

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

LC 64

In the Matter of

NORTHWEST NATURAL GAS
COMPANY, dba NW NATURAL, 2016

Integrated Resource Plan

Staff Final Comments

The Public Utility Commission of Oregon Staff (Staff) files these Final Comments on Northwest Natural Gas Company's (NWN or Company) 2016 Integrated Resource Plan (IRP or Plan). These Final Comments include a summary of Staff's Initial Comments and the Initial Comments submitted by the Citizens' Utility Board of Oregon (CUB), and also address NWN's Reply Comments. Staff's Final Comments and recommendations on the Company's 2016 Plan are organized according to subject and begin by addressing the Action Plan. A final order is expected to follow the Commission public meeting on February 21, 2017. Per usual procedure, Staff will submit its public meeting memorandum, containing Staff's final observations and recommendations, approximately one week prior to the February 21, 2017 public meeting.

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

While some issues have been addressed through on-going discovery or are discussed in NWN's Reply Comments, there are still revisions to the Company's 2016 IRP Action Plan that will be completed between Staff's Final Comments and the filing of Staff's public meeting memorandum which will be presented at the February 21, 2017 public meeting. These revisions are being worked on collaboratively with NWN.

Further, Staff has been working with NWN to modify the following two items (Action Items) in the Company's Action Plan with regard to Demand-side resources and environmental actions:

3. Work with Energy Trust of Oregon to track peak day savings from DSM programs in addition to the typical Energy Trust metric of total annual savings to better understand if the capacity costs projected to be avoided with peak day savings in the DSM savings projection are being saved.

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

4. Investigate the viability of developing a pilot project to reduce upstream emissions of methane and, if viable, NWN will bring this pilot forward for Commission review and approval. The pilot design would test whether reductions can be achieved at a level consistent with the Base Case carbon values incorporated into the IRP and the range of costs for a larger scale effort. If it is determined that the cost to move the market exceeds the carbon values in the IRP, the Company may alternatively consider advancing the work as a project proposal under ORS 757.539 (Senate Bill 844).

Revisions to the two Action Items above will include updated avoided cost forecasts, and revised language regarding how and when to appropriately investigate the viability of a pilot project to reduce upstream emissions of methane. Staff will also be proposing an additional Action Item requiring updates regarding a potential new large customer of NWN's (Northwest Innovation Works²) as part of the final recommendation that will be made to the Commission at the Regular Public Meeting in February 2017.

Summary of Staff's Initial Comments

Staff's Initial Comments were filed on November 3, 2016, and can be reviewed in their entirety in Docket No. LC 64. In its Initial Comments, Staff identified areas requiring further investigation and potential updated analysis in NWN's 2016 IRP and/or the Company's next IRP. These areas included NWN's forecast assumptions related to combined heat and power facilities, potential overestimates related to its peak day forecasts, the approach used to forecast customer losses, and information requests regarding potential future NWN service being provided to Northwest Innovation Works.

Staff provided a recommendation regarding the appropriateness of NWN's Action Item related to its proposed upstream carbon emissions reduction plan, as filed by the Company. Staff had additional questions about NWN's new avoided cost methodology, and Staff supported NWN's proposal to potentially file a request to conduct a targeted Demand-side Management (DSM) pilot.

Summary of CUB's Initial Comments

CUB's Initial Comments were filed on November 3, 2016, and can be reviewed in their entirety in Docket No. LC 64. CUB primarily focused on NWN's Action Items related to its upstream carbon emissions reduction plan, and the Company's proposed investment of \$6 -7 million in replacement and repair costs to the Mist underground storage facility. CUB indicated in its comments that it did not support Commission Acknowledgement of the proposed upstream carbon emissions reduction plan, as filed by the Company. CUB stated that it would prefer that, after NWN fully investigates the feasibility of the program, it be considered in the context of a voluntary program submitted under ORS 757.539.

² Information regarding Northwest Innovation Works can be found using the following link: <http://nwinnovationworks.com/>.

The Action Plan

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

Resource Additions and Changes

Resource Investments:

- 1. Plan to recall 30,000 Dth/day of Mist storage capacity from the interstate storage account effective May 2019 to serve the core customer needs, subject to a review based on an update of the annual load forecast in the summer of 2018.*
- 2. Replace or repair, depending on relative cost-effectiveness, the large dehydrator at Mist's Miller Station. Replacement is currently estimated to cost between \$6 million and \$7 million based on estimates obtained from a third-party engineering consulting firm engaged by NWN.*
- 3. Proceed with the SE Eugene Reinforcement project to be in service for the 2018/2019 heating season and at a preliminary estimated cost of \$4 million to \$6 million.*

Demand –side resources and environmental actions:

- 1. Consistent with methodology in chapter 6, NWN will ensure Energy Trust has sufficient funding to acquire therm savings of 5.1 million therms in 2017 and 5 million therms in 2018 or the amount identified and approved by the Energy Trust Board.*
- 2. Work with Energy Trust of Oregon to further scope a geographically targeted DSM pilot via accelerated and/or enhanced offerings ("Targeted DSM" pilot) to measure and quantify the potential of demand-side resources to cost-effectively avoid/delay gas distribution system reinforcement projects in a timely manner and make a Targeted DSM pilot filing with the Oregon Public Utility Commission in late 2017 or early 2018.*
- 3. Work with Energy Trust of Oregon to track peak day savings from DSM programs in addition to the typical Energy Trust metric of total annual savings to better understand if the capacity costs projected to be avoided with peak day savings in the DSM savings projection are being saved.*
- 4. Investigate the viability of developing a pilot project to reduce upstream emissions of methane and, if viable, NWN will bring this pilot forward for Commission review and approval. The pilot design would test whether reductions can be achieved at a level consistent with the Base Case carbon values incorporated into the IRP and the range of costs for a larger scale effort. If it is determined that the cost to move the market exceeds the carbon values in the IRP, the Company may alternatively consider advancing the work as a project proposal under SB 844.*

See NWN's 2016 IRP Action Plan, 4.1. Joint Multiyear Action Plan, page 1.18.

Staff Final Comments: Gas Requirement Forecast

Staff reviewed NWN's load forecasting methodology used in its 2016 IRP. Staff submitted information requests to obtain the explanatory data used in the Company's econometric forecasting models and to understand the assumptions used by the Company to develop the forecasts. Based upon this review, Staff offers the following observations:

NWN stated in its Reply Comments, "Anecdotally, the Company has seen that when gas prices are rising (falling) quickly, some industrial customers switch from (to) transportation to (from) sales service. NW Natural's gas costs, due to the Company's volatility-reducing hedging activities, generally lag swings in the current market price, where market prices are an option available to transport customers through third party marketers. It is likely that more sophisticated industrial operators take advantage of this differential when it is beneficial to them to lower their costs. Additionally, since the preponderance of transportation volumes move on interruptible service agreements, these switches are much more likely to affect the mix of interruptible sales versus interruptible transportation volumes, neither of which are part of our IRP design day resource plans."

NWN is in a unique position to observe the operations of its sophisticated industrial operators and Staff finds value in NWN's anecdotal description of the possible incentive for customers to switch on and off interruptible sales Schedules.

NWN's peak day load forecast combines the customer count forecast, the peak day weather standard, and the peak day use per customer forecast. NWN argues in support of its assumption in the IRP that the peak day in the planning horizon will not be a holiday and that it will be a day between Monday and Thursday. Staff believes that this assumption may overstate the Company's resource needs. Specifically, the Company is creating a hypothetical case that has never occurred in at least the last 30 years. The Company uses a "highest-heating day requirement in 30 years" standard for its peak day planning. Staff notes that using a 25 or 20 year standard would lower the peak day resource needs because 1989 was the highest heating requirement day. Thus NWN's counterfactual day of the week assumption is not needed because 30 years is already a long enough time period to capture a large variety of weather scenarios.

Staff Recommendation No. 1

Staff recommends that NWN use a weather scenario based upon the Company's actual highest heating requirement day in 30 years for its peak day analysis.

This recommendation is economically significant because the Company's models provided in response to Staff DR 2 indicate that the day of the week can have a similar

impact on use-per-customer as a one degree change in weather. On page 2 of its Reply Comments, NWN indicates that it generally concurs with Staff's recommendation to explore the use of load center specific data for its customer forecasts.

Staff Recommendation No. 2

Staff recommends the Company continue to explore load center specific data, such as the Oregon Office of Economic Analysis' long-term population forecast by county that NWN identified in its Reply Comments.

Staff Final Comments: Supply-Side Resources

NWN's 2016 IRP includes the following action item related to its Supply-Side Resources in 4. Multiyear Action Plan, 4.1 Joint Multiyear Action Plan, *Resource Investments*:

2. Replace or repair, depending on relative cost-effectiveness, the large dehydrator at Mist's Miller Station. Replacement is currently estimated to cost between \$6 million and \$7 million based on estimates obtained from a third-party engineering consulting firm engaged by NWN.

In its Initial Comments, CUB raised concerns about the lack of clarity in NWN's 2016 IRP pertaining to the need for replacement or repair of the large dehydrator at Mist's Miller Station. It was not clear to CUB whether the dehydrator was needed to serve core customers, or interstate storage, or a combination of core customers and interstate storage. In response to CUB's concerns, NWN stated on page 7 of its Reply Comments that replacement or repair of this equipment is needed to serve core customers and is the best combination of cost and risk for its customers.

Staff believes, as was stated in its Initial Comments, that NWN's Mist Storage is a valuable resource for its customers. Mist recall has been and continues to be a least cost resource, delaying the need to acquire more expensive alternative options that would otherwise be needed to serve firm customers. This facility has been in operation for more than 25 years and requires replacement or repair of the large dehydrator at Mist's Miller Station.

Staff indicated in its Initial Comments that results provided in NWN's 2016 IRP estimate that the Northwest region will need to add more gas infrastructure within the next 5-10 years to meet increasing demand, with large drivers such as power generation and industrial sectors. The Company evaluated the potential acquisition of interstate pipeline capacity in several different forms, which it describes in detail on pages 3.32 and 3.33 of its Plan. Of the various potential pipeline projects evaluated, NWN stated that the NWP Sumas Expansion is the only option considered flexible and simple enough to be available as early as November 2019.

Staff also explained in its Initial Comments regarding Supply-Side Resources that the Commission received comments from Columbia Riverkeeper with questions and concerns regarding a potential Methanol Project Resource sharing Agreement, described on page 3.38 of the IRP. Columbia Riverkeeper raised concerns about the fundamental impact that such an agreement might have on the gas supply and demand balance in the Northwest region. NWN provided responses to Columbia Riverkeeper's questions pertaining to this potential project, in response to information requests submitted by Staff. A considerable amount of this information is confidential. Staff and NWN will be meeting with Columbia Riverkeeper in January 2017, to discuss this potential project.

Staff Recommendation No. 3

Staff recommends acknowledgement of NWN's Action Item proposing to "*Replace or repair, depending on relative cost-effectiveness, the large dehydrator at Mist's Miller Station. Replacement is currently estimated to cost between \$6 million and \$7 million based on estimates obtained from a third-party engineering consulting firm engaged by NWN.*" However, Staff believes it is important to note that the prudence of any cost recovery potentially sought by the Company would only be considered in the context of a rate filing. Staff also notes that acknowledgement of an Action Item does not equate to preapproval of that Item for rate recovery.

Staff also recommends that NWN update the IRP stakeholders regarding potential regional pipeline projects and associated cost analysis as information becomes available.

Staff Final Comments: Energy Policies and Environmental Considerations

Staff and NWN are working together to resolve concerns regarding the following Action Item:

4. Investigate the viability of developing a pilot project to reduce upstream emissions of methane and, if viable, NWN will bring this pilot forward for Commission review and approval. The pilot design would test whether reductions can be achieved at a level consistent with the Base Case carbon values incorporated into the IRP and the range of costs for a larger scale effort. If it is determined that the cost to move the market exceeds the carbon values in the IRP, the Company may alternatively consider advancing the work as a project proposal under SB 844.

Staff appreciates NWN willingness to collaborate with Staff and the parties in order to revise the Company's proposed Upstream Methane Emission Reduction Pilot Action Item. Staff finds merit in NWN taking steps with ICF³ to investigate the technical potential and possible costs of going upstream to achieve methane leakage reduction.

³ Inner City Fund: <https://www.icf.com/who-we-are/about/our-history>

Staff is supportive of NWN's request for "a discussion of this concept to continue..." Staff advises NWN that it may submit detail about the project in the IRP but the Commission is unlikely to respond outside of the proper forum to consider proposed pilot details, analysis, and pilot goals for methane emission reduction. At this time, based on the concept submitted by NWN, Staff is supportive of the efforts undertaken by the Company. NWN has demonstrated a continued sustainability commitment.

Additionally, Staff believes NWN's willingness to invest resources to explore, identify and study possible ways to reduce its carbon liability is meritorious. However, the Commission and its Staff have a duty to assure that such investments are prudent. Because neither Oregon nor the federal government have yet imposed a regulatory scheme affecting carbon emissions from natural gas local distribution companies, no carbon compliance costs exist which could affect NWN costs to deliver gas to its customers. However, the prospect of such regulation encompasses a real risk that is recognized by the Commission and is the basis of Guideline 8. Therefore, NWN has taken the correct action in identifying the risk and placing a future carbon compliance cost to that risk. NWN's IRP forecasts a federal or state carbon policy by 2021. One could argue that early action may help reduce future compliance costs.

Staff Conclusion

Staff agrees with CUB's Initial Comments⁴ that, because there are no present compliance costs associated with methane emission reduction, NWN's proposed upstream methane emission reduction proposal "is a voluntary activity that goes beyond what a prudent utility would do." Voluntary emission reduction project proposals can be submitted for Commission review through the ORS 757.539 process.

Staff Recommendation No. 4

Staff looks forward to continuing discussions and review of NWN's upstream methane emission reduction project, potentially as part of an ORS 757.539 filing. Staff does not recommend acknowledgement of NWN's following Action Item;

4. *Investigate the viability of developing a pilot project to reduce upstream emissions of methane and, if viable, NWN will bring this pilot forward for Commission review and approval. The pilot design would test whether reductions can be achieved at a level consistent with the Base Case carbon values incorporated into the IRP and the range of costs for a larger scale effort. If it is determined that the cost to move the market exceeds the carbon values in the IRP, the Company may alternatively consider advancing the work as a project proposal under SB 844.*

⁴ CUB indicated in its comments that it did not support Commission Acknowledgement of the proposed upstream carbon emissions reduction plan, as filed by the Company. CUB stated that it would prefer that, after NWN fully investigates the feasibility of the program, it be considered in the context of a voluntary program submitted under ORS 757.539.

However, Staff and NWN are currently working on revisions to this Action Item and expect that these revisions will result in a recommendation to acknowledge the revised action item. This is expected to be completed by the time Staff makes its recommendations on NWN's 2016 IRP before the Commission at the Public Meeting on February 21, 2017.

Staff Final Comments: Avoided Costs

In its Initial Comments, Staff expressed reservations and concerns about the venue, process, scope and implications for updating avoided costs in an IRP. Staff suggested that updating avoided costs methodology for EE and DSM might be more properly addressed in another proceeding.

In its Reply Comments, NWN referred Staff to previous direction and prior communications from the Commission that the 2016 IRP was the proper forum to explore changes to avoided costs.⁵ NWN also stated that per OAR 860-030-0007(1), IRPs are designated as the venue for natural gas companies to update avoided costs. In the Company's Reply Comments it also indicated that it is open to exploring a different venue to address avoided cost methodologies. However, the Company stated that an alternative Commission proceeding would not be superior to the IRP process, given OAR 860-030-0007. NWN states that the IRP workshop process is better suited to public input than a contested Commission proceeding on avoided costs. Further, NWN correctly points out that the Commission has yet to establish a Commission led process for updating or changing avoided cost methodologies or inputs.

Staff appreciates NWN's proactive work to update its avoided costs in this IRP. The avoided cost methodology and values developed in this IRP should be used for planning purposes and for DSM programs in 2018. Staff maintains that a global docket to investigate avoided costs may need to be opened at some point in the future.

In its Initial Comments, Staff expressed its concerns about the methodology and the precedent being set by NWN's inclusion of a new explicit carbon cost in its avoided costs, as there is already a cost of carbon built into the Company's forward energy prices. An explicit carbon adder, in addition to what is captured in the forward energy prices, is new and novel to the utilities regulated by the Commission. NWN's avoided cost carbon adder takes effect in 2021 and represents 11 percent to 16 percent of total value to an Energy Trust measure.

In its Reply Comments, the Company states that its avoided cost actions are neither precedent setting nor novel and in fact are in keeping with Commission direction on IRP Guidelines for carbon. NWN stated that there is uncertainty regarding the timing and extent of the financial impact of carbon regulation, and asserts that something will likely

⁵ Staff agreed to NWN's suggestion in late 2014 to expand its exploration of a proxy hedge value of DSM, per Commission Order No. 16-064, to instead cover the broader topic of avoided cost of DSM and to do so as part of the 2016 IRP process.

happen within the IRP planning horizon, which should be included as an explicit value in the avoided cost of EE and DSM.

Staff believes the value of the new avoided cost metric “Supply Resource Capacity Value” is based on the cumulative savings of certain Energy Trust measures from fully avoiding the construction of North Mist II, especially given the size of the increase post-2025. Staff requested specifics regarding the necessary amounts of EE that needed to be acquired to avoid Mist II construction and by when these resources would need to be acquired.

NWN asserts in its Reply Comments that the marked increase in value for some measures in the “supply resource capacity value” is incremental and does result in the full avoidance of Mist II construction from Energy Trust EE and DSM activities.

Staff appreciates NWN’s position and explanation regarding Staff’s concerns. Staff will continue to work with the Company to better understand the calculation behind the values utilized in the avoided cost category of “Supply Resource Capacity Value” across all measures described in this IRP.

Staff Recommendation No. 5

Staff recommends acknowledgement of NWN’s Action Item proposing to “*Work with Energy Trust of Oregon to further scope a geographically targeted DSM pilot via accelerated and/or enhanced offerings (“Targeted DSM” pilot) to measure and quantify the potential of demand-side resources to cost-effectively avoid/delay gas distribution system reinforcement projects in a timely manner and make a Targeted DSM pilot filing with the Oregon Public Utility Commission in late 2017 or early 2018.*”

Staff further recommends acknowledgement of NWN’s action item proposing to “*Work with Energy Trust of Oregon to track peak day savings from DSM programs in addition to the typical Energy Trust metric of total annual savings to better understand if the capacity costs projected to be avoided with peak day savings in the DSM savings projection are being saved.*”

Staff Final Comments: Demand-Side Resources Management

In Staff’s review of NWN’s IRP and in its Initial Comments with regard to the Company’s Demand-Side Resources Management, Staff read NWN’s recommendation to, “...verify,” capacity savings as actually creating a *new* goal and/or performance metric for Energy Trust. Staff was opposed to such an action, as that would be within the purview of the Commission versus the Company. However, upon further discussion NWN stated that that was not its goal or intention.

Staff appreciates NWN’s clarification of this matter. It is important that signals to Energy Trust regarding verification come from the Commission. Currently, Energy Trust evaluates and verifies measures, programs and activities to determine their effectiveness

in producing or delivering energy savings, renewable generation or enhancing operations (i.e., customer service).

Since Staff filed its Initial Comments and NWN replied, Energy Trust's budget for all cost-effective EE and DSM in the Company's territory has grown substantially. Staff believes that to ensure that NWN collects enough funding to cover Energy Trust's planned activities in 2017 and 2018, the savings goals mentioned in the NWN's Action Plan need to be revised. NWN and Staff have agreed to update these savings goals prior to the Public Meeting in February of 2017.

Staff Recommendation No. 6

Staff recommends that NWN work with Staff to revise the Company's Action Plan to include the revised savings goals. NWN has agreed to work with Staff to complete these revisions prior to the Commission public meeting in February 2017.

Staff Final Comments: Distribution System Planning

Staff finds NWN's overall distribution system planning to be reasonable. However, Staff's recommendation on page 4 of these Final Comments, "*Staff recommends the Company continue to explore load center specific data, such as the Oregon Office of Economic Analysis' long-term population forecast by county which it identified in its reply comments,*" impacts NWN's Distribution System Planning.

Staff Recommendation No. 7

Staff recommends acknowledgement of NWN's Action Item proposing to "*Proceed with the SE Eugene Reinforcement project to be in service for the 2018/2019 heating season and at a preliminary estimated cost of \$4 million to \$6 million.*"

Staff Final Comments: Linear Programming/Company's Resource Choices

Recall of Mist Storage for core customer is both a least cost and a least risk resource option to meet customer demand.

Staff Recommendation No. 8

Staff recommends acknowledgement of NWN's Action Item proposing to "*Plan to recall 30,000 Dth/day of Mist storage capacity from the interstate storage account effective May 2019 to serve the core customer needs, subject to a review based on an update of the annual load forecast in the summer of 2018.*"

Staff Final Comments: Stochastic Supply Resource Risk Analysis

The standard IRP role for stochastic risk analysis is to assist a utility in its selection among alternative supply/resource portfolios as to which manifest the “best” cost/risk profile. NWN’s effort in its 2016 IRP is primarily academic in the sense that the Mist Recall capacity resource is sufficiently superior to the portfolio addition alternatives for the 2020-21 planning horizon that stochastic analysis would shed no additional light as to what alternative might be its replacement. So the stochastic risk analyses in this IRP cycle is basically a trial run to prepare NWN for when it is time to conduct a timely evaluation of supply options that are outside of the Company’s control. Those supply options will likely involve the participation in prospective regional interstate pipeline projects.

Staff Recommendation No. 9

Staff recommends that in NWN’s next IRP, the following concerns be addressed:

- Extensive use was made of “boxplots” without defining the meanings of their upper and lower boundaries. Similarly, Table 9.1 (on page 9.5) shows the plus and minus cost-per-dekatherm ranges for several different supply resources without defining what the plus and minus meant. The meanings should be presented with the reader’s first exposure to those materials.
- Two pertinent risk variables are the projected cost per dekatherm and the probability of a failure of supply to meet demand. The probability of a failure of supply to meet demand was scarcely mentioned in this IRP, if at all. There was a largely irrelevant boxplot presentation of stochastically simulated January average temperatures, but no connection was made with the likelihood of a lack of capacity to meet coldest-day demand.
- Finally, in Section 2.3, Combining Simulations 1 and 2 (on page 9.7) was difficult to understand. It seems that a numerical example of a specific pairing from the two simulations would have eliminated the problem.

Conclusion

In its upcoming public meeting memorandum to be submitted in February 2017, Staff will recommend Commission acknowledgement of NWN’s 2016 IRP with suggested modifications to certain Action Items in the Company’s Plan. Finally, Staff’s upcoming February public meeting memorandum concerning this IRP will address NWN’s and parties’ Comments on Staff Recommendations (scheduled to be filed on January 19, 2017) as well as incorporate updated information and discussions held with the Company and the parties.

In conclusion Staff makes the following recommendations:

Staff Recommendation No. 1

Staff recommends that NWN use a weather scenario based upon the Company's actual highest heating requirement day in 30 years for its peak day analysis.

This recommendation is economically significant because the Company's models provided in response to Staff DR 2 indicate that the day of the week can have a similar impact on use-per-customer as a one degree change in weather. On page 2 of its Reply Comments, NWN indicates that it generally concurs with Staff's recommendation to explore the use of load center specific data for its customer forecasts.

Staff Recommendation No. 2

Staff recommends the Company continue to explore load center specific data, such as the Oregon Office of Economic Analysis' long-term population forecast by county that NWN identified in its Reply Comments.

Staff Recommendation No. 3

Staff recommends acknowledgement of NWN's Action Item proposing to "*Replace or repair, depending on relative cost-effectiveness, the large dehydrator at Mist's Miller Station. Replacement is currently estimated to cost between \$6 million and \$7 million based on estimates obtained from a third-party engineering consulting firm engaged by NWN.*" However, Staff believes it is important to note that the prudence of any cost recovery potentially sought by the Company would only be considered in the context of a rate filing. Staff also notes that acknowledgement of an Action Item does not equate to preapproval of that Item for rate recovery.

Staff also recommends that NWN update the IRP stakeholders regarding potential regional pipeline projects and associated cost analysis as information becomes available.

Staff Recommendation No. 4

Staff looks forward to continuing discussions and review of NWN's upstream methane emission reduction project, potentially as part of an ORS 757.539 filing. Staff does not recommend acknowledgement of NWN's following Action Item;

4. Investigate the viability of developing a pilot project to reduce upstream emissions of methane and, if viable, NWN will bring this pilot forward for Commission review and approval. The pilot design would test whether reductions can be achieved at a level consistent with the Base Case carbon values incorporated into the IRP and the range of costs for a larger scale effort. If it is determined that the cost to move the market exceeds

the carbon values in the IRP, the Company may alternatively consider advancing the work as a project proposal under SB 844.

However, Staff and NWN are currently working on revisions to this Action Item and expect that these revisions will result in a recommendation to acknowledge a revised version of the Action Item. This is expected to be completed by the time Staff makes its recommendations on NWN's 2016 IRP before the Commission at the Public Meeting on February 21, 2017.

Staff Recommendation No. 5

Staff recommends acknowledgement of NWN's Action Item proposing to *“Work with Energy Trust of Oregon to further scope a geographically targeted DSM pilot via accelerated and/or enhanced offerings (“Targeted DSM” pilot) to measure and quantify the potential of demand-side resources to cost-effectively avoid/delay gas distribution system reinforcement projects in a timely manner and make a Targeted DSM pilot filing with the Oregon Public Utility Commission in late 2017 or early 2018.”*

Staff further recommends acknowledgement of NWN's Action Item proposing to *“Work with Energy Trust of Oregon to track peak day savings from DSM programs in addition to the typical Energy Trust metric of total annual savings to better understand if the capacity costs projected to be avoided with peak day savings in the DSM savings projection are being saved.”*

Staff Recommendation No. 6

Staff recommends that NWN work with Staff to revise the Company's Action Plan to include the revised savings goals. NWN has agreed to work with Staff to complete these revisions prior to the Commission public meeting in February 2017.

Staff Recommendation No. 7

Staff finds NWN's overall distribution system planning to be reasonable. However, Staff's recommendation on page 4 of these Final Comments, *“Staff recommends the Company continue to explore load center specific data, such as the Oregon Office of Economic Analysis' long-term population forecast by county which it identified in its reply comments,”* impacts NWN's Distribution System Planning.

As such, Staff recommends acknowledgement of NWN's Action Item proposing to *“Proceed with the SE Eugene Reinforcement project to be in service for the 2018/2019 heating season and at a preliminary estimated cost of \$4 million to \$6 million.”*

Staff Recommendation No. 8

Recall of Mist Storage for core customer is both a least cost and a least risk resource option to meet customer demand. Staff recommends acknowledgement of NWN's Action

Item proposing to “Plan to recall 30,000 Dth/day of Mist storage capacity from the interstate storage account effective May 2019 to serve the core customer needs, subject to a review based on an update of the annual load forecast in the summer of 2018.”

Staff Recommendation No. 9

Staff recommends that the following concerns be addressed in NWN’s next IRP:

- Extensive use was made of “boxplots” without defining the meanings of their upper and lower boundaries. Similarly, Table 9.1 (on page 9.5) shows the plus and minus cost-per-dekatherm ranges for several different supply resources without defining what the plus and minus meant. The meanings should be presented with the reader’s first exposure to those materials.
- Two pertinent risk variables are the projected cost per dekatherm and the probability of a failure of supply to meet demand. The probability of a failure of supply to meet demand was scarcely mentioned in this IRP, if at all. There was a largely irrelevant boxplot presentation of stochastically simulated January average temperatures, but no connection was made with the likelihood of a lack of capacity to meet coldest-day demand.
- Finally, in Section 2.3, Combining Simulations 1 and 2 (on page 9.7) was difficult to understand. It seems that a numerical example of a specific pairing from the two simulations would have eliminated the problem.

This concludes Staff’s Final Comments.

Dated at Salem, Oregon, this 29th day of December, 2016



Lisa Gorsuch
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