STATE OF CONNECTICUT

PUBLIC UTILITIES REGULATORY AUTHORITY

Docket No. 23-11-02

APPLICATION OF CONNECTICUT NATURAL GAS CORPORATION
AND THE SOUTHERN CONNECTICUT GAS COMPANY
TO AMEND THEIR RATE SCHEDULES

Direct Testimony of Dr. Asa S. Hopkins

Exhibit OCC-ASH-1

On Behalf of Connecticut Office of Consumer Counsel

February 8, 2024

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I. INTRODUCTION AND QUALIFICATIONS

Q1 Please state your name, business address, and position.

A1 My name is Asa S. Hopkins. My business address is 485 Massachusetts Ave., Suite 3, Cambridge, Massachusetts 02139. I am a Vice President at Synapse Energy Economics, Inc. Among other work, I lead Synapse's consulting regarding the future of gas utilities, and I also work extensively in the related area of building decarbonization technology and policy.

Q2 Please describe Synapse Energy Economics.

A2 Synapse Energy Economics is a research and consulting firm specializing in energy industry regulation, planning, and analysis. Synapse works for a variety of clients, with an emphasis on consumer advocates, regulatory commissions, and environmental advocates.

Q3 Please describe your professional experience before beginning your current position at Synapse Energy Economics.

A3 Before joining Synapse Energy Economics in 2017, I was the Director of Energy Policy and Planning at the Vermont Public Service Department from 2011 to 2016. In that role, I was the director of regulated utility planning for the state's public advocate office, and the director of the state energy office. I served on the Board of Directors of the National Association of State Energy Officials. Prior to my work in Vermont, I was an AAAS Science and Technology Policy Fellow at the U.S. Department of Energy ("DOE"), where I worked in the Office of the Undersecretary for Science to develop the first DOE Quadrennial Technology Review. Prior to my time at the U.S. DOE, I was a postdoctoral fellow at Lawrence Berkeley National Laboratory, working on appliance energy efficiency standards. I earned my PhD and Master's degrees in physics from the California Institute of Technology and my Bachelor of Science degree in physics from Haverford College. My resume is included as Exhibit OCC-ASH-2.

Q4 Have you previously provided evidence before the Connecticut Public Utilities Regulatory Authority (PURA)?

A4 No.

Q5 Have you previously provided testimony in other jurisdictions on topics similar to those you are testifying to in this case?

A5 Yes. I have testified on "future of gas utilities" issues, as relates to capital decision-making, rates, and business risk in Quebec, Ontario, Maryland, Washington, DC, Wisconsin, and New York. When I testified before the Régie de l'Energie in Quebec I was recognized as an expert in "energy transition in the gas industry, and business risk." The Ontario Energy Board qualified me as an expert on "the future of electric and gas utility regulatory and business models and associated business risk in the context of deep building decarbonization objectives."

Q6 On whose behalf are you providing evidence in this case?

A6 I am testifying on behalf of the Connecticut Office of Consumer Counsel (OCC).

Q7 What is the purpose of your testimony?

A7 The purpose of my testimony is to discuss the implications of the decarbonization energy transition on gas utilities, specifically Connecticut Natural Gas ("the Company"). This includes examining the implications of energy transition for capital planning and depreciation.

Q8 How is your testimony organized?

A8 My testimony begins with a summary of my conclusions and recommendations. Then it addresses the definition and context of the energy transition, with focus on how PURA and the Company can and should learn from work conducted in other jurisdictions. In Section IV, I address the details of how the energy transition is relevant in the context of gas utility rate cases. I then address the specifics of the Company's filings in this case regarding capital planning (Section VI) and

depreciation (Section VI). The testimony ends with my conclusions and recommendations.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q9 Please summarize your primary conclusions.

A9 I find that:

- The general framework and form of the energy transition to deeply decarbonize Connecticut's economy is well-established. Both Connecticut and other jurisdictions have completed studies, established policies, and conducted regulatory processes that the Company could have used to inform its planning. Further plans and studies are regularly becoming available, and federal plans and policies lay out a clear direction for deep decarbonization. The Company has sufficient information to be taking prudent actions to adapt to a changing future.
- Successfully and safely navigating the energy transition will require the Company to make changes to its practices. The Company's filings do not reflect a reasonable understanding of the energy transition's implications for prudent management of the Company, its business model, and its capital planning. The Company does not incorporate the best available information to inform its planning and capital decision-making.
- The Company's lack of good planning practice makes imprudent investments likely.
- The Company does not undertake well-established practices, including practices required by its own *Gas Transmission and Distribution Manual*, to consider non-pipeline alternatives to its capital investments.
- The Company's lack of planning for the energy transition risks creating inequitable outcomes, disadvantaging low-income residents and renters.

- The Company's approach to prioritizing leak-prone pipe for replacement does not account for the energy transition or target the greatest cost-effectiveness of risk reduction.

- The Company has not developed a sales and asset utilization forecast consistent with state policy and its changing future. It has therefore not been able to develop a revised and equitable depreciation approach consistent with that future.

Q10 Please summarize your primary recommendations.

A10 I recommend that PURA:

- Find that the Company's planning process is flawed because it does not incorporate planning for the energy transition. PURA should direct the Company to update its practices to align with planning for Connecticut's energy future.

- Not approve cost recovery for investments that have not been shown to be prudent, accounting for what the Company should have known and the planning processes it therefore should have used, at the time it made the investment. This includes assessment of non-pipeline alternatives.

- Direct the Company to develop and utilize a non-pipeline alternative assessment process to consider alternatives to all potentially avoidable investments, in keeping with Avangrid's *Gas Transmission and Distribution Manual*.

- Open a docket for the purpose of establishing a common framework and planning parameters for the future of the natural gas system in Connecticut.

III. INTRODUCTION TO THE ENERGY TRANSITION

Q11 Could you please describe what you mean by the term "energy transition"?

A11 By "energy transition" I mean the transition away from fossil fuel energy sources and toward renewable and zero-carbon energy sources as part of an economy-wide transition to reduce greenhouse gas (GHG) emissions by 80 percent or more by 2050. This transition is the instantiation of many state- and nation-level commitments to reach net-zero emissions, including Connecticut's, which I discuss in further detail below.

Q12 What are the primary pathways seen for the energy transition in the building and industrial sectors?

A12 Today, the building and industrial sectors consume electricity for a wide range of end uses and directly combust fuels for space, water, and process heating (as well as cooking, laundry, and other incidental uses). Electricity decarbonization is a relatively straightforward process and already underway, spurred by falling costs of renewable generation technologies like solar and wind, and accompanied by advances in battery and other energy storage technology. Decarbonization of heating, on the other hand, requires either substitution of fossil fuels with limited and/or expensive supplies of lower-carbon combustion fuels, or electrification (such as with highly efficient heat pump technologies). Electrification reduces emissions by taking advantage of the known pathways to decarbonized electricity to supply these end uses.

Q13 Why is the energy transition relevant for this case?

A13 Gas distribution utilities, such as the Company, get their revenue by transporting fossil fuel gas to customers over an extensive pipeline network, and recovering the cost of that transportation network over many years through delivery charges added to the cost of the gas commodity. Under the principles of utility regulation used in Connecticut and across the country, utilities can recover and earn a return on prudent investment in their systems from their customers through rates if the assets are used and useful. Changes in the amount of fuel delivered, as will be

required in the energy transition, will require changes in the Company's rates. This will change the competitive position of the Company's service compared with alternatives. In addition, some of the Company's assets may not long be needed to provide service (that is, no longer used and useful) and would therefore need to be removed from the rate base. If these assets are not fully depreciated, this could create stranded costs which would be borne by either utility investors or the Company's remaining customers. The energy transition is therefore relevant for decision-making about planning and investment in the Company's capital system, how the Company makes decisions about repair or replacement of its assets and considers their future usefulness, and how the Company depreciates its assets.

Q14 Is it generally accepted that there is a transition happening in the energy sector?

A14 Yes. The U.S. federal government has made formal international commitments to reduce nationwide GHG emissions by more than half from 2001 levels by 2030, and to put the country on a path to net-zero emissions by 2050. At the state level, numerous states have established targets through laws and executive orders. At both the federal and state level, policymakers are taking actions to make those commitments a reality through regulations, incentives, codes and standards, and other policies and programs. U.S. GHG emissions fell by more than 15 percent from their peak in 2007 to 2021 and are below 1990 levels, a substantial impact resulting from those actions.[1] Many states have seen emissions fall further.

Q15 What are non-pipeline alternatives (NPAs)?

A15 NPAs, also called non-pipeline solutions, are activities or investments that delay, reduce, or avoid the need to build or upgrade traditional natural gas infrastructure such as pipelines, storage, and peaking resources.[2]

[1] U.S. Environmental Protection Agency. Accessed December 13, 2023. "Climate Change Indicators: U.S. Greenhouse Gas Emissions." Available at: https://www.epa.gov/climate-indicators/climate-change-indicators-us-greenhouse-gas-emissions.

[2] Advanced Energy Economy. 2022. *Non-Pipeline Alternatives (NPAs).* Attached as Exhibit OCC-ASH-6.

Q16 Why are NPAs relevant to the energy transition?

A16 When faced with uncertainty, companies can reduce risk by retaining optionality and avoiding potentially unnecessary capital investments. In the face of the energy transition, gas utility actions which avoid, reduce, or delay irreversible investments have particular value.

Q17 Have policymakers studied the energy transition at the state and federal level, and implemented policies that will directly affect the economics of gas distribution utilities?

A17 Yes. In the following sections of my testimony, I summarize the current state of analysis and action in Connecticut, in neighboring states, in selected jurisdictions further afield, and at the federal level.

A. Energy transition in Connecticut

Q18 What is the state of knowledge and policy regarding energy transition pathways in Connecticut?

A18 Connecticut General Statutes § 22a-200a sets a legally binding requirement for statewide GHG emission reduction in Connecticut to 45 percent below 2001 levels by 2030 and 80 percent below 2001 levels by 2050. Under Section 16a-13d of the Connecticut General Statutes, the Connecticut Department of Energy and Environmental Protection (DEEP) is charged with developing a comprehensive energy strategy (CES). DEEP published a CES in 2013 and again in 2018.[3] The currently effective CES, published in 2018, lays out strategies across buildings, electricity, and transportation; a new version is currently in development.

Q19 What does the currently effective CES say about the energy transition in Connecticut's buildings?

A19 Regarding buildings, it states that "to achieve the long-term vision of a zero-carbon economy, widespread electrification of building thermal loads and the

[3] Conn. Gen. Stat. § 16a-13d.

transportation sector is required. By 2050 electricity must become the dominant form of energy consumed in Connecticut, and the cornerstone of the state's carbon-free economy will be decarbonization of the electric power sector."[4] The CES is aligned with the electrification approach to decarbonizing buildings, rather than favoring a reliance on lower-carbon fuels. The 2018 CES identified partial-building heating with ductless mini-split heat pumps as a likely cost-effective choice from customers' standpoint, for natural gas customers, which would advance the state's decarbonization objective.[5]

Q20 What are the potential implications of widespread adoption of electrification measures like heat pumps, as prioritized by the CES, for Connecticut's gas companies?

A20 Large-scale adoption of partial heating with electric heat pumps would result in substantial reductions in natural gas sales, while the need to maintain the gas infrastructure would remain. This would result in substantial increases in gas delivery rates and change the competitive position of gas versus other fuels. Even a partial-electrification scenario could trigger the need to re-evaluate the gas system investment and business model in order to maintain the Company's financial health and enable it to provide safe and reliable service. In the event of large-scale adoption of whole-building electrification, these effects would be magnified, although the Company could partially mitigate rate increases by planning to retire assets and thereby reduce system costs.

Q21 What are the implications of these future pathways for the Company's customers?

A21 Increases in gas delivery rates will increase energy burden for Connecticut residents and businesses that are not able to transition to electricity. I am particularly concerned that unmitigated rate increases could leave low-income customers and renters to bear a disproportionate burden for the cost of the gas

[4] Connecticut Department of Energy and Environment. 2018. *Comprehensive Energy Strategy*. Page 10. [hereinafter 2018 CES]
[5] *Id*. at 27–28.

system because they are less able to afford and implement electrification measures in their homes. Carefully planning for the energy transition is essential to reduce the risk of this inequitable outcome.

Q22 Has Connecticut taken specific actions with regard to the future of the gas system?

A22 Yes. In its 2013 CES, DEEP stated a policy of expanding access to natural gas in order to reduce emissions and costs from buildings heated with fuel oil. In the 2018 CES, however, the State chose not to continue this emphasis; the 2018 CES points out that the economics of gas have not been as favorable as was projected in 2013, and that expansion proceeded more slowly than expected. In 2021 and 2022, at the request of the Attorney General and the OCC, PURA convened a proceeding to examine the marketing and approach of the *System Expansion Plan* (SEP). In its decision in that proceeding to end the SEP, PURA stated that "promotion of natural gas at levels experienced under the SEP is no longer justified as a way in which to meet the greenhouse gas reduction requirements in the [*Global Warming Solutions Act*, or] GWSA. Specifically, data suggests that future gas conversions will not significantly aid the state in meeting its goals under the GWSA."[6] Around the same time, DEEP stated that it would re-evaluate gas expansion and the future of gas in general in the upcoming CES.[7]

Q23 Connecticut has revisited some conclusions from its most recently completed CES. What process is DEEP following to develop a new CES?

A23 Yes. DEEP is in the process of developing a new CES. This CES update process has been ongoing since 2022 and has involved extensive public and stakeholder engagement, as well as analysis. DEEP has held technical sessions on heat pump

[6] PURA, Decision, April 27, 2022., in Docket No. 21-08-24. Page 15–16. Available at https://www.dpuc.state.ct.us/dockcurr.nsf/4b3c728dd1c0d642852586db0069aa70/b09c5c63c09c2a25852588310054086c/$FILE/210824-042722.pdf.

[7] *See* Connecticut Department of Energy and Environmental Protection, Notice of Proceeding and Scoping Meeting Jan. 6, 2022, https://portal.ct.gov/-/media/DEEP/energy/CES/2022CESnoticeofproceedingpdf.pdf

market advancement and barriers, as well as on alternative fuels and on natural gas distribution planning and policies.

Q24 When will DEEP publish the new CES?

A24 DEEP has not committed to a publication schedule.

Q25 Has Connecticut formalized other planning processed that set a pathway for building sector decarbonization?

A25 Yes. In particular, the state's utilities have proposed, and DEEP approved, a Conservation and Load Management Plan (CLMP) that emphasizes the use of heat pumps for space and water heating and a core contributor to its decarbonization objectives. The 2023 CLMP Update transitions the heat pump pilot to a full-fledged program, builds out the state's heat pump installer network, ceases incentives for natural-gas fired appliances in residential new construction, and enhances incentives for heat pumps in the commercial and industrial sectors.[8] The CLMP Update also states that the utilities are exploring a heat pump incentive for residential new construction to "unambiguously support electrified heating" and "move toward an all-electric new construction package."[9] The CLMP establishes a clear framework and direction showing the State's commitment to using electrification as the primary means to decarbonize the building sector.

Q26 Is DEEP also preparing another, related publication?

A26 Yes. The State is due to publish its *Preliminary Climate Action Plan* (PCAP) and submit it to the U.S. Environmental Protection Agency (EPA) by March 1, 2024. Developing and publishing a PCAP is required in order for the State to be eligible for implementation funds from the federal Climate Pollution Reduction Grant

[8] DEEP. June 23, 2023. "Determination: Approval with Conditions of the 2023 Update to the 2022-2024 Conservation and Load Management Plan."

[9] Eversource Energy, United Illuminating, Connecticut Natural Gas Corporation, and Southern Connecticut Gas. November 1, 2022. "2023 Plan Update to Connecticut's 2022-2024 Conservation & Load Management Plan."

program funded by the *Inflation Reduction Act*. According to the EPA grant guidance, the PCAP must include a "GHG inventory; [q]uantified GHG reduction measures; [a] low-income and disadvantaged communities benefits analysis; and [a] review of authority to implement. Planning grant recipients are encouraged, but not required, to include additional analyses in their PCAP such as GHG emissions projections, GHG reduction targets, a benefits analysis (for the full geographic scope and population covered by the plan), a plan for leveraging other federal funding, and a workforce planning analysis."[10] The same EPA funding program requires the development of a Comprehensive Climate Action Plan (CCAP) by summer 2025. The CCAP must include a GHG inventory; GHG emissions projections; GHG reduction targets; quantified GHG reduction measures; a benefits analysis for the full geographic scope and population covered by the plan; a low-income and disadvantaged communities benefits analysis; a review of authority to implement; a plan to leverage other federal fundings; and a workforce planning analysis.[11] Regardless of the CES publication schedule, the PCAP and CCAP requirements will provide DEEP with the opportunity to further elaborate on its vision for deep decarbonization.

Q27 Has the State indicated what its building decarbonization actions in the PCAP might be?

A27 Yes. In a public meeting regarding Climate Pollution Reduction Grants held on December 18, 2023, DEEP provided one-page slides highlighting actions.[12] One of these actions is "Support Adoption of Residential and Commercial Heat Pumps." The meeting slides state that "Heat pumps can replace gas, fuel oil, propane, or other HVAC." Another highlight action is "Networked Geothermal

[10] U.S. Environmental Protection Agency. 2023. *Climate Pollution Reduction Grants Program: Formula for Grants Planning*, page 18. Available at: https://www.epa.gov/system/files/documents/2023-02/EPA%20CPRG%20Planning%20Grants%20Program%20Guidance%20for%20States-Municipalities-Air%20Agencies%2003-01-2023.pdf.

[11] 2018 CES at 19–20.

[12] Office of Climate Planning, Connecticut Department of Energy & Environmental Protection. December 18, 2023. "Climate Pollution Reduction Grants Public Informational Meeting." Attached as Exhibit OCC-ASH-7.

Systems." Networked geothermal systems use electric heat pumps to move heat in and out of shared underground heat reservoirs.

Q28 Do you intend to update your testimony after the PCAP is released?

A28 It is likely that the PCAP will include actions that are relevant to the future of gas use in Connecticut, and therefore to this case. In that event, I intend to supplement my testimony. If the State publishes an updated CES or draft CES during this proceeding, I will similarly update my testimony if it is timely to do so.

B. Energy transition in other jurisdictions

Q29 Have policymakers and regulators in other jurisdictions with comparable GHG reduction objectives analyzed options for managing the energy transition?

A29 Yes. I think the three most relevant analyses for Connecticut are the analyses conducted by Massachusetts, New York, and by the federal government. These are relevant examples because all three have objectives of net-zero emissions by 2050, comparable to Connecticut's objective of an 80 percent reduction in emissions by 2050, and because they are either bordering states with similar climates and economies (Massachusetts and New York) or reflect the federal policy and planning context in which Connecticut operates. Regulators in other jurisdictions, including Maryland, Illinois, and Ontario, have also recently addressed questions similar to those facing Connecticut regulators in this case.

Massachusetts

Q30 Could you please summarize the state of energy transition planning in Massachusetts?

A30 In 2020, the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) developed the *2050 Decarbonization Roadmap* (2050 Roadmap)[13] and the *Clean Energy and Climate Plan* (CECP) for 2025 and 2030.[14] Then in 2022, the EEA published a follow-up CECP for 2050.[15] Together these documents lay out potential pathways for the Commonwealth to transition the energy sector to meet statutory 2050 goals of net-zero emissions and a reduction of at least 85 percent of gross emissions from 1990 levels, as well as its interim goals of 33 percent gross emissions reductions by 2025 and 50 percent by 2030.[16] These plans each explore several distinct pathways, and each plan directs the Commonwealth towards predominantly renewable electricity generation and away from lower-carbon fuels, such as renewable natural gas or hydrogen. The plans show that lower-carbon fuels are costly and risky because they have not yet been produced at scale. Therefore, the plans recommend that alternative fuels from biological feedstocks and hydrogen from clean electricity should play only a "modest but important role in specialized applications such as high-temperature industrial uses and as a fuel for electricity generation to ensure reliability when other clean energy resources are not available."[17] The plans also highlight the need for the rapid adoption of electric heat pumps in the near term to meet the interim targets that will allow Massachusetts to meet its 2050 goals. Currently, about half of all residential households and three-quarters of commercial space in

[13] Massachusetts Executive Office of Energy and Environmental Affairs. 2020. *Massachusetts Decarbonization Roadmap*. Available at: https://www.mass.gov/info-details/ma-decarbonization-roadmap.

[14] Massachusetts Executive Office of Energy and Environmental Affairs. 2020. *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*. Available at: https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2025-and-2030.

[15] Massachusetts Executive Office of Energy and Environmental Affairs. 2022. *Massachusetts Clean Energy and Climate Plan for 2050*. Available at: https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2050.

[16] Global Warming Solutions Act, St. 2008, c. 298.

[17] Massachusetts Executive Office of Energy and Environmental Affairs. 2022. *Massachusetts Clean Energy and Climate Plan for 2050,* page xviii. Available at: https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2050.

Massachusetts is heated with natural gas.[18] However, in all pathways, the use of pipeline gas will decline, and the plans highlight the need to change existing utility gas utility business models, reform retail rate structures, and have a managed transition by gradually retiring and decommissioning gas assets as throughput declines to mitigate substantial increases to gas distribution rates.

Q31 Have there been any gas-utility-specific dockets in Massachusetts that address energy transition planning?

A31 In 2020, the Massachusetts Department of Public Utilities (DPU) opened Case No. 20-80 to "develop a regulatory and policy framework to guide the evolution of the gas distribution industry in the context of a clean energy transition that requires the Department to consider new policies and structures to protect ratepayers as the Commonwealth reduces its reliance on natural gas."[19] The DPU explicitly linked the opening of this docket to the state's process of planning to meet its net-zero emission objective.

The DPU ordered Massachusetts's gas utilities to hire an independent consultant to evaluate strategies to achieve net-zero emissions, building off the 2050 Roadmap. The gas utilities added to the scope by including recommendations for new business models, regulatory frameworks, and other initiatives that could be implemented in the shorter term. The consultants' final report, published March 18, 2022, included analyses of rate base and revenue over time, customer costs and decision-making, and quantified impacts of targeted electrification to allow asset retirement.[20] The report shows that gas throughput declines in all pathways, requiring transformational changes in customer end uses, energy supply, and networks—as well as coordination among gas and electric utilities. The analysis

[18] Massachusetts Executive Office of Energy and Environmental Affairs. 2020. *Massachusetts Clean Energy and Climate Plan for 2025 and 2030*, page 46. Available at: https://www.mass.gov/info-details/massachusetts-clean-energy-and-climate-plan-for-2025-and-2030.

[19] D.P.U. 20-80, at 4.

[20] E3 and Scott Madden. 2022. *The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals Independent Consultant Report: Technical Analysis of Decarbonization Pathways*. Available at: https://thefutureofgas.com/content/downloads/2022-03-21/3.18.22%20-%20Independent%20Consultant%20Report%20-%20Decarbonization%20Pathways.pdf.

highlighted the opportunity to use targeted electrification to reduce gas system investment and mitigate cost recovery challenges and stranded costs from customer migration that may be substantial in several pathways. The consultants reported that building electrification will be key to achieving net-zero emissions and customers will likely ultimately rely on electricity for most heating needs.[21] The consultants' report also recommended that gas utilities promote hybrid electrification strategies, which involve meeting most space heating needs with air-source heat pumps and using gas for supplemental heat when it is very cold.[22]

The gas utilities' consultants in Case No. 20-80 also explicitly addressed the regulatory and planning approaches and tools that would be required to successfully navigate the energy transition.[23] They recommended:

- minimizing or avoiding gas infrastructure projects to reduce costs, including by using targeted electrification and non-pipeline alternatives; coordinating gas and electric system planning;
- reviewing line extension policies and practices to reduce the risk of ratepayer support for uneconomic pipeline extensions;
- exploring aligning infrastructure cost recovery with utilization (including modeling unrecovered rate base in each of several scenarios);
- identifying and quantifying transition costs and the resulting impacts on customers; and
- tailoring regulatory changes to the timeframes relevant to the pathway being pursued.

[21] *Id*. at 82.
[22] *Id*. at 63.
[23] E3 and Scott Madden. 2022. *The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals Independent Consultant Report: Considerations and Alternatives for Regulatory Designs to Support Transition Plans*. Chapters 4 and 5. Available at: https://thefutureofgas.com/content/downloads/2022-03-21/3.18.22%20-%20Independent%20Consultant%20Report%20-%20Regulatory%20Designs.pdf.

In 2023, the DPU issued an Order on Regulatory Principles and Framework in that gas docket ("Order 20-80"), building on many of the ideas in the 2050 Roadmap and CECPs and specifically identifying their implications for the gas system.[24] The DPU concluded that renewable natural gas did not meet the Department's least-cost supply planning standards and that there are insufficient stocks to support pathways dependent on renewable natural gas.[25] Similarly, the order states that only targeted end uses may rely on hydrogen.[26] The DPU rejected the consultants' recommendation that the gas utilities should promote hybrid electrification. Instead, the DPU stated that no additional ratepayer dollars can be used for hybrid heating systems and funds should be directed to targeted electrification and networked geothermal. (The DPU noted that it did not believe it had the authority to reject hybrid heating outright.)[27] The DPU indicated its focus on a pathway with less reliance on the gas system going forward than anticipated initially by the 2050 Roadmap and CECPs.

Order 20-80 limits gas utilities' ability to continue investing in the gas system as usual and pushes them to support electrification. Going forward, gas utilities will be required to prove that any system replacement investments are consistent with state emissions reduction targets, and that they adequately considered non-gas pipeline alternatives (NPA) that use electrification, thermal networked systems, targeted energy efficiency, and demand response. Gas utilities must also prove that replacement was the best alternative before they can recover the replacement costs.[28] Order 20-80 seeks to develop a ratemaking approach to disincentivize gas utilities from adding new customers and starts by directing the companies to review the potential magnitude of stranded investments, identify the impacts of accelerated depreciation proposals, and identify potential alternatives. To support the energy transition, the Order requires that evaluation of investments take place in the context of joint gas and electric planning, including joint stakeholder

[24] *Order on Regulatory Principles and Framework*, DPU-20-80-B (December 6, 2023) ("Order 20-80"). Attached as Exhibit OCC-ASH-4.
[25] *Id*. at 68.
[26] *Id*. at 84.
[27] *Id*. at 80–81.
[28] *Id*. at 97–98.

processes. Gas utilities will be required to file Climate Compliance Plans to be issued every five years starting in 2025.[29] Each plan must include total investments required as well as an analysis and cost estimate for alternative potential investments. After each deadline, the companies will have nine months to file an additional Climate Act Compliance Term Report Filing to demonstrate whether or not they have achieved required emissions reductions.[30]

Q32 Have other Massachusetts agencies also taken action to meet the state's statutory obligation to reduce emissions from the buildings sector?

A32 Yes. The Massachusetts Department of Environmental Protection (DEP) is in the process of developing a Clean Heat Standard. A Clean Heat Standard is a regulation on heating fuel suppliers to meet emissions limits for residential, commercial, and industrial heating, identified in the CECP for 2025 and 2030 and expanded further by the Commission on Clean Heat.[31] The standard would require gas utilities to service residential and commercial customers with gradually increasing percentages of clean heat services to phase out fossil fuel sales, eventually replacing pipeline gas with heat pumps, clean district energy, weatherization, and other verified low-carbon options. Massachusetts's published framework for this regulation would require an increasing portion of homes in Massachusetts to be served by all-electric heating systems. The values published in the framework would be sufficient to require electrification of the vast majority of the state's residential heating demand and other combustion-based appliances and equipment by 2050.[32]

Q33 What are the specific lessons for gas utility planning that you draw from the Massachusetts experience?

A33 To me, one important insight from Massachusetts's experience is that dependence on lower-carbon fuels would not create a cost-effective or reliable path forward,

[29] *Id.* at 133–135.
[30] *Id.* at 135.
[31] *See* Massachusetts Commission on Clean Heat. 2022. *Final Report*. Available at: https://www.mass.gov/info-details/commission-on-clean-heat-issues-final-report.
[32] *Id*. at iii-iv.

and that the focus should be on harnessing the output of renewable electricity generation accompanied by electrification and efficiency measures. In particular, a net-zero future requires accelerated, short-term efforts to increase electric clean-heat services to meet the interim targets on the way to achieving longer-term goals. This approach needs to include a coordinated effort among gas and electric utility companies to downsize sections of the gas system. All reliable, cost-effective paths forward involve substantial reductions in natural gas consumption, meaning that the paradigm for gas system planning must change. I think it is particularly important to note that Massachusetts utilities and their regulators are not waiting until there are changes in gas consumption patterns in order to study and make key initial decisions about the future of the gas utilities in the state.

The DPU has laid out a set of reasonable, proactive steps to change traditional utility planning processes and limit risk to the utility and ratepayers. Gas companies will need to evaluate and plan for investments within the context of the overall energy transition in coordination with electric companies, rather than independently as has historically been the case. By explicitly requiring the utilities to take the prudent step of evaluating all investments against alternatives, the DPU emphasized that less-rigorous approaches based on historical practice are not consistent with prudent investment decisions in the context of energy transition.

New York

Q34 Could you please summarize the state of energy transition planning in New York?

A34 Under the 2019 *Climate Leadership and Community Protection Act* (CLCPA), all sectors of the state's economy are collectively required to achieve 40 percent GHG emissions reductions from 1990 levels by 2030 and to achieve 85 percent emissions reductions and net-zero emissions by 2050. Per the CLCPA and its emissions reduction goals, the New York State Energy Research and Development Authority (NYSERDA) and New York State Department of Environmental Conservation commissioned a draft climate scoping plan. The

CLCPA also created a new appointed body, the Climate Action Council (CAC), to prepare the scoping plan. The draft plan modeled statewide and economy-wide benefits, costs, and GHG emissions reductions in different scenarios that could achieve the emissions goals, known as the Integration Analysis. A business-as-usual scenario and initial scenario based on CAC recommendations were not found to meet those goals, leading to the modeling of three additional scenarios. The Integration Analysis concluded that widespread building electrification, decarbonized electricity, and aggressive energy efficiency measures are essential to achieving CLCPA targets. The final climate scoping plan, published in December 2022, calls for greater levels of electrification than the draft plan along with statewide fossil gas use reductions of at least 33 percent by 2030 and by 57 percent by 2035.[33] The final plan accordingly contains a full chapter on the gas system transition and recommends a well-planned, strategic downsizing of the gas system.[34]

Q35 What steps has New York taken to address gas-utility-specific issues related to the energy transition?

A35 In 2020, New York's Public Service Commission opened a gas planning proceeding (Case 20-G-0131) to "establish planning and operational practices that best support customer needs and emissions objectives while minimizing infrastructure investments and ensuring the continuation of reliable, safe, and adequate service to existing customers."[35] The Commission issued a Gas Planning Order as part of this docket that creates and defines a process for long-term gas planning that requires the gas utilities to file long-term plans every three years and file annual reports in interim years.[36] Long-term plan analyses are to include

[33] New York State Climate Action Council. 2022. *Scoping Plan Full Report*. Available at https://climate.ny.gov/-/media/Project/Climate/Files/NYS-Climate-Action-Council-Final-Scoping-Plan-2022.pdf.

[34] *Id*. at 250–363.

[35] State of New York Public Service Commission. *Order Instituting Proceeding*. March 19, 2020. Case 20-G-0131 - Proceeding on Motion of the Commission in Regard to Gas Planning Procedures. Page 4. Available at: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={2BE6F1CE-5F37-4A1A-A2C0-C01740962B3C}.

[36] State of New York Public Service Commission. *Order Adopting Gas System Planning Process*. May 12, 2022. Case 20-G-0131 and Case 12-G-0297. Available at: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={130B05B5-00B4-44CE-BBDF-B206A4528EE1}.

geographically granular 20-year demand and supply forecasts. Utilities must consider energy efficiency and NPAs as part of their plan, including an NPA-only (no new gas infrastructure) scenario unless they can present sufficient evidence that such a scenario is not feasible. The plans must evaluate and compare these alternatives using benefit-cost analysis, bill impact analysis, and emissions impacts. Annual reports also must include information that will allow clean heat developers to target programs at areas with leak-prone pipe or which need infrastructure improvements to improve or maintain reliability.

Q36 Have New York utilities begun implementing non-pipeline alternatives?

A36 Yes. New York State Electric and Gas (NYSEG) (a sister utility to the Company in this case) is developing a process for implementing a portfolio of NPAs. In 2022, NYSEG introduced a Request for Proposals for NPAs in the Canadaigua area to avoid a main reinforcement where the distribution system was near reaching maximum capacity.[37] NYSEG issued a similar request for proposals in 2019 in the Lansing area to avoid the need for a pipeline reinforcement project, where delivery pressures have been at unacceptable levels during peak conditions. In 2022, NYSEG entered into contracts with six developers to create a portfolio of NPAs in the Lansing area including installing efficient heat pumps, converting existing heat pumps to electric, replacing inefficient technology, adding other energy efficiency solutions in specific public buildings, and a waste heat recovery program for a large industrial customer.[38]

Another New York utility, Con Edison, has also developed a "Whole Building Electrification Service" NPA program. The utility has identified for consideration of NPAs more than 40 segments of leak-prone pipe that would otherwise be replaced over the next decade, after finding NPAs to be cost-effective when

[37] NYSEG. Accessed December 28, 2023. "Non-Pipe Alternatives." Available at: https://www.nyseg.com/ourcompany/reliableservice/reliability-projects/non-pipe-alternatives.

[38] NYSEG. 2022. "Lansing Non-Pipes Alternatives (NPA) Portfolio." Available at: https://www.nyseg.com/documents/40132/5899449/22-5069+NYSEG+Lansing+Non-Pipes+Alternatives_12.30.22.pdf/.

evaluated against traditional pipe-based solutions.[39] If the utility can identify opportunities to fully electrify all of the customers on the given segment, it will be able to avoid replacing the pipe and instead retire it. Con Edison developed screening and suitability criteria for costs and lead times of worthwhile NPA projects; at least 24 months of lead time is required.[40]

Federal Policy and Planning

Q37 Could you please summarize the state of energy transition planning at the federal level?

A37 Federal climate planning occurs within the context of the United Nations Framework Convention on Climate Change and the Paris Agreement reached under the auspices of that multinational process. Under the Paris Agreement, countries pledge to take actions to meet nationally determined contributions (NDC) toward the worldwide emissions reductions required to keep temperatures at or below 2 degrees above pre-industrial levels. As party of its initial NDC, in 2016 the U.S. government presented the *United States Mid-Century Strategy for Deep Decarbonization*, a report that shows pathways and considerations for the United States to reduce GHG emissions by 80 percent or more below 2005 levels by 2050.[41] The report lays out two primary strategies for a low-carbon buildings sector: energy efficiency and electrification of end uses. In the residential and commercial sector, the plan involves a transition to electric space heating, hot water heating appliances, and high-efficiency heat pumps.

In 2021, the United States re-joined the Paris Agreement and set more ambitious reductions goals in its revised NDC: achieving net-zero emissions no later than

[39] Consolidated Edison Company of New York, Non-Pipeline Alternatives Implementation Plan, NY PSC Case No. 19-G-0066 (Nov. 17, 2022), page 20; NY PSC Case No. 19-G-006, Consolidated Edison Company of New York, Benefit Cost Analysis: MRP Non-Pipeline Alternative Projects (Nov. 17, 2022), page 4.

[40] Consolidated Edison Company of New York, Non-Pipeline Alternatives Implementation Plan, NY PSC Case No. 19-G-0066 (Nov. 17, 2022), page 4.

[41] United States Executive Office of the President. 2016. "United States Midcentury Strategy for Deep Decarbonization." Washington, DC, page 5. Available at: https://unfccc.int/files/focus/long-term_strategies/application/pdf/mid_century_strategy_report-final_red.pdf.

2050 and an interim goal of reducing net GHG emissions by 50–52 percent of 2005 levels by 2030. The government presented an updated Long-Term Strategy in 2021 in line with these updated goals and studied multiple pathways to achieve them.[42] All viable pathways emphasize decarbonizing electricity and electrifying end uses. For the building sector, the efficient use of electricity for heating, hot water, cooking, and other end uses is the primary driver for emissions reductions, moving away from natural gas and other fossil fuels. Specifically, the pathways assume that heat pumps and other electric heaters and electric cooking account for more than 60 percent of all sales by 2030 and almost 100 percent by 2050.[43]

The federal government will support rapid evolution in the energy sector and clean technology deployment through investment and incentives. The Long-Term Strategy identifies that the primary goals for the next decade are to increase efficiency measures and sales of electric appliances. In the longer term, the federal government has stated that all buildings need to be decarbonized through end-use electrification and significant implementation of energy efficiency measures to lower overall demand and reduce energy waste. In the industrial sector, low- and medium-temperature heat processes are priority candidates for industrial electrification in the near term through increased use of industrial heat pumps, electric boilers, or electromagnetic heating processes. Energy demand overall is expected to decrease as efficiency improves, and the share of electricity in final energy demand will grow as end uses are electrified: from about 50 percent in 2020 to 90 percent or more by 2050 because the on-site combustion of gas, oil, and other fuels will decrease substantially.[44]

[42] United States Executive Office of the President. 2021. "The Long-Term Strategy of the United States," Washington, DC. Available at: https://unfccc.int/sites/default/files/resource/US_accessibleLTS2021.pdf.
[43] *Id*. at 32.
[44] *Id*. at 45.

Q38 What policy and programmatic actions has the federal government taken that reflect the pathways and priorities identified in the Long-Term Strategy?

A38 The *Inflation Reduction Act* and *Infrastructure Investment and Jobs Act* (also known as the *Bipartisan Infrastructure Law*) together allocate tens of billions of dollars for energy efficiency implementation and deployment of low- and no-GHG emission technologies.[45] These laws are expected to drive large-scale adoption of technologies that will support electrification. The *Inflation Reduction Act* provides up to $2000 of federal tax credits for air-source heat pumps and a 30 percent tax credit for geothermal heat pumps.[46] The *Inflation Reduction Act's* Home Electrification Rebates Program provides substantial amounts of rebates, up to $8,000 for heat pumps and up to $1,750 for heat pump water heaters, to low- and moderate-income customers.[47] One study estimated that electric space heating would exceed the number of homes with gas space heating by 2032, even before factoring in the impact of the *Inflation Reduction Act*.[48] As these incentives make heat pumps more widely accessible, adoption rates will continue to accelerate.

The federal government has taken other substantial actions to accelerate electrification in the buildings sector and to shape and expand the market for heat pumps. President Biden invoked the *Defense Production Act* to speed up domestic production of heat pumps.[49] Under this program, the U.S. Department of Energy (DOE) will award up to $250 million to entities capable of establishing or

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[45] *See* Nadel, Steven. 2023. *How Utility Energy Efficiency Programs Can Use New Federal Funding*, ACEEE. Available at: https://www.aceee.org/sites/default/files/pdfs/home_energy_upgrade_incentives_2-1-23_1.pdf; ACEEE. 2023. *Home Energy Upgrade Incentives*. Available at: https://www.aceee.org/sites/default/files/pdfs/how_utility_energy_efficiency_programs_can_use_new_federal_funding_-_encrypt_1.pdf.

[46] Rewiring America. "25C Residential Energy Efficiency Tax Credit and 25D Residential Clean Energy Tax Credit." Available at: https://www.rewiringamerica.org/ira-fact-sheets.

[47] Nadel, Steven. 2023. *How Utility Energy Efficiency Programs Can Use New Federal Funding*. ACEEE. Available at: https://www.aceee.org/sites/default/files/pdfs/home_energy_upgrade_incentives_2-1-23_1.pdf.

[48] Mifsud, Ana Sophia and Rachel Golden. 2022. *Millions of US Homes Are Installing Heat Pumps. Will It Be Enough?* RMI. Available at: https://rmi.org/millions-of-us-homes-are-installing-heat-pumps-will-it-beenough/ (citing EIA Residential Energy Consumption Survey).

[49] U.S. Department of Energy. Last Accessed January 2, 2024. "Enhanced Use of Defense Production Act." Available at: https://www.energy.gov/mesc/enhanced-use-defense-production-act-1950.

expanding manufacturing capacity. Administrators for the Energy Star program, jointly run by the EPA and DOE, have proposed to update its programs for heating systems to advance this policy direction. Specifically, the Energy Star program administrators have proposed to sunset Energy Star certification for furnaces and for cooling-only air conditioners, effective at the end of 2024 (with no new products certified as of December 30, 2023).[50] The program's proposal states that "With the passage of the *Inflation Reduction Act*, EPA sees an unprecedented opportunity for the ENERGY STAR program to support the national transition to the most energy efficient equipment available. The Agency recognizes an important responsibility to guide consumers to the choices that support the efficient electrification of residential space conditioning. As such, EPA is proposing to phase out the labeling and promotion of residential gas furnaces and [central air conditioners]."[51] The Energy Star statement also indicates that a similar approach would be taken for oil and gas boilers and dryers. As of this writing, Energy Star program administrators have not yet formally decided to make these program changes.

Regulatory Action in Other States and Provinces (Maryland, Illinois, and Ontario)

Q39 Are there other jurisdictions where gas-utility-related issues have recently been addressed which you think are relevant to this case?

A39 Yes. Recent gas utility rate cases in Maryland, Illinois, and Ontario have featured extensive discussion of energy transition issues, and the regulators in those proceedings have laid out important principles and findings that are relevant for this proceeding.

[50] U.S. EPA (Climate Protection Partnerships Division) - ENERGY STAR. 2023. *HVAC Sunset Letter*. Available at: https://www.energystar.gov/sites/default/files/asset/document/HVAC%20Sunset%20Letter.pdf.

[51] *Ibid*.

Maryland

Q40 Is Maryland's policy context similar to Connecticut's?

A40 Yes. Maryland's General Assembly set renewable energy goals in the 2019 *Clean Energy Jobs Act* (Senate Bill 516), which increased the total renewable energy requirement to 50 percent by the year 2030, and the *Climate Solutions Now Act* (CSNA) of 2022 (Senate Bill 528), which set a goal of a 60 percent reduction in GHG emissions by 2031 and net-zero statewide GHG emissions by 2045. Recent legislation also requires that, in supervising and regulating public service companies, the Maryland Public Service Commission consider "the preservation of environmental quality, the protection of the global climate from warming, and the achievement of the State's climate commitments for reducing statewide GHG emissions."[52]

Maryland has a building energy performance standard (BEPS) for buildings over 35,000 square feet, which requires a decrease in both on-site GHG emissions and site energy intensity. Maryland's recently published *Climate Pollution Reduction Plan* lays out a suite of policies, including the BEPS, to meet the state's net-zero objective.[53] Other policies of particular relevance to the future of the gas system include expansion of the state's energy efficiency programs to include electrification, a zero-emission heating equipment standard that will require all new heating systems to produce no on-site emissions (so that gas equipment will need to be replaced with non-emitting equipment when it burns out), and a clean heat standard to ensure all remaining source of heat-related emissions are eliminated or reduced over time.

[52] *Order on Application for a Multi-Year Rate Plan*. Maryland PSC-9692, p. 83-84. December 14, 2023.
[53] Maryland Department of the Environment. 2023. *Maryland's Climate Pollution Reduction Plan*. Available at https://mde.maryland.gov/programs/air/ClimateChange/Maryland%20Climate%20Reduction%20Plan/Maryland%27s%20Climate%20Pollution%20Reduction%20Plan%20-%20Final%20-%20Dec%2028%202023.pdf.

Q41 Are you aware of any gas utility cases in Maryland in which the parties and the Commission explored energy transition issues?

A41 Yes, the Public Service Commission of Maryland explored energy transition issues in Baltimore Gas and Electric Company's application for a multi-year rate plan, Case No. 9692.

Q42 What did the Maryland Public Service Commission rule with regard to the future-of-gas-related issues that arose in this case?

A42 When evaluating BGE's reconciliation proposal for its first multi-year plan, the Commission generally cautioned BGE to prioritize risk reduction and cost-effectiveness, account for rapidly changing current and future State and federal policies, and proactively consider NPAs for effective system planning in the future. This entails evaluating market force changes that may impact the useful life of the gas assets. In light of Maryland's recent policies, the Commission also set a higher allowed return on equity for electric distribution (relative to gas) to reflect policy shifts toward downsizing the gas system.[54] The slightly lower gas return on equity is intended to incentivize BGE, a dual-fuel utility, to invest in its electric distribution system rather than gas distribution.

In looking at specific components of the multi-year plan, the Commission implemented reporting requirements for leak-prone pipe replacement projects historically associated with BGE's *Strategic Infrastructure Development and Enhancement* program (STRIDE).[55] Though the Commission approved continued investment through this program, the reporting requirements aim to ensure the projects appropriately target leak reduction and are necessary projects. The Commission rejected BGE's plan to use pipe replacement as its only strategy to comply with federal transmission safety rules (PHMSA), because the company did not show it had sufficiently considered potentially lower-cost options, and the expensive strategy BGE proposed was "incongruous" with and demonstrated little

[54] *Order No. 90948 on Application for a Multi-Year Rate Plan*. Maryland PSC-9692, p. 119–132. December 14, 2023, page 242.
[55] *Id*. at 119–132.

to no consideration for the long-term future of gas infrastructure in Maryland.[56] The Commission similarly denied authorization for BGE's two-phase gas meter conversion project because of its risk to ratepayers and lack of analytical support.[57] Maryland's climate policies make investing in the wholesale replacement of BGE's suite of gas meters impractical as there is a significant possibility BGE will have fewer gas customers as Maryland nears its 2045 emissions reduction milestone.

Illinois

Q43 Is Illinois's policy context similar to Connecticut's?

A43 Yes. Illinois joined the U.S. Climate Alliance in 2019, committing the state to the Paris Agreement's emissions reduction goals and aligning Illinois with the decarbonization pathways the country aims to follow more broadly, which require building electrification. Illinois has also passed the *Climate and Equitable Jobs Act* ("CEJA"), which requires the electricity industry to achieve zero-emissions by 2045 and allows an electric utility to "offer and promote measures that electrify space heating, water heating, cooling, drying, cooking, industrial processes, and other building and industrial end uses that would otherwise be served by combustion of fossil fuel at the premises provided that [it] reduce[s] total energy consumption at the premises."[58] The Illinois Commerce Commission also demonstrated its commitment to ensuring that gas companies plan for the transition of the gas system in its recent decision in the People's Gas Light and Coke Company rate case, Case 23-0069.[59]

[56] *Id*. at 143.
[57] *Id*. at 150.
[58] Illinois General Assembly, Public Act 102-0662.
[59] Final Order, *The Peoples Gas Light and Coke Company Proposed general increase in rates and revisions to service classifications, riders, and terms and conditions of service.* ICC 23-0069. November 16, 2023.

Q44 What were the issues in the People's Gas rate case that are relevant context for this case and the Company's capital planning?

A44 People's Gas asked the Commission to approve $265 million for its *Safety Modernization Program* (SMP) to replace leak-prone pipe. Over the past five years, People's Gas routinely installed 75 percent more pipe than it required.[60] This high level of new pipe installation called the implementation of SMP and the magnitude of SMP investments into question, because the goal of the program was to replace dangerous leak-prone pipe, not install new pipelines. The Commission also heard from parties on how to establish a process to navigate the energy transition and ensure gas utilities are planning appropriately amid concerns about stranded assets should companies continue investing in gas infrastructure without accounting for Illinois's decarbonization targets.[61]

Q45 What did the Illinois Commerce Commission rule with regard to leak-prone pipe and the future of gas?

A45 The Commission held that People's Gas did not justify its proposed spending level for the SMP.[62] The Commission ordered a new investigation of the program for failing to prioritize neighborhoods with highest risk and to consider alternatives to pipe installation.[63] The Commission ordered the SMP to be paused until determination of a method of replacing certain high-risk pipe and a prudent investment level in a separate proceeding.[64] The decision further mandates the opening of a future of gas proceeding that will plan for the decarbonization of the gas system, the shift to an electricity-dominated energy system, and the evaluation of NPAs, among other key components of the transition. The Illinois Commission ordered gas utilities to file a long-term infrastructure plan with the Commission every two years, starting in 2025.[65]

[60] *Id*. at 26–29.
[61] *Id*. at 1–5.
[62] *Id*. at 28–29.
[63] *Id*. at 29.
[64] *Ibid*.
[65] *Id*. at 119.

Ontario

Q46 Is Ontario's GHG reduction objective context similar to Connecticut's?

A46 Yes. Ontario has established a relatively near-term target for GHG emission reduction: 30 percent below 2005 levels by 2030, which is somewhat less ambitious than Connecticut's 2030 target. Ontario, like Connecticut, is also subject to a federal objective of net-zero emissions by 2050. Canada's 2030 commitment is a 40 percent reduction from 2005 levels, which is comparable to Connecticut's objective of 45 percent below 2001 levels.

Q47 Are you aware of any recent gas utility cases in Ontario in which the parties and the Commission explored energy transition issues?

A47 Yes. These issues were considered in Phase 1 of Enbridge Gas's rate case, Ontario Energy Board (OEB) Case No. EB-2022-0200.

Q48 Did Enbridge consider the energy transition in its rate case filing?

A48 Yes, it did. Enbridge argued that its cost of equity capital is higher because of risk associated with the energy transition. Enbridge also contracted with two different consulting firms to study pathways to net zero for Ontario, which allows it to understand the range of possible levels of gas consumption that may be consistent with that target. Enbridge did not, however, quantify or model its business risk or stranded-asset risk associated with the energy transition. Enbridge proposed no energy-transition-related change in its approach to capital investment or depreciation.

Q49 What did the Ontario Energy Board rule with regard to energy transition and Enbridge's capital planning?

A49 The OEB "concludes that Enbridge Gas's proposal is not responsive to the energy transition and increases the risk of stranded or underutilized assets, a risk that must be mitigated. In particular, Enbridge Gas has not met the onus to demonstrate that its proposed capital spending plan, reflected in its Asset Management Plan, is prudent, and that it has accounted appropriately for the risk

arising from the energy transition. Two important themes emerged during this proceeding:

- climate change policy is driving an energy transition that gives rise to a stranded-asset risk, and
- the usual way of doing business is not sustainable."[66]

Based on this finding, the OEB reduced Enbridge's overall proposed capital budget by $250 million and found that "[t]he current Asset Management Plan is not accepted as a basis to support the proposed capital investments."[67] The OEB further ordered that the utility no longer provide any cost-sharing for new customer connections, effective January 1, 2025, in order to eliminate stranded-asset risk associated with new connections. The OEB determined that Enbridge "needs to put more emphasis on monitoring, repairing and life extension of its system so that replacement projects are only implemented where absolutely necessary in order to address the stranded asset risk in that context."[68] The OEB also ordered Enbridge to "carry out a risk assessment and to consider a range of risk mitigation measures, including:

- How Enbridge Gas would prune its existing system to avoid the replacement of assets
- What role Enbridge Gas's depreciation policy should play in reducing the stranded asset risk
- How Enbridge Gas will identify maintenance, repair and life extension alternatives to extend the life of existing assets instead of long-lived replacements that increase the stranded asset risk"[69]

[66] OEB. *Decision and Order*. *Enbridge Gas Inc. Application for 2024 Rates – Phase 1*. EB-2022-0200. Pages 19-20. Available at https://www.oeb.ca/applications/applications-oeb/current-major-applications/eb-2022-0200.
[67] Id., page 2.
[68] Ibid.
[69] Ibid.

IV. IMPLICATIONS OF THE ENERGY TRANSITION FOR GAS UTILITIES

Q50 What do you see as the major implications of the energy transition for gas utilities?

A50 As demonstrated by the regulatory proceedings in five relevant jurisdictions that I have just summarized, utility commissions are increasingly recognizing that business-as-usual approaches to managing the gas system cannot continue. The major implications of the energy transition for gas utilities are:

- The future of gas consumption and gas utility asset utilization will not look like the past or present. Energy delivered by the gas system will fall substantially, and the building sector share of gas consumption will fall. *(Massachusetts, New York, Federal, Maryland, Ontario, Illinois)*

- To the extent that biomethane, hydrogen, or synthetic methane are used, they will be expensive enough that customers who can afford to electrify will do so. *(Massachusetts)*

- Business-as-usual approaches to accelerated leak-prone pipe replacement are not justified. Capital investments should not be made until they are shown to be superior to alternatives that incorporate repair, efficiency, electrification, and retirement. *(Massachusetts, New York, Maryland, Illinois)*

- The recovery of invested capital over a smaller volume of sales will mean higher gas distribution rates and increased competition from electricity. The extent of these gas rate increases can be reduced by changes to the utility's approach to capital investment, repairs, retirement, and depreciation. *(Massachusetts, New York)*

- Utilities have a responsibility to undertake prudent planning and investment actions to adapt to the energy transition, taking into account the timeframe of that transition and how it relates to the lifetime of gas assets. Failure to make prudent capital decisions increases stranded-asset

risk, which may be borne by customers and/or investors. *(Massachusetts, Maryland, Ontario)*

Q51 Which of these issues are most relevant to address in gas utility rate cases such as this case?

A51 The areas that are most relevant are capital planning/investment choices and depreciation. Among the cases I have addressed above, these issues were discussed most in-depth in Massachusetts's Case No. 20-80 process and Order, although these issues have also been raised in the other jurisdictions as well. Regarding capital planning and investment choices, a rate case is the venue for prudence review, in which past utility decisions are evaluated. Rate cases with future test year or multi-year ratemaking approaches typically include some kind of pre-approval process which should also be informed by the best available projection of the future state of the gas system. In practice, it appears to be difficult for regulators who have agreed to include assets in a multi-year plan to look back at the planning decisions and decide they were imprudent, so it is important for regulators to bring a prudence lens to bear even for pre-approvals.

Regarding depreciation, a rate case is the venue for determining a fair depreciation rate that appropriately balances present versus future ratepayer contributions to the cost of infrastructure. If assets will be used differently, by a different blend of ratepayers, in the future, then depreciation rates and analysis should account for these changes as part of a clear and consistent plan for energy transition.

Q52 One of the major issues you identified to address in rate cases, such as this one, is capital investment planning and prudence review. Could you please describe the role of prudence review in utility ratemaking?

A52 Prudence review is the process by which regulators review utility investments and expenditures to provide the discipline on expenditures that the competitive marketplace would otherwise provide. Just as companies in competitive markets must account for policy when developing their business plans, reasonable decisions made by prudent utilities must also account for both policy and market

context. Unlike a company in a competitive market, regulated public utilities earn a return on their rate base rather than from their ability to outcompete other firms in a free market. In a competitive market, if a company makes imprudent investments, it will earn a lower rate of return because competing firms that do not make that error will earn a greater market share, or the firm will otherwise have less revenue relative to its costs. In the regulated context, then, regulators must disallow imprudent investments to impose the same kind of discipline.

Q53 Are there established principles about how to conduct prudence reviews?

A53 Yes. *The Prudent Investment Test in the 1980s*, a research report by Burns, Poling, Whinihan, and Kelly of the National Regulatory Research Institute published in 1985 (Exhibit OCC-ASH-3), contains a clear and cogent summary of the underlying philosophy and application of a prudence test for public utility investments. Of particular interest here are four principles for prudence reviews:[70]

- "[T]here should exist a presumption that the investment decisions of utilities are prudent. The presumption of prudence can be overcome, however, by the allegation of imprudence that is backed up by substantive evidence creating a serious doubt about the prudence of an investment decision."

- "[U]se the standard of reasonableness under the circumstances. That is, to be prudent, a utility decision must have been reasonable under the circumstances that were known or could have been known at the time the decision was made. A corollary to the standard of reasonableness under the circumstance is a proscription against the use of hindsight in determining prudence."

- "The proscription against hindsight makes it unwise for a commission to supplement the reasonableness standard for prudence with other standards that look at the final outcome of a utility's decision, though consideration

[70] Exhibit OCC-ASH-3 at page *iv*. Nothing in these statements of principle should be taken as superseding state law, such as regarding a utility's burden of proof and persuasion.

of outcome may legitimately have been used to overcome the presumption of prudence."

- "[D]etermine prudence in a retrospective, factual inquiry. The evidence needs to be retrospective in that it must be concerned with the time at which the decision was made."

Burns et al. also state that "[T]he concept of prudence protects the rights of individuals not in control of investment decision making. It does not require perfection in decision making but does require, for example, avoidance of deliberate exposure to substantial risk where the individuals not in control could suffer financially."[71]

Q54 Does Connecticut's approach to prudence review align with every aspect of Burns et al.'s principles?

A54 No. Each state takes its own approach and has its own case history for defining how prudence review is conducted and how burdens are assigned. I understand that in Connecticut, there is no statutory basis for the presumption that utility decisions are prudent until rebutted by other evidence. In fact, it is my understanding that a Connecticut statute explicitly places the burden upon a public service company to affirmatively prove that its proposed rate is just and reasonable.. Accordingly, PURA has established that utilities have an obligation to make a positive showing that their investments are prudent. In the most recent rate case decision for the United Illuminating Company, PURA found that, "to carry its statutory burden, the utility must provide (or ensure the record contains) a preponderance of evidence that the requested rates are 'sufficient, but no more than sufficient' and 'reflect prudent and efficient management.'"[72] As I understand it, PURA and its predecessor the Department of Public Utility Control ("DPUC") have been applying this standard for many years. For example, in a 2011 decision in a Yankee Gas Services Company rate case, the DPUC found that

[71] *Id*. at *iii-iv*.
[72] PURA. Aug. 25, 2023. Docket No. 22-08-08, *Application of The United Illuminating Company to Amend Its Rate Schedule, Final Decision*, p. 7.

the gas company failed to meet its burden to prove that its proposal was just and reasonable where it failed to provide sufficient evidence as to several claimed costs – including where the company "had the opportunity to provide evidence on the record on [an] issue and chose not to."[73]

Q55 When a regulator or legislature provides some kind of pre-approval for spending, does that change the need for retrospective prudence review?

A55 No. Pre-approval to spend funds does not insulate a utility from a finding of imprudence. Utility management has an ongoing obligation each day to decide whether to continue with, expand, or restrict each investment. If information becomes available that shows that a decision is imprudent, even after it has been approved by a regulator or legislature, utility management has an obligation to make a different, prudent, choice.

Q56 What is the role of prudence analysis in setting rates for the next rate period, if PURA approves multiple years of future rates?

A56 While full (retrospective) prudence review is deferred until the next rate case, PURA has a choice about how to treat each investment over the course of the intervening period in order to set just and reasonable rates. It could (1) include the expected cost in the forecast rates collected over the period, or (2) treat the expense like it would be treated in traditional ratemaking: not include it in rates until the next rate case, after it has been judged to be prudently incurred. PURA's review in this case can enable it to choose which course to take for each projected expense, and how to thereby allocate risk between ratepayers and investors. As Burns et al., state, "The concept of prudence provides commission with a principle that does not necessarily require an 'all or nothing' decision in favor of one side, but can allow some sharing of the risks between investors and ratepayers. The prudent investment test is a tool that regulators are using to

[73] DPUC. June 29, 2011. Docket No. 10-12-02, *Application of Yankee Gas Services for Amended Rate Schedules, Final Decision*, p. 42.

provide an answer to the question of who should bear which risks and associated costs."[74]

Q57 What role does gas system planning play in prudent utility system management?

A57 Planning is essential to prudent management. Gas system capital planning, for both the short term (e.g., less than five years) and for the longer term (over a decade or more) is a key tool for identifying options for system growth and optimization. By looking ahead multiple years, and considering the usefulness of assets over their lifetimes, system planners can weigh alternatives to meet evolving system needs at the lowest cost. For example, with appropriate tools and processes in place, a system planner can compare the costs and benefits of a repair-focused effort for leak-prone pipe (aimed at reactive responses to leaks and repair of pipe sections that show the greatest leak history) with a replacement-based approach (aimed at proactively replacing high-risk pipe). Each action in a repair-focused approach may have a shorter effective lifetime for resolving safety issues than would replacement, but it can also be more targeted and nimble with respect to changing system utilization. Replacement offers a longer lifetime, with associated reduction in flexibility and increase in the need to manage stranded-costs risks. If a utility is not conducting planning practices that take this kind of analysis into account, it risks making imprudent decisions for the development of and investment in its system.

Q58 Can you suggest some principles for long-term gas system planning, in the context of the energy transition?

A58 Yes. My colleagues and I published a white paper in the context of New York's gas planning proceeding,[75] which identified the following principles and practices:

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[74] *Id*. at *vi*.

[75] Woolf et al. 2021. *Long-Term Planning to Support the Transition of New York's Gas Utility Industry*. Synapse Energy Economics on behalf of Natural Resources Defense Council. Attached as Exhibit OCC-ASH-5.

- Design all scenarios to comply with state emissions objectives.
- Integrate gas and electricity planning.
- Assess impacts on gas and electricity sales.
- Use appropriate asset lives and depreciation schedules.
- Articulate GHG constraints.
- Apply a high threshold for approving new gas infrastructure investments.
- Assess multiple gas utility business models.
- Develop comprehensive NPA screening frameworks.
- Adopt practices for strategic asset retirement.
- Update gas load forecasting practices.
- Account for customer actions.
- Account for risk.
- Articulate an action plan.
- Update plans periodically.

Q59 How does the evolving state and federal policy context interact with prudent gas system planning?

A59 In order to be prudent, gas system planning must be conducted with an eye to its policy and market context. Where policies and market transitions may limit the future utility of a gas system asset, a prudent decision to invest in that asset or pursue an alternative must take those potential future limits into account. For example, the economic evaluation of alternative approaches to solve a gas system problem must account for the useful lives of the approaches and the associated depreciation rates.

Q60 What are the implications of these principles for review of the prudence of a gas utility's planning processes, in the context of energy transition?

A60 The gas system operates within the context of the well-established energy transition, and planning must account for that context in order to be prudent. When reviewing gas system investments for prudence, therefore, it is essential for regulators to consider whether the investment planning and selection process has accounted for energy transition. For example, has the process included the items that I listed above, from our New York whitepaper? Depending on information availability, it may be possible to evaluate specific investments and whether the process of selecting and executing those investments took energy transition into account. Looking forward for future rate years and rate cases, it may also be necessary to set high-level guardrails for utility investment to limit stranded-cost risk, as Ontario has done, rather than select specific investments to disallow. Taking this approach would set a clear structure and expectation around making investment choices and evaluating alternatives in order to find the best investments. This approach would also make clear that a simple *status quo* approach is not prudent.

V. THE COMPANY'S CAPITAL PLANNING PROCESSES

Q61 Could you please summarize how the Company addresses the energy transition in its testimony and evidence in this case?

A61 The Company's witness testimony and exhibits touch on energy transition issues, but only at a superficial level. The Company's Capital Investment Panel testimony (Exhibit CNG-CIP-1) does not discuss climate change, GHG policy, or the likelihood for future change in gas consumption amounts or patterns. This testimony does mention GHG emission mitigation as part of "minor projects" (defined as projects with budgets under $100,000).[76] Avangrid's corporate Capital Planning Process (Exhibit CNG-CIP-2) contains a brief description of one

[76] Also discussed in Exhibit CNG-CIP-4, at page 256 and 257 of 313, and Exhibit CNG/SCG-CIP-7, at pages 36 and 37 of 62.

corporate objective, to "Enable Clean Energy Transformation," which is focused on advancing clean energy, decarbonization, and electrification initiatives. However, in OCC-379 A, the Company makes clear that its only "clean energy"-related activities have to do with reducing methane leaks; it is not undertaking any activities to affirmatively advance the use of low-carbon energy or electrification.

The Company's Gas Operations Panel states that "there is no question that the future of the natural gas delivery system will change as public policy transitions customers away from fossil fuels."[77] This testimony discusses leak-prone pipe replacement, and the GHG emission reductions that such actions are assumed to generate, relative to the *status quo*. It also identifies "emerging energy policies" as a trend "particularly relevant to the current and future state of CNG's gas operations."[78] The panel's discussion of energy policies includes a statement about the number of customers who have transitioned to gas from fuel oil and the importance of gas to power fuel cells. The testimony further states that changing to fuels other than natural gas (presumably electricity) would incur costs, that customers care about costs, and that the economics of alternatives are likely to improve, although "the basic value proposition for natural gas customers remains formidable."[79] The panel also states that "some states are enacting policies to accelerate the transition" to alternative energy sources, but that the Company remains obligated to provide reliable service to the customers who remain on the gas delivery system.[80] The panel's testimony then proceeds to address reliability and disruptions on the gas system.

The Company's depreciation testimony, provided by Mr. Ned Allis (Exhibit CNG-NWA-1) includes a brief discussion of the potential impact of GHG emissions reductions on the future service lives of the Company's assets. Mr. Allis states that, "While there may be uncertainty regarding the exact pathway by which the state meets these targets, policies and decisions to achieve these targets

[77] Exhibit CNG-GOP-1, Executive Summary.
[78] Id., page 27.
[79] Id., page 33.
[80] Ibid.

may drive changes to the gas system and a significant reduction in the amount of natural gas used."[81] He goes on to state that he "believe[s] it is possible that the reduction in emissions could have an effect on the service lives of gas assets. Widespread electrification could lead to fewer customers and declines in gas throughput, resulting in early retirements of gas assets and shorter service lives. While I have not recommended any change in the service lives of the gas assets, the possibility of early retirements and shorter lives in the future should be kept in mind when setting depreciation rates in this proceeding."[82]

Q62 Has the Company performed any analysis of the impact of the "changing future of the natural gas delivery system" on its system, capital investments, system operation, finances, or business model?

A62 There is no evidence of any such analysis in this case. When asked to provide such analysis in OCC-384, the Company did not provide any.

Q63 How does the Company explain its lack of detailed consideration of its changing future in this case?

A63 In OCC-384 A, the Company lays out its thinking regarding its plan to continue a *status quo* approach to gas system planning, operations, and investment. The Company states that "The Company is aware of public policy transitional aspirations and goals for cleaner energy and the Company supports the clean energy transition. When and if these aspirations become reality through actual customer count and demand data, and quantitative and qualitative forecast information, the parties and policy makers will have the necessary information to evaluate the pros and cons of the distribution infrastructure. As of right now and for the foreseeable future, that information is speculative only and it is necessary and prudent from a public service perspective to make sure the infrastructure is reliable and safe."

[81] CNG-NWA-1, page 9 of 16, lines 10–13.
[82] Id., lines 16–21.

Q64 Do you agree that Connecticut has "public policy transitional aspirations and goals for cleaner energy," as characterized by the Company?

A64 No. Connecticut General Statutes § 22a-200a sets a legally binding requirement for GHG emission reduction in Connecticut to 45 percent below 2001 levels by 2030 and 80 percent below 2001 levels by 2050. These objectives have been in Connecticut law long enough for the Company to appreciate their legally binding, rather than aspirational, nature and account for them in its plans.

Q65 Do you agree that it is prudent to wait for these legally binding reductions to manifest in changes in customer counts and gas demand data before evaluating the pros and cons of the distribution infrastructure or conducting other analysis of the changing future?

A65 No. The state and federal deep decarbonization pathway studies I detailed earlier in my testimony show transitions off of fossil fuels in the buildings sector on timescales commensurate with the lifetime of gas-burning building equipment such as furnaces and water heaters. Furnaces generally have a useful life of between 15 and 25 years, and 2050 is 26 years away. The transition off fossil gas will therefore occur over a timeframe that is short compared with the average expected useful life of gas system assets. For example, new gas mains typically have engineering lives of more than 50 years, double the time between today and 2050. This means that waiting until the transition has demonstrably begun, then making plans, and then finally taking action on distribution planning and finance would leave the Company and its remaining customers in a precarious position, left behind by changes moving much faster than the Company can adapt its infrastructure and finances.

Q66 Do you agree that policy-encouraged changes in customer counts and gas demand are speculative only, both now and in the foreseeable future?

A66 No. All of the studies I described earlier in my testimony show compliance pathways for legally binding emission reductions that will result in reductions in customer counts and gas demand. Policymakers and planners have foreseen this future for years, and actions are showing it is not speculative. Looking at the earliest example I cited, the *United States Mid-Century Strategy for Deep*

Decarbonization, published in 2016, documents the key components of meeting an 80 percent emissions reduction by 2050, including a substantial increase in the use of electricity and decline in the use of gas. For example, the report's benchmark scenario has a 58 percent reduction in the use of fossil fuel in buildings and 55 percent reduction in industry. While the details would surely be different at a state level, it has been clear for at least seven years that both the nation and Connecticut are on a course to substantial reductions in fossil gas demand. Connecticut's 2018 CES also clearly states Connecticut's path toward electrification. Actions throughout the last several years, such as the enactment of the *Inflation Reduction Act* and *Infrastructure Investment and Jobs Act*, reinforce that this transition is not speculative. Connecticut's *Preliminary Climate Action Plan*, due to be filed with the EPA in early March, and required by the *Inflation Reduction Act* in order to access substantial federal climate change mitigation funding, will be just the latest in a string of resources that should inform the Company's planning and approach to decarbonization.

Q67 Have the Company's witnesses demonstrated that they are well aware of and engaged with the likely course of the energy transition?

A67 No. For example, no members of the Company's capital investment panel, or staff under their direction, attended 2022 CES technical sessions on heat pump markets, barriers, or support strategies for building thermal decarbonization.[83] (Staff attended only sessions on active demand response, alternative fuels, and natural gas distribution planning and policies; no members of the panel directly attended any sessions; and no information from those sessions informed the panel's testimony.[84]) Panel members indicated familiarity with Massachusetts's roadmap study, but not with that state's binding policy documents laying out how

[83] See DEEP. "Comprehensive Energy Strategy (CES)" for the schedule of technical sessions. Available at https://portal.ct.gov/DEEP/Energy/Comprehensive-Energy-Plan/Comprehensive-Energy-Strategy.
[84] OCC-383 A a.

it will meet its decarbonization objectives.[85] No panel member has reviewed the Long-Term Strategy of the United States.[86]

Q68 Has the Company's corporate parent demonstrated understanding or consideration of energy transition in its approach to capital planning?

A68 No. Avangrid's capital planning process document (Exhibit CNG-CIP-2) does not address gas future energy transition issues: it is a largely electric-focused document. (For example, some of its core objectives do not apply to the gas system, and there is no discussion of the equivalent actions or objectives as might be applied to the gas system.) The Company's sister gas utilities in New York have conducted long-term plans. However, the Company is very clear in OCC-384 A (b) that these utilities conducted these plans because they were required to by New York law, not because they believed that it was a necessary or appropriate action to take, or that the plans are useful for their capital or business planning.

Q69 The Company states that the changes it may experience in the future are uncertain. Is that a good reason not to analyze them?

A69 No. On the contrary, the need for a prudently managed utility to be prepared for a range of possible futures is a very strong argument for analyzing those potential futures and understanding their implications for the utility and its capital investments. The Company proposes to make large irreversible capital investments. This means that the value associated with the option to *not* making these investments is high. Greater uncertainty increases the financial value of this option, so it is even more important to understand possible futures when there is greater uncertainty. The Company appears to make no account of this option value when considering capital investments. (In fact, because the Company does not appear to rigorously evaluate alternatives to its investments, as I will discuss

[85] OCC-383 A c.
[86] *Ibid*.

below, it does not even have a place in its processes to consider such option value.)

Q70 Is it prudent for the Company to rely on others, such as state government, to conduct analysis of the changes facing the gas system as a result of the energy transition, and not to analyze the changes itself?

A70 No. The Company knows more about its own system, and it is the entity with an obligation to customers to make sure that it has the financial and operation strength to maintain a safe and reliable gas system. The timing of the Company's need to understand its own challenges is independent of the timing of state-led analyses. As I described above, the 2016 *United States Mid-Century Strategy for Deep Decarbonization* identified that gas use in buildings would fall substantially as part of a nationwide pathway to 80 percent GHG emission reductions below 1990 levels. Doubling gas distribution rates (as would be implied by a halving of sales without changes in the gas revenue requirement) would substantially change the Company's competitive position. The Company has had more than seven years to consider and undertake a study of its own system and business to understand and adapt to such a future, while it watches the federal and Connecticut governments adopt increasingly stringent emission targets and take actions to make them reality. It has not done so.

If the Company were in a competitive market, where competition punishes imprudence through a loss of market share, the Company's failure to consider these changes would be putting its future returns at risk. The regulatory process is intended to supply similar discipline.

Q71 What might the Company have found if it had conducted analysis of the impact of the "changing future of the natural gas delivery system" on its capital plans, finances, or business model?

A71 From my analysis of utilities in similar situations and from the analysis conducted in other states with comparable policy objectives (such as Massachusetts) I believe the Company would have found:

- That continued *status quo* approaches to leak-prone pipe replacement, system growth, and depreciation rates will result in rising revenue requirements without commensurate increases in sales, resulting in increasing rates;

- That these increasing rates, combined with policy support for electrification, will change the competitive position of the Company's product compared with electricity—thereby reinforcing and accelerating declines in sales, resulting in further increases in rates; [87]

- That failing to prepare for and adapt to these changes would place its financial health and its ability to maintain a safe and reliable gas system at risk; and

- That taking a different and more comprehensively planned approach to capital decision-making and depreciation can mitigate long-term rate increases, increase the predictability of capital recovery, and allow it to retain the financial strength necessary to maintain a safe and reliable gas system.[88]

Q72 What impacts might these findings have had on the Company's capital plan and other components of this rate case?

A72 Among the impacts of these findings might have been:

- The Company would examine the cost-effectiveness of its leak-prone pipe investments (among other investments) to prioritize those actions which provide the greatest benefits (such as risk reduction or reliability) within a limited budget for capital additions, while accounting for the potential service lives of assets. This analysis would likely prioritize replacement for leak-prone assets likely to have longer service lives, such as larger mains and assets which serve industrial customers, and de-prioritize

[87] *See* Order 20-80, page 91 (discussing the anticipated substantial decline in gas sales in all pathways).
[88] *See* Order 20-80, page 101–102 (discussing the general consensus on the need to re-examine depreciation and stranded assets).

replacement-based approaches for smaller pipes which serve only a small number of building sector customers.

- The Company would likely have proposed a smaller amount of capital additions, in order to limit capital at risk and maintain optionality. The Company would likely favor smaller projects, and seek to defer larger ones, again reflecting option value.
- The Company would have developed and utilized a process for evaluating the cost-effectiveness of NPAs.
- The Company would be using a shorter potential lifetime for capital assets when evaluating ways to approach challenges on the gas system, such as when evaluating a question of repair vs. replacement or considering NPAs.

Q73 Could you elaborate further on the implications of these findings for leak-prone pipe replacement investments?

A73 Leak-prone pipe replacement constitutes the largest single driver for the Company's capital investment plans, and it is also a component where planning choices will have a large effect on how the Company's assets are distributed as the energy transition unfolds. In order to retain competitive rates, and in recognition of its practical limits on annual replacement activity, the Company needs to work within a limited capital budget for addressing leak-prone pipes. The Company should be selecting projects on which to spend this limited budget based on two drivers: increasing safety and reducing future financial risk. It can prioritize increasing safety by replacing the riskiest pipe per dollar spent—so that a limited budget produces the most safety benefit. It can limit future financial risk by prioritizing replacement for segments that are likely to have the longest useful lives. These are generally going to be the segments that are "trunk" lines, rather than "leaves"—because these mains are most likely to be needed to continue to serve some customers over the longest timeframe. Limiting financial risk is important for the Company's investors, but also for customers, because if the Company's financial health suffers it may not be able to spend the funds necessary to maintain a safe and reliable system.

Q74 Does the Company prioritize its leak-prone pipe investments based on their cost-effectiveness or based on their expected useful life, informed by the energy transition?

A74 No, it does not. While the Company has recently begun a process of quantifying risk associated with leak-prone pipe segments, and using that information when selecting leak-prone pipe projects, it explicitly does not consider the cost of a given project as part of that process.[89] As a result, it is almost certainly not producing the optimal level of risk reduction for a given budget. The Company's risk/prioritization rubric includes no information about the topology of the system, how the pipe is used, or whether it serves other pipes. In fact, because the risk rubric gives higher scores to smaller pipe,[90] it favors the replacement of assets that serve the smaller branches and leaves of the gas system.

Q75 Are there equity considerations that should be incorporated when prioritizing locations for leak-prone pipe replacement or retirement?

A75 Yes. Low-income customers and renters are the most likely customer segments to be unable to easily adopt efficient electric heating equipment, due to lack of capital or lack of control over their building's equipment. As a result, when other customers electrify and rates rise, these customers will be more likely to be left carrying the cost of the gas system. It is inequitable for these customers, who have the least ability to pay and the least control over their gas use, to be paying more than their share of the cost of the gas system. The appropriate priority for these customers is to focus electrification and NPA-based approaches in these communities, rather than to focus leak-prone pipe replacement in these locations. When the Company does begin to plan for scenarios with a shrinking customer base, it will likely prioritize keeping newly installed pipe around in service as long as possible, and therefore will not prioritize electrification for customers served by newly installed pipe. To the extent the Company focuses on

[89] OCC-391 A (a) states "The cost to reduce risk, or cost to replace, is not included in the DIMP prioritization of segments. DIMP prioritization is based on safety and reliability."

[90] OCC-391 CNG Attachment 3.xlsx shows that the rubric assigns a "pipe sizes score" of 4 to 4-inch pipe, 3 to 6-inch pipe, and 2 to pipe over 6 inches. (The tool appears to be designed to give a score of 1 to pipe over 8 inches, but an error in the Excel implementation prevents this score from ever being used.)

replacement, rather than retirement, in low-income communities it is exacerbating future inequitable outcomes.

Q76 Does the Company account for equity implications in its leak-prone pipe planning?

A76 I have not seen any indication that it does. In the Gas Operations Panel testimony, the Company witnesses discuss the correlation between old gas system assets and distressed communities (which tend to be in areas with an older built environment). So, it appears that by chance the Company is likely to be conducting more replacement activities in distressed communities, rather than less. The benefits for local environmental quality that are achieved through leak-prone pipe replacement in these communities would also be achieved through electrification and NPA-based approaches that enable pipe retirement, and the residents would also benefit from the improved air quality that would stem from removing combustion from their homes.

VI. CONSIDERATION OF ALTERNATIVES

Q77 How does the Company's capital planning process assemble the options to address an issue or challenge identified on the Company's system?

A77 According to OCC-380 A, the Company's "Gas Engineering – System Planning" group develops project alternatives to address system needs. Members of this team identify needs for the gas system within their areas of responsibility and develop projects to meet those needs. Company-level review teams are presented with the recommendations. The Company states that "[a]lternatives are considered based on cost effectiveness and achieving project requirements identified to ensure continued safe and reliable operation of the gas system."[91]

[91] OCC-380 A (c).

Q78 Does the Company regularly use this process to determine which alternative approach to take to a system challenge?

A78 Apparently not. According to OCC-380 A (d), the Company has not made any decisions between two (or more) alternatives for capital projects within the last 24 months. This is despite the Company making capital investments of at least $115 million over that time period (as detailed in Exhibit CNG-CIP-3 and Exhibit CNG-CIP-4), of which over $75 million of which was "infrastructure improvement and replacement" within the purview of the Gas Engineering – System Planning group.

Q79 Does Avangrid's *Gas Transmission and Distribution Manual* address NPAs?

A79 It does. On page 27, it states that "Project proposals developed by Gas System Planning are to be reviewed by the Non-Pipeline Alternative (NPA) Group. Projects set to begin construction within 12 months and those addressing system needs that pose a threat to public safety are exempt from the NPA review process."[92] The Manual's "List of Studies Performed by Gas System Planning" includes "Non Pipe Alternative studies."[93]

Q80 Is the Company's corporate family aware of and using NPAs?

A80 The Company's sister utility in New York, NYSEG, states that NPAs "utilize third[-]party solutions to defer or avoid certain traditional natural gas capital projects (i.e., 'pipes') that are needed to address natural gas system reliability needs. We are committed to considering NPA solutions as substitutes for traditional gas capital projects where and when they are appropriate and cost-effective…. We seek to implement a portfolio of NPA solutions which are cost effective for customers, provide reliable alternatives to traditional natural gas capital projects, and reflect full cost recovery and earnings opportunities for our Companies, while we comply with regulatory directives, state environmental policy, and learn from working cooperatively with other utilities and stakeholders.

[92] Exhibit CNG/SCG-CIP-7, Appendix A, page 27.
[93] *Id*. at 58.

NPA solutions are innovative and include but are not limited to gas energy efficiency improvements, gas demand response programs, beneficial electrification (which may include a variety of heat pump technologies as well as other solutions), or the introduction of additional natural gas equivalent supply (in various forms of energy)."[94] NYSEG is using a portfolio of NPA actions in the Lansing, NY, area to mitigate a low-pressure situation on its gas distribution network. This NPA project includes residential and commercial heat pumps, energy efficiency, and industrial heat recovery and result in GHG emission reduction and ratepayer cost savings.[95]

Q81 Does the Company consider NPAs?

A81 No. As the Company states in OCC-381 A, "CNG does not have a business area responsible for non-pipeline alternatives" because "[t]here is no mandated requirement in Connecticut for non-pipeline alternatives." CNG confirmed in OCC-452 A and OCC-453 A that it does not follow Avangrid's *Gas Transmission and Distribution Manual* with regard to NPAs.

Q82 Based on this evidence, do you believe that the Company seriously considers alternatives based on their cost-effectiveness and ability to achieve project requirements?

A82 No, I do not. The Company's inability to point to a single example over the last 2 years, over which it invested over $75 million in relevant capital projects, where it actually considered multiple approaches to solve a project or considered non-pipeline approaches indicates to me that the Company does not have a serious program to develop and consider alternatives.

[94] NYSEG. Accessed December 28, 2023. "Non-Pipe Alternatives." Available at: https://www.nyseg.com/ourcompany/reliableservice/reliability-projects/non-pipe-alternatives.
[95] NYSEG. "Lansing Non-Pipes Alternatives (NPA) Portfolio." Attached as Exhibit OCC-ASH-8.

Q83 Is it reasonable and prudent for the Company to make investment decisions without evaluating alternatives, including NPAs?

A83 No. By failing to evaluate alternatives, the Company runs a high risk of spending more money than is necessary to achieve the safe and reliable gas system that it is obligated to maintain and operate. Because the Company has kept no records of any cost-effectiveness or other evaluations conducted to determine the most appropriate investment, it is essentially asking PURA to bless tens of millions of dollars of capital investments without substantive justification that they were truly necessary.

Q84 The Company states that it does not consider NPAs because Connecticut does not have a mandated requirement for NPAs. Is it necessarily prudent to conduct only the analyses required by law or mandate?

A84 No. As described by Burns et al., utilities have an ongoing obligation to behave in a prudent manner to protect the interests of their customers: "[T]he concept of prudence protects the rights of individuals not in control of investment decision making. It does not require perfection in decision making but does require, for example, avoidance of deliberate exposure to substantial risk where the individuals not in control could suffer financially." The Company's actions need to be "reasonable under the circumstances." In this case, the evaluation of reasonableness must include the circumstance that numerous other utilities, including the Company's sister utilities, conduct NPA analyses. It is unreasonable to avoid NPA analysis just because it is not required by PURA or Connecticut law. Recall that the point of utility law and regulation is, in large part, to replicate the discipline that would be provided by competitors. If the Company were competing to offer cost-effective service with other firms, and those firms offered lower-cost service because they considered NPAs, the Company's competitive position, and therefore financial results, would suffer.

VII. DEPRECIATION AND ASSET LIVES

Q85 In what way does the Company's depreciation analysis reflect the energy transition?

A85 The Company's depreciation witness, Mr. Ned Allis, includes a short discussion of energy transition issues in his testimony (Exhibit CNG-NWA-1) but does not recommend any changes to depreciation rates to account for energy transition. Mr. Allis states that he "believe[s] it is possible that the reduction in emissions could have an effect on the service lives of gas assets. Widespread electrification could lead to fewer customers and declines in gas throughput, resulting in early retirements of gas assets and shorter service lives. While I have not recommended any change in the service lives of the gas assets, the possibility of early retirements and shorter lives in the future should be kept in mind when setting depreciation rates in this proceeding."[96]

Q86 Did Mr. Allis recommend to the Company an approach to depreciation that would be better suited to the energy transition?

A86 Yes, he did. In OCC-388 A (b), Mr. Allis states that he "discussed Units of Production and other approaches with Company personnel and recommended Units of Production as an equitable means to address the potential for declining gas demand." However, the Company decided not to take this recommendation without "additional guidance from PURA or the state about the future of the gas industry."

Q87 What is a Units of Production depreciation approach?

A87 In a Units of Production depreciation approach, the plant and salvage value of an asset is recovered on the basis of the number of units of service it provides, not based on time. That is, a widget-maker that will produce 100 widgets in its life

[96] Exhibit CNG-NWA-1, page 9, lines 16–21.

would be depreciated 1 percent for each widget produced, even if the widgets are not produced evenly over time.

Q88 What would a Units of Production approach look like for gas system depreciation?

A88 To take this approach for the gas system, the Company would prepare its best estimate of the number of units of energy that would flow through each component (or class of components) of its system, in each year going forward, consistent with state policy. Take the example of a component through which 1000 units would flow over the next 25 years, declining from 80 units today through zero units in 25 years (averaging 40 units over 25 years = 1000 units). In this case, the depreciation rate would be 8 percent (80 out of 1000 units) of its current net value in the first year, and a smaller amount each remaining year.

Q89 Why is a Units of Production method a promising method for use in the context of energy transition?

A89 A Units of Production method builds in intertemporal equity, would have the practical effect of limiting rate increases and competition risk in future years, and reduces stranded-asset risk.

Equity: A Units of Production approach would allocate more costs to the near term, when the gas system is heavily used, and fewer costs to the future when use is less. It would be inequitable for future customers to pay for pipes on a per-year basis when they are receiving much less service from the assets. A Units of Production approach is consistent with protecting future customers, who may on average have less ability to invest in their buildings to electrify because wealthier customers have left the system, from paying more than their fair share of costs.

Rate increases: While a Units of Production approach that reflects shorter use-weighted asset lives would tend to increase rates in the near term, it shifts costs toward the present rather than increasing them. In the future, when higher rates would have a larger impact on both customers and competition, overall rates

could be lower because both rate base and depreciation expenses would be smaller.

Stranded-asset risk: A Units of Production approach is built from a foundation of a future-aware plan for how assets will be used and depreciated. It could dramatically lower or eliminate the risk that assets might reach end of life without having been fully depreciated—that is, stranded.

Q90 Has the Company developed an asset utilization forecast sufficient to support a Units of Production approach to depreciation?

A90 While it would have been prudent for the Company to have developed such a forecast, it has not done so.

Q91 Is it acceptable to use a traditional approach to depreciation for this case, given the Company's lack of analysis?

A91 Yes. Given the need to use some kind of depreciation approach in this case, a traditional straight-line approach is acceptable.

Q92 Could the Company have developed a Units of Production approach for this rate case?

A92 Yes. The Company has sufficient information to develop a utilization forecast. If the Company had taken Mr. Allis's recommendation and developed such a forecast, it would have shown that the Company was taking energy transition seriously. It is disheartening that the Company does not have long-term gas demand "forecasts with the degree of certainty needed to develop Units of Production depreciation rates."[97]

[97] OCC-388 A (b).

Q93 What would the Company need to do, alongside a utilization-based depreciation approach, to show a clear and consistent understanding and appreciation of its changing future?

A93 The Company's capital plans and proposals would need to reflect the same understanding of the future as the utilization forecast. It would not be appropriate to build assets for one future, while depreciating assets as though a different future is expected.

Q94 Should the Company develop a policy-consistent projection of future sales, capital needs, and asset utilization?

A94 Yes. This projection (or more likely a range of projections for different policy-consistent scenarios) would be essential for making prudent capital decisions and setting depreciation rates. The set of future pathways should reflect all available information regarding the likely trajectory for future gas use. Such a study would require evaluating which sets of assets will be used to provide fuel for which types of end uses, and the future of those end uses. It may be necessary, for example, to split existing depreciation accounts into subclasses such as buildings-only, mixed, and industrial-only. Once the Company has such projections, it should revise its depreciation approach to mitigate stranded cost risk and enhance equitable outcomes. This package should be reviewed by PURA and be examined by stakeholders in a rate case or similar proceeding. This process, including updated asset-type-level utilization forecasts, should be repeated every few years to keep depreciation aligned with asset utilization as the energy transition proceeds.

Q95 Do you have any particular guidance for PURA as it conducts such a review?

A95 In addition to giving such a plan the appropriate level of scrutiny for the quality and care of its construction, PURA should ensure ongoing consistency between state policy, the Company's capital plans and investments, and the depreciation rates used for different assets.

Q96 Would it be helpful to the Company and its peers if PURA were to establish a common future framework for all of the state's gas utilities?

Absolutely. I recommend that PURA open a docket for the purpose of establishing a common framework and planning parameters for the future of the natural gas system in Connecticut. This framework and planning process should draw upon the lessons learned in similar proceedings in other states, such as Case No. 20-80 in Massachusetts and the other dockets I discussed earlier in my testimony. PURA should also review the planning framework that my colleagues and I suggested in New York, Exhibit OCC-ASH-5.

VIII. CONCLUSIONS AND RECOMMENDATIONS

Q97 What conclusions do you draw in this case?

A96 I find that:

- The general framework and form of the energy transition to deeply decarbonize Connecticut's economy is well-established. Connecticut and other jurisdictions have completed studies, established policies, and conducted regulatory processes that the Company could have used to inform its planning. Further plans and studies are regularly becoming available, and federal plans and policies lay out a clear direction for deep decarbonization. The Company has sufficient information to be taking prudent actions to adapt to a changing future.

- Successfully and safely navigating the energy transition will require the Company to make changes to its practices. The Company's filings do not reflect a reasonable understanding of the energy transition's implications for prudent management of the Company, its business model, and its capital planning. The Company does not incorporate the best available information to inform its planning and capital decision-making.

- The Company's lack of good planning practice makes imprudent investments likely.

- The Company does not undertake well-established practices, including practices required by its own *Gas Transmission and Distribution Manual*, to consider NPAs to its capital investments.

- The Company's lack of planning for the energy transition risks creating inequitable outcomes, disadvantaging low-income residents and renters.

- The Company's approach to prioritizing leak-prone pipe for replacement does not account for the energy transition or target the greatest cost-effectiveness of risk reduction.

- The Company has not developed a sales and asset utilization forecast consistent with state policy and its changing future. It has therefore not been able to develop a revised and equitable depreciation approach consistent with that future.

Q98 What are your recommendations to PURA based on these conclusions?

A97 I recommend that PURA:

- Find that the Company's planning process is flawed because it does not incorporate planning for the energy transition. PURA should direct the Company to update its practices to align with planning for Connecticut's energy future.

- Not approve cost recovery for investments that have not been shown to be prudent, accounting for what the Company should have known and the planning processes it therefore should have used at the time it made the investment. This includes assessment of NPAs.

- Direct the Company to develop and utilize an NPA assessment process to consider alternatives to all potentially avoidable investments, in keeping with Avangrid's *Gas Transmission and Distribution Manual*.

- Open a docket for the purpose of establishing a common framework and planning parameters for the future of the natural gas system in Connecticut.

Q99 Does this conclude your testimony at this time?

A98 Yes, it does.