

To better facilitate our upcoming discussions, please see the recap below of Staff's comments and Cascade's initial response.

Section 3 Demand Forecast

Staff's Comments: Staff believes that Cascade's demand forecast is an improvement from past filings: In the new approach, the Company developed a normal, or expected, future weather year by shaping 30 years of weather data. Heating degree day (HDD values) were assigned to each day in the model weather year. To ensure the Company will be able to serve its firm customers during extreme weather, the Company tested the model weather year three times, each time with a unique extreme weather event. An average peak HDD (the average coldest day for each year in the last 30 years), a system-wide max peak HDD (the systemwide, single coldest day recorded in the last 30 years), and a max citygate peak HDD (the coldest HDD for each weather station in the last 30 years). Peak day demand was then derived for each weather scenario by applying the HDD to the peak day forecast for each citygate. Staff appreciates the citygate level analysis, and detailed description of the SENDOUT models and results. While the demand forecasting appears to be reasonably comprehensive, Staff's questions will be regarding whether corporate versus residential customer were treated differently, and how the decision to select particular stochastic parameters for load uncertainty were made.

Cascade's response:

1. Please clarify what is meant by "corporate" customers.
2. Does the verbiage "questions will be" mean there will be data requests? Is there anything we can address now?
3. We would like to better understand Staffs' comment about the "stochastic parameters for load uncertainty." Is this related to the Monte Carlo weather inputs?
4. Would Staff like us to expand on any of the language in Section 3?

Section 4 Supply Side Resources

Staff's comments: Cascade's gas supply portfolio is sourced from three areas of North America: British Columbia, Alberta, and the Rockies. The Company secures its gas through firm gas supply contracts and open market purchases. Cascade has contracted for storage service directly from Northwest Pipeline since 1994. Storage is held in their Jackson Prairie and Plymouth facilities. Jackson Prairie is located in Lewis County, Washington, approximately ten miles south of Chehalis. Plymouth is located in Benton County, Washington approximately 30 miles south of Kennewick. Both Jackson Prairie facilities and the Plymouth facility are located directly on NWP's transmission system. Therefore, storage withdrawal rates can be changed several times during an individual gas day to accommodate weather driven changes in core customer requirements. Staff appreciates the details provided in Section 4, as well as the efforts taken by the Company to secure supply and lease storage to reduce the risk of shortfalls in Oregon. Staff is interested in understanding if and how the Company will incorporate "peak cooling" days into the supply analysis. Staff is also interested in learning what progress the Company has made in negotiating additional storage options noted in the IRP draft, and what factors the company will consider in whether to obtain these contracts.

Cascade's initial response:

1. Please help Cascade understand why Staff is asking about “peak cooling” days as Cascade core demand has no relevant cooling related demand.
2. In the IRP, Cascade uses the word “consider” to indicate that the Company modeled various storage options as potential resources. The model results did not indicate acquiring any incremental storage at this point in time. Does Staff believe Cascade is actively negotiating additional storage? Cascade is not currently negotiating any incremental storage contracts. Is there language in the IRP that leads staff to believe Cascade is acquiring additional storage? If so, please provide Cascade with the specific language in the IRP where Staff believes the Company is currently negotiating new storage contracts.

Section 5 Avoided Costs

Staff’s comments: Cascade’s avoided cost includes fixed transportation costs, variable transportation costs, fixed storage costs, variable storage costs, commodity costs, a carbon tax, a 10% adder, and a hedge premium. Essentially, the avoided cost is the cost of the Company’s resource stack on a per therm basis plus three values for benefits specifically acquired with energy efficiency. Staff believes CNG is on the correct track with its avoided cost analysis. However, given that Cascade does not forecast a need to acquire additional storage, please clarify if Cascade can avoid its current fixed storage costs? Also, in section 4 Cascade affirmatively stated that it is considering other storage options, so Staff would appreciate clarification on the apparent contradiction. but will have questions in the initial IRP relating to why Cascade believes price elasticity must be considered. Elaborating on the sentence “if usage materially decreases with higher prices, then fewer purchases and less capital investment by an LDC would be necessary” might be helpful. Specifically, elasticity is not a variable in the $AC_{nominal}$ equation on page 5-2, so the impact of elasticity on avoided cost is not obvious. Staff would also request that CNG please provide some examples of the results. For instance, some of the carbon tax scenarios in Appendix H increase the 2018 avoided cost. It might be useful to add a discussion of how the carbon tax scenarios affect which energy conservation measures should be undertaken.

Cascade’s response:

1. Cascade appreciates Staff’s feedback on fixed storage. After checking the calculations, it was not numerically significant to include it one way or another, but Staff’s comments have certainly prompted the Company to be sure to explore this subject further during the upcoming Oregon avoided cost workshops.
2. Cascade will remove the second to last key point of section 5 and move the price elasticity discussion into a qualitative analysis in section 3. This will include a discussion with stakeholders on how to incorporate price elasticity in future IRPs.
3. Cascade will add an action item to discuss how carbon tax scenarios impact which energy conservation measures are undertaken with ETO.

Section 6 Demand Side Management and Environmental Policy

Cascade acquires therm savings through its energy efficiency programs. In Oregon, the Energy Trust of Oregon (Energy Trust) administers the Company’s programs and in Washington, Cascade administers

its own programs. In both states, the programs offer Cascade customers financial incentives to install specific cost-effective energy efficiency measures. The program savings projections included in this IRP are higher than those presented in the Company's 2014 IRP for the following reasons: 1) New measures were considered in the analysis; 2) Measure assumption were updated based on more current data; 3) Emerging technologies were included in the analysis; and 4) Updated measure saturation rates from third-party research and survey work were used. Section 6 also considers environmental policies being both enacted and considered in Oregon, Washington, and nationally. A number of initiatives intended to reduce, eliminate, or mitigate the effects of greenhouse gases on the atmosphere are in play. Carbon legislation will be a reality in a matter of time. Staff's question's and comments regarding Section 6 are related to what percentage of its energy efficiency measures does Cascade expect to be brought into cost-effective compliance in the near future, and whether and how Cascade considered seasonality of savings in its avoided costs. Staff also requests that CNG please describe the nature of the ETO's DSM projections for Cascade's Oregon service area for the period 2018-2037, including: when the projection will be updated, the review process the projection went through, and how the accuracy of the projection will be evaluated (if applicable). Please describe how the accuracy of the DSM projection affects Cascade's long-term planning. Finally, Staff requests that CNG please elaborate on the gas to electric fuel switching topic, specifically, does Cascade believe that, that topic affects its long-term planning.

Cascade's response:

1. ETO includes load profiles of selected measures that recognizes seasonality of savings. The Company will discuss this with stakeholders for possible inclusion in future IRPs.
2. Cascade performed an analysis on the impact of accelerated DSM on its resource decisions on pages 8-12 of its 2014 IRP update. Ultimately, the Company concluded that even with accelerated DSM programs there would be no change to any resource decisions made.
3. Cascade will monitor what other regional LDCs will do with regards to electrification. The Company will consider additional scenarios related to decrements to demand from electrification in future IRPs.
4. Cascade will be discussing the remainder of these questions with ETO during a supplemental teleconference.

Section 7 Resource Integration

Staff's Comments: The Company considered a host of resource alternatives that can be added to its resource portfolio, including additional conservation programs, incremental off-system storage alternatives at AECO Hub, Mist, Ryckman Creek, Wild Goose, and Gill Ranch. Additionally, incremental transportation capacity on NWP, Ruby, NGTL, Foothills and GTN pipeline systems was considered, along with on-system satellite LNG facilities, bio-natural gas, and imported LNG. Even after the savings from energy efficiency programs are realized, Cascade will need to acquire additional capacity resources or enter into other supply arrangements to meet anticipated peak day requirements, primarily due to continued growth in the Company's residential and commercial customer base. Utilizing the SENDOUT resource optimization model, several scenarios were run. Staff again has questions regarding the apparent contradiction between the stated need to acquire additional resources, and the apparent lack of consideration of such resources noted in the avoided costs section of the IRP draft. Staff's other questions are regarding the identified shortfall, and the deterministic approach the company used to foreclose on the shortfall. Particularly, why were the six selected portfolios tested? Did the Company consider alternative approaches given potential changes in

storage and supply contracts? Staff is also curious about the sensitivity limit applied by CNG. Why was 1.25 time the mean total system cost chosen, as opposed to say, 2 times? Staff also notes that table 7-2 is not very clear to read (i.e. blurry) and suggests higher resolution.

Cascade's response:

1. Cascade performed its analysis on the six portfolios presented in the IRP because the Company determined that the portfolios were a comprehensive sample of the alternative resources available on the various pipelines Cascade contracts with. Cascade presented these portfolios in its final two TAG meetings, requesting feedback from stakeholders regarding its methodology for selection of these portfolio. No stakeholders expressed concern with these portfolios.
2. Cascade's contracts are firm related to storage and supply contracts. Cascade did, however, consider extreme circumstances related to its contracts in its scenario analysis.
3. Cascade will provide additional discussion related to its upper VaR limit in the final IRP.
4. Cascade has increased the resolution of table 7-2

Section 8 Distribution System Planning

Staff's comments: Cascade's geographical information system (GIS) keeps an as-to-date record of pipe and facilities, complete with all system attributes such as date of install and operation pressure. Using the Company's geographical information system (GIS) environment and other input data, Cascade is able to create system models through the use of Synergi software. The software provides the means to theoretically model piping and facilities to represent current pressure and flow conditions while predicting future events and growth. Combining these models with historical weather data can provide a Design Day model that will predict a worst-case scenario. Design Day models that experience less than ideal conditions can then be identified and remedied before a real problem is encountered. Staff is very pleased with the DSP section and the detailed GIS analysis, and integration with Synergi modeling. Staff appreciates the Company's walkthrough of design day conditions, and the identification of enhancement projects in upcoming years. Staff would like to see more detail on how the enhancement projects align with the company's internal risk modeling. If there are any inconsistencies between the Company's risk assessment system for distribution systems, and the results of the analysis, Staff would like to know how the Company plans to reconcile these differences.

Cascade's response:

1. Please confirm what is meant by "internal risk modeling"