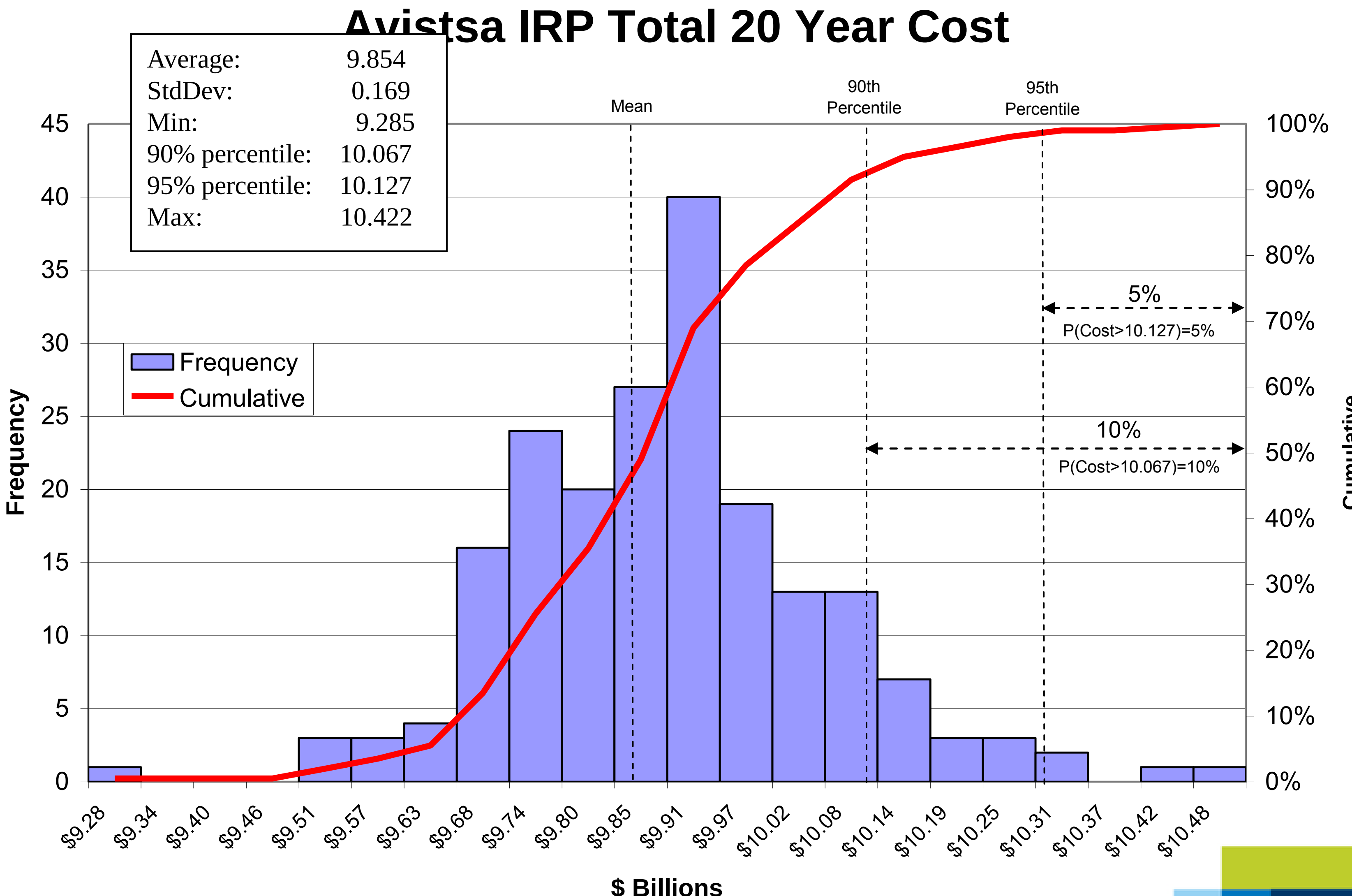
# Analytical Objectives

- Weather
  - Validate reasonableness of our weather planning standard
  - Compare demand and unserved results
  - Quantify potential alternate weather planning standards via comparison of alternate aggregate NPV portfolio costs

- Price
  - Substantiate preferred portfolio selection (commodity cost perspective)
  - Compare distribution of aggregate NPV cost to preferred portfolio

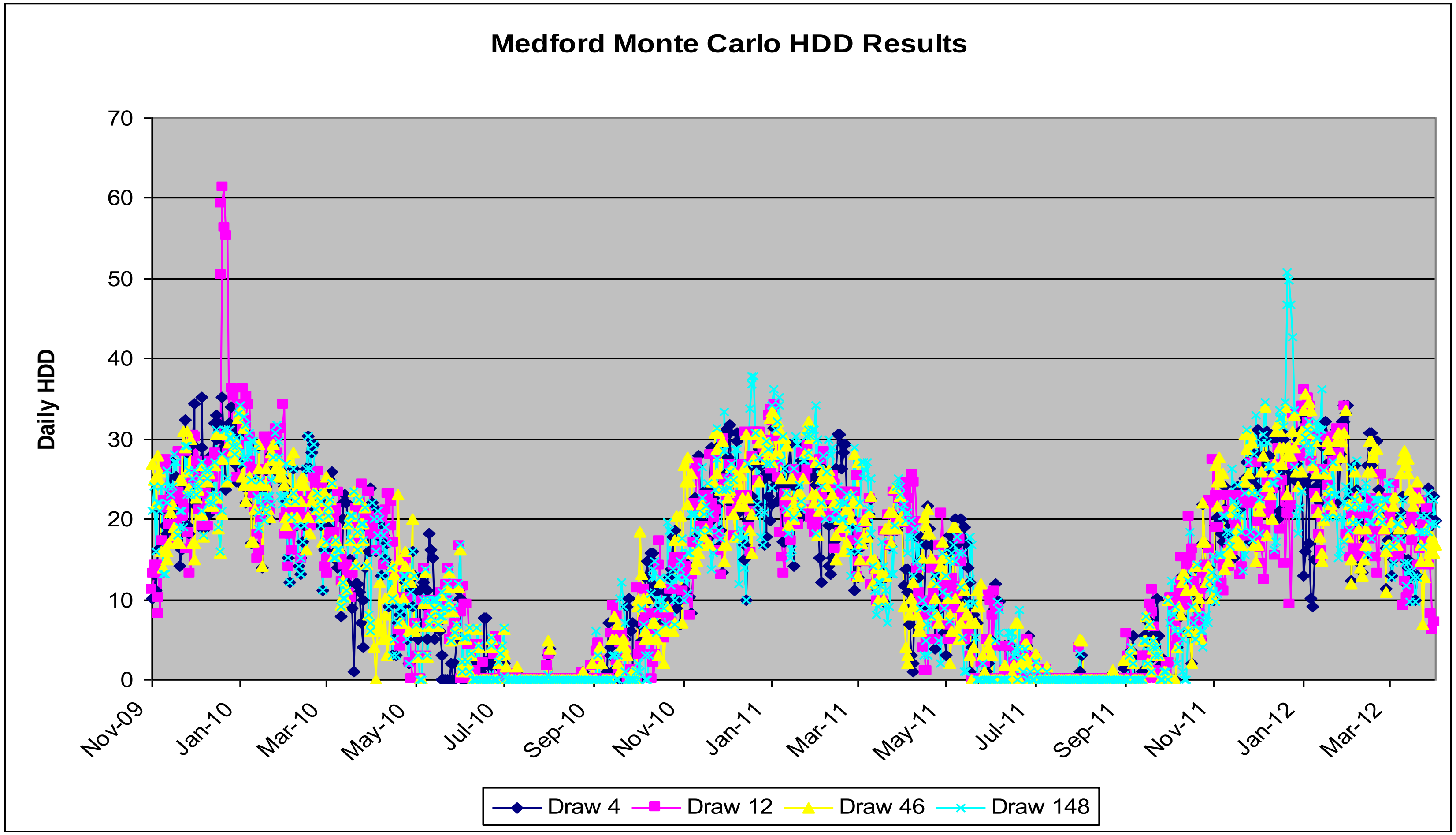
# VectorGas™ Reports

# EXAMPLE ONLY



# Sample Weather Pattern

## Medford HDDs - Four example draws



# Key Issues / Document Discussion

# Highlights of the 2014 IRP

- No near-term resource needs under most scenarios.
- Lower long term customer growth rates.
- 20 year rolling average is the new “normal”.
- No global warming adjustment.
- Updated DSM potential and resultant avoided costs.

# 2012 IRP Acknowledgement Comments

- Describe more clearly derivation of growth scenarios, including high and low in demand forecasting chapter.
- Use 5 year use per customer data set
- Provide a comparative avoided cost analysis in future IRP's
- Do an analysis and/or narrative describing the "trigger point" avoided cost value where conservation programs become cost-effective.
- Between IRP's compare modeling assumptions with actual demand.
- Include a Washington specific city gate analysis, including a narrative of its conclusions as a result of such analysis.

# 2012 IRP Acknowledgement Comments

- Include an easily identifiable progress report that relates new plan to previous plan.
- Reconcile inconsistencies between models used in demand forecasting and implementation and description of these models.
- Hold public outreach meetings in locations convenient for customers.

# 2012 IRP Acknowledgement Comments

- Continue DSM programs in Oregon to achieve minimum savings of 225,000 therms in 2013 and 250,000 therms in 2014.
- Provide results of the following:
  - Savings and cost effectiveness of DSM program.
  - Actions taken to reduce delivery costs, including admin and audit costs.
  - Actions taken to increase cost effective efficiency measures in the portfolio.
  - Analysis of non-natural gas benefits of existing and proposed measures.
  - Analysis of measure lives for all measures.
- Develop mechanism for allocating funding for a separate low-income energy efficiency program.
- Pursue possibility of regional elasticity study through NWGA or AGA.
- Assess potential demand impact from NGV/CNG vehicles and other new uses of natural gas.

# Key Issues

- Where's the Demand?
  - Even flatter demand – How long does this trend continue?
  - What impacts on consumption? Temporary or permanent change?
  - What is the demand boost?
- Resource Management
  - Prudent management of resource length
- "The Price is Right"
  - $5 gas forever?
- Environmental Impacts
  - Carbon Tax?
  - Hydraulic Fracturing Bans

# 2014 IRP Timeline

- **August 31, 2013** – Work Plan filed with WUTC
- **January through April 2014** – Technical Advisory Committee meetings. Meeting topics will include:
  - Demand Forecast and Demand Side Management – *January 24*
  - Supply and Infrastructure, Gate Station Analysis, Supply Side Resources, Resource Optimization – *February 25*
  - Distribution Planning, Natural Gas Pricing, CNG/NGV, SENDOUT® Preliminary Results and Further Case Discussion – *March 26*
  - DSM CPA results, further SENDOUT® results and document discussion – *April 23*
- **May 30, 2014 – Draft of IRP document to TAC**
- **June 30, 2014 –** Comments on draft due back to Avista
- **July 2014 –** TAC final review meeting (if necessary)
- **August 31, 2014 –** File finalized IRP document