

**PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: February 24, 2015**

REGULAR CONSENT EFFECTIVE DATE _____ Upon Commission's Approval _____

DATE: February 20, 2015

TO: Public Utility Commission

FROM: *AGS*
Lisa Gorsuch *E*

THROUGH: Jason Eisdorfer and Aster Adams *AA by E*

SUBJECT: NORTHWEST NATURAL: (Docket No. LC 60) Acknowledgement of 2014 Integrated Resource Plan.

STAFF RECOMMENDATION:

Staff recommends that the Commission acknowledge, with exceptions and revisions, Northwest Natural Gas Company's (NW Natural, NWN, or Company) 2014 Integrated Resource Plan.

DISCUSSION:

Procedural History

NW Natural filed its 2014 Integrated Resource Plan (IRP or Plan) on August 29, 2014, which has been docketed as LC 60. On November 24, 2014, the Public Utility Commission of Oregon Staff (Staff) and the Citizens' Utility Board (CUB) filed initial comments. NW Natural filed reply comments on December 22, 2014. Staff filed final comments on January 15, 2015, and CUB filed final comments on February 2, 2015.

Prior to the filing of the IRP, seven technical working group meetings were held between August of 2013 and July of 2014.¹ Staff, Washington Utilities and Transportation Commission Staff, CUB, Northwest Industrial Gas Users (NWIGU), Northwest Power and Conservation Council (NWPC), Washington Public Counsel, Northwest Energy Coalition, and Williams Pipeline participated in these technical working group meetings.

¹ Technical working group meetings were held on August 22, 2013, October 2, 2013, January 23, 2014, March 7, 2014, April 3, 2014, and July 11, 2014, respectively.

After the first four technical working group meetings, NW Natural filed a draft integrated resource plan on March 4, 2014. Several participants submitted informal comments regarding the draft plan. As a result of the technical working group meetings and informal workshops and in order to perform additional requested analysis, NW Natural requested and was granted an extension to file its IRP on August 29, 2014.

General Description of the Plan

NW Natural's Plan includes analysis and discusses its principal conclusions regarding immediate and future needs under design day peak demand conditions for additional gas supply resources. NW Natural identified these key drivers:

- Load Growth
- Changes to its firm peak resource portfolio
- Decreased opportunity for deploying cost-effective energy efficiency
- Demand-Side Management (DSM) Cost-Effectiveness
- Improved modeling and resource deficiencies in Vancouver/Clark County and the Salem area
- Total impact of the items listed above and the need for additional resources
- Potential and plausible supply side resources

NW Natural also provided its results of more granular modeling that indicates the need for distribution upgrades in Vancouver/Clark County and potential future needs in the Salem area.

Compliance with Commission IRP Guidelines

Staff concludes that NW Natural has generally complied with the Commission's IRP guidelines and previous orders. However, Staff identifies in its recommendations below, additional analysis that should be completed as part of NW Natural's next IRP. In addition, Staff proposes modifications to this Plan.

Action Plan

NW Natural's Plan was filed on August 29, 2014. It is attached to this Staff report as Attachment A.

Staff addresses NW Natural's 2014 Action Plan and the following nine areas in its comments below:

- 1) Gas Requirement Forecast
- 2) Vancouver/Clark County Distribution Projects
- 3) Newport LNG Facility Refurbishments
- 4) South Salem Feeder
- 5) Demand-Side Resources and Avoided Cost Determination
- 6) Hedging
- 7) Supply-Side Resources
- 8) Linear Programming and Risk Analysis
- 9) Energy Policies and Environmental Considerations

- 1) Gas Requirement Forecast

Staff Position

Staff's initial comments provided an overview of issues that would be examined as part of its ongoing analysis of NW Natural's load forecast. Staff provided the following observations in its final comments:

General Comments

A number of the econometric forecasts developed for the 2014 IRP do not use up-to-date (i.e. up to 2013) explanatory data. For example, the Company uses data through 2011 to develop their use per customer forecasts. Recent data is most relevant for forecasting and the most recent data available should be utilized by the Company in subsequent econometric forecasts.

Customer Forecasts

The Company uses relatively short time periods of explanatory data to generate their long-term customer forecasts for some customer classes. For example, only

two years of monthly data is utilized in the Oregon and Washington new residential single family customer forecasts. In contrast, six years of explanatory data are used to generate the Oregon new multifamily customer forecast. The Company has stated that the reason that older vintages of data were not utilized for some customer classes is because NW Natural purges its billing data after a few years. Staff recommends that NW Natural retain such data for at least ten years for use in subsequent forecasts. Staff also recommends that the Company either use all of the data available to them to develop econometric customer forecasts, or alternatively provide appropriate reasoning in the IRP for the time period of the explanatory data used.

For each customer class,² a single econometric forecast was developed for each state (OR and WA) and then allocated to load. Developing separate econometric forecasts at the load center level would facilitate the incorporation of intrastate regional economic factors into the forecast. This would be particularly useful in Oregon where the Company oversees a variety of geographically distinct load centers.

Industrial Forecasts

The Company produced industrial load forecasts at the state level and then allocated to load centers based on the historic distribution of productivity-adjusted manufacturing employment (PAME), and changes in forecasted PAME. Developing individual future forecasts at the load center or customer level would facilitate the use of load center/customer specific variables and likely increase the precision and explanatory power of the Company's forecasting models.

South Salem Feeder

NW Natural is planning construction of the South Salem Feeder as a response to a forecasted increase in load. As mentioned above, Staff identified a number of ways that the Company's customer forecasts could be improved. The Company's customer forecasts were modeled by customer class at the state level and then allocated to load centers. Additionally, the customer class forecasts utilize as little as two years of explanatory data. Staff believes that a more granular forecast (i.e. at the load center level) developed with data from a longer time period would

² Customer classes include: residential new construction single family, residential new construction multi-family, residential conversions, commercial new construction, and commercial conversions. Existing customers are assumed to decline at a constant rate over time.

improve the precision of the Company's forecast and provide more convincing evidence regarding the need for the proposed South Salem Feeder. Staff continues to investigate this issue and plans to develop Salem-specific forecasts for residential and commercial customers.

NW Natural proposed capital investment projects in its IRP. These projects included the South Salem Feeder and a capital expansion project in Vancouver, Washington. NW Natural cited future load growth as the rationale for both of these investments.

Staff developed its own forecasts of Salem and Vancouver residential and commercial customers to offer an alternative interpretation of future load growth to assist the Commission in evaluating the need for NW Natural's requested capital investments. These forecasts may also yield information that can be used to improve future Company forecasts. Through informal information requests to the Company, Staff obtained data to estimate independent customer forecasts. Staff's forecasting methodology differs from that of the Company in two main ways. First, Staff's models use load center specific customer and economic data while the Company models are estimated at the state level and then allocated to load centers based on forecasted population levels. Second, Staff's forecasting models use longer time data series and a higher degree of aggregation across customer classes.³

The following describes the data and methodology Staff used to develop customer forecasts for NW Natural's Salem and Vancouver load centers.

a. *Data*

From the Company, Staff obtained 2004-2012 monthly customer counts for residential and commercial customers in the Salem and Vancouver load centers. Additionally, Staff obtained from the Company 2000-2040 Woods and Poole economic data (and forecasts) for Salem and Vancouver.

b. *Model*

Staff estimated Autoregressive Integrated Moving Average (ARIMA) Error econometric models to produce customer forecasts for each load center (Salem and Vancouver) and customer category (commercial and residential). These models address statistical issues caused by the autocorrelated nature of time series data through the inclusion of

³ Staff forecasts residential and commercial customers separately for each load center. The Company estimates separate state-level models for new residential single-family, new residential multi-family, residential conversions, new commercial, and commercial conversions.

autoregressive and moving average terms in the regression equations. Diagnostic tests of model residuals indicate that the ARIMA Error specifications induced a well-behaved (i.e. white noise) error structure in the final models.

c. *Variables*

Staff's econometric models explained load center customer counts as a function of seasonal indicator variables, load center level economic drivers, and autoregressive (AR) and/or moving average (MA) terms in the error structure. The commercial customer forecasts included non-manufacturing employment as an explanatory economic variable. The Salem and Vancouver residential forecasts included total population and six-month lagged manufacturing employment, respectively. Statistical tests revealed that the customer count and explanatory economic data were non-stationary. These variables were differenced before estimation to induce stationarity.

d. *Sample Period*

The Company uses a relatively short time customer-count data series to forecast customers. The longest time data series used by the Company spans 6 years, but some are as short as 2 years. With 9 years of data on hand, Staff produced two forecasts for each load center/customer category combination. The Full Sample models used the entire data set (2004-2012). The Trimmed Sample models used data from 2007 onward to facilitate a better comparison with the Company forecasting methodology.⁴

NW Natural's commercial and residential forecasts were aggregated across customer classes and compared to the Staff forecasts.

Generally, the Staff's Full Sample and Trimmed Sample model forecasts produced different results. For the Full Sample models, the Staff customer forecast is higher than the Company forecast in the early years and the Company forecast is higher in the later years. For the Trimmed Sample models, the Company forecast is generally higher than the Staff forecast across forecast years. The Trimmed Sample residential forecasts are lower than the Full Sample forecasts because they exclude data from 2004 to 2006, the height of the real estate boom in the United States. The Trimmed Sample commercial forecasts are lower than the Full Sample models

⁴ Using data from the 2004-2006 period, the height of the housing bubble, tends to increase the customer forecast regardless of the modeling methodology employed. Excluding this data permits a better methodology-based forecast comparison.

because the Full Sample includes data from the economically prosperous period before the housing bubble burst. The flattening of customer count curves in the attached figures around 2007 coincides with the bursting of the housing bubble and the resulting financial crisis. Table 1 shows the variance between Company and Staff forecasts for 2019, the year the proposed South Salem Feeder would potentially be needed. The results show that the Full Sample model forecasts predict more 2019 customers compared to the Company forecasts while the Trimmed Sample models predict fewer 2019 customers than the Company forecasts.

Table 1: Variance between Company and Staff Forecasts in 2019

Forecast	Load Center	Customer Variance		Therm Variance*	
Residential	Salem	12,554	1.22%	867,829	1.55%
Residential (trimmed)	Salem	(6,479)	-0.63%	(174,204)	-0.31%
Commercial	Salem	1,076	0.98%	457,286	1.19%
Commercial (trimmed)	Salem	(1,606)	-1.46%	(473,256)	-1.23%
Residential	Vancouver	19,922	2.19%	1,337,257	2.37%
Residential (trimmed)	Vancouver	(30,185)	-3.32%	(1,752,856)	-3.10%
Commercial	Vancouver	2,555	3.36%	875,343	3.55%
Commercial (trimmed)	Vancouver	(1,994)	-2.62%	(586,112)	-2.37%

* Assumes use per customer remains at 2011 levels.

NW Natural Position

In NW Natural's final comments, it states that it generally agrees with Staff's comments on its forecasts and is committed to reexamining methodologies the Company uses in forecasting gas requirements in the next IRP. Issues requiring investigation and evaluation include: (1) determining at what point in the IRP process the gas requirement forecast must be "locked down" in order to proceed with analysis of resource requirements; (2) data availability, especially with respect to 20-year forecasts of values for explanatory variables at the appropriate level of geographic disaggregation; and (3) the use of and methods by which to integrate near-term forecasts developed by the Company's subject matter experts.

Staff Conclusion Gas Requirement Forecast

Staff recommends that NW Natural reexamine its forecasting methodologies as described above, in its next IRP.

2) Vancouver/Clark County Distribution Projects

Staff Position

Staff's initial comments indicated that the construction of the Clark County distribution projects⁵ may have already commenced, which would be the basis for excluding it from NW Natural's Plan.

NWN Position

In its reply comments, NW Natural represented that:

Staff correctly points out that both the Clark County distribution projects and refurbishment of the Newport Liquefied Natural Gas (LNG) storage facility are phased projects where some phases have already commenced.

NW Natural also represented that it:

believes that multiple phases characterize many capital projects and projects may not align well with the timing of the Company's IRP filings. However, the Company agrees to revise its Action Plan such that it is only seeking Commission acknowledgement on project phases that have not been started.

NW Natural proposes to modify the action item related to the Clark County distribution projects as follows:

⁵ The Clark County distribution projects are comprised of five projects, as represented in Appendix 6 of NWN's 2014 IRP (i.e.; 119th Street, \$5.4 million; Camas Reinforcement, \$4.6 million; Washougal Extension, \$4.5 million; 119th Street to Salmon Creek, \$6.1 million; and Vancouver Core Replacement, \$4.3 million). The aggregate cost of these five projects is approximately \$25 million and the in-service date is 2017.

Complete those Clark County distribution projects included in Appendix 6 which have not yet started and which address, in part, Vancouver load center needs and have an estimated timing for completion within the next five years.

Staff Analysis and Recommendation

Staff agrees “that multiple phases characterize many capital projects.” As mentioned above, what the Company characterized as the “Clark County distribution projects” is actually an aggregate of a group of five projects that appear to be independent. (i.e., each project serves a different area of Clark County, for example, North Vancouver, Camas, Washougal, etc.).

As represented in NW Natural’s response to Staff Data Request 15, the construction of the 119th Street project has already commenced; therefore, it should be excluded from the IRP action items. As for the other projects, each projects’ capital costs did not exceed the Company- proposed threshold of \$10 million⁶ for distribution projects to be included in its IRP. Staff’s final comments recommended that these projects should be excluded from its Action Plan. This recommendation is based on the timing of the projects, not the Company-proposed threshold of \$10 million that has not been established as the appropriate threshold for IRP projects. CUB stated in its final comments that it agreed with Staff in principle that projects that have already commenced should not be included in IRP Action Items.

Staff recognizes that more discussion would need to occur to establish threshold levels of capital expenditures for inclusion in IRPs. Therefore, Staff makes no recommendation on threshold levels at this time. Furthermore, the Clark County distribution projects are located in the State of Washington and will have no rate impact of Oregon customers of NW Natural. For this reason, Staff is inclined to recommend that the related Action Item 2.1b should not be acknowledged as part of the Company’s 2014 Action Plan. Alternatively, Staff recommends recognizing that the projects seem to fit in the overall distribution strategy of NW Natural and that the modified Action item should be acknowledged. Thus, Staff proposes two recommendations related to Action Item 2.1b.

⁶ In page 6.1 of NW Natural 2014 IRP, the Company proposed to include in its IRP “[m]ajor system reinforcement or system expansion projects with an estimated construction cost exceeding \$10 million.

Staff Conclusion Vancouver/Clark County Distribution Projects

In Attachment B, Staff recommends NW Natural's Action Item 2.1b be removed from the Company's 2014 Action Plan.

As an alternative recommendation;

In Attachment C, Staff recommends acknowledgement of NW Natural's Action Item 2.1b, as modified by NW Natural in its reply comments: Complete those Clark County distribution projects included in Appendix 6 which have not yet started and which address, in part, Vancouver load center needs and have an estimated timing for completion within the next five years.

NW Natural requests in its final comments that the Commission acknowledge Action Item 2.1b as modified in its reply comments.

3) Newport LNG Facility Refurbishments

Staff Position

In its initial comments, Staff noted that the refurbishment of the Newport LNG facility may have already commenced, which would be the basis for excluding it from NW Natural's Plan. Staff has confirmed that this project has commenced as indicated in page 3.19 of NW Natural's IRP where the Company represented that refurbishment of the Newport facility has begun because this was the least-cost alternative.

The Newport LNG facility (Newport) consists of a 1,000,000 Dth capacity storage tank capable of processing about 5,500 Dth/day and a vaporization capacity of up to 100,000 Dth/day. This facility was commissioned in 1977. Because the Company's pipeline system limits Newport to serving the central coast and Salem market areas, the full 100,000 Dth/day vaporization rate is not achievable. Instead, 60,000 Dth/day is the effective achievable limit on vaporization at this facility. NW Natural is beginning a major refurbishment for Newport, which includes addressing issues with the liquefaction process including removal of carbon dioxide (CO₂), from the incoming natural gas stream, which has been very gradually collecting in the tank and settling on its floor in solid form (commonly known as dry ice). The dry gas issue at Newport is severe enough that in order to avoid weight issues on the floor of the storage tank, the Company has reduced the maximum quantity of LNG to be stored there from 1,000,000 Dth down to 900,000 Dth. Fortunately, so far this issue has not affected the daily vaporization rate and the reliance on Newport within the Company's peak day resource

stack. The cost of the project is approximately \$25 million and the in-service date is 2019.

Staff's final comments argued that it was unclear what NWN intended when stating "those projects not yet begun" when referring to the Newport refurbishment project. According to Attachment 4 in the Company response to Staff Data Request 18, the Newport refurbishment project consists of several activities, such as: Pretreatment System, Liquefaction Improvement, Control Room Construction, etc., some of which have already begun. Staff's understanding was that all the activities that compose the Newport refurbishment project would be necessary for the project to be useful when finished. Therefore, Staff recommended in its final comments that the projects should be treated as a whole when determining when the project has commenced. Staff analogy was that when, for example, a power generation facility project is undertaken, the acknowledgment is made for the entire facility, not just for certain activities such as the generator, turbine, transformer, control room, etc. For this reason, Staff recommended that the refurbishment of Newport should be removed from NW Natural's Plan.

NW Natural Position

In NW Natural's reply comments, the Company represented that:

Staff correctly points out that both the Clark County distribution projects and refurbishment of the Newport Liquefied Natural Gas (LNG) storage facility are phased projects where some phases have already commenced.

The Company also represented that it:

believes that multiple phases characterize many capital projects and projects may not align well with the timing of the Company's IRP filings. However, the Company agrees to revise its Action Plan such that it is only seeking Commission acknowledgement on project phases that have not been started.

NWN proposed to modify the action item related to the Newport refurbishment project as follows:

Proceed with those projects not yet begun on the Newport refurbishment project and continue investigating Portland Gasco refurbishment

alternatives. Estimated timing of Newport refurbishment is over the next three years.

Following Staff's final comments, Staff received NW Natural's response to Data Request 113, which requested that the Company provide clarification regarding the Newport refurbishment projects. NW Natural provided a detailed explanation on the work that has been started at the Newport LNG facility. In its final comments, NW Natural indicated that approximately 50 percent of the \$1.1 million in expenditures, out of the \$25 million budgeted to complete refurbishments to this facility, were used for compressor overhauls that would be characterized as maintenance. The balance of the expenditures made to date does not commit the Company to completion of the life-extending activities. NW Natural stated that contracts have not been awarded for the construction and installation of the pretreatment system. Additionally, the Company stated that less than 5 percent of the total budget for the refurbishment project and the remaining 95 percent of the budget has not yet been contracted.

Staff Conclusion Newport LNG Facility Refurbishments

Staff recommends acknowledgement of NW Natural's Action Item 2.1c, as modified in the Company's reply comments: Proceed with the Newport LNG project activities which will extend the operating life of the facility. This includes: construction and installation of the pretreatment system, liquefaction improvements, vaporization replacement, control building and system upgrades.

4) South Salem Feeder

Staff Position

In Staff's initial comments, Staff indicated that it was unclear how the Company modeled alternative approaches to the South Salem Feeder. The South Salem Feeder consists of installing a 12 inch pipeline from the Mid-Willamette Valley Feeder to the South Salem feeder system. This project's cost estimate is approximately \$25 million and the in-service date is 2019.

In response to Staff Data Request 17 asking about the use of recallable agreements to defer construction of the feeder, the Company represented that approximately 55 customers take service under rate schedules 31 and 32 in the Salem load center. NW Natural represented that assuming hypothetically that all these customers agree to a recall agreement, it would eliminate the Salem shortfall until 2025. If hypothetically, only

10 percent of these customers agreed to a recall, it would eliminate the Salem shortfall for one year.

Staff still believes that in addition to the alternatives proposed by the Company, Recallable Agreements and DSM should be considered as alternatives to the South Salem Feeder or as a means to delay the construction of the South Salem Feeder.

Staff Conclusion South Salem Feeder

Staff recommends acknowledgement of NWN's Action Item 2.1, as modified by Staff in its final comments: Continue the pre-construction phase of the South Salem Feeder Project (e.g., studies, permitting, etc.) and conduct a Request for Proposal (RFP) for Recallable Agreements in the Salem load center. Provide the Commission with the results of additional analysis (e.g., results of RFP, accelerated DSM analysis, future load growth specific to the Salem load center) related to the South Salem Feeder prior to moving beyond the pre-construction phase of the project.

CUB stated in its final comments that it found Staff's recommendation regarding the South Salem Feeder reasonable.

5) Demand-Side Resources and Avoided Cost Determination

Staff Position

In Staff's initial comments, it stated that the Company needed to include demand side resource acquisition targets for all cost effective demand side resources for the next two- to four-years in its Plan.

NW Natural Position

In NW Natural's reply comments, it proposed a new action item which states that:

Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.

The targets included in the above action item, as approved by Energy Trust's Board, are the IRP targets updated with more current market information, including the extension of the non-cost effective measures investigated in UM 1622 until April 30, 2015. These energy efficiency targets are higher than those originally proposed in NW Natural's IRP.

Staff recommended in its final comments that the Commission acknowledge NW Natural's new proposed action item which states:

Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.

Staff Recommendation

Staff recommends that the Commission acknowledge action item 3.1, which states:

3.1 Explore assessing a premium value to account for any natural gas price volatility hedging value associated with DSM energy savings.

Staff recommends that the NW Natural's originally proposed action items 3.2 and 5.6, which read:

3.2 Follow Oregon Docket No. UM 1622 and revise annual DSM targets as needed in accordance with any changes to the program resulting from Energy Trust requested investigation into the exceptions to cost effectiveness guidelines.

5.6 Continue acquiring cost effective therm savings through energy efficiency programs administered by Energy Trust of Oregon.

Be replaced with the following:

3.2 Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.

Finally, Staff recommends that the Commission give NW Natural and the Energy Trust more time to explore non-pipe options to the South Salem Feeder before deciding on acknowledgement of the project.

Staff Conclusion Demand-Side Resources and Avoided Cost Determination

Staff recommends acknowledgement of NW Natural's Action Items 3.1 explore assessing a premium value associated with DSM energy savings, and 3.2 Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.

6) Hedging

Staff Position

Staff's initial comments indicate that consideration should be given to a modified hedging strategy that provides the right incentives for the Company, but at the same time protects its customers from gas price volatility and unreasonable losses.

Staff's final comments noted that at the Special Public Meeting on November 4, 2014, the Commission stated⁷ that increasing NW Natural's long-term hedging position from 10 percent up to 25 percent of its portfolio is an important issue. The Commission indicated that consideration should be given to investigating the hedging issue separately allowing parties the time needed for an in-depth review. Staff recommended that hedging be bifurcated from this IRP and be reviewed separately. CUB's opening and final comments also recommend that additional time was needed for review of this issue.

NW Natural Position

In its reply comments, the Company proposed additional time to review its hedging strategy, which currently proposes increasing its long-term hedged position from approximately 10 percent of its portfolio to 25 percent of its portfolio. NW Natural's proposal includes two workshops to discuss the Company's specific long-term hedging parameters.

⁷ The audio from the special public meeting on November 4, 2014, can be reviewed using the following link: <http://apps.puc.state.or.us/audio/110414-lc60/1009.mp3>

On January 30, 2015, NW Natural filed a proposed motion to bifurcate LC 60 to allow sufficient time for the Commission, Staff, CUB, and other interested parties to review and develop the Company's long-term hedging policy.

Staff Conclusion Hedging

Staff recommends that action item 4.1 be removed from NW Natural's 2014 Action Plan, and per the Company's request, that the Commission open a bifurcated procedural schedule in Docket No. LC 60 to serve as an IRP update to examine the Company's long-term hedging policy.

7) Supply-Side Resources

Supply Diversity and Risk Mitigation Practices

IRP Guideline 13

Staff Position

Staff's initial comments observed an inadequate recognition of the IRP Guideline 13 (Resource Acquisition) requirement. While Staff's initial comments were directed to gas supply and transportation bidding practices, the comment applies to all resource decisions. The context for this requirement is expressed in the Guideline 13 wording for an electric utility, as follows:

- a. An electric utility should, in its IRP:*
Identify its proposed acquisition strategy for each resource in its action plan.

Staff stated in its final comments that regardless of how past IRPs have been treated with regard to Guideline 13, Staff recommends that the Commission reinforce Staff's view of the Guideline 13 requirement in its Order on this IRP. Staff reasoned that:

- The IRP should provide sufficient detail to allow Staff and participants to do a thorough review of the purchasing, hedging and risk management plans, policies and strategies; and
- The IRP, not the PGA, is the correct proceeding for vetting resource acquisition decisions, including the decision process. The PGA is the

proceeding where the result of the vetted resource acquisition decisions and process is reviewed.

NW Natural Position

In its Reply Comments, NW Natural stated that Guideline 13 was developed in full recognition that each local distribution company (LDC) engages with Staff in the annual PGA process. NW Natural continued with a statement that Staff's comments have the potential for creating requirements that would be duplicative of the PGA process. Lastly, NW Natural noted that previous IRPs had not been subjected to Staff's current application of the Guideline 13 Resource Acquisition requirement.

NW Natural stated in its final comments that it rejects Staff's interpretations of Guideline 13 requirement and requests that the Commission confirm the Company's reading of the IRP Guidelines. The Company stated that it believes that it continues to provide all of the necessary information to evaluate and vet resource decisions that are applicable to the IRP. Shorter term decisions, like those made to fill-in capacity that was lost due to the Plymouth LNG situation last winter, by their nature, are not part of any IRP Action Plan. The Company also cited discussions that have occurred regarding Staff's exclusion of projects that have been deemed already underway.

Staff Conclusion Supply-Side Resources

Staff recommends that Staff continue to work with NW Natural and other Stakeholders on the interpretation of Guideline 13 as part of a broader IRP Guideline discussion about how the guidelines are applied to Gas Utilities versus Electric Utilities.

8) Linear Programming and Risk Analysis

Staff Position

In Staff's initial comments, it noted that the process of developing and comparing prospective supply portfolios is complicated because of supply dependency on interstate pipeline companies whose future expansions are something which NW Natural can influence, but cannot control. In addition, Staff conceded that the conventional approach to risk evaluation for electric utilities does not work as well for a natural gas utility. Lastly, Staff noted its major conclusion regarding the fulfillment of the

IRP Compliance Requirement was that the plan include “two measures of PVRR risk: one that measures the variability of costs and one that measures the severity of bad outcomes.” While NW Natural provided cost estimates for various portfolios based upon a certain weather standard, it did not provide 95 percent (or other) upper limits for the present value revenue requirement (PVRR), taking into account both weather variability and gas purchase price uncertainties.

In Staff’s final comments, it recommends that for future IRPs the Commission note that portfolio analysis phases are intended, in IRP Guidelines 1.b.2. and 1.c., as well as Guideline 4.i., j., k. and l.,⁸ to meet the primary goal of selecting a resource portfolio with the best combination of expected costs and associated risks and uncertainties for the utility and its customers (Guideline 1.c.). In addition, Staff recommends that the Commission direct NW Natural to perform in its 2016 IRP stochastic analysis calculating the 95 percent (or other) upper limits for alternate resource portfolio PVRRs, taking into account both weather variability and gas purchase price uncertainties.

NW Natural Position

NW Natural’s reply comments contend that its portfolio evaluation adheres to the intent of the IRP Guideline by accounting for a possible divergence in basis differential at commodity purchasing hubs and the range of new interstate pipeline rates. NW Natural asserts that these are the greatest risks to the resource portfolio selection. The remainder of NW Natural’s comments focused on gas price issues.

NW Natural’s final comments stated that it will incorporate what Staff has defined as stochastic analysis in its next IRP. However, to make this analysis of benefit, the Company looks forward to working with Staff and other Stakeholders through the technical working group process on defining the appropriate stochastic inputs.

⁸ Staff observes that the analysis process for selection of a resource portfolio with the best combination of expected costs and associated risks and uncertainties is outlined in IRP Guidelines 1.b.2. and 1.c., as well as Guideline 4.i., j., k. and l. While the analysis process is not prescribed, it is outlined and applied to include, in order, distinct phases: deterministic; and stochastic. In addition, sensitivity testing may also be performed. These analysis phases include a deterministic analysis, a stochastic analysis and a sensitivity testing to test for conditions not well represented in the deterministic and stochastic analysis.

Staff Conclusion Linear Programming and Risk Analysis

Staff recommends acknowledgement of NW Natural's Action Item 5.8 to continue developing more statistically sophisticated approaches for probabilistically measuring reliability risk management. Explore other modeling tools for potentially supplementing SENDOUT.⁹ Develop a database that allows the Company to more effectively analyze reliability risk.

9) Energy Policies and Environmental Considerations

Staff Position

In Staff's initial comments regarding Guideline 8 (Environmental Costs) that requires utilities to conduct a time profile of CO₂ compliance requirements and to conduct an "analysis that recognizes significant and important upstream emissions that would likely have a significant impact on its resource decisions," Staff stated that it is concerned that all of the climate change risks and opportunities beyond the immediate regulatory effects of EPA's 111 (d) rule are not currently accounted for in the planning cycle. Additionally, Staff stated that it is time for NW Natural to begin exploring how to analyze climate change risks and opportunities.

In Staff's final comments, Staff stated that it appreciates that NW Natural considered the impact of high carbon tax on its resource acquisition. However, that consideration of a high carbon tax scenario may not be sufficient to account for the impacts of all the climate change risks and opportunities on the Company's resource additions. Therefore, Staff recommended that the Company and participants begin these discussions as part of NW Natural's next IRP process.

NW Natural Position

In NW Natural's reply comments, the Company stated that it assessed the impact of alternative regulatory compliance futures on its resource requirements, concluding that the primary resource planning outcome in the highest carbon price scenario is to delay implementation of two resource projects. NW Natural disagreed with Staff's characterization that it is time for NWN to "begin" exploring how to analyze climate change risks and opportunities.

⁹ SENDOUT® is a software model from Ventyx for long-term gas supply portfolio planning. SENDOUT is a widely used model that helps identify the long-term least-cost combination of resources to meet stated loads.

In NW Natural's final comments, it stated that Staff did not speak to the fact that the Company solicited input from Staff and other Stakeholders regarding the appropriate analysis of this issue to include in the IRP. NW Natural also stated that Staff failed to mention the Company's analysis of this issue in 23 pages of its IRP.

Staff Recommendation

Staff agrees that energy policies and environmental considerations were raised and discussed during the technical meetings. Staff appreciates NW Natural's work with the participants on these issues and clarifies its previous comments. Instead, of recommending that the Company begin conversations on these policies and considerations, Staff recommends that NW Natural and participants continue discussions regarding policies and environmental considerations as part of NW Natural's next IRP process. Thus, Staff recommends that the Company's proposed Action item 5.7 be modified to reflect continued discussions with stakeholders to improve the analysis of the impact of climate change on the risks and opportunities faced by the Company.

Staff Conclusion Energy Policies and Environmental Considerations

Staff recommend acknowledgement of the modified Company's proposed Action item 5.7 to continue monitoring Green House Gas Legislation and work with stakeholders to identify the appropriate analysis of the impact of climate change on the Company's risks and opportunities.

PROPOSED COMMISSION MOTION:

The Commission acknowledge, with exceptions and revisions, Northwest Natural Gas Company's 2014 Integrated Resource Plan as contained in this report and summarized in Attachment B (which would remove NW Natural's Action Item 2.1b. Vancouver/Clark County distribution projects), or as an alternative motion Staff moves that the Commission acknowledge, with exceptions and revisions, the Company's 2014 Integrated Resource Plan as contained in this report and summarized in Attachment C (which would include NW Natural's Action Item 2.1b. Vancouver/Clark County distribution projects, not yet started, included in Appendix 6).

ATTACHMENT A

NW NATURAL ACTION PLAN

1. Load Forecasting

1.1 Continue to refine growth projections for the Clark County load center.

1.2 Create a demand forecast scenario based upon the assumed construction of Northwest Innovation Works methanol plants.

2. Resource Additions and Changes.

2.1 Acquire resources in the near-term consistent with meeting the Base Case firm sales load forecast.

- a. Recall 30,000/day of Mist storage capacity from the interstate storage account effective May 2015 to serve the core customer needs reflected in the Base Case load forecast.
- b. Complete Clark County distribution projects to address Vancouver load center needs — estimated timing of projects is over the next five years with an estimated total capital cost of \$25 million.
- c. Proceed with the Newport refurbishment project and continue investigating Portland Gasco refurbishment alternatives. Estimated timing of Newport refurbishment is over the next three years at an estimated cost of \$25 million.
- d. Construct the South Salem Feeder to serve load growth in the Salem area – estimated timing is to begin permitting in 2015 with an in-service date in 2019; estimated cost of \$25 million.

2.2 Additional actions related to changes to resource stack:

- a. Given that segmented capacity is an interim solution, continue working with Northwest Pipeline to investigate options regarding both the Plymouth and Jackson Prairie storage facilities.
- b. Explore alternatives with NWP for increasing contracted MDDO capacity at Vancouver gates, including but not limited to, TF-1 contract extensions

and/or subscription for additional contract demand capacity at some future date.

- c. Provide termination notice to NWP on the Company's existing Plymouth LS-1 and TF-2 service agreements by October 31, 2014 (effective November 1, 2015), unless NWP offers a viable economic alternative solution before that notice cut-off date.

2.3 Analyses to be performed for future pipelines and alternative resources:

- a. Complete analysis regarding North Mist: refine cost estimates; quantify the value of the project's optionality created by upsizing the associated takeaway pipeline near-term versus at some future date(s); and research applicability of the Company's Hinshaw Exemption. NW Natural will submit this analysis for the Commission's review by May 2015.
- b. Preserve the optionality of participating in both the Cross-Cascades and Pacific Connector interstate pipelines by working with the Project Sponsors and exploring what preserving this optionality requires. Timing is contingent on other parties. Updates will be provided at the annual updates.
- c. Conduct cost risk analysis on acquiring capacity on the proposed Pacific Connector pipeline to ensure that the Company has fully analyzed its options should the project move forward. These analyses will be included in the next IRP.

3. Demand-Side Resources and Environmental Considerations

- 3.1 Explore assessing a premium value to account for any natural gas price volatility hedging value associated with DSM energy savings.
- 3.2 Follow Oregon Docket No. UM 1622 and revise annual DSM targets as needed in accordance with any changes to the program resulting from Energy Trust requested investigation into the exceptions to the cost effectiveness guidelines.
- 3.3 Monitor the implications of EPA regulation 111(d) on future coal plant retirements and the consequential impact of natural gas supply prices.

4. Hedging

4.1 Increase the Company's long-term hedged position of gas requirements from the current level of approximately 10 percent up to 25 percent consistent with the recommendation of the Company's consultant. NW Natural will propose specific long-term hedging parameters for Commission and stakeholder review prior to June 30, 2015.

5. Ongoing Activities and Noteworthy items that might be included in future IRPs

5.1 Continue monitoring the data and sources used for the customer growth forecast.

5.2 Continue monitoring pipeline projects that have been identified in the IRP and that are associated with LNG export facilities.

5.3 Continue reviewing national and regional supply and price forecasts and their sensitivity to environmental regulation, LNG exports, and other factors.

5.4 Continue exploring the load implications from the emerging growth markets of power generation, industrial, and transportation.

5.5 Continue updating and refining resource cost estimates included in modeling and options considered such as satellite CNG/LNG.

5.6 Continue acquiring cost effective therm savings through energy efficiency programs administered by Energy Trust of Oregon.

5.7 Continue monitoring Green House Gas (GHG) legislation.

5.8 Continue developing more statistically sophisticated approaches for probabilistically measuring reliability risk management. Explore other modeling tools for potentially supplementing SENDOUT. Develop a database that allows the Company to more effectively analyze reliability risk.

ATTACHMENT B

NWN'S 2014 IRP ACTION PLAN WITH STAFF RECOMMENDATIONS AND MODIFICATIONS

1. Load Forecasting

- 1.1 Continue to refine growth projections for the Clark County load center.
- 1.2 Create a demand forecast scenario based upon the assumed construction of NIW's methanol plants.

2. Resource Additions and Changes

- 2.1 Create a demand forecast scenario based upon the assumed construction of NIW's methanol plants. Acquire resources in the near-term consistent with meeting the Base Case firm sales load forecast.
 - a. Recall 30,000/day of Mist storage capacity from the interstate storage account effective May 2015 to serve the core customer needs reflected in the Base Case load forecast.
 - b. ~~Complete Clark County distribution projects to address Vancouver load center needs — estimated timing of projects is over the next five years with an estimated total capital cost of \$25 million.~~
 - c. Proceed with the Newport refurbishment project and continue investigating Portland Gasco refurbishment alternatives. Estimated timing of Newport refurbishment is over next three years at an estimated cost of \$25 million.
 - d. Continue the pre-construction phase of the South Salem Feeder Project (e.g., studies, permitting, etc.) and ~~Construct the South Salem Feeder to serve load growth in the Salem area — estimated timing is to begin permitting in 2015 with an in-service date in 2019; estimated cost of \$25 million.~~ conduct a Request for Proposal (RFP) for Recallable Agreements in the Salem load center. Provide the Commission with the results of additional

analysis (e.g., results of RFP, accelerated DSM analysis, future load growth specific to the Salem load center) related to the

South Salem Feeder prior to moving beyond the pre-construction phase of the project.

2.2 Additional actions related to changes to resource stack:

- a. Given that segmented capacity is an interim solution, continue working with NWP to investigate options regarding both the Plymouth and Jackson Prairie storage facilities.
- b. Explore alternatives with NWP for increasing contracted MDDO capacity at Vancouver gates, including but not limited to, TF-1 contract extensions and/or subscription for additional contract demand capacity at some future date.
- c. Provide termination notice to NWP on the Company's existing Plymouth LS-1 and TF-2 service agreements by October 31, 2014 (effective November 1, 2015), unless NWP offers a viable economic alternative solution before that notice cut-off date.

2.3 Analyses to be performed for future pipelines and alternative resources:

- a. Complete analysis regarding North Mist: refine cost estimates; quantify the value of the project's optionality created by upsizing the associated takeaway pipeline near-term versus at some future date(s); and research applicability of the Company's Hinshaw Exemption. NW Natural will submit this analysis for the Commission's review by May 2015.
- b. Preserve the optionality of participating in both the Cross-Cascades and Pacific Connector interstate pipelines by working with the Project Sponsors and exploring what preserving this optionality requires. Timing is contingent on other parties. Updates will be provided at the annual updates.
- c. Conduct cost risk analysis on acquiring capacity on the proposed Pacific Connector pipeline to ensure that the Company has fully analyzed its options should the project move forward. These analyses will be included in the next IRP.

3. Demand-Side Resources and Environmental Considerations

3.1 Explore assessing a premium value to account for any natural gas price volatility hedging value associated with DSM energy savings.

~~3.2 Follow Oregon Docket No. UM 1622 and revise annual DSM targets as needed in accordance with any changes to the program resulting from Energy Trust requested investigation into the exceptions to the cost effectiveness guidelines. Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.~~

3.3 Monitor the implications of EPA regulation 111(d) on future coal plant retirements and the consequential impact of natural gas supply prices.

4. Hedging

~~4.1 Increase the Company's long term hedged position of gas requirements from the current level approximately 10 percent up to 25 percent consistent with the recommendation of the Company's consultant. NW Natural will propose specific long term hedging parameters for Commission and stakeholder review prior to June 30, 2015.~~

5. Ongoing Activities and Noteworthy items that might be included in future IRPs

5.1 Continue monitoring the data and sources used for the customer growth forecast.

5.2 Continue monitoring pipeline projects that have been identified in the IRP and that are associated with LNG export facilities.

5.3 Continue reviewing national and regional supply and price forecasts and their sensitivity to environmental regulation, LNG exports, and other factors.

5.4 Continue exploring the load implications from the emerging growth markets of power generation, industrial, and transportation.

5.5 Continue updating and refining resource cost estimates included in modeling and options considered such as satellite CNG/LNG.

~~5.6 Continue acquiring cost effective therm savings through energy efficiency programs administered by Energy Trust of Oregon.~~

5.7 Continue monitoring GHG legislation.

5.8 Continue developing more statistically sophisticated approaches for probabilistically measuring reliability risk management. Explore other modeling tools for potentially supplementing SENDOUT. Develop a database that allows the Company to more effectively analyze reliability risk.

ATTACHMENT C

NWN'S 2014 IRP ACTION PLAN WITH STAFF RECOMMENDATIONS AND MODIFICATIONS

1. Load Forecasting

1.1 Continue to refine growth projections for the Clark County load center.

1.2 Create a demand forecast scenario based upon the assumed construction of NIW's methanol plants.

2. Resource Additions and Changes.

2.1 Acquire resources in the near-term consistent with meeting the Base Case firm sales load forecast.

- a. Recall 30,000/day of Mist storage capacity from the interstate storage account effective May 2015 to serve the core customer needs reflected in the Base Case load forecast.
- b. ~~Complete Clark County distribution projects to address Vancouver load center needs — estimated timing of projects is over the next five years with an estimated total capital cost of \$25 million. Complete those Clark County distribution projects included in Appendix 6 which have not yet started and which address, in part, Vancouver load center needs and have an estimated timing for completion within the next five years.~~
- c. Proceed with the Newport refurbishment project activities which will extend the operating life of the facility. This includes construction and installation of the pretreatment system, liquefaction improvements, vaporization replacement, control building and system upgrades.
- d. Continue the pre-construction phase of the South Salem Feeder Project (e.g., studies, permitting, etc.) and ~~Construct the South Salem Feeder to serve load growth in the Salem area — estimated timing is to begin permitting in 2015 with an in-service date in 2019; estimated cost of \$25 million.~~ conduct a Request for Proposal (RFP) for Recallable Agreements in the Salem load center. Provide the Commission with the results of

additional analysis (e.g., results of RFP, accelerated DSM analysis, future load growth specific to the Salem load center) related to the South Salem Feeder prior to moving beyond the pre-construction phase of the project.

2.2 Additional actions related to changes to resource stack:

- a. Given that segmented capacity is an interim solution, continue working with Williams Pipeline to investigate options regarding both the Plymouth and Jackson Prairie storage facilities.
- b. Explore alternatives with Williams Pipeline for increasing contracted MDDO capacity at Vancouver gates, including but not limited to, TF-1 contract extensions and/or subscription for additional CD capacity at some future date.
- c. Provide termination notice to Williams Pipeline on the Company's existing Plymouth LS-1 and TF-2 service agreements by October 31, 2014 (effective November 1, 2015), unless Williams Pipeline offers a viable economic alternative solution before that notice cut-off date.

2.3 Analyses to be performed for future pipelines and alternative resources:

- a. Complete analysis regarding North Mist: refine cost estimates; quantify the value of the project's optionality created by upsizing the associated takeaway pipeline near-term versus at some future date(s); and research applicability of the Company's Hinshaw Exemption. NW Natural will submit this analysis for the Commission's review by May 2015.
- b. Preserve the optionality of participating in both the Cross-Cascades and Pacific Connector interstate pipelines by working with the Project Sponsors and exploring what preserving this optionality requires. Timing is contingent on other parties. Updates will be provided at the annual updates.
- c. Conduct cost risk analysis on acquiring capacity on the proposed Pacific Connector pipeline to ensure that the Company has fully analyzed its options should the project move forward. These analyses will be included in the next IRP.

3. Demand-Side Resources and Environmental Considerations

- 3.1 Explore assessing a premium value to account for any natural gas price volatility hedging value associated with DSM energy savings.

~~3.2 Follow Oregon Docket No. UM 1622 and revise annual DSM targets as needed in accordance with any changes to the program resulting from Energy Trust requested investigation into the exceptions to the cost effectiveness guidelines.~~

3.2 Consistent with the methodology presented in Chapter 4, NW Natural will ensure Energy Trust has sufficient public purpose charge funding to acquire the therm savings identified and approved by the Energy Trust's board of approximately 5.2 million therms in 2015 and 5.4 million therms in 2016.

~~3.3 Monitor the implications of EPA regulation 111(d) on future coal plant retirements and the consequential impact of natural gas supply prices.~~

4. Hedging

~~4.1 Increase the Company's long term hedged position of gas requirements from the current level of approximately 10% up to 25% consistent with the recommendation of the Company's consultant. NW Natural will propose specific long term hedging parameters for Commission and stakeholder review prior to June 30, 2015.~~

5. Ongoing Activities and Noteworthy items that might be included in future IRPs

5.1 Continue monitoring the data and sources used for the customer growth forecast.

5.2 Continue monitoring pipeline projects that have been identified in the IRP and that are associated with LNG export facilities.

5.3 Continue reviewing national and regional supply and price forecasts and their sensitivity to environmental regulation, LNG exports, and other factors.

5.4 Continue exploring the load implications from the emerging growth markets of power generation, industrial, and transportation.

5.5 Continue updating and refining resource cost estimates included in modeling and options considered such as satellite CNG/LNG.

~~5.6 Continue acquiring cost effective therm savings through energy efficiency programs administered by Energy Trust of Oregon.~~

5.7 Continue monitoring GHG legislation.

5.8 Continue developing more statistically sophisticated approaches for probabilistically measuring reliability risk management. Explore other modeling tools for potentially supplementing SENDOUT. Develop a database that allows the Company to more effectively analyze reliability risk.