

From: [HERB Kim * PUC](#)
To: [HERB Kim * PUC](#)
Cc: [PUC PUC.FilingCenter * PUC](#)
Subject: UM 2178 Natural Gas Fact Finding Workshop #4b materials
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Attachments: [UM 2178 10.12.2021 Workshop 4b Attendee List.docx.pdf](#)
[UM 2178 Workshop 4b Breakout 1 - Compiled Notes.pdf](#)
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Dear UM 2178 / Natural Gas Fact Finding Stakeholders,

Thank you again for your contributions to Workshop 4b on Regulatory Tools. Please find attached the raw notes from the two breakout sessions in the October 12, 2021 Natural Gas Fact Finding Workshop 4b, and the attendee list.

Additionally, the recording of the meeting can be found here:
http://oregonpuc.granicus.com/MediaPlayer.php?view_id=2&clip_id=843

Links to all of these materials, as well as the presentation, can be found on the PUC's EO 20-04 website: <https://www.oregon.gov/puc/utilities/Pages/ExecutiveOrder20-04.aspx>, and will be posted to [UM 2178](#).

As a reminder, comments on Regulatory Tool should be submitted to PUC by October 26, 2021.

If you have any questions, please feel free to reach out to me directly.

Best,
Kim

Kim Herb (she/her)
Utility Strategy & Planning Manager
Oregon Public Utility Commission

C: 503.428.3057

Kim.herb@puc.oregon.gov ***New Email Address***

Breakout Group 1 (Programs) - Compiled Notes

Natural Gas Fact Finding, Docket no. UM 2178

Workshop #4b, October 12, 2021

Questions

- What programmatic tools would you recommend that the Commission implement immediately, near-term, and long-term to facilitate meeting climate goals with least risk to customers?
- Why would you prioritize these tools over others?

Participant Responses

- Energy Trust of Oregon incentivization of cost-effective electrification – update cost effectiveness calculation. Something we can do immediately, with near term benefits to decarbonize, aligns with clean electricity policies. Need data on what programs should be supported because they are cost effective solutions.
 - Customers get incentives for cost effective actions
 - Define cost effective to include health, climate, and equity impacts
 - Use consistent CE to both gas and electric
 - Open options for some technologies solutions (AC example)
 - Make strategies additive (how they are sequenced)
 - Review SB 98 rules – useful prerequisites for moving forward
 - Implementing Social Cost of Carbon (SCC) in calculations
 - Comprehensive energy planning gas/electric – adequacy/stability what are the challenges and limitation in higher electrification scenarios.
 - Focus on tools that help us decarbonize, not just electrification
 - Why – because decarbonization is the goal
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- Leverage Integrated Resource Planning (IRP) joint planning. Bring forward low-income rates and energy burdened communities relative to HB 2475. Revisit

decarbonization study to inform reg tools to inform recommendations. For immediate impacts, renewable natural gas and hydrogen brought on system

- Center ways to solve problem rather than – should be focused on decarbonization as central. Pursue energy efficiency as aggressively as possible, highest and best use of tools rather than electricity/gas switching. Revisit energy efficiency valuation methodologies to achieve decarb goals including Hydrogen and biogas side to look at avoided costs of greenhouse gases (GHGs). Look at CCI costs for avoided costs, or DEQ.
- Partner with Energy Trust of Oregon for aggressive energy efficiency as much as possible. Rural service providers hired Guidehouse to review best cost pathways modeling scenarios, reviewing DEQ scenarios including use of gas-based fuels, decarbonized over time, to reduce GHGs.
- Industrial end-users not only residential customers. What does this mean for work force (steel, cement for example): result in leaving due to costs/production. How can PUC provide decarb tools for industrial sector? Also, aviation sector: how can clean fuels provide pathways for jet fuels, marine sectors
- Utilize what's in place SB 98, Renewable Natural Gas (RNG) and hydrogen now in place, encourage utilities to aggressively pursue those projects. Important step for gas for energy efficiency and decarbonization,
- Endorses IRP joint planning. Wholeheartedly endorses pursuing energy efficiency. Supports decarb as “driving force.” If customer, moving away from natural gas best way to decarbonize. As payee as electric and gas customer, wanted to go to electric heat pump: should be able to fuel switch. Thinks current fuel-switching policy works against decarbonization.
- For gas customer, using less and cleaner gas is best way to decarb. Renewable natural gas, hydrogen: Needs to find highest and best use – direct to industrial customers that experience challenges. Overall gas company profile/business model may need to change.

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- Incentivizing appliances that don't emit greenhouse gases and weatherization. Priority: market signals to tell people what to do. People aren't going to know what the right thing is
 - and health effects
 - Including other benefits in cost-effectiveness including health, climate change, others, more than just money
 - Time-of-use (TOU) incentives, flexible demand, appliances, customer behaviors

- Focus on best bang-for-your-buck efficiency. Priority: low hanging fruit
 - Including transport-only gas customers
 - Revisit fuel switching policy. Priority: Goes hand in hand with the right market signals (idea #1)
 - Line extension policies: new gas users responsible for paying for the hook-up to discourage expansion of the gas system. Priority: give people market signals to help them make decisions to keep gas infrastructure where it is.
 - Energy efficient options for every type of equipment, how to finance deep energy retrofits/more challenging efficiency installations (Seattle MEETS)
 - Using the new rate class to protect low-income ratepayers
 - If the way their rates are calculated are different, consider how they interact with programs including energy efficiency
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- Energy efficiency – exploring pilots in partnerships with Energy Trust of Oregon, there is a bottleneck with the agencies they work with so we need to find efficiencies, another is energy efficiency for interruptible customers. They don't contribute to the public purpose charge so they don't contribute.
 - Why prioritize this? Provides more access to customers is a win for environment and cost – so it's low hanging fruit.
 - Wants to agree with energy efficiency, innovation requires pilots, but rather say pilots at scale – fix the definition of cost effectiveness so that you are able to do everything that needs to be done. The need is climate policy not avoided cost. While doubling down on energy efficiency change fuel switching rules. And putting underserved communities first should be a priority.
 - Why prioritize these? It means going out into the field and doing the working, doing the best job we can while we're there, the why is urgency.
 - Agree with energy efficiency, investigate low-income rates, they are hurting right now. And can we get more renewable natural gas in the system for immediate impact? Do joint planning with IRPs.
 - Very important that we not count on efficient because it is not fast enough. We need to change the sources of energy.
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- Low-income protections/rate classes

- Point of replacement - lift ETO fuel switching preemption, have ETO preference electric replacements as most energy efficiency and cost effective, or weatherization upgrades, but no gas incentives of any kind
- Line extension policies:
 - Eliminate these for gas
 - Increase LEAs for electrification - prioritize behind the meter upgrades that are currently out of scope (panel and circuitry upgrades to existing that are needed to electrify existing buildings)
 - Additional fees for voluntary connections to the gas system. Any new infrastructure will add to the cost of decarbonizing the entire system, so customers who choose to connect should pay a CPP type fee in addition to the cost of connection - must shift cost and risk of new gas hook ups onto new customers rather than saddle existing low- and moderate-income (LMI) customers
- 10-year depreciation schedules for any new gas investments going forward - especially for any investments that are related to heating buildings of any kind. Investments for transportation solutions could have longer depreciation schedules.
- Options 1-4 are all low cost, and don't preclude other options in future. Can and should be done immediately. Must do these in addition to decarbonizing gas. OK to encourage lower emission gas while also shrinking the gas system to serve only the best uses.
- Equity is not a tool, but rather an underlying principle to be applied to all options.
- First priority: Address barriers to fuel switching. Necessary to address existing buildings. Immediate opportunity, do it now.
- Next priority: Line extension allowance conversation.
- Open line extension proceeding--let's stop adding/subsidizing customers on the gas system; open a proceeding in OR on this issue (current policy is just funding a stranded asset.) Use WUTC as example.
- Get appliances electrified now. Cut gas appliance subsidies AND implement new policies/subsidies to encourage electrification of home appliances (with priority for highly impacted, low-income communities).
- Revisit fuel switching policy/barriers. Invest in enabling fuel switching (i.e. providing funding for electric panel upgrades for low income customers.)
- RNG is limited technology. Put less time/energy toward that. Right now Oregon is unique by acting like RNG and electrification are both equally viable long term options. They aren't.

- Energy efficiency first! Like the examples of evaluating CE and piloting new technologies. Explore where we may be able to shift the boundaries to accelerate energy efficiency programs using existing and near-term technologies.
- Avoided cost for CE calculation needs be based on renewable energy and hydrogen. CE of gas heat pump (near future) challenged by low cost of gas as avoided resource.
- Would be good if more of the market (i.e. manufacturers) could be involved in this dialogue. They are looking for indicators so they can plan their product mix for the next 10-20+ years, and also have a wealth of knowledge about what may be possible.
- Focus of this group should not be electrification. Electric Cos need to figure out how to support 100% RE for existing load, much less new load.
- I would appreciate hearing from the electric utilities directly about whether they have concerns on how to meet their load. To be frank, I have heard those concerns here a lot from gas companies, but had not heard electrics raise that concern. They know their system best.
- Line extension policy is drop in bucket.
- Need to include customer choice in conversation.
- Accelerated depreciation has near term cost to customers.
- Fuel switching is least accessible to lowest income customers. Need to enable it for them.

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- Low-price of electricity prevents retrofits from happening- equity is of tantamount importance- raise the price of electricity and then give people who electrify rebates
 - If looking at price of natural gas, does not include the risks of natural gas to health and safety- should include methane leaks of natural gas- should be required to be fixed; reason picked that is because methane has a greater global warming potential over 20-year time period
 - Prioritize tools to get the greatest immediate impacts- expand target DSM, energy affordability and resiliency, cost-effectiveness for energy efficiency programs, then exploring other types of pilots
 - Focus on electrifying, focus on low-income communities being able to afford new equipment and electricity bill- don't want to have low-income customers having super high electricity bills- want to address methane and move away from NG- not to focus on hydrogen and RNG- should move

- Didn't get a lot of guidance in DEQ rules about looking at low-income- but not really in CPP, leaving with the PUC to figure out the best way to do that- excited to do that, but will need to figure that out- would like to figure that out sooner rather than later
 - Compliance- joint resiliency, finding the place in the venn diagram where there is the flexibility in both systems to take advantage of that
- Target areas where can look at affordability, energy efficiency, comprehensive look at gas and electric utilities are combined- look at costs before electrification- see how that looks for groups, compliance, transport and industrial customers, also
- Risk management is a good way to get a perspective and figure out what needs first attention- other suggestion is that lifecycle analysis has been brought up but generally done by PhDs and can be not transparent and hard to explain- PUC could offer a lifecycle tutorial that doesn't involve the complex tools (unlike the GREET tool, which takes too long to explain)
 - False solutions are lurking everywhere- will eat up precious time and budget
 - The Risk Management Process has been around for a couple decades. It lists agreed-upon hazards, then rates each one for likelihood of occurring and consequences if it happens. This tool is employed by investors, military, industry, public health agencies, etc.
 - Lifecycle Analysis is important, but a drawback is that it relies on skilled and knowledgeable experts to take it on and indeed to understand and accept the results. So I really like the idea of a Lifecycle 101 tutorial that the marginalized justice and equity communities can engage in the technical narrative. With any false and ineffective climate actions, justice goes begging. This puts a premium on having everyone engaged in technical issues. False solutions eat up budget resources and precious time.
- Glad for this question because there are a lot of people- energy affordable rate for LMI, aligning replacement with carbon goals, EnergyTrust of OR has a fuel switching preemption- that should be lifted- beyond that, should be rally subsidizing and incentivizing heat pumps- shouldn't be subsidized in the name of energy savings but also carbon savings- take a sweep at programs that are subsidizing gas appliances as new EnergyStar appliances are electric- want to shield costs of ratepayers- target programs, depreciation schedules, don't want to be locking people in- 10 year- want to shift those costs and risks with new

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- Incentivizing adoption of RNG is something we can do; also pilots for hydrogen; need incentives to accelerate this

- Cost of electric sector decarb comparison to gas: significant cost reduction available- natural gas has cost effective options for decarbonization
- Avoided costs should be considered
- Revisit fuel switching policy; customers shouldn't be locked into one type of fuel; also need to revise cost-effectiveness test to better handle electrification
- Need targeted programs for disadvantaged communities to mitigate cost burdens as some customers go electric
- Expand targeted demand-side management
- Important to include transport customers in energy efficiency programs; BAT that certain sources needed to meet in GHG rules; what is achievable for transport customers; not having them included penalizes gas utilities
- Line extension policy review is needed
- Joint utility planning, including for meeting winter peak
- Assumption that RNG and hydrogen are zero carbon - but no real proof - needs to be evaluated
- Cost of maintaining system is expanding as we continue to expand gas consumption
- Investigate low income rates
- IRPs coming up - could use that to try for joint utility planning
- Neutral decarb study would be useful
- RNG/hydrogen - DEQ lacks authority to regulate emissions from these so they are considered zero emissions but PUC should consider how to evaluate risks regarding emissions from these sources - they are not actually zero emissions. Note that state law can change on this subject so utilities should be measuring these sources - otherwise ratepayers are exposed to risk.
- PUC does consider through SB98 and recognize emission reductions associated with hydrogen/RNG

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- Focus tools on load growth. Let's not add customers, focus there
 - PUC needs to look at gas and electric together, not separately, have a framework within which to evaluate IRPs, the PUC to become an energy planning entity. How will emissions reach that trajectory, planning and rates regulating at the PUC. Or link Planning from ODOE to PUC, work with ODOT for TE. State goals under framework
 - More coordination between planning, meeting DEQ requirements is the new cost of service, least cost includes carbon
 - Lots of tools can be implemented in the short-term, low-income programs, remove barriers for LI to electrify (upfront capital barrier), question of use of funds to

electrify, low-income, rural and BIPOC able to take advantage of solutions. Make sure programs are accessible to all.

prioritize pilot programs for beneficial electrification and efficiency, NOT hydrogen and RNG

- Support for fourth point above, prioritize low-income ratepayers, rural, BIPOC and reduce emissions now for current benefits, performance-based ratemaking, remove fuel switching barrier
- Support fourth point above, low-income, environmental justice communities concerns, Direct ETO to change rules,
- Fugitive methane, hot topic. Life cycle consideration needed.
- Affordable access now and into the future, to ensure that we are eliminating line extensions
- Opportunity for transport customer efficiency - should be addressed, no current program
- Protect customers against political advocacy/lobbying. What does utility rate of return look like during this transition compared to customer impacts

Breakout 2 (Ratemaking) – Compiled Notes

Natural Gas Fact Finding, Docket no. UM 2178

Workshop #4b, October 12, 2021

Questions

- What ratemaking tools would you recommend that Commission implement immediately, near-term, and long-term to facilitate meeting climate goals with least risk to customers?
- Why would you prioritize these tools over others?
- What should be the trigger for adopting a particular ratemaking tool?

Participant Responses

- The Risk Management Process has been around for a couple decades. It lists agreed-upon hazards, then rates each one for likelihood of occurring and consequences if it happens. This tool is employed by investors, military, industry, public health agencies, etc. Suggest this be adapted to Customer Cost Risk Analysis.
- Most tools mentioned don't do much or are inappropriate for the task at hand. Line extension and depreciation. The other tools are already in use. I think the avoided cost is a huge item that can be changed and is already under review. SB98 allows for mechanisms to promote renewable natural gas (RNG) and Hydrogen which is major.
- Pursuing a low-income rate to mitigate the cost impact of the CPP on this customers should be pursued in the very near-term. I'm interested to learn more about rate designs to improve efficiency, but NWN's fixed charge is already relatively low (\$8, I think), so I'm not sure if it makes sense to pursue that.
- I also think the rate design is structured to promote conservation but could go farther with a block structure with higher rates at the tailblock.
- Depreciation – assumption the life of asset is limited – this might not be the right assumption.
 - Might not be in best interest of customers
- Fixed costs are already really low. Costs are in variable side. Could do block rates to encourage reduced usage.

- Transport customers – utilities don't provide conservation programs for them, but if CPP makes utilities responsible for these emissions, then there is a clear avoided cost and which might open up options for programs
 - This customer type might have limited control over their usage
- Follow cost causation and allow reasonable return for utilities.
- Transport customers have not be part of utility sponsored conservation program, but already incentivized economically to conserve.
 - Potential can be hard to estimate, very specific to the application
- Shouldn't necessarily charge customers who use a lot per 'factory' – be careful when implementing these types of policies. The alternative might be that companies split up 'factories' to avoid this increase.
- Low-income rates to mitigate cost of CPP
- Accelerated depreciation has more immediate up-front costs
- An example of a successful cost risk analysis is the PGE decision to abandon the Carty #2 and #3 gas plants in the Boardman vicinity. PGE customers would have been paying off the investment cost for 40 years, when the cost of renewable wind and solar was already less than the cost of natural gas at that time. Screen for cost risk management.
- GeoTEE and low-income rates – could have far reaching implication if pilot is successful
 - Incentives that are best applicable for specific communities
- Avoided Cost drives conservation potential – this opens up channels and markets for solutions.

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- Attracted to line extension (LE) allowance to eliminate passing on costs to ratepayers, to send market signals that we don't want to expand systems and stranded future costs, impacting ratepayers in future.
 - Supports review of line extension in future. In cost recovery, center equity and low-income household assistance and avoid disproportionate impact
 - Energy efficiency incentives and making available to impacted communities, rate class
 - Through Integrated Resource Planning (IRP) process, make it more accessible. Health impact, lifecycle, full system costs (comprehensive) rather than carbon-free sources
 - Market extensions: eliminate gas appliance subsidies, line extensions

- Prioritize immediate emission reduction and customer benefits. Couple with affordable income low-income electrification and heat. Future/new infrastructure will add to future costs.
 - Depreciation modification—to ensure we don't lock in customer commitments that perpetuate status quo
 - Strongly supports points above. Need to act/implement quickly
 - Focus on what should be trigger for tool: Focus on what will achieve emissions reductions. Relative to goals, reiterate goal per SB 98. Any policies should require demonstration of that.
 - Supports line extension review by Commission. Current policy is to give only to customers who will pay more than their share—include carbon cost compliance? Currently seen as reducing rates for all customers, may review
 - Goal: decarb. Not a vacuum. Gas/electricity dual customers. Rate impacts across fuels is really important. Does need to address system-wide impacts.
 - Near-term: How to apply compliance costs of CPP program is near-term need and to be decided in rate design? How costs applied? Urgent as program kicks off January
 - Pilot electrification to benefit energy-burdened customers
 - Transport customer class through ratemaking to incent/opportunity: big possible short-term opportunity.
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- Line extensions are not a gas subsidy: they are formulated to cover the cost of the new customer. Accelerating depreciation will raise rates and can be a signal to the market, rate designs are small compared to the volumetric charge, opportunities with inverted rate blocking that di-incent usage at the margin, decoupling has been in effect for a long time, support DSM. Priority: rate design, especially for low income.
 - Shift the cost and risk of new gas infrastructure (including hook-ups) to new gas customers going forward. Stranded asset risks. Not subsidize future costs for new customers. Additional fees for voluntary connections because of new infrastructure costs. Depreciation can be a powerful way to make sure investments aren't long-term stranded assets, Schedules with other depreciation schedules, and hydrogen. Shield low-income customers and have a manageable and knowable cost of energy. Look holistically at energy+carbon for energy efficiency when considering the most reasonable investment for these outcomes. Careful consideration between consumer classes. Some types of customers can't be electrified, and may need different investments, make sure the different classes of customers bear those

- costs. Bring in best practices to get benefits and protections to everyone who is in need of them. Priority: line extension policy followed by depreciation schedules
- Line extension costs are opaque for customers. We need price signals and risks to be clearer. Price signals should include costs for stranded assets including any modifications for other future molecules. On-bill repayment mechanism for investments, including fuel switching investments. Be very careful on capturing low income. Deploy those resources to find those who need a low-income rate—just make it easy. Priority: line extensions followed by marginal cost signal.
 - Agree with second and third points above. PUC should look at incentivizing electricity hookups and send price signals to customers about the direction for energy sources.
 - For marginal cost, consider marginal in short term vs. long term. Properly identifying low income on their system—heating assistance on their bills is one way to identify them, but beyond that to capture low-income customers is more complicated and a lot don't self-identify. Priority Focus on line extension policies.
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- The line between programmatic and ratemaking is fine – the propositions could be programmatic – but intended to frame – rather than the PUC relying entirely on utility-by-utility IRPs the PUC needs to start with a framework that is independent of utilities – such as the state GHG reduction goal in order to evaluate the individual IRPs. Absent that, PUC rate making is like sitting in a dark room without looking at the world outside. The PUC needs to be informed programmatically to assess IRPs.
- Agree with planning and acknowledgement process, utilities were given the authority to operate as monopolies because they operate in the public interest. What is in the public interest is changing. 1) Need a low-income rate to protect them from decarbonization costs. 2) End Line extension allowances, existing ratepayers should not pay for new customers. Long term – explore performance-based mechanisms.
- Some sort of rate design that would promote energy efficiency on the grid. Having higher variable costs, reducing load and minimizing new infrastructure costs. Take the fixed cost out of energy efficiency, agree with low-income customer rate designs, focus of promoting energy efficiency will green up fuel supply. If that is the least carbon intensive solution, that would be the idea, rather than electrification. Shifting customers to electric grid and the costs is really greener is something that should be focused. Promoting the greening of RNG and hydrogen. Folks should be trying to use energy efficiency for energy reduction overall, not just transfer to electricity. Electric is less energy efficient for some end uses.

- Look and risk and cost from a greater societal perspective of the risk calculations. The governor's order is to reduce emissions, but it doesn't go far enough. Change line extension allowance policy. I'm worried about customers subsidizing growth of system. Low-income customers who cannot leave the gas system need to be protected. Acceleration of depreciation schedule of parts of the system that need to go. Longer term, a performance-based mechanism for which I'm intrigued but am concerned about serious decarbonization and it's not happening.
 - The PUC should focus on prudent investments given state policy implemented by DEQ and other environmental regulators. The PUC isn't equipped to be an environmental regulator and its core competency is guaranteeing just and reasonable rates.
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- Threshold question needs to be answered prior to ratemaking through integrated gas/electric planning. Need to demonstrate electric company's ability to meet load. What is cost effective way to meet carbon reduction goals?
- Need to consider customer choice. CO2 regulation, not customers, are driving us away from gas.
- Some RE generators unable to sell to electric utilities today. Causes concern about electric utilities' ability to support this transition.
- Need incentives to facilitate consumer choice. Current incentives do not allow fuel switching.
- Tools need to help consumers make transition to lower carbon options.
- Need to facilitate choice for low-income individuals. Including fuel switching.
- Need community-wide solutions to improve access to electric grid.
 - Microgrids for resilience and transition from natural gas.
- Who pays for this transition? Consumers? Utilities? State?
- Re: performance-based ratemaking: least cost planning obligation already provides incentives for utility.
- Don't want volatile energy markets, shortages, price spikes. These hit both the poor and the energy intensive manufacturers the hardest.
- Energy supply needs to be reliable. If we fail at that, policy goals will have backlash.
- Summer AC is becoming as important as winter heating.
- Takes time to make this transition, both utility infrastructure as well as individual customers making investments (can't pay for everything all at once).
- How is PUC engaging with tribes in this proceeding? Particularly tribal housing. Transition looks different in different communities.

- What timing is being assumed for electrification of home heating and electric vehicles (EVs) is being factored into the planning?
 - This PUC process is not currently accessible. Example: 9 am meeting not available to working individuals. More education may be needed.
 - Note that we shouldn't talk about ratemaking until after we have planning figured out
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- I'm concerned about any buildout of new infrastructure for Gas of any kind. This includes local infrastructure as well as larger pipelines. Scientists say we must nearly eliminate fossil fuels from energy, 50% by 2030 and 80% by 2050. New infrastructure to support gas just locks us into another decade or more of planet destroying energy.
- Feel like always attacking companies and they do provide a role- but they will be looking at stranded assets- want to make it easier for them to do what is aligned with goals- but need to find a way to put cost of carbon on new gas infrastructure installation- would help to make a cleaner choice- and to pay that off- right now not a lot of incentive to do a retrofit- some barriers
- Non-pipeline solutions, geographically targeted energy efficiency, demand-response, those types of programs are a little different than programs that the utility under the traditional model would be accustomed to pursuing- utilities earn off of capital investments- if pursue that, avoid those investments- are there ways to think about that that match incentives and match goals- are there ways to think about doing business with incentives that meet goals and that
- Start small and quickly with pilot projects, can PUC encourage some sort of programs that helps utilities look into clean fuels- could utilities- how to accelerate through pilot projects- could government play a key role, fleets, how could the state decarbonize and show- instead of residents and businesses
- Long-term view- where do we want to end up in terms of decarbonizing energy system- think about some of the solutions that have been proposed- get concerned- when look at supply and turn it into hydrogen and then supply that for building heating- already a path to do that more efficiently- not disparaging hydrogen or even synthetic methane or renewable natural gas- but in the long run- it seems that for buildings, the low-cost solution is electric heat pumps and need to focus, reliability needs to be maintained, need a business model change for gas utilities, means that at some point in time, will need to dismantle parts of infrastructure- need to implement tools such as accelerated depreciation

- OR, LDC, but in other states, electric and gas- see gas side playing a role in all areas- reliability as a key role- electricity outages- natural gas plays a key role in reliability- if move that, becomes winter peaking load- already resource adequacy concerns- when look at tools- already see the need for a look at low-income rates- push or direct to look at public purpose charges- expansion of energy for low- and moderate income (LMI) customers is crucial- need new methods and tools to help those customers weatherize, joint electric/gas planning- significant concerns from cost standpoint- esp. on transportation fuels; performance-based ratemaking (PBR)- still in infancy- could provide useful benefit to the utilities
- Near-term solutions- PBR- rate design that promotes efficient design
- Energy efficiency has come up several times- people are becoming more in tune with what happens- serve electric customers also- for Energy Trust, operate under the cost-effectiveness mandate- also a topic for discussion- ways whether a full pilot to investigate those benefits- but do have to operate under those guidelines; also interested in hearing in how the three gas utilities are approaching this differently, energy efficiency can be a solution, not going to be the biggest solution- doesn't have to be thought of- doesn't have to be a slow solution- a way that can be thought of as a more nimble partner, serve thousands of customers a year- retrofits don't necessarily have to be a slow
- Timescale that needs to be taken into account- customer preferences are going to change and evolve over time-
- Customers are going to respond to economics
- Longer-term issue of overall reliability of the system- not a valid reason for not moving forward with cost-effective electrification
- Decarbonizing through RNG etc, but won't stop the major market drivers, irrespective of gas utility preferences
- Significant storms during winter events- can still use gas appliances- but in storms where 10-day outages, how do you serve those customers?
- On the electrification aspect- heat dome- had to proactively shut off customers because couldn't handle the loads- hard to keep up demand on the housing sector- can't keep up
- Reliability component on the electric system is so important- not just G&T- also distribution system- talking about the system as a whole-
- will have to be selective about electrification- not do it in areas with reliability issues
- not all service areas are created equal- does electrification actually cause emissions reductions
- one last plug- LMI rates, want to explore with the Commission

- What ratemaking approach will help reduce carbon emissions?
- Low-income protections – in HB 4475 there is a specific process for that but it is fundamental
- Electric utility investigation – if electrification is the path, there needs to be analysis of the costs of needed electric resources (including wires); cost of electrification and understanding that; electrification may not make sense in all cases
- PBR might be midlevel impact
- Modified depreciation will have little impacts because it will increase rates with no carbon impacts; it is a shutdown the utility approach
- I favor electrification but am aware there are some substitute gasses that might be feasible for decarbonization
- Renewable natural gas should be a proportionate part of the discussion – not dominate it.
- Energy efficiency incentives; including electrification and low-income target
- Low – income; need to consider rates
- need line extension review
- Incentives for panel upgrades for low-income and multi-unit dwellings
- Make sure low income doesn't shoulder costs of transition
- Cost of electrification – dandelion energy in NY has made the cost of ground source heat pumps in NY
- Need more specific proposals on accelerated depreciation

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- Affordability and equity protections - affordable bills, new rate class or other solutions. Look at energy insecurity more broadly, behavior change (cooling and heating use related to affordability). Performance based mechanism, not increasing investment related to risk of stranded assets. Political spending should be closely evaluated by PUC. Rate design to improve efficiency and reduction of demand. Rate structures to encourage using less gas.
 - Looking at the low-income rate in the context of electric and gas. Decoupling and rate design for improving energy efficiency, might already be in place. Line extension policy - seeing a negative impact on that, as well as accelerated depreciation would increase costs. Maintain resiliency with different fuels, look at electric and gas, higher look before planning for other mechanisms
 - Making sure that we are looking at an all above approach to decarbonization, see Guidehouse modeling - pathway with hydrogen and RNG. Support large industrial

customers in meeting their goals - Energy Trust role potentially, collection mechanism. Value gas energy efficiency pathways including avoided GHG and avoided alternative mechanisms. Best cost path, support resiliency with targeted electrification

- Environmental justice perspective - are we making people's lives better. As increased electrification, ensure rates for those on gas are affordable. Indoor air quality impacts concerns. Need solution to address cooling - electrification is most impactful to help both cooling and heating. Affordable, low income, black and brown communities and rural
- UM 1893 - methodology for energy efficiency cost effectiveness - info submitted now not used until 2023 - lag of calendar years. More cost effective if used more quickly. Concern for moderate income customers - renters in particular often left behind.
- All tools on the table, expanding on low-income rate design (HB 2475) needs assessment in the works. Carves outs or discounts for CPP compliance. Not only low-income rate but also looking at additional considerations and carve outs. Moderate income, trying to figure out how to expand definition (net) to reach more that are struggling.
- Importance of supporting transition away from gas use that's affordable and safe, gas use not great for indoor air quality.
- Clarification around political spending - above and below the line - awareness of where costs lie