



In the Community to Serve®

Targeted TAG #2 – TAG Meeting

Date & time: 05/20/2026, 9:00 AM to 10:00 AM

Location: Microsoft Teams Meeting

Presenters: Brian Robertson, Ryan Denton

In attendance: Abbie Krebsbach, Adam Shick, Brian Robertson, Bruce Folsom, Caleb Reimer, Camille Sultana, Carolyn Stone, Chad Stokes, Chris Robbins, Debra Campbell, Devin McGreal, Elliot Carleton, Eric Shierman, Eric Wood, Gordon Gimse, Jennifer Gross, Jennifer Snyder, Jenny De Boer, Jodie Albert, Kai Hiatt, Karen Magana, Kathleen Campbell, Kirten Brewer, Kyle McCauley, Kyle Morrill, Lucas Hamilton, Mark Mohan, Matt Steele, Megan Koelzer, Mouhamad Ahmad, Noemi Ortiz, Patrick Darras, Paul Koenig, Russ Nishikawa, Ryan Denton, Ryan Kern, Shawna Nieraeth, Steven Nevels, Travis Jacobson, Vigilija Klima, Wesley Franks, Zachary Harris

Brian Robertson, Supervisor of Resource Planning, opened the meeting by welcoming stakeholders for participating in Cascade’s IRP Process. Brian reminded folks that we wouldn’t be doing introductions at the beginning of the meeting, but he wanted to announce the departure of former Cascade economist Bailey Steeves, and to introduce Kirten Brewer, a new economist on the team

Presentation Topic #1 – Safety Moment (Brian Robertson)

- Brian provided a quick presentation on how to protect yourself and others while enjoying recreational time outside while hunting, fishing, camping, and more.

Presentation Topic #2 – Core Customer Breakdowns (Ryan Denton)

- Ryan begins presentation for Customer and Load Breakdown with pie charts for Oregon, Washington and total from 2025 residential vs commercial vs industrial.
- Residential, commercial, and industrial in that order
- Washington overall is larger than OR for the base and load.

Presentation Topic #3 – Demand Forecast (Ryan Denton)

- Demand Forecast combines Usage-Per-Customer (UPC) and Customer Count Forecast to get an estimated total demand at different levels: Pipeline zone level, rate schedule level, daily level, as well as a forecast out until 2050 to plan for decarbonization.
- Some definitions for various metrics were explained in both technical and layman’s terms to provide more context to his results later: The Akaike Information Criterion (AICc), Weighted Mean Absolute Percentage Error (WMAPE), Symmetric Mean Absolute Percentage Error (SMAPE), as well as Mean Absolute Error (MAE).
 - None of these are used in isolation but used together as a holistic measure for error and quality of the modelling technique.
- ARIMA and Error, Trend, Season (ETS) models used
- Core inputs: Fourier Terms, Heating Degree Day (HDD), Extreme HDD.

- Brian comes in to remind the group that these models are not set in stone, and the team is open to feedback if there are questions or comments.
- Further explanation of Fourier Terms: How many Sine and Cosine terms are in a graph. Fourier terms make seasonality look just like smooth “spikes”.
- Ryan shared some of the free-to-use resources he used when building the model, the R software as well as a forecasting textbook.

Presentation Topic #4 – Customer Forecast (Ryan Denton)

- Ryan gave a brief explanation of the previous method for the model to provide context for the changes that took place for the current approach.
 - Breaks down the variables by zone and customer type combos along with ARIMA terms, households, employment level, price, income, and Fourier terms.
 - Different model approaches: Naive vs Linear.

Question (Paul Koenig): How does Retail Rate affect the customer count final deliverable?

Answer (Ryan Denton): So this is from the previous model, I wasn't here for this. We also test it in the current approach. Speaking from that experience, it doesn't typically have much of an effect at all.

Answer (Brian Robertson): There was a statistically significant impact among industrial customers, but we also saw that as retail prices went up, so did customer counts. We saw all forms of correlation. We're also looking at price elasticity by using electrification modelling.

Answer (Ryan Denton): When you see the coefficients jumping signs or just being unstable, that could point to it trying to absorb some other behavior in the series that's not actually attributed to retail price.

- Ryan then explains the current model, which is based around a randomly selected set of 3 zones for residential customers and commercial customers. This model was built primarily using ARIMA with a mixture of the previous variables and new ones.
- Included lagged variables to test for any potential delayed effects, such as building code changes, or changes in gas hookups from changes in households.
- Because many of the building codes are so new, there's not a lot of reliable data to test the effects that they have reliably. Coefficients are often insignificant and jump around on signs.
- Also included customer growth rates as outcome variables as well as interaction terms between trend and building codes.
- Produced models that perform well on 1–3 year test set forecast but over-forecast in long-run cases. From this, they chose the best-performing model.
- Another approach to the model now includes ETS model, which performed better than ARIMA at finding forecasts with strong and stable seasonality in long and short run projections. ETS uses most recent data as the highest weight, creating a smoothing effect.
- Shows ARIMA and ETS forecasts and year over year growth for both models.
- Shows ETS model for three different growth scenarios: Base, High, Low, depending on policy like building codes and other electrification-forward policies that may affect natural gas uptake.

Presentation Topic #5 – Customer Forecast Challenges (Brian Robertson)

- Big picture: Many of the building codes that have been implemented around the state(s) have been tied to building performance and energy efficiency, with the goal of these codes being to increase electricity uptake in all new construction buildings.
- WSEC needs a building to have 8 “credits” to be good to build. Combustion heating gets a credit of 0, meaning that more furnaces have been replaced with heat pumps.
- The new codes began in 2018, when Cascade's customer growth rate was 1.5-2%. However, since that point, Cascade's growth has been flat at ~0.5% recently.

Question (Paul): Are we in the preparatory stages for dealing with the next stage of the WSEC?

Answer (Brian): We meet with our building codes expert, Elisabeth, to talk about this. For right now we don't need to do much, but we are monitoring the situation.

Question (Wesley Franks): As a follow-up question, you mentioned that the growth is around 0.5%. Even with these codes, do you have a sense of how builders are trying to figure out how to keep building gas while meeting the standards.

Answer (Brian Robertson): If I had to take a guess, if you got the permitting done before 2024, you can still build with gas. And there's still a lot of opportunities with natural gas stovetops or fireplaces rather than relying on the furnaces.

- Line Extension Allowances:
 - In WA, 2025 policy gives NPV of margin over a timeframe to help fund construction cost.
 - In OR, it's under review.
- OR Customer Count Impacts: Goal of a memorandum with 8 other states wants to get heat pumps to be 65% of shipments by 2030 and 90% by 2040.
- OR building codes is trying to also update the residential energy code in summer and fall 2026.
- Bend, OR is developing a climate pollution fee for gas appliances in new buildings.

Presentation Topic #6 – Usage Per Customer Forecast (Ryan Denton)

- OR does not have many of the required materials to figure out the usage.
- Used an ensemble of 20+ climate models to forecast load at different times.

Question (Paul Koenig): With the ensemble of climate models, it's a lot of models. Have we considered changing the number of models to be less so that it doesn't overshoot peak winter temperature?

Answer (Brian Robertson): We're not going to use these models for the peak winter temps, but just to find the trend over time. We are utilizing Monte Carlos for the peak rather than using ICF data for the peak.

- Shows a diagram of the process to build these UPC forecasts, reiterates that this is a work in progress and that suggestions are welcome and encouraged.
- Shows off the current model using ARIMA and Fourier Terms.
- New model groups together months rather than having them as single entities.

Question (Paul): I was noticing the current model has retail rate but the new one does not. Is it still included in another of the variables?

Answer (Ryan): Yes, we included it in another one of the variables, it's still in there.

Presentation Topic #7 – Non-Core Outlook (Brian Robertson)

- Many of Cascade's customers are farmers or other commercial workers who use more gas in the summer months than the winter months.
- The current transportation customer forecast in the new model increased to 254 by 2027.
- The current projection is 521 million therms in 2027 in WA and OR by 2027.

Presentation Topic #8 – Feedback for Cascade (Brian Robertson)

- We ran a little over time so if people need to leave that's okay but if anyone has any feedback please let the team know.
- Since OR rules are new, please let us know if any of the modelling inputs seem unreasonable.

Question (Paul Kroenig): This is recorded and transcribed, and we can ask you any questions on emails, correct?

Answer (Brian): Yes, we can also get on a call if you have any questions as well.

The Meeting was Adjourned

Per Cascade Commitment #8 (Stakeholder Engagement Design Document, 2/22,2022: "Provide TAG minutes that include the action items from these notes as well as any upcoming deadlines for feedback on the IRP"), here are additional action items to track, coming out of the Targeted TAG 2 meeting:

- 1. Follow up on new construction and appliances that those homes have.**