



2025 IRP TAG #3 Meeting

Date & time: 1/8/2025, 9:00 AM to 12:00 PM

Location: Microsoft Teams Meeting

Presenters: Brian Robertson, Jenny De Boer.

In attendance: Abbie Krebsbach, Alessandra de la Torre, Alondra Regalado, Bailey Steeves, Brenda Montanez, Brian Robertson, Bruce Folsom, Byron Harmon, Caleb Reimer, Carolyn Stone, Carra Sahler, Chris Robbins, Darcy Neigum, Devin McGreal, Eric Shierman, Eric Wood, Garret Senger, Jeff Higgins, Jenny De Boer, Jodie Albert, Kary Burin, Kathleen Campbell, Mark Sellers-Vaughn, Matt Steele, Matthew Doyle, Megan Koelzer, Michael Meyers, Michael Parvinen, Patrick Darras, Patrick Hanks, Quinn Weber, Ryan Denton, Tom Pardee, Vigilija Klima, Will Gehrke, Zachary Sowards

Brian Robertson, Supervisor of Resource Planning, opened the meeting by welcoming and thanking stakeholders for participating in Cascade's IRP Process. Brian briefly covers the overall agenda and allows for everyone to introduce themselves.

Presentation #1 – Safety Moment (Brian Robertson)

- Brian covers some statistics related to, and tips to protect, one's hearing. Some tips include reducing volume, moving away from noise, or wearing appropriate hearing protection.

Presentation #2 – Low Carbon Alternative Fuels (Jenny DeBoer)

- Jenny talks about the study from ICF that Cascade uses to help guide analysis and decisions around low carbon alternative fuels.
- She goes over some model restrictions (e.g. Cascade not anticipating participating in carbon capture prior to 2030), capital costs, and O&M fixed and variable costs.
- She talks about prices and how they are broken down between Northwest and Nationals technical potential. Also included: how prices are averaged to reduce model inputs, IRA incentives where applicable, and that all low carbon alternative fuels (except carbon capture) will be evaluated off-system. Further, she mentions how prices are not only

taken from the ICF study, but how the Company also considers current market prices and information from low alternative fuel brokers and developers.

- Jenny then covers renewable natural gas (RNG) prices specifically, presenting graphs on the different types under consideration (e.g. food waste, waste water, animal manure, landfill gas). Mentioning how the landfill and waste water options are currently the most feasible. The graphs show different forecasted pricing within each RNG type by facility size (highlighting lower costs for larger facilities).
- Jenny then shows a similar set of graphs and analysis, but for renewable thermal credit (RTC) prices. She talks about how currently carbon intensity is not represented in these RTCs yet, but the Company is keeping an eye out for any changes on this (as well as any market linkage that may occur).
- Jenny goes over carbon capture and synthetic methane, presenting graphs of forecasted prices. She mentions how carbon capture is likely not feasible prior to 2030 before briefly explaining what synthetic methane is and the associated graph.
- Jenny presents forecasted prices for the different types of hydrogen sources (e.g. blue, green), explaining the associated graph. She highlights that blue and solar green hydrogen are currently the most feasible options.
- Jenny explains how the technical potential volumes for the alternative fuels are broken down between the Northwest and National (i.e. the Nation excluding the Northwest), how they are weighted, and that Cascade's weighted share is about 13%.
- She then covers what the volumes are forecasted to be for the different RNG types, presenting graphs that show these projections. She highlights that landfill gas is expected to have the largest volumes. Afterwards she continues to show the same analysis and graphs for RTC volumes, this time highlighting that the largest volumes available will be in landfill gas and animal manure.

Question (Quinn Weber): Quinn asks if the RTC volumes are scaled by Cascade's 13% share.

Answer (Brian Robertson): Brian states that these volumes are indeed scaled in that way.

Question (Quinn Weber): Quinn then asks if, given this share amount, there will be enough for the company to fully decarbonize by using just RNG and RTCs.

Answer (Brian Robertson): Brian clarifies that the models are still being ran and thus the Company is waiting for those results, but that he anticipates the volumes will be sufficient to fully decarbonize. He then highlights the large role that associated costs play in such decision making.

- Jenny continues and covers the volumes associated with carbon capture and synthetic methane, noting that carbon capture not being considered by Cascade prior to 2030 and the largest volumes for synthetic methane are in solar green and wind green hydrogen.

Question (Carra Sahler): Carra asks if Cascade is expecting that RTCs will be available regionally, and if not in which states Cascade expects the RTCs to come from.

Answer (Brian Robertson): Brian clarifies that the ICF study does not specify where the RTCs come from exactly. He then asks Devin what he is currently seeing in the market.

Answer (Devin McGreal): Devin the how the RTCs are geographically diverse when referencing the current market, but that he mainly sees projects in the Northwest and Midwest.

Question (Will Gehrke): Will asks if the green and pink hydrogen (under the synthetic methane category) potential volumes is off-system resources, such as a “book and claim” approach, or on-system.

Answer (Brian Robertson): Brian states that currently the Company is looking at off-system (book and claim) but is also considering on-system, though not soon enough to be included in the current IRP.

- Jenny then covers the same analysis for hydrogen volumes, highlighting that the largest volumes available are in blue hydrogen and solar green hydrogen.

Question (Carra Sahler): Carra seeks to clarify the definition of blue hydrogen being used in the presentation and IRP. Asking if the production of this type of hydrogen is methane based with carbon capture.

Answer (Devin McGreal): Devin clarifies that this is indeed the description of blue hydrogen that aligns with the Company’s description.

Brian Robertson mentions that the Company has some information for pink hydrogen but is not currently modeling it.

Question (Carra Sahler): Carra asks if study that is being cited for the alternative fuels analysis will be provided.

Answer (Brian Robertson): Brian ensures that it will be provided in the appendix of the IRP when it is finalized.

Presentation #3 – Electrification (Brian Robertson)

- Brian covers the key inputs in the electrification analysis (e.g. heat pump specs, home size, climate zone). He then mentions that there are many different types of heat pumps and that the Company had to select one for the analysis. He goes over some brief performance specs, explaining them as well as some assumptions that were made.
- Brian goes over the coefficient of performance (COP) efficiency metric. This is the amount of output produced given the amount of input received. He talks about how temperature influences this metric, presents accompanying graphs, and associated costs per hour depending on whether gas or electric is used and based on the temperature. He also states that a rate increase of 3% is the current assumption on the electric side.

Question (Jeff Higgins): Jeff asks what the units on the vertical axis of the cost graphs are.

Answer (Brian Robertson): Brian states the units are \$/MMBtu and that he will double-check that and get back to Jeff just to be sure.

- Brian moves on to show a graph showing the different climate zones used in this analysis. He also mentions how the climate zone goes into the BTUs needed calculation.

Question (Quinn Weber): Quinn asks Brian to clarify what is meant by “total square footage” in terms of BTUs needed, service territory, and climate zone.

Answer (Brian Robertson): Brian clarifies that this is in reference to home size.

- Brian explains how the Company shares service territories with twenty-five different electric utilities. He talks about how Cascade pulled the residential and commercial rates for each of them and weighted them by customer counts.
- He then goes over how electrification installation costs were gathered, the different IRA rebates and incentives, how different income groups were impacted, and how the different install costs are separated (e.g. space heat, water heat, other). He comments that the estimated installation costs seem low.

Question (Quinn Weber): Quinn asks if a similar analysis will be done with funds related to the CCA.

Answer (Brian Robertson): Brian comments that the Company is not currently doing that but invites Quinn to send him any information about the CCA and associated funds for electrification so that he can look at working that into the analysis.

- Brian presents the different IRA rules and incentives (e.g. HEEHRA, and different tax incentives). This covers eligibility, rebate/tax credit amount, and some details about each one.
- He then presents a graph showing preliminary results of what average monthly costs per year for a whole home may be. These costs include installation cost and cost of service, while factoring in the different potential incentives. These projections compare the cost to electrify vs staying a gas customer for the various different service territory zones. He then presents a graph to show what these costs may look like when levelized over 15 years (noting that the IRA is set to expire in 2032, thus the associated incentives will no longer be available). He highlights that all these results are preliminary and there is more adjustments that will be made.

Question (Eric Shierman): Eric gives feedback on how including state-funded dollars may be of use.

Answer (Brian Robertson): Brian agrees and ensures that the Company is keeping an eye on such information to use in the analysis.

Question (Eric Shierman): Eric asks if these costs are for load forecasting or for the program participant portion of the total resource cost test for an electrification measure.

Answer (Brian Robertson): Brian clarifies that this is looking at an estimate of how much it would cost a customer to electrify their home, which is then compared to the costs of remaining a gas customer.

Question (Eric Shierman): Eric asks if this is a sort of sensitivity analysis.

Answer (Brian Robertson): Brian explains that the Company is looking at this in two ways. Both to see if it is cost-effective for the company to electrify those customers and to use the information to better understand consumer behavior (what they may do on their own). These can indeed influence the load forecast and are considered.

Question (Carra Sahler): Carra asks how does the Company assesses the cost of remaining as a gas customer and what does it include?

Answer (Brian Robertson): Brian explains that the Plexos model will provide insight as to what alternative fuel is needed, and the costs associate with that, to meet demand. From there the Company can perform bill impact analysis.

Question (Carra Sahler): Carra asks if this includes the cost to replace equipment for both the electric and gas options.

Answer (Brian Robertson): Brian clarifies that only the costs to replace gas equipment with electric equipment is included in these slides. Noting that here we are looking at it from the view of what it would cost the utility, but also notes that when looking at it from a customer behavior view that including the marginal costs for both the gas and electric equipment replacement costs would be beneficial.

Question (Carra Sahler): Carra then asks if the Company is considering the cost to Cascade customers over time if some customers are electrifying. How are rates impacted by this change?

Answer (Brian Robertson): Brian mentions that the Company does have different scenarios that are involved in the IRP, including different customer count changes over time, to try and capture those types of potential dynamics.

Question (Byron Harmon): Byron asks if the graph showing the levelized costs are showing amortized costs of heat pump installation and electric service over time.

Answer (Brian Robertson): Brian confirms this understanding.

Question (Byron Harmon): Byron asks about the gap in heat cost per hour between gas and electric (slide 20). Byron asks if these costs include the levelized costs of equipment replacement for both gas and electric.

Answer (Brian Robertson): Brian clarifies that slide 20 is showing comparisons based only on cost of service.

Question (Byron Harmon): Byron seeks to clarify if the following observation sounds correct: with all the costs included, the cost projections do not even intersect (slide 27), implying that electric does not appear to be cost-competitive in this forecast.

Answer (Brian Robertson): Brian confirms this interpretation of the graph but mentions that the graph on slide 27 is a specific zone and that these forecasts are different for each of the service territory zones. Thus, the interpretation of electric vs gas cost-competitiveness may vary.

Question (Byron Harmon): Byron asks if the costs on the gas side include things such as CCA compliance also.

Answer (Brian Robertson): Brian clarifies that this is indeed the goal of this analysis, once again noting that these results are not finalized and hence the results may change in the future.

Question (Byron Harmon): Byron comments that all the assumptions going into this analysis being stated in the IRP would be beneficial.

Answer (Brian Robertson): Brian agrees and mentions that is indeed his intent for the IRP narrative.

Question (Patrick Hanks): Patrick asks what causes the big jump in the graph for electric costs around the year 2031.

Answer (Brian Robertson): Brian stats that this is from the IRA set to expire in 2031, so those incentives will not be available to help offset the transition costs anymore.

Post Presentations –

Brian opens it up for questions and feedback then shares the 2025 Washington IRP schedule.

Question (Byron Harmon): Byron asks if the volumes for RTCs and RNG are of Cascades share in the region or totals for the region.

Answer (Brian Robertson): Brian states these are of Cascades share.

Question (Byron Harmon): Byron asks if Cascade were to get all the forecasted alternative fuels available, if it would be enough to fully decarbonize.

Answer (Brian Robertson): Brian asks if Byron is including allowances or not in this scenario.

Question (Byron Harmon): Byron mentions that the question is in regard to state compliance goals, so can demand be fully met using just these alternative fuel options, while the Company is satisfying the carbon compliance goals.

Answer (Brian Robertson): Brian clarifies that the models are still be ran, but that he anticipates that the volumes would indeed be high enough to do that.

The Meeting was Adjourned.

Per Cascade Commitment #8 (Stakeholder Engagement Design Document, 2/22,2022: “Provide TAG minutes that include the action items from bullet #7 as well as any upcoming deadlines for feedback on the IRP”), here are additional action items to track, coming out of the TAG meeting:

1. Chapters 2-7 have been provided for edit, Cascade requests any feedback on these by 1/10/2025.
2. Cascade will include narrative around assumptions regarding electrification modeling in the IRP.