

Integrated Resource Plan (IRP) Stakeholder Meeting on the 2023 Gas Utility IRP: Summary

v. 4/29/2022

Meeting details

- Thursday, March 31 from 1 p.m. – 4 p.m.
- Links to:
 - [Meeting materials](#) (e.g. hot sheet and presentations)
 - [Meeting recording](#)

Action Items from March 31 Gas Utility IRP Stakeholder Meeting

What	Who
Respond to Jennifer Snyder (UTC) in the Feedback Report regarding PSE’s interpretation of the legislation in HB 1257 and applying the social cost of greenhouse gases in intermediate and long-term resource planning.	Completed, see Feedback Report
Respond to Kelly Hall in the Feedback Report on the use of renewable natural gas (RNG) in Washington under the Climate Commitment Act (CCA).	Completed, see Feedback Report.
Respond to Christine Bunch in the Feedback Report re: how PSE’s gas and electric territories are related to developing the Natural Gas IRP.	Completed, see Feedback Report.

Summary of IRP Comments and Questions during the Meeting

Overview:

- PSE provided brief updates at the start of the meeting, including:
 - 2022 energy planning process focus areas.
 - 2023 Gas Utility IRP timeline, including PSE’s plan to file the IRP workplan on April 1, 2022.
 - Brief update on status of regulatory review of Clean Energy Implementation Plan.
- This information can be found on [slides 7-10](#) of the presentation

Carbon Prices and Social Cost of Greenhouse Gas Emissions

- PSE shared an overview of the Climate Commitment Act (CCA) and how it will affect gas utility planning:
 - Under [HB 1257](#), PSE must use the social cost of greenhouse gases in planning for conservation. Planning will look different for electric and gas utilities.
 - The law is clear for intermediate and long-term resource decisions and planning for electric utilities.
 - There is uncertainty around applying the social cost of greenhouse gas emissions in gas utility planning and what it includes beyond conservation and hybrid heat pumps.
- PSE discussed applying the social cost of greenhouse gases and carbon pricing to total costs.
- Stakeholder questions and comments included:
 - Is there uncertainty around whether PSE can apply the social cost of greenhouse gases to natural gas, and would it be beneficial to apply that cost to upstream emissions?

- What barriers does PSE see in the application of social cost of greenhouse gases to other resources?
- How does this impact resource planning decisions beyond conservation?
- This information can be found on slides [11-21](#) of the presentation.

Gas Utility Resource Alternatives

- PSE reviewed the Gas Utility IRP modeling process:
 - PSE is considering different resource alternatives for the gas utility that help with decarbonization.
 - Supply-side resource alternatives include natural gas, pipeline and storage contract options, and renewable fuels.
 - Demand-side resources include energy efficiency and electrification (e.g., hybrid heat pumps).
- PSE will discuss demand analysis in an upcoming stakeholder meeting.
- Stakeholder questions and comments included:
 - Questions about PSE's base load forecast as shown and the data included.
 - Concerns about PSE's assumptions on the future of natural gas use given public concerns on climate change.
 - Questions on gas price volatility, how biogas could be used in both gas and electric utility planning, and the potential of green hydrogen and concerns about the overall efficiencies of green hydrogen compared to storing excess renewables.
 - Questions on whether PSE's analysis applies to areas outside PSE's service territory and non-PSE electric impacts.
 - Concerns about potential impacts for customers that would like to invest in cold weather heat pumps or hybrid heat systems.
- Stakeholder suggestions included:
 - Conduct a cost-efficiency comparison between utility scale battery storage, pumped hydropower, and green hydrogen.
 - Remove traditional heat pumps from electrification scenario modeling.
 - Include ground storage heat pumps to electrification scenario modeling.
- This information can be found on slides [22-34](#) of the presentation.

Gas Utility IRP Scenarios

- PSE provided information and updates on Gas Utility IRP scenarios, including:
 - The use of scenarios to create a 20-year portfolio.
 - Sensitivities are used to test different assumptions related to changes in resources, environmental regulations, and other conditions.
 - The Gas Utility IRP will include decarbonization factors.
 - There will be several scenarios to capture the range of potential outcomes for the CCA.
- Stakeholder questions and comments included:
 - Questions and concerns about heat pumps, including traditional and hybrid heat pumps, heat pump incentives, and building new gas lines to serve hybrid heat pumps.
 - Questions on how PSE is considering electrification programs of other utilities and whether PSE applies proposed electrification policies from cities.
 - Concerns about all types of renewable hydrogen and the effects on pipes and appliances.
- Stakeholder suggestions included:

- Include a scenario that aligns with modeling and gas/electric demands from State Energy Strategy.
- Consider demand changes if jurisdictions adopt a path to electrification.
- Reduce PSE's own emissions instead of treating RNG like a Renewable Energy Credit.
- This information can be found on slides [35-48](#) of the presentation.

Breakout rooms

- Stakeholders broke out into three different breakout rooms to discuss the following topics:
 - Electrification
 - Carbon Constraints
 - Renewable Fuels
- PSE asked participants the following questions about each topic:
 - Are we considering the right components?
 - Are we missing anything?
 - Are there other sensitivities or scenarios we should be considering?
 - Would you change anything?
- See the Appendix for a copy of the Mural used to take notes during the breakout rooms.

Note: Stakeholder questions were addressed in the meeting (refer to [meeting recording](#) for responses) or included in the Feedback Report (see next page).

Feedback Report

Purpose: The following table records the IRP stakeholder unanswered questions and PSE responses from the Electric Progress Report discussion with IRP stakeholders and the meeting’s feedback form. Meeting materials are available on the project [website](#).

Date	Stakeholder	Comment	PSE Response
3/31/22	Jennifer Snyder	I don’t see any barrier to using the social cost of carbon for other resources. What barriers is PSE seeing?	<p><i>Initial response in meeting: It is a legal construct. The legislation made the social cost of carbon clear in the intermediate and long-term resource decisions, and it was clear that it was conservation. When the legislation is clear with a list of items, it's usually intentional.</i></p> <p>PSE will model a scenario to show the SCGHG on RNG and its benefits to decarbonization.</p>
3/31/22	Kelly Hall	<p>Can you say more about the rules potentially restricting RNG to Washington? Are you referring to the production or the use?</p> <p>Are you talking about compliance using offsets or separate from the 5% offsets you use?</p>	<p>When we reference ‘WA constrained RNG’ we are referring to both production and use being restricted to the state of Washington.</p> <p>The “5%” referenced in the meeting pertains to the 5% cost cap for gas utilities to acquire Renewable Natural Gas (RNG) in HB 1257. We are not sure how or whether the 5% cost cap from HB 1257 interacts with the Climate Commitment Act. For purposes of this IRP, we will assume that acquiring RNG in excess of the 5% cost cap for CCA compliance will be an acceptable policy solution.</p>
3/31/22	Christine Bunch	How PSE’s gas and electric territories are related to developing the Natural Gas IRP?	<p>For the electrification study for the 2023 Gas Utility IRP, we are looking at PSE’s entire gas system. Where our gas and electric systems overlap, we will be adding the loads to the electric portfolio.</p> <p>We will be applying generic “avoided” electric costs to electrification alternatives (energy, capacity, along with transmission and distribution costs). We will be able to perform a detailed look at the energy-supply-related implications to PSE’s electric portfolio, but not other electric utilities.</p> <p>Please keep in mind the IRP will be focused on cost effectiveness, not program design and implementation. Should PSE develop broad hybrid heat pump programs, or something similar, we will</p>

Date	Stakeholder	Comment	PSE Response
			communicate and coordinate with host electric utilities, including Seattle City Light, to maximize effectiveness.
4/5/22	Bill Westre, Union of Concerned Scientists	<p>Slide 23 – Key questions for stakeholders: I do not know of any renewable gas resources including the ones you list that meet the requirements of:</p> <p>1) potential supply volume, 2) acceptable cost, and 3) effective timing to meet the CCA requirements, and 4) sustainable practice.</p> <p>For example, biomethane from livestock. I did a short analysis of the potential capacity of biomethane from manure calculating the volume from the 275,000 cows in Washington state and found that if perfectly captured would contribute only 5% of PSE’s peak capacity need. I suspect landfill gas would be a similar volume. Biomethane from forest residue is not sustainable as forest experts will tell you it needs to remain in the forest for sustenance of the replacement growth. Additionally, biofuels are the only short and intermediate source of clean energy for our airliners which you won't compete with. The certification of electric planes with capacity is years off. Green Hydrogen fails the cost requirement. If the renewable energy required for the electrolysis conversion was used instead to power heat pumps it would be much more economical than using renewable gas for heating, because heat pumps are up to 3 times more efficient than gas furnaces. Neither would green hydrogen be ready in time to meet the early reduction ramp which starts next year. The</p>	Thank you for your comment. PSE will include supply curves for RNG for the scenarios discussed in the 2023 Gas Utility IRP. This will help clarify volumes and prices for different kinds of renewable gas. Supply curves for both the Washington-only RNG as well as North America-wide RNG scenarios will be included.

Date	Stakeholder	Comment	PSE Response
		conclusion I come to is you need to focus on the electrification route to meet CCA requirements.	
4/5/22	Bill Westre, Union of Concerned Scientists	Slide 34 -What types of heat pumps? I would focus on cold weather heat pumps and ground source heat pumps. As has been pointed out in the meeting traditional heat pumps are obsolete now with the development of cold weather air source heat pumps. All the people I know with heat pumps and a furnace never need the furnace. Hybrid heat pumps may be slightly lower cost now but add maintenance and installation complexity, and really don't provide any more backup than cold weather heat pumps in case of power outage. You should include ground source heat pumps as well because they are the most efficient of all types and are scaleable for large new construction installations like warehouses and major buildings, and can be installed as well under parking lots, streets, vacant space or parks or drilled down into the earth. Bellevue School district has selected ground source heat pumps for their new schools. Give up on focusing on hybrid heat pumps to extend the life of NG infrastructure and focus on electrification. It will simplify your operation. Focus on electrification and cold weather & ground source heat pumps.	<p>Thank you for your feedback and perspectives on hybrid heat pumps and ground source heat pumps.</p> <p>PSE will include the cold weather heat pumps and ground source heat pumps in our study along with hybrid heat pumps.</p>
4/8/22	Deepa Sivarajan, Climate Solutions	We urge PSE to make sure that the electric and gas IRP processes are integrated holistically to ensure that what's being considered on the gas side – particularly around the potential for electrification of residential and commercial buildings to be a cost-effective decarbonization strategy – can be incorporated into the electric	<p>Thank you for your feedback. PSE agrees that it is particularly important to show the impacts of electrification and decarbonization for both gas and electric utility resource plans.</p> <p>PSE plans to publish the accompanying electric portfolio analysis within the 2023 Gas Utility IRP, as these are gas IRP scenarios. We also see the strong interaction between the demand forecast for</p>

Date	Stakeholder	Comment	PSE Response
		IRP, and vice versa. We see a strong interaction between the demand forecasts for each side of the utility as well as Conservation Potential Assessments.	both utilities and the Conservation Potential Assessment (CPA). PSE plans to leverage the CPA heat pump analysis to analyze the demand forecast impacts on both the gas and electric portfolio.
4/8/22	Deepa Sivarajan, Climate Solutions	We also encourage PSE to consider gas and electric together when looking at how the social cost of greenhouse gas (SCGHG) and Climate Commitment Act (CCA) price will impact resource decisions, particularly in considering not only energy efficiency as strategy, but electrification as well. Additionally, it is important that PSE works to reduce its own emissions under CCA rather than treating the renewable attributes of RNG as unbundled RECs.	Thank you for your feedback. PSE plans to leverage the same social cost of greenhouse gas (SCGHG) and Climate Commitment Act (CCA) prices for both the 2023 Electric Progress Report and the 2023 Gas Utility IRP. PSE is planning to run an electrification scenario in the gas utility IRP per slide 48 from the IRP stakeholder meeting on 3/31/2022. Thank you also for your comment referring to PSE reducing our emissions under the CCA outside of just RNG. PSE will be studying a host of carbon reduction resources, including typical conservation measures, hybrid heat pumps, other kinds of electrification, green hydrogen, RNG that is sourced locally and RNG sourced from a broader geographic footprint. As the Washington Department of Ecology’s CCA rules are not written yet, PSE will examine the impact of RNG footprint using scenario analysis in this IRP.
4/8/22	Deepa Sivarajan, Climate Solutions	Regarding slide 20, which discusses looks at forecasts for CCA price based on California’s carbon pricing ceiling and floor, the values are a likely underestimate and do not align with the results of the most recent California auction in February 2022, which show a higher range of prices: https://ww2.arb.ca.gov/sites/default/files/2020-08/results_summary.pdf	Yes, you are correct, the forecasted California carbon pricing is based on a historical price from 2017 which puts the starting year of 2023 at \$23.35. The latest auction from February 2022 finished at \$29.15. This chart was intended to begin the discussion with stakeholders and seek feedback on different forecasts available on carbon prices. PSE is exploring more options, which also include the California Energy Commission (CEC) Integrated Energy Policy Report (IEPR) projection for 2021. 2021 Integrated Energy Policy Report (ca.gov)
4/8/22	Deepa Sivarajan, Climate Solutions	Regarding slide 29, which uses the American Gas Foundation study to project RNG costs – we recommend also looking at the Washington Department of Commerce RNG study, which considers prices in a higher range of \$20-	Based on our follow-up, this comment is referencing the “Promoting RNG in WA State” study that was published in 2018 (https://www.commerce.wa.gov/wp-content/uploads/2019/01/Energy-Promoting-RNG-in-Washington-State.pdf)

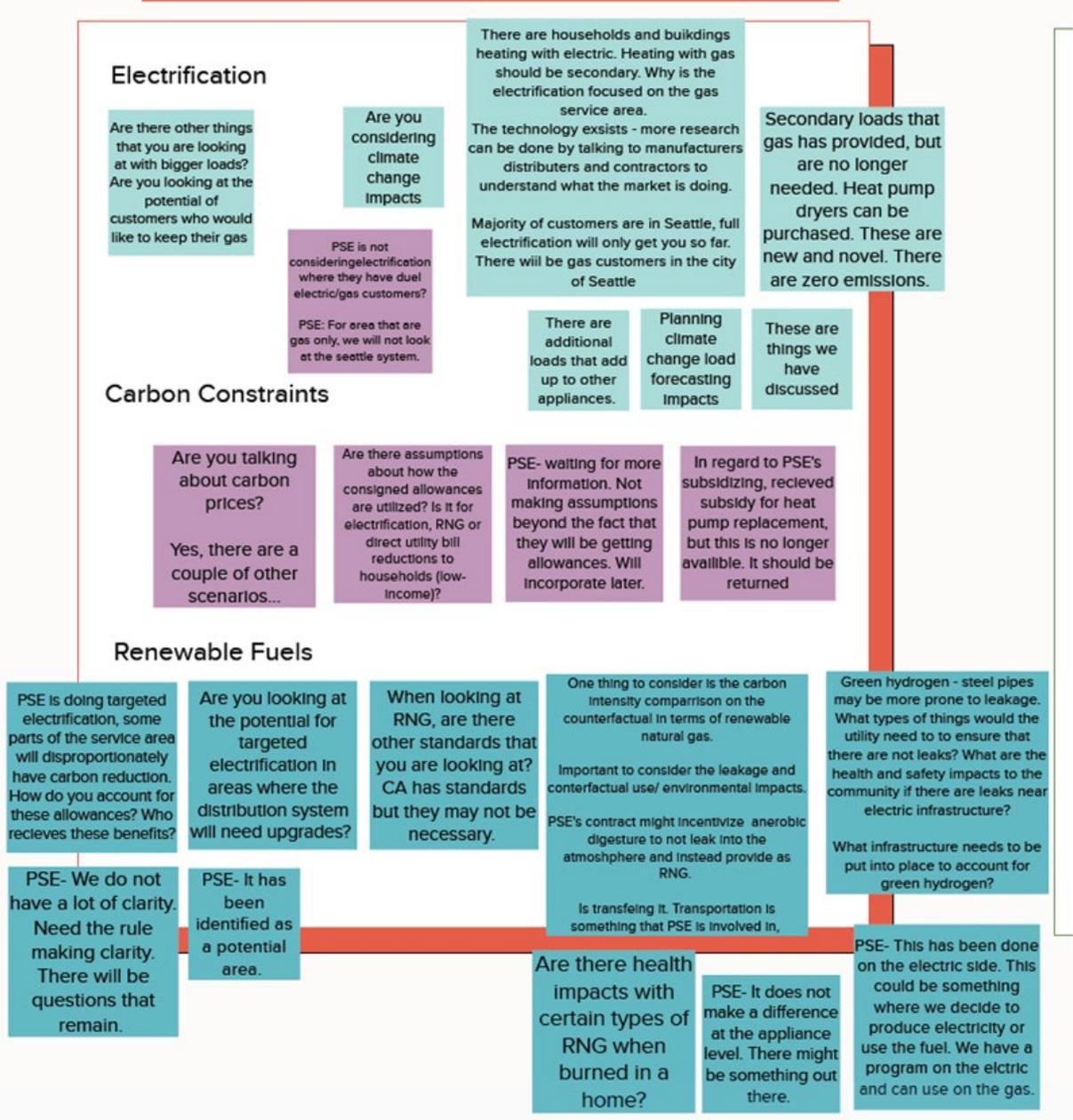
Date	Stakeholder	Comment	PSE Response
		<p>\$30/MMBtu for biogas: www.commerce.wa.gov%2Fcommerce-rng%2F&usg=AOvVaw1-iAWXLUclRPlcj1liJIZR</p>	<p>One of the sources referenced in the study was an earlier version of the American Gas Foundation (AGF) 2011 study for RNG prices. We are using the updated and expanded AGF study from 2019, which has updated production cost estimates.</p>
4/8/22	Deepa Sivarajan, Climate Solutions	<p>Regarding the resource alternatives, as other stakeholders mentioned, we are curious to see why current demand projections show gas use increasing over time, and we look forward to hearing more about the inputs for the demand projections at a future meeting. We would also like more information on whether PSE has economically interruptible tariffs to help keep costs down.</p>	<p>The forecast shown during the Mar. 31, 2022, meeting did not have Demand Side Resources (DSR) removed from the forecast. With the removal of DSR that load forecast does not increase. PSE plans to walk through the demand forecast in greater detail in an upcoming stakeholder meeting on July 12, 2022. PSE does have interruptible gas sales and interruptible gas transport-only service for larger commercial and industrial customers.</p>
4/8/22	Deepa Sivarajan, Climate Solutions	<p>Washington’s requirement to reduce greenhouse gas emissions 95% from 1990 levels by the year 2050 is law under the Climate Commitment Act and our statutory greenhouse gas reduction requirements. Rather than just a price signal, this carbon constraint should be incorporated in the reference case, and we recommend using targets identified in the State Energy Strategy to model different pathways based on CCA targets. In particular, using the most cost-effective sector-specific targets in the State Energy Strategy would allow pathways that, for example, continue to use RNG and hydrogen to support industrial customers in sectors that are difficult to electrify, while relying on cost-effective decarbonization strategies like electric heat pumps for most residential and commercial customers.</p>	<p>Thank you for the feedback. As discussed in the meeting, PSE will include an analysis based on a hard carbon cap. That is, we will examine the most cost-effective way to achieve that hard carbon cap without purchasing allowances under the CCA program. Decarbonization alternatives will include hybrid heat pumps, full electrification with typical and other heat pump technologies, RNG, Green Hydrogen, and possibly some categories of carbon offsets.</p> <p>Based on comments and follow-up discussion with Climate Solutions, PSE will use the State Energy Strategy as the basis of that hard carbon cap. PSE’s analysis may result in a different solution because the State Energy Strategy looks more broadly than just PSE’s gas utility footprint. PSE’s analysis will be an estimate of the least-cost solution for PSE’s gas utility operation.</p>
4/8/22	Deepa Sivarajan, Climate Solutions	<p>Overall, this would also allow for more flexibility in how different strategies could be deployed. Apart from the full electrification scenario, the scenarios do not appear to consider decarbonization</p>	<p>Thank you for your feedback. The electric heat pump is currently an incentivized technology through Energy Efficiency. The Conservation Potential Assessment is looking into the market penetration rate for heat pumps, and PSE plans to leverage their</p>

Date	Stakeholder	Comment	PSE Response
		<p>measures outside of hybrid heat pumps – why is conversion to electric heat pumps not considered as a strategy for some customers in the other scenarios? Similarly, the full electrification scenario does not consider hybrid heat pumps at all – we suggest that one pathway to full electrification could include hybrid heat pumps until 2030, then shifting to electric heat pumps past that date.</p>	<p>finding to influence the adoption curve for both electric and hybrid heat pumps in the scenario analysis.</p> <p>Full electrification will be considered in all scenarios as an alternative, along with hybrid heat pumps, RNG, Washington Department of Ecology allowances, and other resources. That will be the case in scenarios where CCA is treated as an economic regulation and the hard-cap scenario.</p>

Feedback Addressed from March 31 Natural Gas IRP Meeting

What PSE heard	What PSE did with feedback (to date)
Conduct a cost-efficiency comparison between utility scale battery storage, pumped hydropower, and green hydrogen.	We have shared this feedback with the Electric IRP team for their consideration.
Remove traditional heat pumps from electrification scenario modeling.	PSE will include heat pumps that rely on back-up heat sources, including electric resistance or gas furnaces, along with other heat pump technologies in the IRP. These heat pumps are commercially available and typically the variety that customers install in our service territory. Additional details of heat pump penetration and potential penetration rates will be included in the 2023 Gas Utility IRP.
Include ground storage heat pumps to electrification scenario modeling.	PSE will include ground source heat pumps as suggested.
Include a scenario that aligns with modeling and gas/electric demands from the State Energy Strategy.	As noted in the Feedback Report, based on discussion with Climate Solutions, PSE will use the State Energy Strategy as a guide for a hard-emission cap scenario. That is, we will examine the least cost way to achieve the State Energy Strategy emission reductions targets from PSE's gas utility perspective.
Consider natural gas demand changes if jurisdictions adopt a path to electrification.	PSE will be modeling an electrification scenario. For those jurisdictions that have adopted electrification requirements, the analysis will capture the impacts to both the gas and electric system for those jurisdictions.
PSE should reduce its own emissions instead of treating renewable natural gas like a Renewable Energy Credit (REC).	Thank you for your comment. PSE believes that all options to reduce emissions should be considered. Renewable natural gas (RNG) will play a key role in decarbonization of our gas system. The detailed rules pertaining to RNG locations have not been written. Therefore, PSE will examine the implications of strictly limiting RNG and broader footprints in scenario analysis for this IRP.

Room 1



Room 2

Carbon Constraints

PSE blew things up by freezing stakeholders out by moving to join the rate case and CEIP

Jim: look at this as a price regulation

PSE should do a scenario in which PSE considers a firm carbon cap without buying [gas equivalent of] RECs.

Renewable Fuels

Desire to change: prevent from PSE from exploring blending fuels (including hydrogen) into the natural gas pipeline

Green hydrogen is inefficient. Concerns around this.

Not economically viable and it won't ever be. There are better ways to use surplus green electricity via batteries.

Challenging to turn a Gas Utility into a "clean" energy

Better to use green energy for electric vehicles than green hydrogen

PSE needs to pick up the pace to electrification

Need for pursuing renewables more aggressively

Electrification

Explore the full range of electrification where possible

Use old technology in the IRP that doesn't make sense today. No longer have heat pumps that won't work below freezing.

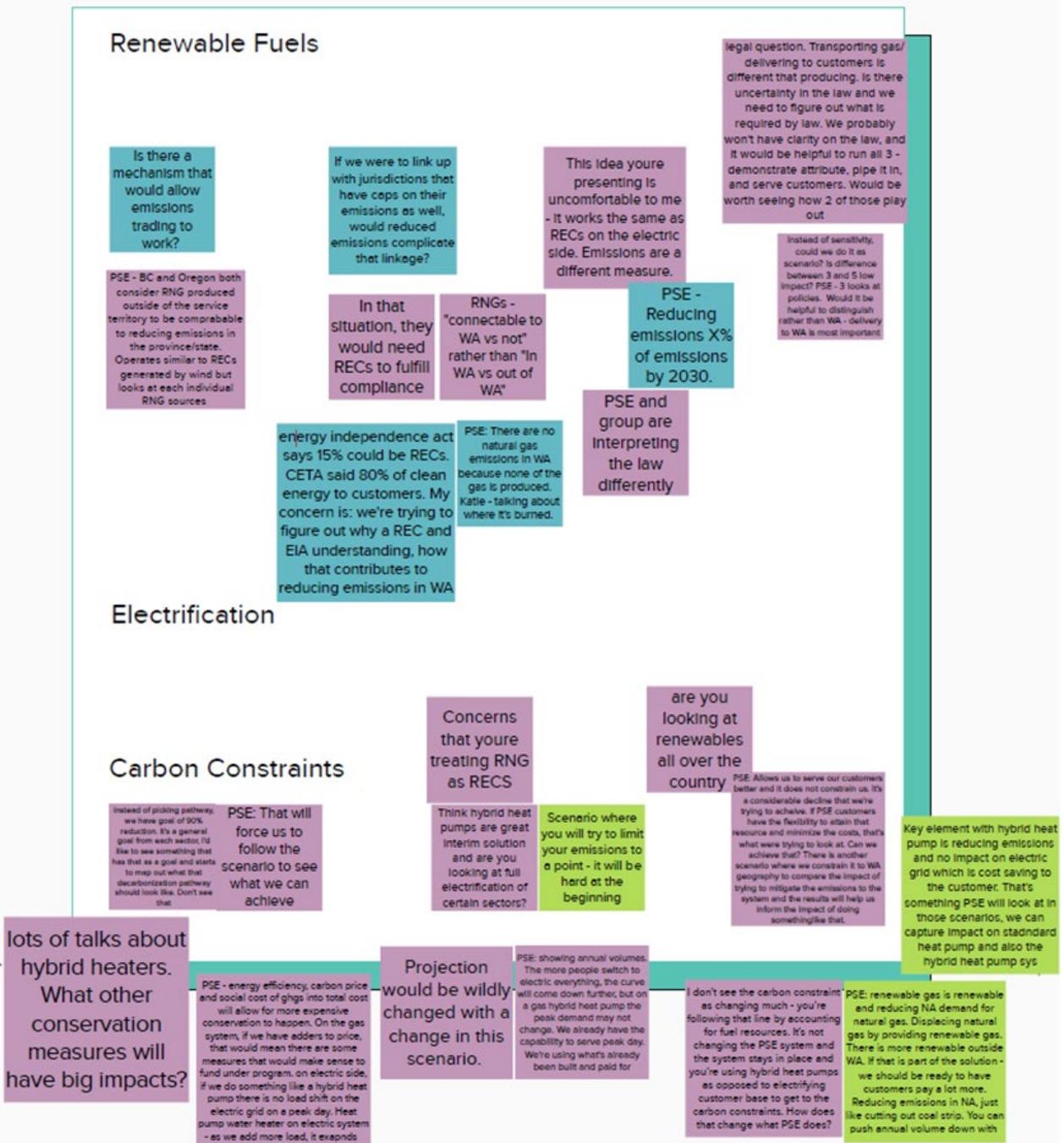
Use of "traditional" heat pumps in modeling is obsolete (x2)

Use of "hybrid" heat pumps is outdated technology since back-ups are not required

Price model, time of use, time of day, show a 10-year commitment to that (existing housing)

Price tradeoffs for new construction. Especially taking into account SCGHG.

Room 3



Attendees (alphabetical by first name)

1. Aaron Tam, Attorney General
2. Anne Newcomb, IATC
3. Austin Nnoli, GE
4. Brian Robertson, CNGC
5. Christine Bunch, City of Seattle
6. Daniel Handal, NEE
7. Deepa Sivarajan, Climate Solutions
8. Fred Heutte, NWEC
9. James Adcock
10. Jennifer Snyder, UTC
11. Joni Bosh, NWEC
12. Katie Ware, Renewable Northwest
13. Kelly Hall, Climate Solutions
14. Larry Becker, Frontier
15. Lauren McCloy, NWEC
16. Marcus Sellers-Vaughn, CNGC
17. Marilyn Subala,
18. Marty Campbell, Pierce County
19. Monica Blakeslee-Kish, Energy Solution
20. Nora Hawkins, UTC
21. Patrick Leslie, Monolith Energy
22. R. Court Olson, Optimum Building
23. Rachel Clark, City of Tacoma
24. Rosemary Moore
25. Semra Riddle, City of Lake Forest Park
26. Stephanie Chase, Attorney General
27. Willard Westre

Puget Sound Energy Staff Observers (alphabetical by first name)

1. Alexandra Karpoff
2. Allison Jacobs
3. Amreen Pappar
4. Bill Donahue
5. Bob Williams
6. Brett Rendina
7. Cindy Vu
8. Corey Corbett
9. David Meyer
10. Diann Strom
11. Doug Hart
12. Elizabeth Hossner
13. Gurvinder Singh
14. Jennifer Coulson
15. Jesse Durst
16. Jessica Zahnow
17. Kara Durbin
18. Kasey Curtis
19. Kelly Xu
20. Leslie Almond
21. Lorin Molander
22. Marc Alberts
23. Mark Lensen
24. Melanie Coon
25. Michal Munoz
26. Michelle Wildie
27. Niece Weatherby
28. Phillip Popoff
29. Renchang Dai
30. Ryan Frazier
31. Sara Leverette
32. Sheri Maynard
33. Thor Angle
34. Tyler Tobin
35. Vidushi Raina
36. Villamor Gamponia
37. Wendy Gerlitz
38. Zeia Lomax

Consultant Staff (alphabetical by first name)

1. Claire Wendle
2. Sophie Glass
3. Will Henderson