



STATE OF WASHINGTON  
UTILITIES AND TRANSPORTATION COMMISSION

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March 27, 2015

Greg S. Kantor  
President and Chief Executive Officer  
Northwest Natural Gas Company  
220 NW Second Avenue  
Portland, Oregon 97202

**Re: Northwest Natural Gas Company  
2014 Natural Gas Integrated Resource Plan  
Docket UG-131473**

Dear Mr. Kantor:

The Washington Utilities and Transportation Commission (Commission) has reviewed the 2014 Natural Gas Integrated Resource Plan (IRP) filed by Northwest Natural Gas Company (NW Natural or Company) on August 29, 2014, and finds that it meets the requirements of Washington Administrative Code (WAC) 480-90-238.

By acknowledging compliance with WAC 480-90-238, the Commission does not signal pre-approval for ratemaking purposes of any course of action identified in the IRP. The Commission will review the prudence of the Company's actions at the time of any future request to recover costs of resources in customer rates. The Commission will reach a prudence determination after giving due weight to the information, analyses, and strategies contained in the Company's IRP along with other relevant evidence.

Because an IRP cannot pinpoint precisely the future actions that will minimize a utility's costs and risks, we expect that the Company will regularly update the assumptions that underlie the analysis within the IRP and adjust its investment strategies accordingly.

In the attached document, the Commission elaborates on the expectations regarding the Company's Technical Working Group (TWG) process and 2016 IRP:

1. As a condition of acknowledgment of this IRP, work with the TWG to correct deficiencies in the avoided cost calculation, and file an updated cost in the 2016 Energy Efficiency Business Plan.
2. The Company should also consider and discuss the following issues with its TWG prior to the submitting the 2016 IRP:
  - a. Consider a larger range of potential peak day demand growth scenarios, including a very low demand growth forecast;
  - b. Re-examine the estimate of Washington service territory use-per-customer;
  - c. Provide more detail on the distribution model results and analysis that identify specific large distribution projects;
  - d. Discuss with the TWG the appropriateness of the changes made to the design weather criteria;
  - e. Consider a quantitative risk analysis of relying upon segmented capacity as a firm resource until 2018.

Consistent with previous IRPs, the Commission expects that any regulatory deliberations or decisions on the economic viability of any specific course of action described within NW Natural's next IRP will not be made within the context of the IRP.

Commission Staff will continue to provide additional input as NW Natural develops its next IRP. NW Natural should file its next IRP work plan on or before August 31, 2015, and its final 2016 IRP on or before August 31, 2016.

Sincerely,



STEVEN V. KING  
Executive Director and Secretary

Attachment



## *Memorandum*

### **Northwest Natural Gas Company's 2014 Integrated Resource Plan Docket UG-131473**

#### **Introduction**

WAC 480-90-238 directs investor-owned utilities (IOUs) to describe the mix of natural gas supply resources and conservation that will meet current and future needs at the lowest reasonable cost to the utilities and its ratepayers.<sup>1</sup> In determining the lowest reasonable cost mix of resources, a utility must consider such factors as resource cost, market-volatility risks, public policies regarding resource preference adopted or contemplated by the State of Washington or the federal government and the cost of risks associated with environmental effects including emissions of carbon dioxide.<sup>2</sup> The rule requires IOUs to conduct a comprehensive analysis of the costs and benefits, including risk mitigation benefits, of various approaches for meeting future resource needs using the best available information.

On August 29, 2014, Northwest Natural Gas Company Corporation (NW Natural or Company) filed with the Washington Utilities and Transportation Commission (Commission) its 2014 Integrated Resource Plan (IRP or Plan). The Plan describes its evaluation of potential resource strategies for meeting resource need over the next 20 years. In doing so, NW Natural has complied with applicable Commission rules.

#### **Summary**

NW Natural projects a system-wide annual average rate of growth of 1.3 percent in its peak design day over the 20-year planning horizon. This is an increase of 0.4 percent from its most recent projection in the 2013 Washington IRP.<sup>3</sup> The peak day increase is attributable to customer growth forecasts, particularly the revised customer growth forecasts for the Company's Washington service territory. At the request of the Commission in its 2013 IRP acknowledgment letter, NW Natural used Washington-specific data when projecting demand growth for its Washington service territory, which led to an increase in its projected customer growth rate for Washington from 2.3 percent to 3.8 percent.<sup>4</sup> Clark, Skamania, and Klickitat counties encompass only 10 percent of the Company's system load, but Washington is the fastest growing region in the Company's service area.

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<sup>1</sup> WAC 480-90-238(2)(a).

<sup>2</sup> WAC 480-90-238(2)(b).

<sup>3</sup> Northwest Natural Gas Company, 2013 Integrated Resource Plan, Docket UG-120417.

<sup>4</sup> Northwest Natural Gas Company, 2013 Integrated Resource Plan Acknowledgment Letter, Docket UG-120417.

NW Natural also made significant changes to its firm resource stack as compared to the previous IRP. After an unexpected December 2013 transmission curtailment of gas sourced from Plymouth LNG, the Company immediately removed the storage facility from its firm resource stack. It will also remove a portion of its Jackson Prairie (JP) supply beginning in 2018 due to the non-firm nature of some of its transport service from the facility to its service territory. Considered as firm resources in prior IRPs because the Company believed the transport contracts were firm, the delivery of the gas under the Plymouth and JP contracts were in reality subordinate to firm gas pipeline rights and therefore subject to curtailment.

Driven by changes to the firm resource stack, the Plan states that the Company will need additional interstate transmission capacity within the 20-year planning horizon. The Company can cover transmission deficiencies for the next five years through segmented capacity and Mist storage recall, but will need to acquire additional supply-side resources within the planning horizon.<sup>5</sup> The Company does not yet know when it will need additional capacity. The Plan determined that due to the high degree of uncertainty regarding proposed regional projects, the Company should remain flexible and employ risk management strategies as the regional projects unfold.<sup>6</sup> A key tool for managing this risk is Mist storage recall.

Furthermore, due to customer growth in the Washington service territory, the Plan states that the Company requires immediate distribution upgrades in its Washington service territory. The Plan shows that the Company is currently peak resource deficient in Clark County, as shown in Figure 1.2.<sup>7</sup> The Plan states that the Company will need to invest \$25 million in Washington distribution system projects over the next five years to ameliorate the deficiencies.

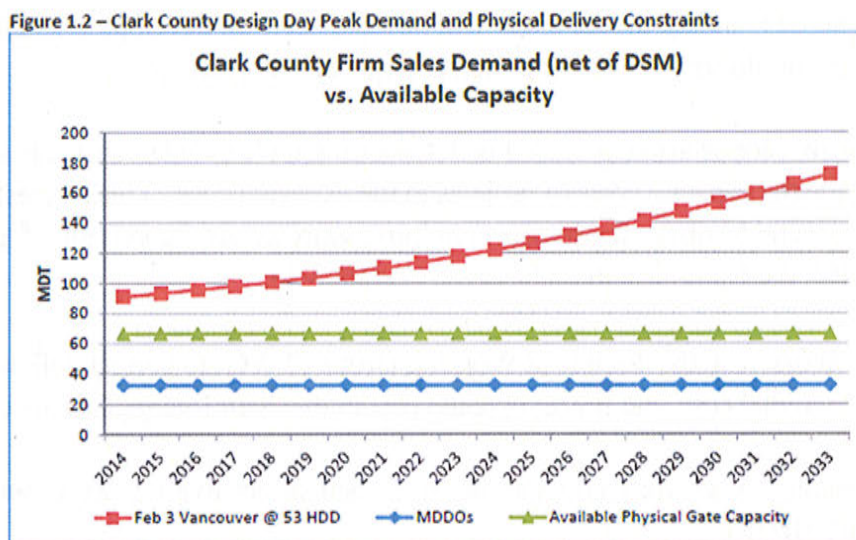
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<sup>5</sup> Segmented capacity is a contract that allows the Company to flow more gas on an existing contract as secondary firm transportation. See pages 3.12-3.14 of the Plan for more information. Mist is an underground natural gas storage located near Mist, Oregon, owned and operated by NW Natural. The Company has annual contracts for storage with other parties it can recall to serve its own end-use customers.

<sup>6</sup> We collectively refer to five large industrial and export proposals located in the Northwest as the regional projects, and discuss it in detail later in this letter. The Company also provides a summary of the projects on page 2.26 of the Plan.

<sup>7</sup> The Company's peak design day is 53 Heating Degree Days, which is equivalent to 12 degrees Fahrenheit.





### Recommendations

NW Natural's general analytic approach in the final IRP is sound and we concur that the Company will likely need additional interstate transmission capacity within the next 20 years. Although NW Natural's draft IRP determined that in all scenarios it is necessary to enter into an agreement for Cross-Cascades capacity within 10 years, the final IRP is more nuanced. At the request of the advisory group to examine additional alternatives (such as the proposed Pacific Connector), the Company determined that in some scenarios alternatives to the Cross-Cascades had lower costs. More importantly, the Plan recognizes that regional projects and events outside the Company's control will determine the next regional pipeline, and identifies the lowest-cost resource stack for multiple scenarios. This decision-making analysis should help the Company be prepared to respond appropriately as regional projects move forward. This is the appropriate analysis for a company that is fortunate to have storage recall as a buffer while regional events unfold.

Although the Commission is satisfied with NW Natural's general analytical approach and with the overall presentation of the analysis in this IRP, the Commission does have concerns with certain aspects of the Plan. For example, relative to the previous IRP, in this IRP the Company made several significant changes to the inputs to its resource-planning model including adjusting the Washington load forecast upward, modifying the weather design criteria to plan for a more extreme winter event, and removing a storage contract from its firm resource stack. Although the Commission does not contest these individual adjustments, cumulatively the changes to the model invite skepticism, as it appears that all changes serve to advance the date of Company's projected resource deficit. As it seems unlikely that all model adjustments should be so reliably one directional, the Commission must now pay particular attention to these types of adjustments in NW Natural's future IRPs. As a matter of mere statistical probability, counter-balancing adjustments to the Company's

next resource planning model likely will be necessary. In developing its 2016 Plan, the Company should strive to capture such counterbalancing factors.

The Commission is also concerned with the Company's avoided cost calculation, which does not include the capacity costs of projects in the expected case. This suggests that the Company is under-investing in conservation resources. As a condition of acknowledgment of this IRP, the Commission requires the Company to:

- Work with the Technical Working Group (TWG) to correct deficiencies in the avoided cost, and file an updated cost in the 2016 Energy Efficiency Business Plan.

The Commission also has a number of recommendations that it believes will make for a stronger 2016 IRP.

- Consider a larger range of potential peak-day demand growth scenarios, including a very low demand growth forecast;
- Re-examine the Washington service territory use-per-customer;
- Provide more detail on the distribution model results and analysis that identify specific large distribution projects;
- Discuss with the Technical Working Group the appropriateness of the changes made to the design weather criteria;
- Consider a quantitative risk analysis of reliance upon segmented capacity as a firm resource until 2018.

## **Discussion**

### **Load Forecast**

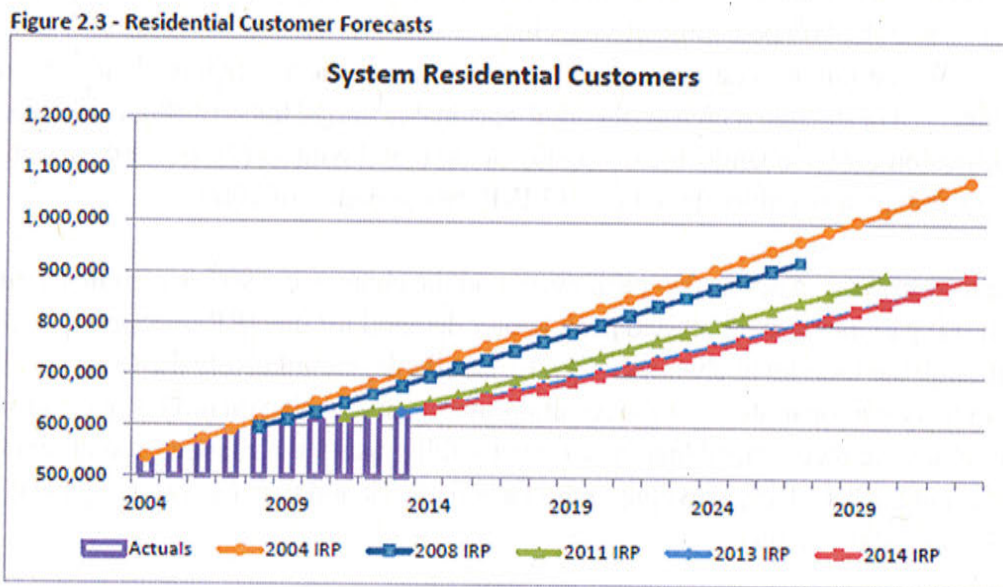
NW Natural projects its Washington peak-day demand to grow at 3.4 percent annually net of demand-side management (DSM), a substantial increase from the 1.61 percent projected in the 2013 IRP. This growth is attributable to growth in customers, not use-per-customer. In Washington, the residential use-per-customer is declining by 0.1 percent, and the commercial by 0.6 percent. However, the annual customer growth rate for Washington service territory is 3.8 percent, and 1.9 percent for the entire system. In part, the increase in residential customer growth from the 2013 IRP is attributable to modified, Washington-specific new construction forecasts for the 2014 IRP.<sup>8</sup>

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<sup>8</sup> The Washington Office of Financial Management projects Clark County population growth to be 1.2 percent from 2015-2032, (with a high estimate of 1.6 percent). NW Natural modified this data using consultant and in-house new



We appreciate that NW Natural used Washington-specific data in its load forecast as requested in the 2013 IRP Commission acknowledgment letter. In general, relying more heavily on local data leads to better IRPs. To continue to improve upon this Plan, the Company should consider taking a broader scope of potential demand growth in the Washington service territory. This is possible by including a very low demand forecast in its scenarios. Clark County has been growing at a rapid pace for more than a decade, and we agree it is likely to remain one of the fastest growing regions of the Pacific Northwest. Nevertheless, as we saw during the 2008/2009 recession, growth rates can decline rapidly for unforeseen reasons and take years to recover. We also note that use-per-customer continues to decline, and as can be seen in Figure 2.3, the Company has over-estimated its residential customer forecasts since 2008.<sup>9</sup> A very low forecast would provide a more robust analysis of the range of possible growth scenarios.



We would also like the Company to review its Washington service territory use-per-customer, which it has not done since before the 2013 Plan. The Company's load growth is increasing primarily because of new home construction, which should be more efficient than the general housing stock. At the same time, we can expect that owners of Clark county homes built during the massive construction boom of the 1990s will begin to replace older furnaces. It is also possible that newer homes are larger than the general housing stock and might require more gas to heat and thus increase the use-per-customer. In light of the

construction data, and projects the average annual customer growth rate to be 3.8 percent. Page 2.13 of the Plan shows the forecasts range from a low case of 3.1 percent to a high case of 4.1 percent.

<sup>9</sup> Pages 2.6 & 2.7; Figures 2.3, 2.4, and 2.5.

planned and anticipated local distribution projects, it is important that the Company have the most recent information to guide its decision-making.

#### *Design Weather Criteria*

In the 2014 IRP, NW Natural uses a seven-day peak event to model demand for an unusually cold multi-day weather event. The Company uses the actual 53 heating degree-days (HDD) (equivalent to an average daily temperature of 12 degrees Fahrenheit) from February 3, 1989, as the peak day. The 53 HDD peak day is shouldered by colder-than-average temperatures on the three days preceding and three days following the peak, creating a seven-day peak event. The 2013 IRP used the same peak day, but with colder-than-normal temperatures only the day before and after, creating a three-day event. It is not clear whether or how the modification results in a change to peak load transportation or storage.

For generating seasonal demand data in the 2014 IRP, NW Natural uses daily temperatures for a year at the 90<sup>th</sup> percentile of years in a 30-year winter weather history.<sup>10</sup> In its 2013 IRP, NW Natural used daily temperatures for a year at the 85<sup>th</sup> percentile in a 20-year history.<sup>11</sup> The change increases the total seasonal heating HDD by 180, or 5 percent. As justification for the change, the Company noted that 3 winters (2007, 2008, and 2011) have been subsequently colder than the 2013 IRP design winter of 2000.

The movement to a seven-day peak event and the change to a 90<sup>th</sup> percentile heating season both serve to increase forecasted peak winter demand for this IRP over previous IRPs. Although the individual changes might be justifiable, cumulatively the Company has not adequately demonstrated that the resulting more conservative method is necessary. Therefore, we recommend that the Company fully justify the change in weather design criteria in its 2016 IRP, providing a discussion of risk and benefit-cost analysis of the new and old design criteria.

#### **Demand-Side Management Resources**

NW Natural works with the Energy Trust of Oregon (ETO) to forecast its 20-year demand-side management potential for its entire service territory, including Washington. The Company provides ETO its avoided cost and ETO produces a forecast of cost-effective therm savings. NW Natural then includes this forecast in its SENDOUT model.<sup>12</sup> This Plan

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<sup>10</sup> This means that the Company uses the third coldest year of 30 years (90<sup>th</sup> percentile). In this case, the heating season is 1992/1993.

<sup>11</sup> This means that the Company used the third coldest year of 20 years (85<sup>th</sup> percentile). In this case, the heating season was 2000/2001.

<sup>12</sup> SENDOUT is a linear programming model, which provides deterministic results used by all of Washington natural gas utilities for modeling the IRP.



projects that the Company can achieve savings of 1.1 million therms by 2018 and 3.6 million by 2033 in Washington.

In light of the Commission Policy Statement on the cost-effectiveness of natural gas conservation and lower avoided costs, NW Natural will temporarily use the Utility Cost Test (UCT) as the primary cost-effectiveness test in 2015.<sup>13</sup> This is the appropriate approach in the near term. The Company's forecasts of avoided cost and declining cost-effectiveness of the portfolio under a total resource cost (TRC) test highlight missing non-energy benefits in the analysis. As directed by the policy statement, the Company and ETO should continue to work with Staff and regional stakeholders to quantify non-energy benefits properly and develop a fully-balanced TRC test in accordance with Commission policy.

#### *Avoided Cost Calculation*

Demand-side resources reduce peak demand and total gas usage by offsetting supply-side resources at a lower cost, so long as the cost of the supply-side resources are reflected in the avoided cost for demand-side resources. The Company's expected case for the future includes subscribing to a Cross Cascades transmission pipeline, recalling Mist storage contracts, building a compressor to increase the capacity of the Central Coast Feeder, and refurbishing the Newport LNG plant, among other distribution and transmission projects. However, the Company's avoided cost did not account for the capacity value of any of these transmission and distribution projects, only the commodity cost. If the resources of the expected case are necessary because peak demand forecasts exceed the ability of the current infrastructure to meet that future demand, then there is a value associated with avoiding or even delaying these projects. Acquiring additional demand-side resources to reduce demand is a least cost alternative to resource additions. By not including the capacity cost of the expected projects, the Company is likely under-investing in conservation resources. Prior to its 2016 energy efficiency plan expected in November 2015, the Company should work with Staff and interested parties to modify and refile its avoided cost calculation.

#### **Natural Gas Hedging**

The Plan states that the Company would like to increase its long-term hedged position up to no more than 25 percent of its expected annual purchases requirements. Currently, the Company does not have long-term hedges for its Washington customers.<sup>14</sup> A long-term

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<sup>13</sup> Policy Statement on the Evaluation of the Cost-Effectiveness of Natural Gas Conservation Programs Docket UG-121207.

<sup>14</sup> NW Natural meets about 10 percent of its annual Oregon requirement through a 30-year supply agreement with Encana, located Jonah field in Wyoming. The Washington Commission ordered the Company not to include the Encana transaction in Washington rates, in Docket UG-111233. In its acknowledgment letter of this IRP, the Oregon Public Utilities Commission decided to open a new docket to investigate the Company's hedging practice (Docket LC 60).

hedge in this context is a contract for more than three years. NW Natural believes that the fundamentals of gas production and demand favor locking-in gas prices now for longer-term periods.

The Commission is interested in further discussions of the Company's hedging practices in the Commission's existing natural gas hedging practices inquiry in Docket UG-132019. We look forward to the Company's participation in the continuation of these workshops later this year.

### **Resource Stack**

#### *Modification to Resource Stack*

In December 2013, prior to the explosion at Plymouth LNG, Williams Northwest Pipeline (NWP) curtailed the Company's TF-2 transmission service from Plymouth.<sup>15</sup> In previous plans, the Company claimed the resource, and implicitly its transmission, as firm.<sup>16</sup> In light of the discovery that this was a "secondary" or "subordinate" contract, the Company did not renew the service in 2015 and removed the 40,000 dth/day from the resource stack. The Company also removed a portion of its Jackson Prairie (JP) contract from the firm resource stack for meeting peak demand in recognition of the subordinate status of the pipeline capacity. However, the Company does not expect curtailment along that stretch of the pipeline within the next five years and is therefore renewing the JP contract.

Primarily due to the removal of Plymouth and a portion of JP, NW Natural projects it will need additional regional pipeline capacity within the planning horizon. In all scenarios, the Company's resource stack includes:

- Recall of Mist storage contracts beginning in 2015,
- Segmented capacity until 2018,
- North Mist expansion as soon as 2020 and,
- Subscribing to a regional interstate pipeline.

#### *Regional Interstate Pipeline*

The plan states that the Company will need additional interstate pipeline capacity within the planning horizon and likely before 2025. However, the Plan's optimal resource plan depends upon third-party developer-driven events and actions outside the Company's control. The Northwest gas market is approaching a period of uncertainty and possible growth in exports and industrial uses. Earlier referenced as the regional projects, there are plans for two

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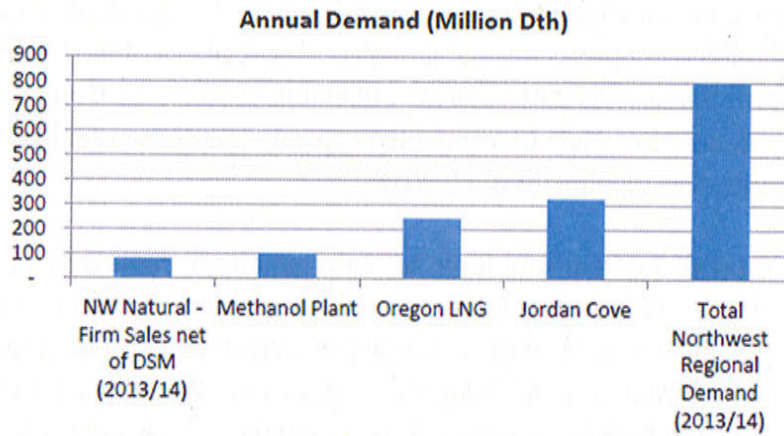
<sup>15</sup> TF-2 is NWP's contract for secondary, or subordinate, firm service.

<sup>16</sup> Northwest Natural Gas Company, 2013 Integrated Resource Plan, Docket UG-120417, Page 3.6; Northwest Natural Gas Company, 2011 Integrated Resource Plan, Docket UG-100245, Page 3.6.



liquefied natural gas (LNG) export facilities along the Oregon coast, as well as three methanol plants in Washington and Oregon. It is unlikely that all five projects will be built; nevertheless, the completion of even one project would have a significant impact in the Northwest and on NW Natural's eventual resource acquisition decisions.

### Regional Pipeline Infrastructure: Implications of Potential Major New Loads



The graph above shows the demand of NW Natural's entire service territory relative to the entire northwest regional demand and the proposed projects. One methanol plant is equivalent to the demand of an additional local distribution Company. The proposed Jordan Cove project could have a capacity of 1,000,000 dth/day, which is more than three times greater than NW Natural's entire system.<sup>17</sup> The current infrastructure does not have the capacity to meet that additional demand, and NW Natural may have the opportunity to explore partnerships in new transmission pipelines that will serve the large, new developments.

Nearly all of the Company's supplies must flow on Williams' Northwest Pipeline (NWP), which does not have additional firm TF-1 service.<sup>18</sup> Williams is currently soliciting interest in an expansion along its Washington Interstate 5 line to serve the proposed Oregon LNG export terminal in Warrenton, Oregon. A non-regulated affiliate of NW Natural and Williams is also soliciting interest in a Cross-Cascades project that would run from Stanfield to Molalla, the same as presented in Northwest Natural's 2013 IRP.<sup>19</sup> In its initial draft of the 2014 IRP, the Company determined that the lowest-cost resource addition always included

<sup>17</sup> Jordan Cove Energy Project, L.P., <http://www.jordancoveenergy.com/project.htm>.

<sup>18</sup> Mist field produces two percent of the Company's needs and is located within its service territory.

<sup>19</sup> Formerly known as Palomar, the Company is referring to the project as "Cross-Cascades."

participating as an anchor tenant to the Cross-Cascades pipeline. At the request of the Technical Working Group, the Company analyzed additional alternatives such as subscribing to the proposed Pacific Connector line that will extend from Malin to Jordan Cove. The final Plan determined that events outside of the Company's control will likely dictate the next regional pipeline and the Company does not need to make a decision for at least five years. The Commission agrees that the Company should keep its options open by recalling Mist storage contracts as regional events unfold.

We have some concern with the Company's reliance upon segmented capacity as a near-term resource without having presented a quantitative risk-analysis of the likelihood of potential constraints from Sumas. As part of its next planning process, the Company should include a quantitative risk analysis study of segmented capacity that shows the likelihood of curtailment along this pipeline through 2018.

We are pleased with the Plan's multiple scenario paradigm analysis to manage its portfolio in an uncertain future. This decision-making analysis provides an effective tool for understanding the range of possible future scenarios. It is apparent that the non-utility use of natural gas is still undergoing a period of rapid change and expansion. We do not yet know what, if any, regional projects will be built. Only recently, liquid natural gas import facilities along the coast were proposed and in the permitting process. Now, those facilities are in the permitting process to export natural gas. As we have noted, NW Natural is in the fortuitous position of having the ability to recall Mist storage contracts so that it can wait for regional events to unfold. We believe that this Plan puts the Company in a better position to strike the right deal for its customers at the right time. We encourage the Company to continue to use and improve its multiple scenario analysis for the next Plan.

#### *Distribution*

The Company is planning five distribution system projects in its Washington service territory within the next 5 years. The five projects will reinforce distribution system pipelines in the Vancouver region. At an estimated cost of \$25 million, these significant investments deserve greater attention.

The Plan's distribution chapter was a good overview of its distribution planning methodology, but it did not provide analysis of the SynerGEE distribution model runs. For example, the Plan displays two interesting and potentially informative distribution system maps that show the improved pipeline pressure of a neighborhood in Vancouver with the addition of a city gate.<sup>20</sup> A discussion of these types of displays would improve the quality of analysis both the

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<sup>20</sup> Page 6.7, Figure 6.1 and 6.2.



Company and Staff can perform. In future Plans, we recommend that the Company provide more discussion on the analyses that identify specific large distribution projects.

**Conclusion**

The Commission acknowledges that Northwest Natural's 2014 Natural Gas IRP complies with WAC 480-90-238, on the condition that the Company file a revised avoided cost prior to its 2016 Energy Efficiency Plan. It is also our expectation that the Company will discuss with the TWG prior to the submission of its 2016 IRP our recommendations in this acknowledgement letter.

