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Review of Literature and Utility Commission Proceedings Relevant to Integrated System Planning

Annotated Bibliography Prepared to Support the Washington Utilities and Transportation Commission

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1.0 Introduction

In 2024 the Washington State Legislature passed the Decarbonization Act for Large Combination Utilities (Engrossed Substitute House Bill 1589 – the Act). The Act requires a large combination electric and gas utility to conduct integrated system planning supporting electrification and gas system decarbonization, including a reduction in the gas rate base. The utility is required to submit the first integrated system plan (ISP) by January 1, 2027. The requirements are to be developed and adopted by the Washington Utilities and Transportation Commission (UTC) by July 1, 2025.

In October 2024 Pacific Northwest National Laboratory (PNNL) and Lawrence Berkeley National Laboratory (LBNL) began providing technical assistance to the UTC to support the ISP rulemaking. PNNL and LBNL have prepared this annotated bibliography of research and reports, and state examples of coordinated gas and electric planning, future of gas, and future of heat proceedings in other U.S. States and one Canadian Province. The items described here have been selected by the authors for their potential relevance to the UTC's integrated system planning rule discussions.

Our review of the selected reports and proceedings indicate some key points that the UTC may find useful in its deliberations. We summarize these key points from our review below.

- Gas planning capabilities and requirements need to become more detailed and transparent. Specific ideas included in these reports and proceedings include:
  - Gas system mapping conducted by Local Distribution Companies (LDCs) [see reference #1 in the list below]
  - New solution acquisition processes [see reference #4]
  - Disclosure of locational system needs [see reference #4]
  - Comprehensive capital investment forecasts [see reference #3]
  - 3-step non-pipeline alternative processes [see reference #3]
  - Evaluating non-pipeline alternatives for safety-related projects [see references #8 and #9]
  - Modeling a "no-infrastructure option" within planning scenarios [see reference #10]

- Coordinated gas and electric planning is ripe for innovation. Ideas included in the reports and proceedings include:
  - Requiring the development of short-term and long-term action plans for gas LDCs and electric distribution utilities [see reference #1]
  - Requesting or requiring utilities to share data necessary for each utility to file load forecast results based upon other neighboring or overlapping utilities' scenarios [see reference #5 and #7]
  - Encouraging or requiring electric distribution companies to be involved in gas planning processes (and this could logically be extended to requiring gas LDCs to be involved in electric utility planning processes) [see reference #9 and #11]
  - Identifying "signposts" to periodically evaluate trends and adjust utility strategy over time [see reference #6]
  - Enabling multi-system procurement processes [see reference #5]

2.0 Research and Reports

1. Anderson, M., LeBel, M., & Dupuy, M. (2021, May). Under pressure: Gas utility regulation for a time of transition. Regulatory Assistance Project. https://www.raponline.org/wp-content/uploads/2023/09/rap-anderson-lebel-dupuy-under-pressure-gas-utility-regulation-time-transition-2021-may.pdf

This paper focuses on **three categories of recommendations for commissions related to a transition away from retail use of natural gas**: **gas planning, efficiency and electrification programs, and gas rate-making**. The gas planning section lays out some options that may be relevant to WA ISP considerations. One such option is requiring a utility to produce a system map consisting of information about the existing infrastructure, customer base, demand and supply, and factors and risks affecting all of those items. In the case of the RAP paper, this refers just to a gas utility producing a gas system map, but as applied to the ISP could perhaps include a requirement to map gas and electric systems together, identifying in particular areas where the electric distribution system has existing capacity to accommodate newly electrified loads and where the existing gas distribution system may otherwise need to be expanded to meet demand. The paper also recommends that commissions require utilities to develop scenarios that anticipate future changes in supply and demand and assess alternative options for meeting end uses, dealing with infrastructure contraction, and serving the needs of specific areas and customer bases. The paper then recommends the creation of short-term action and long-term transition plans.

2. Collaborating for Gas Utility Decarbonization, RMI and National Grid convening, October 2022. https://blogs.edf.org/climate411/wp-content/uploads/sites/7/2022/12/Collaborating-for-Gas-Utility-Decarbonization-October-2022.pdf

This paper lays out **high-level principles and strategies for decarbonizing the gas distribution system** agreed to by a small group of non-profit and utility stakeholders through a series of convenings hosted by RMI and National Grid. Most of the principles and strategies are either tangential to comprehensive utility planning or are very broad and general. However, a few ideas around regulatory reforms may be relevant to the UTC's ISP discussions or subsequent rulemakings, namely: modified depreciation timelines for gas infrastructure, potential changes to gas utilities' obligation to serve, gas rate re-design, different accounting treatments for non-capital investments, and securitization.

3. A Regulator's Blueprint for 21st Century Gas Utility Planning, Prepared by Strategen for Advanced Energy United, December 2023. https://www.strategen.com/strategen-blog/aeu-gas-utility-planning

This paper covers how a **modern gas planning process and analytical features could be designed**. The authors make several recommendations specific to gas planning processes that may be informative for the gas planning portions of the ISP rules. For example, the authors argue that comprehensive capital investment forecasts are an essential element of a complete gas planning analysis. They also lay out three steps for a non-pipeline alternative process: preliminary screening, development of NPA resource portfolios, and evaluation of portfolios. These guidelines and others in the paper may be useful to the UTC in thinking about the potential evolution of gas planning requirements. The authors describe an approach to combined electric and gas planning taken in British Columbia that may be informative for integrated system planning as it relates to parts of a utility service territory in which it is only a gas utility. This is discussed further below.

4. Sandoval, R., Frick, N., & Deason, J. (2024, June). Planning for Electrification: Guidance on Aligning Gas and Electric Distribution Planning. 2024 ACEEE Summer Study on Energy Efficient Buildings. https://www.aceee.org/sites/default/files/proceedings/ssb24/assets/attachments/20240722163115812_27745ab4-5290-461b-8b6d-38892734fbe1.pdf

This paper primarily focuses on **cataloguing state practices around electric and gas distribution planning**. The paper notes that gas distribution planning does not have a consistent framework across states and is less mature than electric distribution planning. The misalignment in maturity across electric and gas planning processes makes it a challenge to coordinate them. The authors argue that before alignment between gas and electric planning can happen, gas planning capabilities need to be developed further. For example, the authors state that processes such as new solution acquisition and disclosure of locational system needs are not well-developed in gas planning as they are in electric distribution system planning. This might argue for more advanced and innovative gas planning practices to be deployed in Washington's ISP process while simultaneously implementing consolidated and coordinated planning across gas and electric systems.

5. Lebel, M., Frick, N., & Deason, J. (2024 Forthcoming). Addressing Electrification Through Integrated Electric and Gas Planning. Regulatory Assistance Project and Lawrence Berkeley National Laboratory.

This forthcoming report will identify characteristics of an integrated electric and gas planning structure and actions states can take. Key themes explored in the report include (1) improving organization, communications, and collaboration across planners, regulators, and solutions providers, (2) aligning inputs for forecasts and planning across proceedings and entities, (3) reforming the analytical structure to jointly assess electric and gas system costs and impacts, and (4) ensuring sufficient outputs for procurements, programs, and other processes. The WUTC may be interested in actions identified in the report such as **creating specific communication channels for data and information sharing across utilities, creating cross-fuel regulatory, utility, and stakeholder teams/groups, and enabling multi-system procurement processes.**

3.0 State Examples: Combined Gas/Electric Planning

6. Consolidated Edison Company, *Long-Range Plan: Our Integrated Energy System*

ConEdison's 2022 Integrated Long-Range Plan takes a comprehensive look at the Company's electric, gas, and steam business operations in the context of its core objectives. It brings together information from more detailed long-range plans specific to each electricity, gas, and steam. The plan's objectives are to meet an economy-wide net-zero GHG emissions target by 2050, increase the system's resilience to climate change, maintain core service (safety, reliability, and security) functions while managing rate and equity impacts, and create a leading customer experience.

The plan evaluates three pathways to meeting these goals: Full Electrification, Targeted Electrification, and Hybrid Consumption, which use different policy, technology, and customer adoption assumptions to provide a range of outcomes and costs. The plan is organized around the four major objectives and presents key activities under each objective for electricity, gas, and steam. It also presents overall expected costs and highlights costs that are expected to provide value under multiple key plan objectives. Under each pathway, ConEdison maintains use of its gas system to some extent by incorporating renewable natural gas, green hydrogen, and synthetic natural gas. The company states that this improves fuel diversity and resilience, avoids the need to electrify where it may be challenging or impossible, and improves the cost-effectiveness of meeting plan objectives. ConEdison does not identify a preferred pathway, but rather **identifies "signposts" that it will use to evaluate trends and adjust its strategy over time,** which may be a useful strategy for the WUTC (even if requiring identification of a preferred pathway).

7. Coordinated Gas and Electric Planning in British Columbia

British Columbia (BC) has perhaps the most advanced example of a commission and separate gas and electric utilities attempting coordinated planning. The commission, following recommendations from the two utilities, requested that the **utilities share required data for each utility to file load forecast results based upon the other utility's scenarios contained in their resource plans**, with "supporting commentary regarding the supply resource inputs, rate impacts, and associated GHG emission impacts that may be needed to meet the demand."[1] These scenario outputs became part of the evidentiary record for the respective resource plans. In the March 2024 final decision on BC Hydro's 2021 electric IRP, the BC Utilities Commission declined to make determinations on the matter of enhanced collaboration between the major utilities.[2] The BCUC said that they cannot force the utilities to agree upon a given view of the future, but they did identify several assumptions that would be relevant for both utilities' resource plans in the future and suggested that the companies file those with the BCUC.

[1] British Columbia Utilities Commission. *British Columbia Hydro and Power Authority and FortisBC Energy Inc.- Energy Scenarios*. January 21, 2021. Available at: https://docs.bcuc.com/documents/arguments/2022/doc_65400_2022-01-21-fei-bch-energy-scenarios-request.pdf

[2] See page 39: https://docs.bcuc.com/documents/other/2024/doc_76260_g-58-24-bch-2021irp-decision.pdf

4.0 State Examples: Future of Gas and Future of Heat Proceedings

8. Colorado Clean Heat and Gas Infrastructure Plans

In 2021 two new Colorado laws prompted the PUC to initiate a gas rulemaking that resulted in two separate but related processes: Clean Heat Plans and Gas Infrastructure Plans. Xcel, the largest gas utility in the state, is a combination utility that may be an informative comparison case for the current WA UTC rulemaking.

Clean Heat Plans: Senate Bill 21-264[1] introduced requirements for certain gas distribution utilities to meet emission reduction targets and obtain Commission approval of Clean Heat Plans that meet these targets at the lowest reasonable cost. The process includes a cost test using the social cost of greenhouse gases. Xcel's original Clean Heat Plan proposal included measures for "certified natural gas" and carbon offsets, though the plan was amended to reduce the use of these measures.[2]

Gas Infrastructure Plans: Rules require biannual filing of Gas Infrastructure Plans that include assessments of non-pipeline alternatives. The Commission decision[3] on Xcel's plan discussed several topics including:

- **Non-pipeline alternatives for safety-related projects:** "To the extent certain system safety and integrity projects are suitable for NPA analysis, we strongly encourage the Company to include these projects in its alternatives analysis process […] Customers should not miss out on cost savings available from implementation of an NPA simply because the project it replaces is a safety project."[4]

- **Targeted electrification:** Requires the company to, "include a proposal for how alternatives analysis could include electrification of [its] gas-only customers."[5]

9. Massachusetts DPU Order 20-80 on "Role of gas local distribution companies as the Commonwealth achieves its target 2050 climate goals"

Order 20-80 (December 2023)[6] from the Massachusetts Department of Public Utilities concluded a two-year investigation on the role of gas local distribution companies (LDCs) in meeting the state's climate goals. The DPU examined six potential regulatory approaches for gas system decarbonization; it identified networked geothermal (using ground-source heat

[1] Signed Act from June 2021: https://leg.colorado.gov/sites/default/files/2021a_264_signed.pdf
[2] Commission Decision C24-0397 under proceeding 23A-0392EG, available at: https://xcelnew.my.salesforce.com/sfc/p/#1U0000011ttV/a/8b000002nyDH/bkrL818HukrNcMPWcvyLn0e8.EKA8u1eyXDY8rRIEQM
[3] Decision No. C24-0233, April 3, 2024. Available at: https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_session_id=&p_dec=30816
[4] Ibid. at paragraph 8
[5] Ibid. at paragraph 10
[6] Massachusetts DPU Order 20-80, December 6, 2023. Available at: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18297602

pumps) and targeted electrification as the approaches with the highest potential while rejecting support for expansion of renewable natural gas.

The order highlights several topics:

- **Targeted electrification:** Each LDC must propose at least one targeted electrification demonstration project.[1]

- **Non-pipeline alternatives:** "As part of any future cost recovery proposals, LDCs will bear the burden of demonstrating that NPAs were adequately considered and found to be non-viable or cost prohibitive in order to receive full cost recovery."[2]

- **Plans:** The LDCs are required to submit Climate Compliance Plans every five years beginning in 2025. The electric distribution company in each LDC territory is required to participate in the planning process.[3]

10. New York Non-Pipeline Alternatives in Long-Term Gas Plans

New York's Gas System Planning Order required utilities to **assess non-pipeline alternatives in their long-term plans**.[4] The order encourages a "neighborhood approach" to removing leaking infrastructure and employing weatherization, demand response, and electrification. Utilities may form portfolios of demand- and supply-side resources as NPAs, however, solutions that result in a switch to other fossil fuels, such as propane, are not viable. Relatedly, the NY order requires utilities to **provide a "no-infrastructure option**," modeling a scenario that does not rely on capital spending for meeting reliability needs and forecasted demand. The New York Commission's Decision Order found that the utilities did not meet the requirements of the planning order and directed them to provide a no-infrastructure option in their next filing that meets all load growth with non-pipe alternatives.[5] The UTC may be interested in such an approach as a way to ensure that at least one scenario comprehensively examines non-pipeline options.

11. Hawaii Gas Integrated Resource Plan

Hawaii Gas, the regulated gas utility in serving a limited market across Hawaii, is undergoing an integrated resource planning process. The proceeding is currently in a formal phase before the PUC, following a collaborative advisory group process where participants supported Hawaii Gas's development of the draft IRP. The IRP is expected to address State policies for emissions reductions and decarbonization, including a net-carbon neutrality target of 100% by 2045. Hawaiian Electric, the largest electric utility in the state, participated as an advisory group

[1] Ibid. at page 87
[2] Ibid. at page 98
[3] Ibid. at page 135
[4] New York Public Service Commission. Case No. 20-G-0131, *Order Adopting Gas System Planning Process,* page 21-22. May 12, 2022. Available at: https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={130B05B5-00B4-44CE-BBDF-B206A4528EE1}
[5] New York Public Service Commission. Case No. 23-G-0147, *Order Regarding Long-Term Natural Gas Plan and Requiring Further Actions*, page 53. Issued September 20, 2024. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={30831092-0000-CC1F-A4BA-BA05427FE6C6}

member and moved to intervene[1] in the formal phase of the proceeding because of its substantial stake in Hawaii Gas's future energy plans, which could lead to significant additional electric load and to ensure coordination between electric and gas system planning. The gas company opposed the motion to intervene, and while the Commission previously identified that cross-utility collaboration on planning is important to achieving the state's clean energy and climate goals, it has not yet ruled on the motion and the proceeding has not progressed since 2023. The proceeding could provide an example on specific questions for the WUTC, including increasing **RNG and hydrogen on the system, analyzing customer defection to determine rate impacts and other potential feedback loops, and the use of offsets to reduce the utility's emissions.[2]**

12. Vermont Clean Heat

In 2023 the General Assembly of Vermont passed the Affordable Heat Act.[3] The Act directed the Vermont PUC to, "establish or adopt a system of tradeable clean heat credits earned from the delivery of clean heat measures that reduce greenhouse gas emissions."[4] In October 2024 the PUC released a draft rule for the standard while simultaneously noting in a companion report, "The Clean Heat Standard as currently conceived requires substantial additional costs and regulatory complexity above the funding needed to accomplish Vermont's greenhouse gas emission reduction goals."[5] The PUC's report presents an alternative system for consideration that consists of a charge on fossil heating fuels, rather than establishing a credit-based marketplace. A public hearing on the draft rules is scheduled for October 30, 2024.

13. Illinois Future of Gas

In March 2024 the Illinois Commerce Commission (ICC) initiated a Future of Gas proceeding to examine the effects of the state's clean energy goals on the gas distribution system, noting that the Climate and Equitable Jobs Act of 2021, which created a state-wide 100% clean energy goal for 2050, was silent on authority for pursuing gas sector decarbonization.[6] The proceeding consists of two phases of public workshops that will conclude in 2025 and may result in recommendations for legislation or commission rulemaking.

Concurrent with the initiation of the Future of Gas proceeding, the ICC directed the gas utilities to develop and file long-term gas infrastructure plans beginning in mid-2025 and developed

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[1] Docket No. 2022-0009, "Hawaiian Electric Company, Inc.'s Motion to Participate", filed May 3, 2023. Available at: https://hpuc.my.site.com/cdms/s/puc-case/a2G8z0000007f39EAA/pc20448?tabset-431dc=3.
[2] Docket No. 2022-0009, "Independent Facilitator's Advisory Group Report: Final Report on Hawaii Gas Integrated Resource Planning Advisory Group Process", filed March 17, 2023. Available at: https://hpuc.my.site.com/cdms/s/puc-case/a2G8z0000007f39EAA/pc20448?tabset-431dc=3.
[3] Affordable Heat Act, as enacted, available at: https://legislature.vermont.gov/Documents/2024/Docs/ACTS/ACT018/ACT018%20As%20Enacted.pdf
[4] 30 V.S.A Section 8122
[5] Draft Clean Heat Standard Rule Companion Status Report, Case No. 23-2220-RULE, October 1, 2024. Available at: https://epuc.vermont.gov/?q=downloadfile/734359/190907&_gl=1*os7m7j*_ga*ODczNDA0MzIxLjE3Mjc4MTc1NDE.*_ga_V9WQH77KLW*MTcyOTI3MTk3OC4yLjEuMTcyOTI3NDU1NS4wLjAuMA.
[6] Order 24-0158, available at: https://www.icc.illinois.gov/docket/P2024-0158/documents/347887/files/607586.pdf

biannually thereafter. The purpose of the plans is to increase transparency about gas planning processes.[1]

[1] Future of Gas Phase 1 Workshops Facilitator Report to the Commission, July 29, 2024. Available at: https://policyintegrity.org/documents/ICC_Future_of_Gas_Workshops_Facilitator_and_ICC_Staff_Report_Final_7-29-2024.pdf

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