



BDC Presents: Future of Gas

September 26, 2024

Summary

Since 2019, the “future of gas” has evolved from a niche research topic to a fully fledged regulatory framework. To call into question the future of natural—or methane—gas is to acknowledge that we are in the midst of an energy transition that requires an evolution of “business as usual” policies and procedures. The regulatory frameworks that have served our mostly separate electric and gas utilities for a century are now confronting the contradiction between continuous growth and emission reduction mandates. In the past five years, dozens of “Future of Gas” proceedings, policies, and whitepapers have sought to address the regulatory, economic, and equity challenges of managing the transition from the methane gas system to clean energy infrastructure. This special 1.5 hour BDC Presents offered a synthesizing national perspective on the regulatory proceedings, economic analyses, and equitable energy policies central to designing the future of gas.

Resources

- [Recording](#)
- [Slides](#)

Events

- [New York National Policy Call](#): Oct 8th, 10AM PT/1pm ET
- [California Policy Call](#): Oct 15th, 10am PT / 1pm ET
- [BDC Presents: State of the Union: Post-Election Decarb Outlook](#): Nov 7th, 10am PT/ 1pm ET

Sign Up Forms

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Presentation Notes

What is the Future of Gas? (Kristin George Bagdanov, BDC)

- The phrase “future of gas” is used to designate a set of questions, assumptions, and arguments associated with the long-term sustainability of the methane gas system
 - Since 2019, this phrase has evolved into a framework to guide where we should be and how we should get there in regulatory proceedings, policies, reports, and campaigns.
 - **Proceedings:** At least 13 regulatory proceedings opened since 2020 seeking to reconcile the growth of methane emissions with net-zero climate targets.
 - **Policies:** This year alone, we saw 13 bills introduced in 11 states that address the future of the gas system.

- **Reports:** Over a dozen ‘future of gas’ reports have been released that synthesize utility, model the risks of business-as-usual gas system growth, and develop nuanced solutions for addressing these issues in a timely and equitable manner.
 - Today, we want to establish certain arguments made over the past five years as fundamental truths in order to build consensus and accelerate the decarbonization movement
- What should the future of gas be?
 - Based on all of the experience and evidence we have accumulated as a movement (see [slide 10](#) for dockets and reports), we should raise the baseline of what the future of gas should be.
 - In 2019, the baseline consensus around the future of gas could be articulated as “there is a need to engage in long-term gas planning in light of climate targets.”
 - Following the proceedings, policies, and activities of the past five years, we can shift that baseline up to say “there are *also* irrefutable social, economic, and regulatory reasons why a managed transition of the gas system is necessary.”
 - Raising the baseline in this way ensures that we aren’t “starting from zero” by debating whether a transition off the gas system is needed, but rather building off of the knowledge and experience of the past five years to discuss how this transition will / should be managed.
- What do we know now about the future of gas?
 - To support this new baseline, BDC has articulated some of the supporting economic, regulatory, and equity-related arguments about the future of gas. You can read all ten on [slide 11](#).
 - This is a dynamic list that can be revised and added to, but overall the intention is that it can be used as supporting evidence for raising our baseline of what the future of gas should be.

Regulatory Landscape (Joe Dammel, RMI)

- **What role do PUCs play in the future of gas?**
 - Public Utility Commissions (PUCs) set rates but also play a critical role in aligning state energy policy goals with the utility regulatory framework. PUCs have the authority to establish a ‘future of gas’ (FOG) proceeding but often the impetus for one comes from an outside actor.
- **How do FOG proceedings start?**
 - FOG proceedings can also originate from legislation, petitions, and executive orders (see [this blog](#) for more details). Given the future of gas is a broad topic, other entities including the Governor’s office, various state agencies, and the legislature play a part in furthering the future of gas (see [slide 29](#) for examples).
- **Where are they happening?**
 - 13 states (including DC) have a fog-type proceeding. This means 30% of the US population lives in an area with a FOG proceeding (active or recent).
- **What’s included in the scope of a FOG proceeding?**
 - Everything from rate design, affordability and equity, and gas resource planning to workforce impacts and line extension allowances. See a non-exhaustive list of topics on [slide 22](#).
 - It’s important to note that FOG-related topics can occur in many other venues and proceedings and aren’t limited to being discussed in official future of gas proceedings. These other arenas

include PUC rate cases, electric utility dockets (PUC); in climate action planning and clean heat standard design (Governor's office / State agencies); and bills and hearings in the Legislature (see [slide 29](#) for complete list).

- **What happens in a FOG proceeding?** (See [slide 25](#) for a 'typical' proceeding)
 - Once a docket is opened, a typical proceeding often consists of comment periods, technical workshops, stakeholder workshops, studies, working groups, interim orders, a final rulemaking, a final report, and/or additional policy recommendations or orders to open new follow-on dockets.
 - Progress can be bumpy and commissions can get stuck, there are ways to help them get unstuck (See [RMI's resource](#))
- **What are some potential outcomes of FOG proceedings?** (see more on [slide 27](#))
 - PUC orders, legislation, and rulemaking/ new proceedings. These outcomes can drive significant and impactful change if there is a clear objective and timeline, and the PUC takes meaningful action to establish frameworks and principles to meet future of gas objectives.
- **The challenges of the future of gas:**
 - Issues are complex, far-reaching, and consequential
 - Shortage of resources and time
 - Questions of authority and direction
 - Balancing building the record and taking action
- *The future of gas is more than just Future of Gas proceedings*

Economics of the Future of Gas (Dorie Seavey, Groundwork Data)

- A new subfield of research has arisen to fill in the gaps regarding the long-term viability of the gas system. This Independent research on the economics of the future of gas is critical given that the traditional regulatory framework for gas utilities does not facilitate an environment to holistically plan for the future of gas.
- Six key meta-findings on the economics of methane gas and the gas distribution system:
 1. **The gas system is in its 'mature' lifecycle phase:** meaning it is a fairly stagnant industry with little to no growth.
 2. **Regulatory practices encourage over-investment in pipeline replacement:** Perverse regulatory incentives encourage replacement over leak detection and repair and do not encourage investments in other viable technologies that would improve climate and customer health.
 3. **Gas utilities are spending aggressively on pipeline replacement:** Despite this mature lifecycle phase and regardless of climate policies, gas utilities are still spending aggressively on pipeline replacement for a stagnant customer base leading to steep bill impacts and record utility profits.
 4. **The gas customer base is shrinking:** As more customers leave the gas system, the costs of the gas system will be spread over a smaller customer base, pushing rates even higher and encouraging more customers to depart. The rate and speed at which customers will leave the system is a 'great unknown' accelerator of the gas transition.
 - For example, the [Future of Gas II](#) report modeled that a rate of 2% customer decline each year will double average delivery costs over just ten years.

5. **Asset stranding risks are a growing concern for all stakeholders:** In the FOG IL report, under a business-as-usual investment scenario, unrecovered assets would increase from \$13 to \$42 billion in 2050. This would be a risk for utilities, investors, gas customers, and taxpayers.
 6. **If social costs are accounted for, gas becomes far more expensive than electricity:** In Massachusetts, if social climate costs are included in the price of gas it would double the price of gas making it uneconomic and making electricity the better choice (see Seavey, [Leaked & Combusted](#))
- Where do we go from here?
 - Halt further expansion of the gas distribution system
 - Sunset accelerated cost recovery programs; limit the capital spending on replacing infrastructure; and require screening for non-pipe alternatives
 - Embark on strategic downsizing of local gas systems as part of a managed transition off gas
 - Integrate planning and rate setting across electric and gas sectors

Energy Burdens and Inequity (Morgan Edwards, University of Wisconsin, Madison)

- Key Definitions, specific to the energy space
 - **Energy poor (or energy insecure):** If a household cannot meet its energy needs.
 - A survey estimates that 34 million U.S. households (27%) have difficulty paying their energy bills or have kept their home at an unsafe temperature due to energy costs.
 - **Energy burdened:** A household that spends a large percentage of their income on energy bills. Energy burdened households are disproportionately Black, Latinx, multifamily, and renters.
 - **Energy Justice:** Everyone has access to clean, safe affordable, and reliable energy infrastructure and is able to participate in energy decisions that affect them
 - **Inequality:** Differences in technology adoption across populations
 - A lot of research on rooftop solar finds that race and ethnicity are a stronger predictor of adoption than income.
 - **Inequity:** A normative concept where there is a difference across populations that we consider unfair as a society
 - **Injustice:** Where policies or other kinds of systemic factors either exacerbate these inequities or fail to address them
- Questions for a Just Building Decarbonization
 - How effective were previous policies to reduce the climate impacts of home heating?
 - **Incentives:** A lot of our climate policy is being implemented as incentives to adopt new technologies. This leads to the important question of who is adopting these technologies and who might be left behind?
 - **Leak Repairs:** Our gas system, particularly on the East Coast, has pipelines that are very old and leak-prone. Though leak repairs occur, a study conducted in Massachusetts found that approximately 20% of them are unsuccessful. It was also seen that leaks that are considered of significant environmental impact have potentially higher rates of unsuccessful repair (see [report](#)).
 - What are the patterns in heating electrification across the U.S., and are they equitable?

- Many households are highly energy burdened and this number may increase with rising infrastructure costs.
- A study in *Joule* finds that households that are racial and ethnic minorities are less likely to have heat pumps even when heat pumps would provide them benefits. This suggests that so far we are not seeing electrification equitably across the country.
- What are the combined effects of previous and ongoing policies on energy poverty?
 - There is a big concern with the phase down of the gas network because as customers exit, our cost per customer can rise. How do these costs per customer translate into energy burden and energy equity?
 - Often wealthier households electrify first, making the energy burden rise because lower-income households are disproportionately left behind. To address this, a policy can be established where we electrify our low-income households first (see [slide 65](#) for more details).
 - However, this policy does not address the long-term challenges that arise with natural gas phase-out (e.g. stranded assets). This is where more systematic and coordinated strategies of phasing out the gas system such as neighborhood scale and thermal energy networks can help reduce the per customer costs of the gas network.

Future of Gas Bibliography

Future of Gas Proceedings

- [BDC Analysis of Future of Gas Proceedings \(2022\)](#): Provides a summary of the regulatory proceedings on the Methane Gas System
- [BDC Spreadsheet of Proceedings and Docket Links](#): Lists current future of gas proceedings happening in the U.S.

Future of Gas reports

- California:
 - [Gridworks. "California's Gas System in Transition: Equitable, Affordable, Decarbonized and Smaller." 2019.](#)
 - [Gridworks. "Gas Resource and Infrastructure Planning for California: A Proposed Approach to Long-Term Gas Planning." Whitepaper, January 2021.](#)
 - [CPUC Staff. "Staff Proposal on Gas Distribution Infrastructure Decommissioning Framework in Support of Climate Goals." CPUC, December 21, 2022.](#)
- Minnesota: [Fresh Energy. "Hidden beneath Our Feet: Minnesota's Growing Decarbonization Challenge." March 19, 2024.](#)
- Massachusetts: [Groundwork Data. "New Construction and the Future of Gas in Massachusetts." ZeroCarbonMA, February 2024.](#)
- Washington: [Hopkins PhD, Asa S., and Angela Zeng. "A Managed and Timely Transition for WA's Gas Utilities | Climate Solutions." Synapse Energy Economics and Climate Solutions. April 2024.](#)
- New Jersey: [New Jersey Energy Master Plan: Ratepayer Impact Study, NJBPU and Brattle Group, August 2022](#)
- Maryland:
 - [Office of People's Counsel. "Maryland Gas Utility Spending," November 2023.](#)
 - [Office of People's Counsel. "Maryland's Utility Rates and Charges," June 2024.](#)
- D.C.: [Synapse Energy Economic, and Dept. of Energy and Environment. "Formal Case No. 1175: Comments of the District Dept. of Transportation," 2023.](#)
- Oregon: [Oregon PUC. "Natural Gas Fact Finding Final Report," January 2023.](#)
- Illinois: [Seavey, Dorie, Groundwork Data, and the Building Decarbonization Coalition. "The Future of Gas Illinois," May 2024.](#)
- National: [Seavey, Dorie and HEET. "Leaked and Combusted," 2024.](#)
- New York: [Walsh, Michael J., Michael E. Bloomberg, and Building Decarbonization Coalition. "The Future of Gas in New York State," March 2023.](#)

Additional Resources

Pipeline Replacement Program Studies (See Seavey, [Leaked and Combusted](#), pgs 31-32 for more detail)

- [Scarr & Orcutt–Peoples Gas / Chicago \(2019\)](#)
- [Sightline Institute–Cascadia \(2023\)](#)
- [MD Office of People's Counsel–Maryland \(2023\)](#)

- [Seavey–Massachusetts \(2023\)](#)
- [Larkin–Connolly & Parcels \(2023\)](#)
- [Synapse Energy Economics–New York \(2023\)](#)
- [Seavey–Philadelphia \(2023\)](#)

Non Gas-Pipeline Replacements (NPAs)

- [Non-Pipeline Alternatives \(2024\)](#): Presents nine case studies on the current state of NPA initiatives and integrated energy planning and eight insights for further exploration for key stakeholders.
- [Non-Pipeline Alternatives to Natural Gas Utility Infrastructure: An Examination of Existing Regulatory Practices \(2023\)](#): Examines the existing proceedings, rules, and studies under consideration to inform PUCs as they consider developing their own NPA framework.
- [Non-Pipeline Alternatives: A Framework and a Case Study of Colorado: Leading Practices in the Screening and Evaluation of NPAs \(2023\)](#): Provides a set of observations and leading opportunities to help guide the development and refinement of NPA requirements.
- [Thermal Energy Networks](#): A walkthrough of an example of non-pipe alternatives.

Policy Analysis

- [Decarbonizing the Obligation to Serve](#): Defines the obligation to serve and addresses the importance of modifying it to enable neighborhood-scale building decarbonization.
- [BDC's Legislative Roundup, 2024](#): This year's BDC legislative roundup added a category 'future of gas' to identify legislation furthering the transition away from the gas system.
- [PUC Modernization Issue Briefs](#): A series of briefs focused on three dimensions of PUC modernization: purpose, people, and process. It aims to assist policymakers, advocates, and regulators in decarbonization efforts.
- [Regulatory Approaches for a Cost-Effective Gas Transition: Ratemaking, Incentives, and Other Tools](#): Provides an overarching regulatory toolkit to help facilitate a cost-effective gas transition.

Webinar Discussion

1. **If a state PUC is stuck ideologically, procedurally, or in another way, are there any good resources or reports to get them unstuck? What are some of your suggestions from your experience about how to unstick that process?**
 - **Joe Dammel:** A resource I recommend is a [series of reports that RMI put together](#). It's a great overview of how to unstick commissions in their attempt to align the regulatory framework with state policy goals. Another resource that might be helpful is the Office of People's Council petition in Maryland. It's a good deep dive into talking about the problem and then thinking about the different nearer and longer terms ways to address the future of gas issues. In general, we are all starting from the same point now because states can build on what other states have done. Now that we have a body of knowledge, we can communicate that with regulators, stakeholders, and utilities. One of the things we've seen across commissions both in future of gas and other contexts is there's often one commissioner or two driving the issue forward. It requires a lot of building the knowledge base and identifying commission partners but there are multiple ways to get unstuck, but it really is dependent on the state.
 - **Dorie Seavey:** One way I see commissions going around in a circle, and I don't have a solution for it, is data. For example, gas companies may testify that heat pumps don't work in cold climates or that there's not enough grid capacity to move a billion customers off of gas and onto heat pumps, but energy and environmental advocates say the opposite. How do you make progress when there's no agreement on basic engineering or grid capacity data? It's a problem that can be anticipated so it might be beneficial for a commission to, in advance, establish rules and protocols around that. One solution is to have a pathway study, but there may be issues around it including what assumptions are made.
 - **Morgan Edwards:** To add to Dorie's point, one important source of data is pilot projects for on-the-ground data. A lot of the work I do is modeling so we use data to try and understand what might happen if certain kinds of decisions were made in the future. Well, these decisions are actually being made and we are able to analyze the pilots and the different approaches they took to phasing down the natural gas network. There are now examples across the United States where heat pumps are adopted so we have real data on how they operate in real homes and the effects they have on energy bills. This real data often helps break these disagreements where different folks with different modeling assumptions come to different conclusions.
2. **What methodologies or approaches do you use when data isn't available?**
 - **Morgan Edwards:** When data isn't available, sensitivity analysis is a useful tool. Sensitivity analysis helps identify what are the core assumptions that your results depend on and help understand what the real levers of change are. This is certainly true for these feedback loops in the phase down of the gas network where the exact percentages change a little across different assumptions, but cost impacts and replacement costs are fairly robust.
 - **Joe Dammel:** There are two pieces of data knowledge I want to share. First, there is a lot of existing data buried in forgotten reports that utilities file. When I was at Fresh Energy, Caitlin, Kurt and I pulled data together primarily from the PUC docket reports or filings reported to EIA and other federal

agencies. In Maryland, during the PSC's hearing in July, there was a pathway study that looked at ways to decarbonize but also had utilities filing reports about expectations around gas use and gas procurement. A commissioner noticed a disconnect between the pathways analyzed and the expectations around gas use and asked for there to be alignment. Having these filings presented in the same hearing makes it easier to ensure that what is being discussed is aligned across all plans. There is a lot of existing data, the issue is finding it all and putting it together.

- **Morgan Edwards:** And to add to Joe's point, there are a lot of groups represented on the webinar now. This could be an opportunity for us to consider what kind of data we want to have and are there ways we can crowdsource or collaborate on that data collection to reduce duplicative efforts. Also, how can we make this data available to everyone?
3. On the policy front, there has been movement on allowing gas utilities to evolve into thermal utilities. We've seen New York pass the UTENJA law and Washington this year passed a law that allows gas utilities to operate their own thermal energy network. **What are your thoughts about viable pathways for gas-only utilities?**
- **Dorie Seavey:** Gas-only utilities are in a difficult position, especially if they have a rate base that has a lot of unrecovered assets in it. I agree, that exploring thermal energy networks is an interesting possibility for gas-only utility. If you look at People's Gas in Chicago it's next to this huge thermal reservoir of cold water. The other thing to consider is collaborating with the electric utility and see if there are any ideas. In general, the solutions are more obvious for dual fuel utilities.
 - **Joe Dammel:** Over the history of gas utilities, they've gone from street lighting companies to town gas utilities to distribution utilities. The evolution in the business model happened for economic and policy reasons in the past, so we're just in another evolutionary phase. The current emergence of different business models of focusing on providing heat as a service is another part of their evolution. As they evolve, we'll continue to work on incentives and policies that encourage evolution in the public interest. And I agree with Dorie, we might be seeing more consolidation in terms of the corporate entities, but there has to be a reason to merge.
 - **Morgan Edwards:** I'll echo what everyone is saying and these solutions are going to be very location-specific. As we see these examples play out, we need to think about what the common themes are across these different cases that we can use as a rule of thumb when thinking about what these transitions might look like. In particular, we can't only look at the end point, but how will we reach intermediate milestones such as how do we pare down the gas system and what order we do that in.
4. **How do we encourage broader community participation by taking some of these somewhat heady and research-specific talking points and transforming them for a general audience to make these concepts and arguments accessible? I'm curious if any of you have had experience with transforming some of your talking points into more accessible language for a general audience?**
- **Kristin George Bagdanov:** Sunstone Strategies is doing research and polling on what talking points work for a general audience and have a lot of great findings to share, FYI.
 - **Joe Dammel:** To add to Kristin's point, at the November regulatory working group meeting Sunstone will walk through how to communicate with the public based on the best practices they've developed.

I'll also plug the consumer advocate [COPAL](#), which is a Minnesota-based community organization that works in the PUC space. They have a good start on how to communicate these issues in a way that will work in communities and respects the tug of war of time and resources we are all facing.

- **Morgan Edwards:** I'll add that climate change feels like a distant problem compared to the inability to pay your energy bill. So for different audiences, different narratives are most effective. I think focusing on cases where electrification is beneficial and that it will lower your energy bill can help with connecting energy poverty with solving the climate crisis. There's also a lot of research on the seeding effect, the idea that if your neighbor adopts a new technology, you're more likely to adopt the technology too. This speaks to the important aspect of piloting so that we are not the only messengers.
- **Dorie Seavey:** This is a light and fun, but serious suggestion, but everyone should subscribe to the feed of [Hot & Toxic](#). It is a creative storytelling group that creates videos and performances on the dangers of gas and addresses fossil fuel disinformation. I find it fantastic and refreshing, but serious.

5. How would the social cost be determined/enforced? Would PUCs have to pass a ruling to force gas utilities to incorporate this into their pricing?

- **Joe Dammel:** As an example, under MN law, the PUC has to adopt a socioeconomic cost of carbon as part of a requirement to establish environmental cost values. As relevant here, the PUC has required that gas utilities' NGIA filings include these costs in cost-effectiveness test (and the PUC has determined that the Societal Cost Test that includes these costs has the most weight). So I don't think PUCs would require utilities to price externalities directly into a rate, but there are ways to establish an accounting of these costs in utility proceedings.
- **Dorie Seavey:** One way to address this is with methane emission taxes. With the Inflation Reduction Act of 2022, the first-ever methane emissions tax was approved and will be applied to the upstream and midstream parts of the gas supply chain beginning in 2024; the downstream part of the gas system is exempted. Beginning in 2024, gas production, processing, transmission, and storage facilities and related pipelines will face a charge starting at \$900 per metric ton of methane, increasing to \$1,500 after two years (these charges equate to \$36 and \$60 per metric ton of carbon dioxide equivalent). The tax will be imposed when reported emissions surpass thresholds that generally allow about 35 percent of emissions to occur "tax-free." For more on methane emissions taxes, see pp. 50-52 of Seavey, [Leaked & Combusted](#).

6. Can you provide examples of non-gas-pipe alternatives (NPAs)?

- [RMI report on NPAs](#) (2024)
- [Lawrence Berkeley NL report on NPAs](#) (2023)
- [Lawrence Berkeley case study, Colorado NPAs](#) (2023)
- [Thermal Energy Networks](#) are a promising non-gas-pipeline alternative.

7. Have there been examples of using pipeline replacement dollars toward electrification?

- **Dorie Seavey:** In general, pipeline replacement dollars are not an appropriated amount that can be redirected but rather result from specific gas assets that are authorized and put in place by the utility. In other words, it's the actual expenditure that creates the dollars that must be recovered through

rates. That being said, it makes sense to track the savings that accrue from avoided gas capital replacement projects.

8. Can any of the panelists speak to **how other states have addressed the issue of lack of access to (neighborhood scale) gas infrastructure and customer data for the single fuel electric utility?**
 - **Joe Dammel:** Access to data like this is hard to come by generally, but gas planning requirements and/or non-pipeline alternative frameworks might make this data more accessible in the future.

9. **Is there any research on the effectiveness of using “methane” vs “natural gas” when building support among the general public?** I imagine a lot of folks would say “yeah, methane leaks sound bad!” and also “I love my natural gas stove”.
 - **Kristin George Bagdanov:** Climate Nexus, which sadly shut down a few months ago, did frequent public perception polling regarding “methane” vs. “natural” gas. Their most recent (Dec 2023) topline findings [can be found here](#), but in general, I think the consensus and polling has shown that we as a movement should use “methane” as the public has a better perception of “natural gas” thanks to, well, greenwashing! [Gas Leaks](#) (which produces the “Hot and Toxic” series Dorie mentioned) also has information about this type of “disinformation.”
 - **Dorie Seavey:** Check out: [Rebecca Leber, “The end of natural gas has to start with its name,” Vox \(February 10, 2022\)](#); and [Karine Lacroix et al., “Should it be called ‘natural gas’ or ‘methane?’” Yale Program on Climate Change Communication, Climate Note \(December 1, 2020\)](#). Another powerful advocate.

10. **If the US continues to be a major producer of natural gas, won't rates continue to be suppressed over time rather than increase? Or, is it that you believe the T&D portion of bills to consumers will increase exponentially but the raw gas will continue to be priced low**
 - **Joe Dammel:** Opining on the future of the global gas commodity market is beyond my expertise, but two nuggets of info to add. First, my observation is that gas utilities’ push to accelerate pipeline replacement efforts largely coincided with the fracking boom that started in the late 2000s, the thinking being that consumers wouldn’t notice much change to their bills with commodity prices responding to supply increases, so that’s what they did. Second, going forward, with gas rates now increasing at a fast pace due to the accelerated replacement (and slowing customer count/usage growth), gas as a commodity is facing a number of market stressors that includes electric generation and global demand (e.g. LNG demand, geopolitical risks) all of which suggests that we can’t count on cheap, stable gas going forward. Winter Storm Uri’s price spikes were also an indicator of potential shocks to the gas commodity market that show up on peoples’ bills.
 - **Dorie Seavey:** I agree with Joe’s summary and would underscore his point about LNG. Up to half of US gas production could be headed overseas. Gas used to be a domestic energy source for the US but it is turning into an internationally traded commodity which will put upward pressure on US domestic natural gas prices and expose US gas to international price swings. See: [Chris Martinez, “LNG exports raise natural gas prices for Americans,” Center for American Progress \(November 6, 2023\)](#).

11. Using GWP100 for methane leaks makes little sense when the action horizon is from the "end of the FOG study" until 2050. How can we transition from using GWP100 to GWP20? Where has this been done already?

- **Dorie Seavey:** For the Boston calculation that I provided, I did use GWP20. In my view, there are some important arguments for preserving GWP100 for CO₂; not for CH₄. I think both measurements should be available in state GHG inventory measurements. I agree that policy goals re: CH₄ should be based on GWP20.
- **Morgan Edwards:** Building on Dorie's response, there are arguments for using both. Some researchers have proposed a "do no harm rule" to account for the high climate impacts of methane but also avoid substituting methane reductions for CO₂ reductions: [Ensuring that offsets and other internationally transferred mitigation outcomes contribute effectively to limiting global warming](#).

12. Has any public service commission eliminated the "obligation to serve" which is a key barrier to eliminating gas?

- **Kristin George Bagdanov:** No PSC / PUC has fully eliminated the obligation to serve (OTS), and there's a good reason why we don't want them to remove it completely. You can read about the history, intentions, and policy recommendations regarding reforming or "decarbonizing" the obligation to serve in [BDC's recent report here](#). That being said, this past legislative session we saw some movement on modifying pieces of OTS to enable "neighborhood-scale" decarbonization—specifically in California and Washington (successfully), a partial measure in Colorado, and attempts in NY, MN, and MA. You can get the full download about OTS and other niche legislative topics in BDC's recently released [Legislation Tracker and Dashboard](#).

13. Are there any pieces of data in particular that stick out to you, that you would say "this one big finding/data piece/graph should convince everyone?"

- **Dorie Seavey:** These are "self-referential" in that I worked on them but my two favorite factoids are:
 - \$1.4 TRILLION: If gas utilities are allowed to continue pipeline replacement programs at current spending levels, U.S. gas ratepayers will owe roughly \$1.4 trillion for infrastructure investments through 2050, including substantial profits for utilities and their shareholders.
 - The social cost of leaked and combusted methane is roughly equal to the supply cost of gas. We are paying twice: once for the gas system itself and again for its harmful impacts.
 - Source: Seavey, *Leaked & Combusted*.

14. It was mentioned there are 3 pathways for regulating gas going forward: PUC, Legislative, or Governor. Does it make sense to have multiple approaches going in parallel (belt and suspenders) or to focus on one pathway (focused)?

- **Joe Dammel:** It all depends on the state and, specifically, the composition of the governor's office, the legislature, and the PUC. My advice is that all three entities should be engaged and accountable for advancing a managed gas transition and aligning state programs/policies toward that goal and to encourage coordination amongst those three entities.

15. How can we counter the lobbying power of the gas industry? Are there successful examples of how to counter corruption?

- **Joe Dammel:** I don't have a great answer to this (and as a 501c(3), RMI doesn't engage in partisan activities or lobbying), but there are some regulatory paths to address some of this. I know in some states, utility accountability laws have prohibited utilities from recovering costs associated with lobbying or membership in certain industry associations. That doesn't necessarily put an end to the lobbying power question (it just addresses cost recovery from ratepayers), but it does send signals to utilities. Also having more advocates at the PUC table is important in increasing the transparency and accountability of the PUC. And, to their credit, many PUCs are increasingly focused on addressing the transparency of the PUC and on increasing ways to participate.
- **Kristin George Bagdanov:** If you want a more historical analysis of this phenomenon in the regulatory space, sometimes referred to as "regulatory capture," check out legal scholar Heather Payne's 2017 article "[Game Over: Regulatory Capture, Negotiation, and Utility Rate Cases in an Age of Disruption.](#)"

16. Can you explain the graph on distribution costs increases in simpler terms? Why would a reduction of 2% of gas customers result in 50% increase in distribution costs?

- **Dorie Seavey:** Consumer bills for gas service are made up of charges for gas used and the utility's delivery costs. Delivery charges account for all expenses associated with the reliable and safe transportation of gas to customers, including the costs of system operation, maintenance, repair, customer service, administration, taxes, and repaying utilities for their capital investments (capital spending is paid back over many years). When capital investments go up, then the cost of repaying utilities for their capital investments goes up. So that's why delivery charges per gas customer go up when spending on pipeline replacement (or other gas assets) goes up. Delivery charges per customer also would increase if the number of customers decreases.
- **Dorie Seavey:** What we found in Illinois for each of the four largest investor-owned gas utilities is that, given the capital spending we forecast that would make each year going forward, if the customer base declined by 2% each year (or by nearly 20% over 10 years), then distribution charges per customer would need to double by the end of the decade period.

17. How does increased spending on infrastructure correspond to the age of that infrastructure?

- **Dorie Seavey:** We tend to see more infrastructure replacement activity in gas distribution systems that have greater amounts of older infrastructure. All things equal, as a pipeline ages, its risk profile increases because the integrity of the materials it is made of declines over time or there are problems with joints leaking, etc. However, utilities are required by federal regulation to have "integrity management" programs and protocols that prioritize pipeline replacement projects. Utilities have discretion to base their prioritization on factors other than age, such as size, material, leak history, leak repair history, pressure, soil conditions, proximity to structures, nearby construction activity, permitting and coordination with municipalities, and regulatory mandates.

18. I'd like to learn more about sunseting accelerated cost recovery and the potential impact on methane gas customers on stranded assets. My recollection is that it has been pointed to as a tool to

avoid saddling the remaining methane gas customers (many likely equity customers) with paying the remaining costs for the system as others depart via electrification.

- **Dorie Seavey:** You can find more information about the role that accelerated cost recovery regulatory mechanisms are playing in the gas industry's pipe replacement efforts in Section III.B of Seavey, [Leaked & Combusted](#). The reason I think they should be sunsetted is because we should be considering a larger solution set that just pipeline replacement for addressing the goals of safety, reliability, and emissions reduction. Non-(gas) pipeline alternatives such as advanced leak detection and repair, pipeline retirement, and thermal energy networks offer solutions that are equally, if not more, cost effective. Whether a segment of pipeline is replaced and installed via accelerated cost recovery (outside of a rate case) or via normal rate case proceedings won't have much impact on stranded asset risk.

19. What percentage of income spent on energy is generally considered energy burdened? Also does that vary much for location or other factors?

- **Morgan Edwards:** Great question! Generally a value of 6% is used as a rough estimate to get a sense of energy burdens across locations. However, individual households might have a value above 6% and not be experiencing energy insecurity and vice versa – e.g., retirees, students, households with high medical bills, etc.

20. What policy solutions have you found to best address the equitable planning for building electrification?

- **Morgan Edwards:** This is a rapidly growing space. A few best practices:
 - On the household scale, low-income incentives are helpful but not enough on their own. Targeted outreach and other resources are also important for addressing barriers to electrification. There are also other financing models (e.g., pay as you save) that can support adoption for low-income households.
 - It is also important that we provide accurate, household specific estimates of costs of equipment and changes in energy bills. Overly optimistic estimates can be harmful to households and to the overall goals of building decarbonization.
 - Engaging marginalized communities in community-led decision-making with early neighborhood electrification projects is key to an equitable and successful decarbonization. There are lots of good resources on this including through [RMI's content library](#) and work by [HEET](#).

21. Morgan, how do I stay in the know about your data and research?

- **Morgan Edwards:** We share the latest from the Climate Action Lab here: <https://www.climateactionlab.com/lab-news/>