2025 IRP TAG #4 Meeting

Date & time: 2/5/2025, 9:00 AM to 12:00 PM

Location: Microsoft Teams Meeting

Presenters: Brian Robertson, Chris Robbins, Zachary Sowards.

In attendance: Abbie Krebsbach, Alondra Regaldo, Bailey Steeves, Brian Robertson, Bruce Folsom, Byron Harmon, Caleb Reimer, Carolyn Stone, Carra Sahler, Chris Robbins, Dan Kirschner, Darcy Neigum, Devin McGreal, Eric Shierman, Eric Wood, Will Gehrke, Jennifer De Boer, Jodie Albert, Kim Herb, Mark Sellers-Vaughn, Matt Steele, Megan Koelzer, Michael Freels, Michael Meyers, Michael Parvinen, Noemi Ortiz, Patrick Darras, Patrick Hanks, Quinn Weber, Russ Nishikawa, Ryan Denton, Ryan Kern, Samantha Christenson, Shawna Nieraeth, Vigilija Klima, Zachary Sowards

Brian Robertson, Supervisor of Resource Planning, opened the meeting by welcoming and thanking stakeholders for participating in Cascade's IRP Process. He gave a brief overview of the meeting agenda before proceeding.

Presentation #1 – Safety Moment (Brian Robertson)

- Brian presented a safety moment, covering distracted driving. Tips include programming GPS before driving, turning off or silencing phones, and avoid eating/drinking while driving.

Presentation #2 – Resource Integration Results (Brian Robertson)

- Brian presents analysis and results of the different compliance options for Oregon and Washington. Included are graphs that show which types of compliance options are chosen by the optimization process (using PLEXOS).
- In Washington, reference case emission targets will be met with different types of allowances, offsets, carbon capture, and RTCs.
- Brian comments on the interplay of certain compliance options between Oregon and Washington.
- In Oregon, Cascade expects to meet reference case emission targets with allowances, CCIs, and RTCs. Brian comments on how the Company will likely take a more balanced

approach than what is suggested by PLEXOS since the CCA and CPP will likely continue past the end of the period that is considered in the optimization model, this is one example of how Cascade must take the suggestions from PLEXOS while also adapting where needed.

- Brian then covers the price by compliance take for the various options, providing a graphical representation of the option pricing over the planning period, noting that the lowest cost options in Washington are offsets and allowances.

Question (Quinn Weber): Quinn asks why there is a dip in auction prices around the year 2035.

Answer (Brian Robertson): Brian mentions that there are many compliance targets that have certain goals in 2035 that are contributing to the drop in price around this time. He also mentions that linkage could contribute to this price change also.

Question (Quinn Weber): Quinn asks if this comes from entities dropping out and thus lowers the prices.

Answer (Brian Robertson): Brian clarifies that they may not necessarily drop out, but not need as many.

- Brian continues to cover the Washington allowance price Monte Carlo results and the accompanying graph. The 200 simulations allow Cascade to better analyze and understand the ranges of potential allowance cost in the future.
- Brian then covers how those Monte Carlo results of allowance prices compare to the low carbon alternative fuel prices, noting that the allowance pricing is generally lower than these alternatives except in some cases for years toward the end of the planning period.

Question (Carra Sahler): "Can you talk a little bit about the cost of RTCs you used in Plexos that results in purchasing those RTCs now and banking allowances under the CPP? And are the RTCs just those associated with biomethane? Or are there RTCs you're including from other alternative fuels?"

Answer (Brian Robertson): Brian mentions that Landfill Gas (LFG) – 5 is what is being purchased early in these slides, noting the risks associated with these types of projects while also highlighting the cost effectiveness of them.

- Brian continues, covering which of the low carbon alternative fuels are taken, presenting a graph that shows the amounts and times in which the different types are taken. He also highlights that the presented analysis is not a "set it and forget it" type plan and that the company is constantly keeping tabs on current trends and changes in the industry, adjusting when opportunities arise.

Question (Quinn Weber): Quinn mentions that during the last TAG meeting it was mentioned that no carbon capture would come on by 2030 and asks if this is still the case.

Answer (Brian Robertson): Brian confirms that this is still the case as of now. He notes this is from conversations the Company has had, where currently there is uncertainty around this option. He reiterates that the Company is constantly keeping a finger on the pulse of all these options and will adjust accordingly if changes arise.

Question (Quinn Weber): Quinn then asks about thermal energy networks (TENS) and where they are in this mix.

Answer (Brian Robertson): Brian clarifies that since TENS is so new, it is hard to explicitly model this option due to the uncertainty around it and the lack of information on it.

Question (Quinn Weber): Quinn asks if it would be possible to model it as a more generic resource option.

Answer (Brian Robertson): Brian states that the Company could with information such as costs.

- Brian continues, covering the different customer growth scenarios (high customer growth and low customer growth) and how that impacts the various types of compliance options that are taken. He provides a graphical representation of these.

Question (Quinn Weber): Quinn notes the "demand" curve and the "demand less DSM" curve start at the same value but diverge more and more over time, asking what the assumption is behind this.

Answer (Brian Robertson): This is due to DSM being cumulative. An energy efficiency project today won't just have savings potential for just today, but it will have savings potential for the lifetime of the appliance. Each year through the planning horizon Cascade anticipates adding more and more DSM projects so each year will have savings from prior years as well as the savings from the current year.

Question (Carra Sahler): Carra seeks to clarify that if there is high customer growth, the model is buying RTCs earlier so that the Company can bank more allowances for future use, and if the cost being minimized is the RTC pricing.

Answer (Brian Robertson): Brian confirms that it is the RTC price in the future that is being minimized. He also reiterates that the Company will likely adjust what the model suggests by smoothing the amount of banking of allowances to take a more balanced approach.

Question (Carra Sahler): Carra asks if the forecasted pricing of the RTCs comes from the ICF study.

Answer (Brian Robertson): Brian confirms that the pricing forecast does come from the ICF study.

- Brian continues, covering the residential bill impacts for Oregon and Washington. He also provides a graphical representation to show the forecasted changes in the average monthly bill and the annual incremental cost. The graph includes a curve for an "as-is" case (no carbon compliance obligations), a reference case (to show the impacts of meeting the carbon compliance obligations), and annual incremental cost. He also talks about how these are integrated into the electrification modeling process as well.

Question (Will Gehrke): Will asks about rate base growth outside of just increases due to carbon compliance and if that is accounted for in these graphs.

Answer (Brian Robertson): Brian clarifies that the graphs shown are of reference case scenarios (which include costs such as O&M).

Question (Kim Herb): Kim asks if these graphs reflect any reduction in customers scenarios.

Answer (Brian Robertson): Brian reiterates that these graphs show the reference case, which is different from the low customer growth scenario that the Company also analyzes and plans for, mentioning that those graphs are not available, but the goal is to have them ready for the March draft filing.

- Brian continues, covering the low carbon alternative fuels Monte Carlo pricing. He goes over the minimum price and the maximum price for years in from 2025-2050 in five-year increments. He shows two types in the slides and highlights both the wide range between the minimum and the maximum and how this range increases over time due to increased uncertainty. He mentions that the Company received 1,000 different draws from ICF but chose only 200 of them due to constraints.

Question (Quinn Weber): Quinn asks how the 200 that were used were chosen.

Answer (Brian Robertson): Brian clarifies that the Company used the first 200 draws that were provided. He further comments that other methods were explored and more methods for choosing 200 draws will be explored further. He also mentions that all this type of information will be provided in the IRP appendices.

- Brian continues, presenting a table that shows different alternative fuel types and which years they were first chosen over the 50 Monte Carlo simulations that have so far been ran. This highlights the variability in when certain fuel types can be chosen in the model.
- Brian then covers Monte Carlo simulations around Washington and Oregon residential impacts. The 50 samples ran resulted in a range of about $20-$40 in terms of average monthly bill impacts.

Presentation #3 – Incremental Supply Side Resources (Chris Robbins)

- Chris covers the current storage accounts (Jackson, Plymouth, and Mist) and the capacity of them. He then covers a new storage contract, which should begin service in mid-2029 with a 25-year term. He also covers the expected storage volumes for this new contract.
- Chris explains the logic behind why Cascade needs more storage capacity. This includes price arbitrage opportunities and the flexibility it provides during winter peaks.

Question (Carra Sahler): Carra asks for an update on Cascade's contract with GTN Xpress.

Answer (Chris Robbins): Chris clarifies that is in full service.

Question (Kim Herb): Kim asks what signal the Company gets to indicate that something different needs to happen in terms of storage.

Answer (Chris Robbins): Chris explains that the main pipelines in the service area are maxed out and fully contracted, thus there is little ability to operate outside of normal conditions, thus any negative

shock can throw the entire system off. Having storage helps mitigate those risks and helps avoid penalties, which help shield customers.

Question (Byron Harmon): Byron asks how the idea of needing more storage aligns with the IRP reference case of a gradual downward trend in demand.

Answer (Chris Robbins): Chris talks about how more storage is different from additional pipeline capacity to serve more, the storage allows for more of a cushion for the customers. Thus, even with less customers or demand the storage still provides the intended cushion again price spikes.

Question (Byron Harmon): Byron asks if increasing storage for the stated intended purposes is something that PLEXOS can do.

Answer (Brian Robertson): Brian states that it can optimize for that. Brian then mentions the issues that PLEXOS faces, such as not handling OFO orders well or certain flow restrictions that may arise. He also mentions that when the Company ran Monte Carlos with and without storage expansion, it showed a total lower system cost with the storage.

Question (Carra Sahler): Carra asks about the Company's historical approach to storage and why this wasn't done earlier.

Answer (Chris Robbins): Chris talks about how the Company has been looking for storage for a long time and how opportunities in California haven't made sense from a cost and operation viewpoint. He also mentions how all the storage in the area is utilized and thus the only opportunity for more storage comes from new projects.

Presentation #4 – Distribution System Planning (Zachary Sowards)

- Zachary covers system dynamics, including the various traits of piping and how much of it is in Washington and Oregon. He also covers facilities, and system design. He explains how the company uses Synergy Gas modeling software to analyze the various variables involved in the distribution system before providing an example.
- Zachary explains that the Synergy models used are rebuilt every three years and are maintained/updated between the rebuilds. He also explains the variables that go into the modeling process, how the data is gathered, and how the data is used.

Question (Byron Harmon): Byron asks what assumptions are made when modeling individual customers.

Answer (Zachary Sowards): Zachary explains that the modeling is done on a per customer basis. The Customer Management Module (CMM) uses historical building data and historical weather data to build linear regressions. He then explains the linear regressions.

Question (Byron Harmon): Byron asks about the standard deviation of residential customer gas consumption.

Answer (Zachary Sowards): Zachary explains that such statistics are produced with each model, and he can get that to Byron.

Presentation #5 – Identification of System Deficits/Constraints (Zachary Sowards)

- Zachary explains the capabilities of the Synergy modeling software and what it is used to model, including but not limited to RNG, large volume customer requests, system reliability, and IRP predicted growth.
- Zachary explains what a capacity deficit is and the distribution system modeling process.

Presentation #6 – Distribution Enhancement/Reinforcement Options to Address Deficits (Zachary Sowards)

- Zachary covers some of the enhancement options, including but not limited to pipeline replacements or reinforcements, facility upgrades, and compressor stations. He then goes over an example of what an engineer may go through when modeling a situation using the Synergy software. He also covers what considerations must be considered when evaluating different enhancement or reinforcement options and the selection guidelines that are used to decide.

Question (Byron Harmon): Byron asks about the environmental concerns and impacts that are considered in this process and how they align with the cost benefit and engineering goals.

Answer (Zachary Sowards): Zachary explains that the engineering works with the environmental group in the selection process previously covered, using those types of inputs in the process.

Presentation #7 – Enhancements/Reinforcements Identified in 2025-2029 Capital Budget (Zachary Sowards)

- Zachary covers the various enhancement projects that have been identified over the next 5 years. He then dives into more detail about projects., including information such as cost, timing, benefits, and alternatives that were considered. He also covers an addition gate station to take place and the iterative process of the IRP.

Post Presentations –

- Brian Robertson opens the meeting up for any questions or feedback.

Question (Carra Sahler): Carra asked if non-pipeline alternatives were considered in the distribution system planning analysis.

Answer (Zachary Sowards): Zachary explains that many of these projects are supporting projects of other projects that have been completed before. Zachary also mentioned that many of these projects

are projects that are identified to be needed immediately and may not have enough time for non-pipe alternatives.

Question (Carra Sahler): Carra asked if there is a way to manage DSM analysis in a way that allows for consideration of a variety of alternatives so that it is not an immediate need that results in a pipeline solution.

Answer (Brian Robertson): Brian explains that distribution system costs are included in the avoided cost, so future projected pipeline costs are included in the DSM model. He also explains that DSM needs more time but that the Company is still considering various approaches.

- Brian Robertson goes over the 2025 Washington IRP schedule, requesting feedback as soon as possible, and no later than April 15th, to allow time for the Company to incorporate feedback into the IRP.

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. Cascade will consider adding graphs to show the dynamics before and after reinforcements for each of the reinforcements over the next 5 years that visually show the justification for them.
2. Cascade will continue to consider ways to identify potential capacity and distribution system deficits earlier than when they become an immediate need.