ITEM NO. 6

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: July 31, 2018

REGULAR	X	CONSENT		EFFECTIVE DATE	Upon Commission's Approval

DATE: July 31, 2018

TO: Public Utility Commission

FROM: Deborah Glosser

THROUGH: Jason Eisdorfer and JP Batmale

SUBJECT: CASCADE NATURAL GAS (Docket No. LC 69) Integrated Resource Plan Decision.

STAFF RECOMMENDATION:

Staff recommends that the Commission acknowledge Cascade Natural Gas' (CNG or Company) 2018 Integrated Resource Plan (IRP or Plan), subject to Staff's recommendations provided in this report.

DISCUSSION:

Issue

Whether the Commission should acknowledge CNG's 2018 IRP.

Applicable Rule or Law

The Commission adopted least-cost planning as the preferred approach to utility resource planning in 1989.[1] In 2007, the Commission updated its existing least-cost planning principles and established a comprehensive set of IRP Guidelines to govern the IRP process. The IRP Guidelines found in Order Nos. 07-002 (corrected by 07-047) and 12-013 clarify the procedural steps and substantive analysis required of Oregon's regulated utilities in order for the Commission to consider acknowledgement of a utility's resource plan.[2]

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[1] Order No. 89-507.

[2] Orders 07-002 and 07-047. Additional refinements to the process have been adopted since 2007: See Order No. 08-339 (IRP Guideline 8 was later refined to specify how utilities should treat carbon dioxide

The IRP Guidelines and Commission rules require a utility to file an IRP with a planning horizon of at least 20 years within two years of its previous IRP acknowledgment order, or as otherwise directed by the Commission.[3] Further, the IRP must also include an "Action Plan" with resource activities that the utility intends to take over the next two to four years.[4] The utility's IRP should satisfy the IRP Guidelines and Commission rules for its determination of future long-term resource needs, its analysis of the expected costs and associated risks of the alternatives reviewed to meet its future resource needs, and its near-term Action Plan to achieve the IRP goal of selecting the "portfolio of resources with the best combination of expected costs and associated risks and uncertainties for the utility and its customers."[5] This is often referred to as the "least cost/least risk portfolio."

The Commission recently reiterated key components that it expects to see in an IRP, consistent with Order No. 07-047 Guidelines:

- Identification of capacity and energy needs to bridge the gap between expected loads and resources;
- Identification and estimated costs of all supply-side and demand-side resource options;
- Construction of a representative set of resource portfolios;
- Evaluation of the performance of the candidate portfolios over the range of identified risks and uncertainties;
- Selection of a portfolio that represents the best combination of cost and risk for the utility and its customers; and
- Creation of an Action Plan that is consistent with the long-run public interest as expressed in Oregon and federal energy policies.[6]

The Commission reviews the utility's plan for adherence to the procedural and substantive IRP Guidelines and generally acknowledges the overall plan if it is reasonable based on the information available at the time.[7] However, the Commission may also decline to acknowledge specific action items if it questions whether the utility's proposed resource decision presents the least cost and risk option for its customers.[8]

(CO2) risk in their IRP analysis); Order No. 12-013 (guideline added directing utilities to evaluate their need and supply of flexible capacity in IRP filings).

[3] Order No. 07-002 (Guidelines 1(c) and 3(a)) and OAR 860-027-0400.

[4] Order No. 14-415 at 3.

[5] Order No. 07-002 at 1-2.

[6] Order No. 17-386 at 3-4.

[7] *Id.* at 1.

[8] *Id.*

Analysis

Background and Procedural History
Following non-acknowledgment of its 2014 Oregon IRP, Cascade has worked closely with Commission Staff and stakeholders to take the steps necessary to improve its 2018 IRP. Since the initiation of the IRP process in January of 2018, over 60 information requests (IR) were initiated by Staff and addressed by the Company. In addition to a Commission workshop held on May 15, 2018, several informal and collaborative phone and web meetings were held between Staff and the Company over the course of the IRP process. Attendees at the Commission workshop included representatives from Citizen's Utility Board ("CUB") Energy Trust of Oregon ("ETO,") Staff, and Cascade. Topics addressed at the workshop included I-5 corridor and Gas Transmission Northwest ("GTN") resource shortfalls, non-cost-efficient energy efficiency projections, and CNG's avoided cost calculations. CUB and Alliance of Western Energy Consumers ("AWEC") also filed opening comments on April 6, 2018. Neither CUB nor AWEC filed final comments in LC 69.

During the early stages of the IRP process, Staff identified substantive areas of the 2018 IRP Action Plan and analysis that were not aligned with the IRP Guidelines. For example, the initial Action Plan contained only a two-year Action Plan (as opposed to four years), which left Staff unable to evaluate the Company's near-term actions for meeting the resource needs identified in the long-term plan. Specifically, the initial IRP filing and Action Plan did not include specific distribution and resource acquisitions the Company plans to acquire. Staff and CNG worked together to address these deficiencies and the Company filed an updated Action Plan with the requisite analysis.

Compliance with Commission IRP Guidelines
Staff concludes that CNG has complied with the Commission's IRP Guidelines and previous orders. However, in order to improve the efficiency and robustness of the IRP process and to facilitate the transfer of information between Company and stakeholders in the future, Staff has identified additional analysis that should be completed by the Company in its next IRP, as well as analysis that should be completed for the Company's 2018 IRP update.

Staff Recommendations
In its opening comments, Staff recommended that CNG extend its Action Plan timeframe from a two-year to a four-year horizon, and explicitly include in its four-year Action Plan the Company's planned resource investments, so that Staff could review

the near-term investments the Company plans to make.[9] The Company addressed this shortcoming and modified their 2018 Action Plan to include the requested analysis.

Staff also requested access to data the Company used in preparing its forecasts and models due to concerns that least cost-least risk alternatives were not evaluated by the Company. Although the Company did not provide all of the data necessary for Staff to replicate its statistical analysis, Staff was able to determine that the Company's resource and demand models (given the reasonable stated assumptions) were accurate within a reasonable margin of error.

Below Staff discusses its final analysis and recommendations for Cascade's IRP.

Issue 1. Demand Forecasts
The Company's analysis predicts solid load growth across its Oregon service territory, even when projected economic conditions are poor.

In its IRP, Staff identified that the Company used input data of dissimilar spatial and dissimilar temporal granularity to model load growth and demand forecasts. In addition, the Company's process of checking for autocorrelation of variables was inadequately explained and documented. These factors were important for Staff to understand in order to evaluate the accuracy of the Company's models.

Input Data
Over the course of the Company's responses to Staff IRs and further discussions with the Company, Staff was able to determine that, most of the input data used by the Company was appropriately resolved for its models (specifically, whether data and population and employment data were all appropriate). However, CNG should, in future IRPs, include this input data at the city- and town-level rather than the less granular citygate level. Doing so will allow for improved resolution in the Company's demand model using actual numbers rather than relying on smoothing or extrapolation from city to citygate level.

Statistical Methods
As part of its demand forecast, CNG modeled peak day usage. Staff noted in its comments that Cascade's peak day forecasting methodology is not transparent and does not appear to be based on standard econometric techniques. Cascade's method of forecasting peak day demand involves removing a portion of the data from the demand forecast and removing the ARMA terms from the demand forecast equation.

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[9] Staff referred to IRP Guideline 4(n) in Order No. 07-047, which lists the following required element: "An action plan with resource activities the utility intends to undertake over the next two to four years to acquire the identified resources . . . ."

Staff believes these steps are not likely to improve the accuracy of forecasting peak day demand, and they may decrease forecast accuracy.

Company's Response
In its Final Comments, the Company stated that the load forecast methodology used in Cascade's 2018 IRP did provide for steps to check for autocorrelation, but admitted that the narrative description and data provided to Staff were not sufficient for Staff to completely replicate the analysis. To that end, the Company states that it will add a narrative related to how it accomplishes this in future IRPs. Additionally, Cascade is currently utilizing a tool in its software to forecast load using moving averages (auto ARIMA in the statistical program R) for the 2018 IRP in Washington. The Company plan to do the same for future IRPs in Oregon and Staff believes this could be workable. CNG also states its opinion that the Technical Advisory Group meetings provide the best forum to review and critique Cascade's forecast methodology, and will therefore propose adding additional TAGs to walk Staff and other stakeholders through specific modeling efforts to minimize any potential forecast confusion when Staff or other stakeholders attempt to replicate the Company's forecast. While Staff was not able to exactly replicate the Company's forecast on the basis of the information provided by the Company, Staff was able to determine a range of demand forecast results based on its own modeling of the data. Since the Company's forecasts fall within the range calculated by Staff, Staff is satisfied that the forecast is reasonable. Nevertheless, in the future it will be more efficient to have access to all of the data and descriptions to completely reproduce the Company's models.

Staff Conclusion
Because load growth and demand forecasts are fundamental to planning to meet resource needs, it is imperative that Staff be able to replicate the Company's modeling analysis. To that end, Staff remains of the opinion that all model input data – along with clearly stated assumptions and equations – be provided with the initial IRP filing.

Staff Recommendation 1a:
In future IRPs, Cascade should amend its forecasts to describe and utilize a process that:

- Checks for autocorrelation;
- Uses an automated stepwise regression function available in such software packages as SAS or R.

Staff Recommendation 1b:
In future IRPs, the Company should provide with its initial IRP filing, all input files to replicate the Company's analysis in IRP filings.

Staff Recommendation 1c:

In future IRPs, the Company should use city- and town-level usage data rather than citygate level.

Issue 2. Supply Side Resources

Most of Staff's initial comments and discussion with the Company revolved around acquiring the input data and analysis the Company used to model its supply side resources. Particularly, for future IRPs, Staff recommended that the Company analyze how supply side model results would be affected by the impact of lower than anticipated energy efficiency savings. Because energy efficiency savings are a modeled value, having a range of values rather than a single value will produce a more realistic range of results. For this reason Staff has also requested that the Company as well as other utilities evaluate the impacts of lower than anticipated energy savings on supply side models. Staff also requested that the Company list the supply side acquisitions it plans to undertake within the Action Plan horizon. The Company has provided the requested information, and its responses address many of Staff's supply side concerns. The Company also modified its Action Plan to include anticipated supply side upgrades and acquisitions.

Company's Response

Regarding the forecasting data, the Company reaffirmed in its final comments that it has previously agreed to model the impacts of lower than projected energy efficiency savings as described in Staff's recommendation.

Staff Conclusion

While the Company's supply side modeling is of acceptable rigor to meet Commission guidelines, in future IRPs it will be critical for the Company to provide its input data, assumptions, and equations as part of its initial IRP filing. In addition, as is becoming customary with LNG IRPs, CNG should include in its models the impact of lower than projected energy efficiency savings in its 2018 IRP update.

Staff Recommendation 2a

In future IRPs, the Company must provide its load forecasting data with its initial IRP filing.

Staff Recommendation 2b

In its 2018 IRP update, the Company should model the impact of lower than projected energy efficiency savings on supply availability.

Issue 3. Avoided Costs of Energy Efficiency

In its initial comments, Staff highlighted serious concerns about the avoided costs presented in Cascade's 2018 IRP. Specifically, Staff was concerned about the credibility of various calculations due to the omissions of avoided distribution costs and data about price certainty. Additionally, the justification of Cascade's forecasted price of carbon compliance was seen as problematic because the Company only used one specific study in an inappropriate fashion to forecast the cost per therm it would pay into the future.

Staff's concerns were twofold: first Staff has concerns with the data used for modeling price of Carbon compliance. Second, Staff has concerns with respect to how avoided distribution costs resulting from energy efficiency can be integrated into the Company's avoided cost calculations.

Company's Response

In its final comments, Cascade agreed with Staff that the Company's price of carbon compliance requires improvement and additional justification. Cascade will continue to actively monitor relevant carbon policy and will work with Staff between now and the first IRP update to more effectively integrate such costs into the Company's modeling as appropriate. Additionally, Cascade will continue to coordinate internally, and with the Energy Trust of Oregon, to provide an update to the 2018 IRP as to how the Company will achieve these requirements.

However, with respect to avoided costs and rebound effects, Cascade argues that the rebound effect will likely lower the effectiveness of energy efficiency programs: if energy efficiency doesn't reduce consumption as much as it forecasted, then DSM's price per therm would be different, resulting in a lower amount of price certainty. The Company states its belief that it is unlikely that indirect rebound (also known as snapback) has any relevance to the certainty provided by DSM programs versus market pricing, particularly for low-income customers.

Staff Conclusion

Staff appreciates CNG's willingness to more robustly justify its assumptions and data used to model the price of carbon compliance and sees this as a critical step for future IRPs. With respect to avoided costs and rebound effects, Staff remains of the opinion that unrealized distribution costs should be included in future avoided cost calculations, and that risk premium should be included in future avoided cost calculations. However, in light of the ongoing Commission Avoided Cost Docket UM 1893, Staff recommends that these avoided cost issues be addressed for all Oregon LNG's as part of UM 1893.

Staff Recommendation 3a
In its 2020 IRP, Staff recommends that Cascade include unrealized distribution costs in its avoided cost for energy efficiency calculation.

Staff Recommendation 3b
In its 2020 IRP, Staff recommends that Cascade include a measure of price certainty (risk premium) in the Company's future avoided cost for energy efficiency calculation.

Staff Recommendation 3c
In its 2020 IRP, Staff recommends that Cascade utilize a realistic and justifiable estimation of the price of carbon compliance.

Issue 4. Demand Side Management

Staff made two recommendations in its Opening Comments on Demand Side Management (energy efficiency) planning activities:

1. CNG should work with Energy Trust of Oregon to better describe the calculations, model assumptions, and include the high level non-cost effective savings in this IRP; and
2. Distribution costs should be better quantified in the Company's avoided cost calculations. [10]

These recommendations were addressed by stakeholders at the Commissioner workshop held on May 15, 2018. Energy Trust explained how its model uses CNG's actual avoided costs found in the IRP, and how the use of a blended avoided cost allows ETO to normalize and scale customer experience statewide, while minimizing its operational and financial complexities. All parties agreed that if CNG were to incorporate avoided distribution costs into the Company's avoided cost calculation the discrepancy between modeled and blended avoided costs would be minimized. Depending on the energy efficiency measure, the discrepancy between the Company's avoided cost value and Energy Trust's blended avoided cost value can be as high as 20 percent.

Company's Response

The Company intends to work with Staff via UM 1893, the Energy Trust of Oregon, and other stakeholders as appropriate, to develop an avoided cost value for its distribution system, and will incorporate that component into the Company's avoided cost for energy efficiency calculations once a viable value is determined.

[10] LC 69, Staff's Opening Comments, April 6, 2018, pgs. 12 and 13.

Staff Conclusion
The avoided cost issues should continue to be addressed in UM 1893 and resolved before the next IRP.

Staff Recommendation 4
Staff recommends that the Company address issues of avoided distribution system costs and where relevant, non-cost-effective savings of energy efficiency in UM 1893.

Issue 5. Resource Integration
In its opening comments, and in the Commissioner's workshop held on May 15, 2018, Staff raised several concerns regarding how the Company plans to meet anticipated energy needs in three areas: the GTN, Bend and the I-5 Corridor. The Company had planned, in its IRP, distribution system upgrades to meet this shortfall but had yet to secure resources to meet the anticipated demand. Since unmet central Oregon shortfalls for energy were a major issue in the Company's 2014 IRP, Staff flagged this issue for further investigation.

Staff remains concerned by the GTN and Bend shortfalls, which are expected to begin in 2022 and 2027 respectively; shortfalls of 12,836 dths/day are expected around Bend in 2028. The Company provided data to Staff which shows that it acquired incremental GTN of 10,000 dths/day, which offsets the need for additional GTN capacity to serve the area until year 2027. This information was not included in its initial modeling or results, but is very helpful for Staff's analysis and alleviating its concern.

Staff also raised concerns that the Company did not appear to evaluate the cost of purchasing incremental GTN capacity now versus in four years to ensure that all scenarios are considered to lead to the selection of the least cost, least risk portfolio. Particularly since the Company is planning on performing pipeline enhancements in the area during this four-year window in order to meet increased demand, Staff expected to see a more robust explanation from the Company.

Company's Response
In its final comments, CNG asserts that, based on current information (as of June 7, 2018) from conversations with GTN, incremental capacity should be available to Cascade at the current rates (subject to any adjustment in CNG's next rate case) today as well as in four years. The Company is committed to perform this analysis at least quarterly for review by Cascade's Gas Supply Oversight Committee (GSOC), who must approve any incremental capacity acquisition. The Company will provide the status of these analyses in the Company's IRP Update filing. As noted earlier, in conjunction

with the filing of these responses, Cascade has filed an amended four-year action plan as recommended by Commission Staff in their final comments on June 1, 2018.

Staff Conclusion
In light of the fact that shortfalls are not anticipated to begin until after the 2018 IRP planning horizon, Staff is satisfied with the steps the Company is taking to plan for meeting anticipated shortfalls. Staff thinks it is important to be kept abreast of the Company's progress in meeting shortfalls. Staff notes the Company's concern that the contracts may not be closed prior to July 31, 2018, meaning they do not expect the contracts to be closed prior to IRP acknowledgment. While it is not proper for Staff to direct the Company's business decisions, it is likely that Staff will have questions about the prudence of the Company's decision to forego the securement of energy resources to meet the anticipated shortfalls until the time those shortfalls become ripe (i.e., 2022 and 2027). The Company must be prepared to show why these acquisitions are prudent when it seeks cost recovery.

Staff Recommendation 5
Cascade represented at the Commissioner workshop and its final comments that the Company will secure resources necessary to meet the anticipated 2022 shortfall along the I-5 corridor. Staff recommends that the Company provide a narrative update on the status of these acquisitions in its 2018 IRP update.

Issue 6. Distribution System Planning

Cascade plans to undertake the following distribution system enhancement projects over the next four years:

- Umatilla 2 inch reinforcement
- Pendleton 4 inch iron pipe reinforcement
- Pendleton 4 inch high pressure reinforcement
- Pendleton Korvola Road 4 inch PE reinforcement
- Bend 8" /6" high pressure steel reinforcement
- Bend Reinforcement of 4" PE at Hayes Ave
- Bend Reinforcement of 4" PE at Archie Briggs Rd

Following Staff's recommendations in previously-filed comments and information requests, the Company provided Staff with information regarding its cost-effective analysis, as well as its proposed distribution system costs. These items were also addressed in an informal phone discussion. Cascade further included this information in its Amended Four Year Action Plan. Staff notes that CNG provided all of the data

and information requested for Staff to independently evaluate proposed distribution system upgrades in the IRP. Staff is persuaded by the Company's justification for the need for these distribution system investments.

In terms of the methodology employed by CNG, Staff notes that CNG is working with Staff in docket UM 1893 to develop methodologies to incorporate distribution system costs into its avoided cost calculations. Staff believes that the outcome of this docket will yield a methodology the Company will include no later than in its next IRP.

Company's Response
In the Company's final comments, Cascade states that it is committed to incorporating distribution system costs into the avoided cost calculation of the 2020 IRP. As noted earlier, the Company feels participation in UM 1893 will allow Cascade to work with Staff and other stakeholders to develop the best methodology for incorporation into the Company's next IRP.

Staff Conclusion
Staff is satisfied, based on the information provided by the Company, that the proposed distribution system upgrades are necessary to meet forecasted demand, and that there does not appear to be a financial benefit to delaying these specific upgrades.

Staff Recommendation 6
Staff recommends that as part of its next IRP, Cascade develop a methodology to incorporate distribution system costs into its avoided cost calculation.

Issue 7. The Action Plan
Based on Staff comments and subsequent discussions, CNG made changes to its 2018 Action Plan in its Amended Four-Year Action Plan following both the initial and second Staff comments. In its Amended 2018 IRP Action Plan, Cascade proposed to introduce and perform several tasks intended to add rigor to its demand, supply, DSM, and avoided costs modeling.

In its prior comments, Staff made the following recommendations:

- The Company provide its load forecasting data in its 2022 initial IRP filing;
- The Commission acknowledge the Company's supply side analysis;
- Evaluate the cost of purchasing incremental GTN capacity now versus in 4 years;

- The Company update its Action Plan to include a timeline and plan for how it plans to acquire resources to meet the anticipated 2022 shortfall along the I-5 corridor;
- Cascade develop a methodology to incorporate distribution system costs into its avoided cost calculation in its next IRP.

Company's Response
The Company will provide load forecasting data in its 2020 initial IRP filing. Based on current information from GTN, incremental capacity should be available to Cascade at the current rates (subject to their next rate case) today as well as in four years. In conjunction with the filing of the Company's final comments, the Company has submitted an updated Action Plan, expanding on the timeline and plans to acquire resources to meet the 2022 anticipated shortfall along the I-5 corridor and to address issues in Bend.

The Company also reaffirmed its commitment to working with stakeholders in future IRP cycles, and notes that it is actively working internally with input from stakeholders involved with UM 1893, plus consulting with ETO and other LDCs to develop a methodology to incorporate distribution system costs into Cascade's avoided costs calculation. Cascade will provide the status of the development of this methodology in the Company's 2018 IRP Update.

Staff's Conclusion
Staff appreciates the work that has gone into the revisions to the Company's Action Plan, and recommends acknowledgment of the Action Plan, subject to the Company providing updates to Staff with respect to resource acquisition and avoided costs consistent with the assertions made in the Company's final comments.

Staff Recommendation 7
Staff recommends Commission acknowledgment of the Company's 2018 Action Plan, provided that the Company provide updates to Staff with respect to resource acquisition and avoided costs consistent with the assertions made in the Company's final comments.

Conclusion

Staff recommends that the Commission acknowledge the Company's 2018 IRP, subject to the following Staff recommendations:

Staff Recommendation 1a:
In future IRPs, Cascade should amend its forecasts to describe and utilize a process that:

- Checks for autocorrelation;
- Uses an automated stepwise regression function available in such software packages as SAS or R.

Staff Recommendation 1b:
In future IRPs, the Company should provide with its initial IRP filing, all input files to replicate the Company's analysis in IRP filings.

Staff Recommendation 1c:
In future IRPs, the Company should use city- and town-level usage data rather than citygate level.

Staff Recommendation 2a
In future IRPs, the Company must provide its load forecasting data with its initial IRP filing.

Staff Recommendation 2b
In its 2018 IRP update, the Company should model the impact of lower than projected energy efficiency savings on supply availability.

Staff Recommendation 3a
In its 2020 IRP, Staff recommends that Cascade include unrealized distribution costs in its avoided cost for energy efficiency calculation.

Staff Recommendation 3b
In its 2020 IRP, Staff recommends that Cascade include a measure of price certainty (risk premium) in the Company's future avoided cost for energy efficiency calculation.

Staff Recommendation 3c
In its 2020 IRP, Staff recommends that Cascade utilize a realistic and justifiable estimation of the price of carbon compliance.

Staff Recommendation 4
Staff recommends that the Company address issues of avoided distribution system costs and where relevant, non-cost-effective savings of energy efficiency in UM 1893.

Staff Recommendation 5
Cascade represented at the Commissioner workshop and its final comments that the Company will secure resources necessary to meet the anticipated 2022 shortfall along the I-5 corridor. Staff recommends that the Company provide a narrative update on the status of these acquisitions in its 2018 IRP update.

Staff Recommendation 6
Staff recommends that as part of its next IRP, Cascade develop a methodology to incorporate distribution system costs into its avoided cost calculation.

Staff Recommendation 7
Staff recommends Commission acknowledgment of the Company's 2018 Action Plan, provided that the Company provide updates to Staff with respect to resource acquisition and avoided costs consistent with the assertions made in the Company's final comments.

PROPOSED COMMISSION MOTION:

Acknowledge Cascade Natural Gas's 2018 IRP along with Staff's recommendations as set forth in Staff's report and listed together in the conclusion section directly above.