BEFORE THE NOVA SCOTIA UTILITY AND REVIEW BOARD

In the Matter of an Application by Eastward Energy Incorporated for Approval of a Schedule of Rates, Tolls, and Charges Pursuant to Section 21 of the Gas Distribution Act

(NSUARB M10960)

Evidence of Eric Borden

On Behalf of Counsel to Nova Scotia Utility and Review Board

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Table of Contents

I. INTRODUCTION

Q Please provide your name, title, and business address.

A My name is Eric Borden. I am a Principal Associate at Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Suite 3, Cambridge, MA 02139.

Q Please describe Synapse.

A Synapse is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues, including economic and technical assessments of demand-side and supply-side energy resources; energy efficiency policies and programs; integrated resource planning; electricity market modeling and assessment; renewable resource technologies and policies; and climate change strategies. Synapse works for a wide range of clients, including state attorneys general, offices of consumer advocates, trade associations, public utility commissions, environmental advocates, the U.S. Environmental Protection Agency, U.S. Department of Energy, U.S. Department of Justice, the Federal Trade Commission, and the National Association of Regulatory Utility Commissioners. Synapse has over 30 professional staff with extensive experience in the electricity industry.

Q Please summarize your professional and educational experience.

A I have over 10 years of experience in the energy industry and joined Synapse in 2022. From 2015 to 2022, I was a Senior Energy Expert at the Utility Reform Network ("TURN") in California, where I served as an expert witness in numerous proceedings before the California Public Utilities Commission. I provided in-depth analysis to inform policy recommendations on a variety of energy issues, including rate design and

electrification efforts. At Synapse, I have worked on a variety of projects in multiple states, including on rate design issues, cost allocation, and electrification incentives. I have a Bachelor's degree in finance from Washington University in St. Louis and a Master's in Public Affairs from the University of Texas at Austin. My resume is attached as Exhibit 1.

Q What is the purpose of your testimony?

A The purpose of this testimony is to review Eastward Energy's (the Company or Eastward) rate design, cost of service and cost allocation study, as well as its distribution service rules and residential heating incentive program.

Q What materials did you rely on to develop your testimony?

A The sources for my testimony are the Company's application and workpapers, public documents, responses to discovery requests, and my personal knowledge and experience.

Q Was your testimony prepared by you or under your direction?

A Yes.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q Please describe your conclusions and recommendations.

A Based on the analysis provided below, I find and recommend the following:

1. The Company's cost allocation proposal results in rate shock for residential customers. I recommend that more of the expected cost increases be shifted to commercial customers to allow for a more gradual transition to a new rate class for

residential customers. I find this will have a relatively modest effect on commercial rates but represents a substantial improvement for residential customers.

- I recommend annual cost increases for the residential class of 5, 10, and 12 percent in 2024, 2025, and 2026, respectively, compared with the Company's proposal for 36, 57, and 73 percent increases, respectively.

- I recommend that 80 percent and 20 percent of remaining cost increases should be shifted to Rate GS and Rate 3, respectively.

2. The proposed cost allocation for Customer Retention Program (CRP) costs is not cost-based and is inequitable. I propose a different cost allocation that better matches costs with benefits received by customer class.

- I recommend no more than 1.5 percent of revenue requirement should be allocated to the residential class, with the remainder (98.5 percent) to the commercial classes.

3. A declining block rate structure is not consistent with fundamental rate design principles and is mis-aligned with regional and federal policy goals. I propose flat variable charges and analysis of the effect of inclining block rates in the Company's next rate application.

4. Eastward's proposal to revise its distribution service rules to exclude customers with past-due balances from balanced payment plans may have unintended consequences. This proposal should be rejected.

5. Eastward's heating incentive proposal is not aligned with federal and provincial energy policy and presents an unacceptable degree of risk related to affordability and stranded asset costs to customers. I recommend this proposal be rejected.

6. Eastward's application and the larger energy policy landscape in Nova Scotia raise complex issues regarding the future of gas utilities that I believe require greater deliberation and analysis to guide the Board in its decision-making. I recommend the Board consider directing additional study and analysis on decarbonization pathways and subsequent effects for gas utilities and their customers in Nova Scotia.

III. COST OF SERVICE AND RATE DESIGN

Q Please provide a high-level summary of the Company's cost of service and rate design proposal.

A Eastward proposes fixed charges and declining block rates for all rate classes, and an additional demand charge rate component for the large commercial class (RC3). The Company has several goals for its cost of service and rate design proposals, including moving towards full cost recovery, maintaining competitive prices, fairness between and within rate classes, and avoidance of rate shock.[1]

[1] Eastward Energy Incorporated, *Application for Approval of a Schedule of Rates, Tolls and Charges pursuant to Section 21 of the Gas Distribution Act*, January 16, 2023 ("Eastward Application"), pp. 120-121.

The Company's proposal results in two significant changes to its current rate design. The first is a new residential class with significantly higher rates. The second is a combined small- and large-commercial class (GSC).

Q What are the primary metrics considered by the Board and Eastward with regard to cost of service and rate design results?

A Eastward considers rate impacts—particularly rate shock, or sudden large price spikes[2]—as well as a desired revenue-to-cost ("R/C") ratio, which is the ratio of revenues from proposed rates versus revenues based on "pure" cost of service results. The Company states its proposal seeks to "gradually move toward the target R/C ratio band recommended by the NSUARB in past proceedings (95%–105%)."[3] The results of the Company's proposal for these two metrics are shown below.

Table 1. Proposed average rate increases by class[4]

Class	2024	2025	2026
RSC	36.2%	57.0%	72.5%
GSC	0.5%	5.5%	6.1%
RC3	0.4%	0.4%	0.4%

Table 2. Proposed revenue-to-cost ratio[5]

Class	2024	2025	2026
RSC	57.5%	62.5%	67.5%
GSC	104.6%	104.4%	104.3%
RC3	123.9%	120.2%	121.7%
Total	**95.6%**	**95.8%**	**96.7%**

[2] Eastward Application, Appendix 6, p. 12.
[3] Eastward Application, Appendix 6, p. 15.
[4] Eastward Application, Appendix 6, p. 19.
[5] Eastward Application, Appendix 6, p. 19.

As seen above, the proposal results in very large increases for the residential class, though that class still remains below the desired R/C ratio of 95 to 105 percent.

Q Do you have any concerns with the Company's proposal?

A Yes, I have three primary concerns. First, the proposal would result in rate shock for residential customers. Second, the methodology for allocating Customer Retention Program (CRP) costs is inequitable. Third, a declining block variable rate structure is not cost-based and is inconsistent with Nova Scotia's goals for energy efficiency and conservation.

1. Eastward's Proposal Will Result in Rate Shock for Residential Customers

Q Please explain why you believe the Company's proposal results in rate shock for residential customers.

A Rate shock refers to "sudden large price spikes"[6] that cannot be reasonably planned for and likely result in the inability of some customers to pay their bills or leads them to cut back on other essential items. Although gradualism and avoidance of large detrimental rate impacts is an important and widely recognized principle, I am unaware of any consensus on what constitutes rate shock. For example, while some commissions appear to view increases of 14 percent or more as constituting rate shock, other commissions have used a threshold of closer to 20 percent.[7] Regardless of the definition used for rate shock, I believe the percentage rate increases proposed by Eastward meet or exceed it.

[6] Eastward Application, Appendix 6, p. 12.
[7] For example, the New Mexico Public Regulation Commission found a 14 percent increase in base rates to be unacceptable in Case 15-00127-UT, while the Washington Utilities and Transportation Commission elected to phase in a large rate increase with a 19 percent increase being allowed in the first year in Docket UW-180801.

Further, while I understand the 36 to 73 percent rate increase shown above is for the distribution portion of the rate, it is also possible that the supply portion of the rate may also increase over the rate case period.

As the Company's consultant notes, "sudden large price spikes are particularly difficult for customers to manage. Ratemakers should attempt to avoid these spikes whenever possible in favour of more gradual increases."[8] I agree and have incorporated this principle into my recommendations.

Q How can rate shock be avoided for the residential class?

A There are really only two ways to mitigate rate shock in this application: either the Company should not collect a portion of revenues allocated to the residential class for recovery and record that portion in the Revenue Deficiency Account ("RDA") for collection at a later time,[9] or it can shift that portion to other customer classes.

Q Should the Board allow for growth in the RDA or shift more of the proposed cost increases onto commercial customers?

A I do not believe it would be prudent for the utility to shift even more costs into the RDA, as this practice is not financially sustainable and will only make cost recovery issues more difficult over the long term. Therefore, I propose a portion of the cost increase allocated to the residential class under Eastward's proposal be shifted to the GSC and RC3 classes.

[8] Eastward Application, Appendix 6, p. 12.
[9] Under the utility's proposal, the RDA is expected to increase to $33.9 million in 2026 and is subject to a $50 million cap. See Eastward Application, pp. 49-50.

Q How should the Board evaluate the tradeoff between residential rate increases and rate design that reflects each class's cost of service?

A A primary tradeoff the Board should consider is between an acceptable rate increase and the R/C ratio, which indicates the costs customers are expected to pay as a percentage of their allocated cost of service under "pure" rates, according to the Company's study. As described above, the desired R/C ratio is between 95 and 105 percent, meaning each class is essentially allocated the costs it imposes on the system.

Development of a new residential class inevitably raises rates due to these customers' higher cost to serve compared with larger commercial customers. The latter have been subsidizing the former in past years. That said, I believe increases can be accomplished in a more gradual manner to avoid rate shock.

Q How can the Board evaluate what an "affordable" increase might be for residential customers?

One way to view this issue is through the lens of price inflation and wage growth, which, respectively, provide a benchmark for the rise in prices in goods[10] and the extent to which these can be absorbed through consumers' increased wages.[11] The Conference Board of Canada assesses a difficult economic situation currently in Nova Scotia due to historically high inflation:

[10] This may or may not include energy prices depending on the measure chosen.
[11] This does not factor in unemployment or individuals on fixed incomes who are retired, and it does not account for all factors that affect individuals' ability to pay for necessary goods like energy.

> Consumer confidence was in a freefall over the summer months of 2022 as inflation reached 9.3 per cent in June, a 40-year high. The Atlantic provinces have a larger share of their consumption in food and energy, sectors that have seen the largest price increases. The good news is that Nova Scotia's consumer price index appears to have peaked in the second quarter of 2022 at 8.4 per cent (year over year). Our call is for inflation to slow each month and then to decline to 2.1 per cent by the end of 2024.[12]

The Conference Board expects wages to rise 5.2 percent in 2023, slowing to 2 to 3 percent in the years thereafter. Furthermore, the Conference Board expects real wage declines in 2022 and 2023 due to inflation that exceeds wage growth.[13]

While the Conference Board seems to indicate these cost pressures may be alleviated after 2023, this is a particularly challenging time for consumers to absorb even greater increases in energy costs than were incurred in previous years.

Q What is your recommendation?

A I propose re-allocating a portion of proposed cost increases to the residential class to the GSC and RC3 classes to balance affordability for residential ratepayers while improving class R/C ratios. Specifically, I propose a 5, 10, and 12 percent residential rate class average increase in 2024, 2025, and 2026, respectively. I propose allocating 80 percent of the remaining proposed increase to Rate GS and 20 percent to Rate 3. This provides a considerable improvement over the Company's proposal in terms of affordability for the residential class but less favorable R/C ratios for Rate GSC and Rate 3, shown below.

[12] NSUARB Staff IR-79 Confidential Attachment 1, p. 8.
[13] *Ibid.*

Table 3. Eastward proposed revenue-to-cost ratios

Class	2024	2025	2026
RSC	57.5%	62.5%	67.5%
GSC	104.6%	104.4%	104.3%
RC3	123.9%	120.2%	121.7%
GSC + RC3	107.2%	106.4%	106.5%
Total	**95.6%**	**95.8%**	**96.7%**

Table 4. Eastward proposed rate increases

Class	2024	2025	2026
RSC	36.2%	57.0%	72.5%
GSC	0.5%	5.5%	6.1%
RC3	0.4%	0.4%	0.4%
Average	**4.3%**	**10.5%**	**12.9%**

Table 5. Synapse proposed rate increases

Class	2024	2025	2026
RSC	5.0%	10.0%	12.0%
GSC	4.0%	11.0%	13.4%
RC3	5.2%	8.1%	10.8%
Average	**4.3%**	**10.5%**	**12.9%**

Table 6. Synapse proposed revenue-to-cost ratios

Class	2024	2025	2026
RSC	44.3%	43.8%	43.8%
GSC	108.3%	109.9%	111.6%
RC3	129.9%	129.4%	134.4%
GSC + RC3	111.2%	112.4%	114.4%
Total	**95.6%**	**95.8%**	**96.7%**

As shown in the table above, the GSC and RC3 classes combined have an R/C ratio of 111 to 114 percent, as compared to the upper end of the preferred range of 105 percent. If cost increases can be limited in coming years, this will allow these classes on a combined basis to near the upper end of the preferred range, and eventually for each class to reach the preferred range. I consider this a reasonable alternative that allows for a significant improvement to residential customer rate impacts compared with Eastward's proposal.

Q How does your recommendation affect commercial rates?

A Relative to Eastward's proposal, my recommendations increase gas rates for commercial customers but decrease them for residential customers. Table 7 below shows this for 2024 rates, consistent with Eastward's workpapers.

Table 7. Difference in Synapse and Eastward Proposals for Rate Increases/Decreases (Synapse-Eastward)

Class	2024	2025	2026
RSC	-31.2%	-47.0%	-60.5%
GSC	3.6%	5.5%	7.4%
RC3	4.8%	7.7%	10.5%
Average	**0.0%**	**0.0%**	**0.0%**

Q Does your proposal affect the competitiveness of Eastward's rates?

A I recognize that a primary goal of Eastward's proposal is to provide competitive rates, particularly for larger commercial customers. The Board has clearly been concerned with this issue, as demonstrated by its approval of the Customer Retention Program ("CRP"), where the Board noted:

> […] [T]he departure of customers from the system could potentially have serious negative rate impacts on the remaining customers of the Utility, and indeed, perhaps even on the viability of the Utility itself.[14]

While my recommendation to moderate the impact of rate increases on residential customers does increase commercial rates relative to the utility's proposal, these effects are quite modest and I do not believe they will materially impact a customer's choice to adopt or stay on natural gas.

Since the distribution portion of the bill represents less than half of the total when including supply costs, my proposal results in a maximum total increase of approximately 2 to 5 percent relative to Eastward's proposal (see Table 7), *holding supply costs constant*.[15] Therefore, I do not believe this recommendation will result in a materially adverse competitive disadvantage for Eastward.

2. Proposed Cost Allocation for the Customer Retention Program Is Inequitable

Q How does the Company propose to allocate CRP deferred costs?

A The Company explains that since balances have "accumulated through the combined deferral of OMA [Operating Maintenance and Administrative] and Depreciation expenses," it has allocated these "using an average of the Gross OMA allocator and the Accumulated Depreciation allocator."[16]

[14] M07346, *In the Matter of an Application by Heritage Gas Limited for approval of its Customer Retention Program,* July 25, 2016, p. 10.
[15] Eastward Application, p. 126. "For most customers, distribution rates make up less than half of the total billed costs to customers with unregulated commodity-related costs making up the majority of their bills."
[16] Eastward Application, Appendix 6, p. 8.

Q What are your concerns with this cost allocation methodology?

A Analysis of the Company's proposal shows that it is inequitable. Specifically, 98.8 percent of the monetary benefits of CPR have gone to commercial customers, 1.2 percent to residential.[17] Yet the Company's cost allocation methodology results in 22 percent of costs allocated to the residential class.[18]

Q How should these costs be allocated?

A I recommend these costs be allocated in proportion to benefits: no more than 1.5 percent of revenue requirement should be allocated to the residential class, with the remainder to the commercial classes.

Q Is this recommendation consistent with traditional principles of cost allocation?

A Yes. As stated in the Regulatory Assistance Project's cost allocation manual:

> There is general agreement that the overarching goal of cost allocation is equitable division of costs among customers. Unfortunately, that is where the agreement ends and the arguments begin. Two primary conceptual principles help guide the way to the right answers:
>
> 1. Cost causation: Why were the costs incurred?
>
> 2. Costs follow benefits: Who benefits?[19]

While the manual notes that these principles can conflict, in this case they do not; costs were incurred primarily to subsidize commercial customers, and this is also who predominately benefited from the subsidies. These principles point to a different cost

[17] Calculated from Synapse IR-07, Attachment 1.
[18] Calculated from Excel workpaper *Appendix 6_COSS Model V2022-Shared NSUARB 10Feb23_CONFIDENTIAL*.
[19] Regulatory Assistance Project, *Electric Cost Allocation for a New Era: A Manual*, p. 18.

allocation methodology than proposed: one that properly reflects cost causation and benefit principles of cost allocation.

3. Declining Block Rates Are Not Cost-based and Are Misaligned with Policy Objectives

Q How does the Company propose to charge variable rates and why?

A Eastward proposes a declining block rate structure, meaning a customer will have lower marginal energy charges the more it consumes. The Company argues that declining block rates "match actual costs to serve customers better than any flat variable rate because "most of the costs to serve a customer occur before the first gigajoule is delivered and the cost of delivering incremental volumes (energy-related) are minimal."[20]

Q Does Eastward acknowledge any drawbacks to declining block rates?

A The Company notes two primary issues with this rate structure: (1) "the potential for real or perceived favoritism toward larger customers by offering them lower prices than smaller customers" and (2) "that they may influence customers to use more natural gas at a time when environmental concerns are high."[21]

Q Do you agree that declining block rates are "cost based?"

A Not necessarily. As the Company acknowledges, greater use of the gas system has the potential to result in higher costs: "Increased volumes do bring the need for larger mains, additional mains (looping and reinforcement) and eventually additional elevated pressure assets."[22] A primary goal of rate design is to send accurate price signals that reduce costs

[20] Eastward Application, Appendix 6, p. 17.
[21] Eastward Application, Appendix 6, pp. 16-17.
[22] Eastward Application, Appendix 6, p. 17.

for customers, not increase them. While the Company attempts to downplay this by stating there are many reasons for additional costs on the system, the fact is that greater usage results in additional costs that could be avoided by sending more efficient price signals.

Q Do you have any other concerns about the approach?

A Yes. As the Company notes, the price signal sent by a declining block rate structure may encourage wasteful usage and runs counter to provincial efficiency and conservation goals.[23] This is contrary to the direction many localities are moving in due to these concerns. For example, Central Hudson, a utility in New York, was recently ordered to phase out declining block rates:

> Elimination of the declining block rates and a move toward a flat rate structure would promote the state's long-term energy efficiency policy by removing any incentive for customers to benefit from decreased rates for increased usage. The current declining block rate structure limits the ability of lower usage customers to achieve bill savings through energy efficiency or conservation measures.[24]

The Board should consider whether price signals that favor large users and incentivize higher usage are aligned with environmental concerns.

Q What is your recommendation?

A I recommend variable charges be set using flat rates so as not to discourage efficiency or encourage wasteful usage. Flat rates are effectively just the average of each class's usage, calculated by dividing total revenue by usage (these calculations are available in the utility workpapers). The Board should also order Eastward to study the effect of inclining

[23] Nova Scotia, Department of Natural Resources and Renewables, https://energy.novascotia.ca/energy-efficiency/efficiency-and-conservation.
[24] Central Hudson, https://www.cenhud.com/en/account-resources/rates/gas-rate-structure/.

block rates in its next General Tariff Application, which may benefit low-consumption users and encourage efficiency and conservation.

IV. DISTRIBUTION SERVICE RULES

Q Have you reviewed the Company's proposed changes to its distribution rules?

A Yes. The Company proposed multiple changes to its distribution rule language; I do not summarize all of them here. I believe most of these changes provide straightforward clarifications to the rules and should be adopted. However, I have concerns about one of the proposed changes.

Q Which rule modification concerns you?

A The Company proposes a change for which customers can enroll in a "budget plan," which reduces seasonal bill volatility, by adding the following language: "to enroll in a budget plan, your account must not have a past[-]due balance."[25]

Q What are your concerns about the proposed budget plan language?

A While it is true that including past-due balances in a fixed payment budget plan would increase payments for the following year,[26] customers who are unable to pay off arrearages may actually benefit from this arrangement. I am concerned that barring customers with past-due bills from budget plans may cause them to fall into a deeper hole due to higher seasonal bill volatility.

[25] Eastward Application, p. 142, Table 18, Section 6.9.
[26] Synapse IR-32 (b).

Q What do you recommend?

A While I do not oppose Eastward working with customers to pay off past-due balances before entering into a budget plan, or even excluding past-due balances from a budget plan if separate arrangements are made to pay these amounts, I also do not believe customers should be prohibited from a budget plan if past-due balances are incorporated. I therefore recommend rejecting this proposed language modification to the distribution service rules.

V. RESIDENTIAL HEATING PROGRAM

Q Please describe Eastward's proposed residential energy incentive program.

A Eastward proposes a heating incentive program to provide subsidies to residential building owners to install natural gas space heating and domestic hot water systems. Developers of new multi-unit residential buildings, builders of new construction single-family homes, and owners of single-family homes that currently have furnace oil or propane heating equipment will, provided they meet certain criteria, be eligible for these incentives. Developers of new multi-unit residential buildings will receive an incentive payment based on the building's projected annual natural gas usage, while developers of new single-family homes or owners who convert to natural gas from propane or fuel oil are eligible for rebates ranging from $500 to $2,500, based on the equipment installed. Details of the program are in Section 17 of the Application.[27] Eastward projects total rebate costs of $4.8 million[28] to be capitalized and amortized over 55 years.[29]

[27] Eastward Energy Incorporated. Application for Approval of a Schedule of Rates, Tolls and Charges pursuant to Section 21 of the Gas Distribution Act. Application (Application), January 16, 2023, page 130-135.
[28] Synapse IR-27.
[29] Synapse IR-31.

Q What are the relevant regional and national energy policies the Board should consider in its evaluation of this proposal?

A The carbon intensity of electricity is expected to decrease significantly in coming years because of a recently adopted provincial renewable energy standard which mandates 80 percent renewable generation by 2030,[30] as well as legislation that targets the phase-out of coal-fired electricity generation in Nova Scotia by 2030.[31] Currently, Nova Scotia's electricity is heavily fossil-fuel-based, with 47 percent[32] of the electricity generated coming from coal. However, the generation mix is expected to substantially change to meet the provincial government's mandate of 80 percent renewables by 2030.

Furthermore, Canada and Nova Scotia have policies and plans that are aimed at incentivizing decarbonization of buildings through electrification. For example, the Nova Scotia climate change plan lists 68 actions that the government intends to execute. Included are actions that drive a shift of buildings toward electric heating equipment, and away from fuel oil and propane heating equipment, such as helping retrofit homes and piloting a program to help homeowners completely replace heating oil with electric equipment,[33] as well as banning the installation of new oil-fired heating equipment.[34]

Aside from the renewable energy mandate, federal policy drives decarbonization by setting a price for carbon. This makes use of fossil fuels for heating or other end uses more expensive, and it encourages a shift to zero- or low-carbon sources of energy. The

[30] (Nova Scotia) Electricity Act S.N.S. 2004, c.25, 6.B-1. Amended in 2023, see Nova Scotia, https://novascotia.ca/news/release/?id=20230322004#:~:text=Nova%20Scotia's%20climate%20change%20goals,types%20of%20renewable%20energy%20storage.
[31] (Nova Scotia) Chapter 20 of the Acts of 2021: An Act Respecting Environmental Goals and Climate Change Reduction, 7- l and m.
[32] NS Power, https://www.nspower.ca/cleanandgreen/clean-energy.
[33] Nova Scotia Climate Change Plan, page 22.
[34] Nova Scotia Climate Change Plan, page 37.

federal government established a national standard for the price on carbon, and in November 2022 announced that Nova Scotia is required to apply the carbon tax.[35] The price of carbon escalates by $15 every year, from $65 per tonne in 2023 to $170 per tonne in 2030.[36] This price is equivalent to $8.94/GJ[37] by Eastward's calculations, which the utility states amounts to doubling the cost of the natural gas commodity.[38]

Q Can Eastward meet the decarbonization targets set by the federal or local Canadian jurisdictions?

A Eastward has not been able to demonstrate that it can decarbonize its supply and its systems to support meeting the federal and provincial target to be net-zero by 2050. The Company "plans to participate in the energy transition through the development of long-term, lower carbon energy solutions,"[39] and has identified some low-carbon strategies. However, Eastward has not provided the timeline for implementation, costs, and emission reduction potentials of these strategies. What is clear is the Company does not expect much progress towards decarbonization in the next few years, certainly not within the three-year timeframe of this rate case: the Company states that "the opportunity to materially reduce emissions during the 2024–2026 test period are limited."[40]

For the medium-to-long term, the Company's strategies to reduce carbon intensity are energy efficiency programs and blending low-carbon fuels, such as hydrogen and

[35] CBC News, https://www.cbc.ca/news/canada/nova-scotia/federal-carbon-tax-gas-oil-diesel-rebate-1.6660132.
[36] 2030 Emission Reduction Plan: Canada's Next Steps for Clean Air and A Strong Economy, page 24.
[37] Eastward Application, p. 75.
[38] Eastward Application, p. 75.
[39] Eastward Application, p. 15.
[40] Eastward Application, p. 75.

renewable natural gas.[41] However, Eastward recognizes that these technologies are "new and evolving,"[42] and it does not have a timetable for implementation.[43]

Eastward's decarbonization strategy raises other strategic questions. The Company states "Eastward has set ambitious targets to reduce the carbon emissions from the gas it distributes with RNG [renewable natural gas] and hydrogen blending."[44] However, it is currently unclear if renewable natural gas and hydrogen created with low-carbon processes will be available in time in sufficient quantities. Hydrogen has several end uses including transportation, power generation and process heat for energy production, and industrial processes, which will likely compete with residential use cases.[45] There is an embedded supply risk as potentially limited supply is diverted to other end uses that are found to be the most economic use. At minimum, Eastward has not adequately addressed this concern.

Q What does governmental policy and Eastward's inability to provide assurance of a low-carbon solution mean for its proposal?

A Clearly, the intention of the national and provincial governments is to rapidly decarbonize the electric sector. While natural gas will still be required for various uses, the government's direction is to phase out unnecessary uses of natural gas, as indicated by the significant carbon price enacted. Residential heating may turn out to be an end use

[41] Eastward Application, p. 72.
[42] Eastward Application, page 72
[43] Consumer Advocate IR-16.
[44] Eastward Application, p. 79.
[45] US Department of Energy, Hydrogen program, https://www.hydrogen.energy.gov/enduse.html#:~:text=Hydrogen%20is%20able%20to%20supply,for%20buildings%20and%20industrial%20processes.

for which natural gas is simply not required or desired due to environmental concerns in 10 years, or sooner.

Installing and providing ratepayer incentives for new natural gas heating equipment, or converting buildings from oil to natural gas for heating, limits the decarbonization potential of these end uses. Customers with natural gas heating will continue to use a fuel with a carbon intensity of 183 g/kWh[46] for the life of the equipment, instead of decarbonizing in tandem with the electric grid. While the carbon intensity of natural gas is currently lower than electricity, it will not remain so over the life of the assets installed.

Q Are environmental policies your only concern with Eastward's proposal?

A No. The proposal also raises issues of affordability and an almost certain risk of stranded costs.

Q What are your concerns regarding affordability?

A The heating incentive plan is inconsistent with affordability concerns also referenced in in the Nova Scotia climate plan;[47] it locks customers into using natural gas which is expected to become more expensive than electricity over the next few years due to the introduction of a carbon tax.[48]

Further analysis is needed to understand the implications of natural gas customer growth in a decarbonizing industry. In Section VI, I propose more analysis of these fundamental issues. At the same time, the Company should assess the impact on customer bills if the

[46] Eastward Excel workpaper, "Heating System Operating Cost Comparison" Feb 22 2023.
[47] Nova Scotia Climate Change Plan, page 20.
[48] Staff IR-53.

amount of new residential customers does not materialize or customer gas consumption is not as high as expected. A potential result is that increasing costs will be shouldered by a smaller number of remaining customers, further increasing rates. Increasing costs would then make conversion to electric heat *more* economically desirable, contrary to Eastward's own business goals.

Q What are your concerns regarding stranded asset costs?

A There are several. First, while the Company claims it will not need to build new infrastructure as part of its incentive program,[49] it is not clear whether this is true in all cases. If the Company builds more or higher cost infrastructure that is later not needed, costs will be stranded or assets under-utilized.

Second, the Company's proposal to treat these rebates as a capital expense—depreciated over 55 years for a total cost of $16.3 million over the period[50]—essentially ensures that some or all of these costs are stranded when some customers switch to electricity. This is an unnecessary and uncalled for risk given the clear policy direction provided at both the federal and provincial levels.

Q What is your recommendation?

A The Board should not approve the costs for a heating incentive program. It is inconsistent with the decarbonization goals of the province and federal government, and it introduces affordability issues and stranded asset cost risk that are not in the interest of ratepayers.

[49] Staff IR-126 (c).
[50] Synapse IR-31, Attachment 1.

VI. EASTWARD'S APPLICATION HIGHLIGHTS BUSINESS RISK AND FUTURE OF GAS CONCERNS IN NOVA SCOTIA

Q Should the Board be concerned with the energy transition and its long-term implications on Eastward's business?

A I believe it should. This application, and ones prior such as the need for a CRP,[51] reveal business risks to Eastward that the energy transition will exacerbate. Eastward recognizes this risk; however, I find that some of its proposals, such as those for natural gas heating incentives, are ill-advised and may ultimately be counter-productive for the Company's customers and the province.

The exact impacts of the energy transition in Nova Scotia remain unclear and unquantified particularly as it relates to gas-specific issues. Furthermore, Eastward is not the only utility facing the impacts of transitioning to lower carbon fuels; the policies to increase the cost of carbon and drive building electrification affects all utilities. I believe there is currently a dearth of information on which the Board can rely to ensure sound policies that allow the utility to remain viable while meeting least-cost, least-regrets pathways to decarbonization. A study of these issues, specific to Nova Scotia, could provide a set of scenarios that allow policymakers to reasonably ensure decarbonization goals are met and that gas is available and affordable for the uses for which it is necessary and required over the medium-to-long term.

[51] M07346, *In the Matter of an Application by Heritage Gas Limited for approval of its Customer Retention Program,* July 25, 2016.

Q Are there any examples of such a study?

A Multiple jurisdictions have opened or are considering "future of gas" issues in the context of similar policy landscapes as Nova Scotia. A relevant example comes from the Ontario government, which recently recognized the need for more information for its own energy transition when a gas phase-out assessment found significant negative financial and reliability consequences would be incurred without adequate preparation. Accordingly, the Ontario government recently formed an "Electrification and Energy Transition Panel" and commissioned a pathways study intended to help the province "make the best strategic decisions to reform [its] long-term energy planning process […] and prepare our province for the energy system of the future."[52]

Q What do you recommend?

A Given the uncertainties and lack of clear policy guidance and analysis specific to the implications of decarbonization policy on gas utilities, I recommend that the Board require further analysis and study of how to ensure an orderly, just, equitable, and least-cost approach to decarbonization and the implications this has for gas utilities. The analysis and assumptions should be specific to the Nova Scotia province.

This could be accomplished by the Board itself, in coordination with the provincial government, or some other means. This is a complex topic that requires prospective thinking and planning—not short-term solutions that do not adequately consider long-term impacts and the broader policy context.

[52] Ontario, News Release, *Ontario Finalizes Electrification and Energy Transition Panel,* https://news.ontario.ca/en/release/1002487/ontario-finalizes-electrification-and-energy-transition-panel.

Q Does this conclude your direct testimony?

A Yes, it does.