BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 76

In the Matter of	)
	)
CASCADE NATURAL GAS CORPORATION,	)
	)
2020 Integrated Resource Plan.	)
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COMMENTS

OF THE

OREGON CITIZENS' UTILITY BOARD

Nov. 20, 2020

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I. INTRODUCTION

The Oregon Citizens' Utility Board (CUB) hereby submits its opening comments on Cascade Natural Gas Corporation's (Cascade or the Company) 2020 Integrated Resource plan (IRP or Plan) filed with the Oregon Public Utility Commission (Commission) on July 31, 2020.

CUB appreciates Cascade's extensive analysis of its resource portfolio and thorough stakeholder engagement. CUB has reviewed Cascade's Action Plan Items and related analysis and identified two broad areas for comments:

- ***Customer Forecast*** – CUB will comment on the exogenous variables used in the regression model and various future scenarios that could affect the model forecasts. For instance, a future with high penetration of building electrification due to state, federal, or local policy in Cascade's service territory could significantly affect the results of its demand forecasts. Given the significance of customer forecasts to resource planning and acquisition, these uncertainties are important to highlight.

- ***Demand Response*** – CUB proposes that the Company consider acquiring demand response resources to meet energy and capacity needs, especially during winter. While gas demand response is less common compared to that for electric utilities, there are growing efforts by gas utilities in other parts of the country in designing such programs. Utilizing demand response as an alternative to a planned project can mitigate the risk associated with customer forecast uncertainty.
- ***Pressure Data*** – CUB seeks a better understanding of the Company's definition of pipeline low pressure and how that compares with other gas utilities serving similar areas. It is unclear how Cascade uses pressure data to determine its project needs.

CUB presents comments on each of these issues in greater detail in the following sections.

II. CUSTOMER FORECAST

1. Regression Model

Customer or demand forecasts form the crux of the assessment of future system needs. Cascade developed its customer forecast for each city gate and for every customer class — namely, residential, commercial and industrial. Cascade utilizes a dynamic regression model for its customer forecast. The regression model includes population and employment forecast as exogenous variables obtained from Woods & Poole growth data.

CUB would like to point out that including both population and employment as independent variables in the regression model yields unreliable coefficient estimates for these regressors. When regressors are highly correlated between themselves, there is a multicollinearity problem in the regression model. As a result, the regression estimates or the slope co-efficient of the regression line cannot be interpreted correctly. The correlation

coefficient between population and employment is found to be 0.994.[1] One of the reasons for this high and almost perfect correlation could be that employment was already included in the population forecast. Therefore, including both population and employment in the customer forecast model is equivalent to including the same exogenous variable twice. While this may not significantly affect the model forecasts, it is still erroneous to have two highly correlated independent variables in the same regression equation. Cascade should remove one of these variables from the model and correct the model specification error.

2. *Factors affecting customer forecast*

Cascade primarily attributes its forecasted system wide deficiency to economic and population growth in Bend and Redmond service areas in Oregon and the Tri-cities area in Washington, among other reasons.[2] CUB realizes that this growth would partly be accommodated by new home construction. Bend has started planning for development of more than 1000 homes on 383 acres, while Redmond has estimated a need for approximately 7000 housing units in the next twenty years.[3] It is CUB's understanding that new construction homes typically come with highly efficient gas furnaces. A 95% high efficiency condensing furnace uses significantly less gas to heat homes compared to a lower efficiency 80% furnace. Compared to past customer growth, CUB expects that new Cascade customers will have a lower per customer usage then historical new connects. CUB asks Cascade to evaluate a sensitivity test for highly efficient gas furnaces for their customer forecast in areas projected to have high economic and population growth.

[1] Calculations by CUB from Population and Employment Data in LC 76 OPUC Staff DR 24 Attachment A

[2] Cascade Natural Gas 2020 Integrated Resource Plan, p. 3-9.

[3] Cascade Natural Gas 2020 Integrated Resource Plan, Appendix A, p. 80.

Since Cascade identifies Bend and Redmond as major drivers of its system-wide deficiency, the forecasted deficiency will also be affected by environmental policies adopted in these cities. For example, Bend plans to reduce its fossil fuel usage by 40% by 2030 and by 70% by 2050 through its Climate Action Plan. The city may initiate programs targeted towards meeting these goals, such as modified franchise agreements which would ultimately bring down future gas demand in Cascade's service territory. These city level policies are in addition to the Governor's Executive Order (EO) No. 20-04 directing state commissions and agencies to achieve greenhouse gas (GHG) emissions reduction goals for the entire state. As cities across the west coast begin to announce bans for natural gas in new systems, the effect of government action on natural gas muse be considered.[4] Cascade should conduct specific sensitivity analyses around city-wide carbon policies on its estimated deficiency. Deschutes county is the core of Cascade's service territory.

CUB Recommendation

CUB recommends the following for Cascade customer and system wide deficiency forecasts:

i. Use either the employment or the population variable in its customer forecast regression model. Either of these variables should capture the Bend and Redmond area economic activities that are predicted to cause system deficiencies moving forward. For reference, Northwest Natural Gas Company uses Oregon population as a driver for its commercial customer growth in Oregon,[5] while Avista uses Population growth as the main driver for its

[4] *Krause, David, San Francisco Bans Natural Gas in New Buildings, With Exceptions,* Clearing Up (Nov. 13, 2020) *available at* https://www.newsdata.com/clearing_up/briefs/san-francisco-bans-natural-gas-in-new-buildings-with-exceptions/article_523d33a0-2611-11eb-807a-d7d928a30cf9.html.
[5] LC 71, Northwest natural 2018 IRP, Chapter 3, Table 3.5
https://edocs.puc.state.or.us/efdocs/HAA/lc71haa151218.pdf

residential and commercial customer growth, as opposed to using both employment and population data.[6]

ii. Conduct sensitivity analyses for highly efficient gas furnaces for demand forecast for areas projected to have high economic and population growth.

iii. Conduct sensitivity analyses for city-level climate policies possibilities in areas projected to have high economic and population growth.

III. DEMAND RESPONSE RESOURCES

Cascade's near-term Action Plan includes several distribution system enhancement projects. Distribution enhancements include both reinforcement and expansion of the current system. Customer demand is the primary driver behind these project needs. Cascade action items for the next four years include enhancement projects, such as gate station upgrades, extending distribution system pipelines, installing new regulator stations, upsizing existing pipes, building new gate stations, and looping pipeline systems in constrained areas in various parts of their system in eastern and central Oregon.[7] Cascade estimates that distribution system projects for 2020-2023 in the Bend district alone will cost over $10 million.[8]

While distribution system upgrades are needed to reliably and safely deliver gas to an existing and growing customer base, there are serious cost and risk implications of these projects for customers, especially in the wake of Governor Brown's EO 20-04 in Oregon. The EO sets goals to reduce GHG emissions by 45% from 1990 levels by 2035, and at least by 80% from 1990 levels by 2050. Gas utilities would need to aggressively reduce carbon emissions under the Cap and Reduce program of the EO. Future high electrification scenarios could also make

[6] Avista Corporation, 2018 Natural Gas IRP Appendix, Chap. 2, p-30 https://www.myavista.com/about-us/integrated-resource-planning
[7] Cascade Natural Gas 2020 Integrated System Plan, p8-10.
[8] CUB Calculations from Figure 8-5, Cascade Natural Gas 2020 Integrated System Plan.

present investments in gas infrastructure highly risky and inequitable for customers, as the ones who cannot afford to electrify will bear the brunt of these stranded costs.

It is therefore important to explore alternatives that can produce the same safety and reliability outcomes at a lower cost and with a lower stranded cost risk. These alternatives could reduce or defer the need for such system enhancements.

CUB recommends that Cascade evaluate non-pipe distribution programs, such as implementing demand management programs. CUB appreciates Cascade's analysis of energy efficiency potential on its system. The Company states that expanding its current energy efficiency programs may not be sufficient to achieve peak load reductions but acknowledges that more targeted energy efficiency programs in the long-term may be able to achieve this goal.

CUB believes that demand reductions can be achieved through targeted energy efficiency, and peak reductions could be achieved through demand response (DR) programs. While demand response programs are more common in electric utility demand side management, there are growing instances of such programs for natural gas utilities as well.

A study by Brattle group discusses multiple values that could be obtained from having a gas demand response program for winter and severe weather (similar to a polar vortex) peaks. The study shows that on a severe weather day when both wholesale natural gas and electricity markets experience price increases, natural gas DR can prevent price hikes in both markets as DR relieves gas supply constraints. Gas DR also has the potential to prevent or defer long-term investments in gas infrastructure resulting in substantial savings for gas customers.[9] CUB sees demand side resources, such as DR, as impacting the Company's Peak Day Forecast Methodology.

[9] Details of this study can be found at http://files.brattle.com/files/13929_demand_response_for_natural_gas_distribution.pdf

For example, several gas utilities in California, including SoCalGas, Con Edison and National Grid, have each implemented innovative demand response pilots that contributed to reduced winter peak demand and relieved constraints on their distribution systems. Per the Brattle group study, "SoCalGas's Seasonal Savings program for residential customers with a smart thermostat resulted in 8% gas heating savings during the winter of 2016-17. The MA DOER Nest Seasonal Savings programs resulted in a 3.5% heating savings in the winter of 2014-15 (73% of participants had gas fueled heating furnaces) – including significant results on the 10 peak days."[10]

A recent study by Auffhammer and Rubin (2018)[11] on natural gas price elasticities in California shows that winter price elasticity is higher and has a greater statistical significance compared to summer elasticity, with low income households having a higher winter price sensitivity compared to higher income groups.[12] This finding has several policy implications, including the potential for price-based demand response programs and subsidizing smart thermostats for low income households in order to implement these programs.

While CUB believes that innovative DR programs for gas customers are vital to Cascade's future resource planning, CUB is also aware of the challenges that the Company could face in implementing them. Deployment of smart thermostats could be critical to having these programs in place. Gas customers may be less flexible compared to electric in their usage. Customer response rates to existing DR programs have generally been low.[13]

[10] http://files.brattle.com/files/13929_demand_response_for_natural_gas_distribution.pdf
[11] Maximilian Auffhammer, Edward Rubin. NBER Working Paper No. 24295. Issued in February 2018. NBER Program(s): Environment and Energy Economics.
[12] Specifically, the authors estimate that "the "wintertime"price elasticity of demand for natural gas is−0.523 (0.142) for CARE households and−0.317(0.150) for non-CARE households." CARE are the low-income households.
[13] *Id.*

CUB Recommendation

CUB highly recommends the following measures that could mitigate Cascade's forecasted system deficiency while avoiding the need for new investments in gas infrastructure:

i. Plan for targeted energy efficiency in its Bend service area.

ii. Design winter demand response pilots and provide or subsidize smart thermostats in residential units.

iii. Subsidize conversion of existing lower efficiency condensing furnaces to higher efficiency non-condensing ones.

iv. Subsidize smart thermostat installation or use already installed smart thermostats to remotely control home gas usage, especially during peak hours.

These programs have the potential to save thousands of dollars in customer money. As states and cities put in place stricter environmental policies, costly investments in gas infrastructure would expose customers to larger risks of having to pay for stranded assets. Cascade should think innovatively while making future investment decisions in the light of an evolving energy sector.

IV. CASCADE PRESSURE DATA AND INTERPRETATION

Cascade has identified several enhancement projects in its Action Plan over the next few years. Low pipeline pressure is the main driver behind these project requirements. CUB would like to have a better understanding of pressure data provided by the Company in response to a Confidential Staff DR 05. In particular, CUB would like to understand the determination of low pressure from the data provided by the Company. [redacted][14]

[14] LC 76, OPUC DR 05 CONF Attachment B

Avista Corp, for instance, explains that it needs to maintain a minimum of 15 psig on its system at all times. Any number below 15 is flagged as low pressure.[15]

CUB would like for Cascade to explain why the low-pressure benchmarks are different for two gas utilities' serving similar geographical areas in Oregon.

V. CONCLUSION

CUB appreciates the opportunity to participate in Cascade Natural Gas Company's 2020 IRP process. CUB is supportive of the action items that Cascade has planned for its future IRP including developing and updating the RNG evaluation tool. CUB has some concern regarding the Company's customer forecast model. CUB would like to understand the Company's thinking in the inclusion of two almost perfectly correlated regressors. Customer forecast should also be subject to sensitivity tests around high efficiency gas furnaces and high electrification in new homes in Cascade service area.

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[15] Avista 2020 Natural Gas IRP TAC 3 Meeting Slide 73.
https://www.myavista.com/about-us/integrated-resource-planning

Cascade also has several pipeline enhancement projects lined up for the next few years. CUB suggests that the Company evaluate non-pipe alternatives to these projects. Gas demand response is a relatively new concept but can potentially have significant positive impacts in terms of peak flattening, relieving supply constraints and saving customers thousands of dollars by avoiding or deferring costly distribution system projects.

Dated this 20th day of November 2020

Respectfully submitted,

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