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FortisBC Energy Inc.

2022 Long-Term Gas Resource Plan

Decision and Order G-78-24

March 20, 2024

Before:
T. A. Loski, Panel Chair

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APPENDICES

- Appendix A: Directives in 2017 Decision**
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Executive Summary

On May 9, 2022, FortisBC Energy Inc. (FEI) filed its 2022 Long-Term Gas Resource Plan (LTGRP) for acceptance by the British Columbia Utilities Commission (BCUC), pursuant to section 44.1(2) of the *Utilities Commission Act* (UCA). FEI seeks an order from the BCUC accepting the 2022 LTGRP under section 44.1(6) of the UCA as being in the public interest. FEI is not seeking any approval or acceptance of a Demand-Side Measures (DSM) plan or any particular DSM expenditures, and is also not seeking approval or acceptance of any specific gas supply contracts or resource projects that are identified within the LTGRP.

FEI states the 2022 LTGRP is profoundly shaped by the developments in climate change policy in recent years, in particular, the Province's 2018 CleanBC plan and CleanBC Roadmap to 2030, which set out ambitious targets for reducing greenhouse gas (GHG) emissions. In response to these policies and the need to reduce GHG emissions, the 2022 LTGRP provides a preliminary overview of FEI's plans to transition to a low-carbon energy future and how FEI will shift from distributing conventional gas to distributing renewable and low-carbon gas.

Pursuant to section 44.1(6) of the UCA, the Panel finds that carrying out the 2022 LTGRP is in the public interest. The Panel accepts the 2022 LTGRP, with the exception of the Resiliency Plan component, and FEI's planned investments in Liquefied Natural Gas (LNG) for marine fueling (bunkering) and global markets, which are rejected.

In the FEI Tilbury LNG Storage Expansion Project proceeding (Decision and Order G-62-23), the BCUC identified a number of shortcomings with the Resiliency Plan. This Panel agrees with those shortcomings and rejects the Resiliency Plan component of the 2022 LTGRP. FEI has committed to preparing a new Resiliency Plan that will include a more comprehensive and robust analysis, and it intends to include the latest version of its resiliency plan in future LTGRPs for BCUC review.

Additionally, due to the significant uncertainty associated with the LNG bunkering and export markets currently, the Panel is not in a position to make a finding that pursuit of sales or infrastructure investments in LNG for these markets will be beneficial to ratepayers and in the public interest.

The Panel concludes that FEI has provided sufficient information to address each of the filing requirements of a long-term resource plan, and that the respective components that have been accepted provide a reasonable basis for outlining activities that FEI intends to pursue in the short term, and a range of long-term scenarios that could potentially unfold. Additionally, acceptance of the LTGRP (excluding the rejected components) is supported by each of the considerations outlined in section 44.1(8) of the UCA namely, the applicable BC Energy Objectives, the intent to pursue adequate and cost-effective DSM, and the interests of current and future FEI customers.

The Panel finds that the LTGRP is an aspirational pathway forward that results in a reasonable likelihood that FEI will meet its prescribed GHG reduction requirements and serves the public interest. Although it is possible that FEI will not meet 2030 GHG reduction requirements, rejection of the entirety of the LTGRP would likely preclude FEI from ever reaching its objective. The Panel considers that such an outcome would not serve the public interest.

Notwithstanding acceptance of the LTGRP excluding the two components specified above, in various sections of the decision the Panel has identified a number of matters that it expects FEI to address in its next long-term gas resource plan. Overall, while this LTGRP represents a reasonable first step in outlining how FEI is planning for a low carbon future, the next plan will need to go further. FEI will need to demonstrate greater sophistication in modelling how its demand may be affected by the energy transition, and provide more detailed support for its planned actions to address GHG emission reductions.

FEI must file its next long-term gas resource plan on or before March 31, 2026. The Panel finds that more frequent future plans are appropriate to address the challenges FEI faces during the energy transition .

1.0 Introduction and Background

On May 9, 2022, FortisBC Energy Inc. (FEI) filed its 2022 Long-Term Gas Resource Plan (LTGRP) for acceptance by the British Columbia Utilities Commission (BCUC), pursuant to section 44.1(2) of the *Utilities Commission Act* (UCA) (Application). FEI is seeking an order from the BCUC accepting the 2022 LTGRP under section 44.1(6) of the UCA as being in the public interest. FEI is not seeking any approval or acceptance of a Demand-Side Measures (DSM) plan or any particular DSM expenditures, and is also not seeking approval or acceptance of any specific gas supply contracts or resource projects that are identified within the LTGRP.¹

1.1 Legislative Framework

Section 44.1 of the UCA establishes the BCUC's framework for review of FEI's 2022 LTGRP. Section 44.1(2) provides that FEI must file a long-term resource plan that includes several components, which are outlined in turn in Section 3 of this decision.

Sections 44.1(6) and (7) of the UCA require that after reviewing the plan, the BCUC must accept the plan, if the BCUC determines that carrying out the plan would be in the public interest, or reject the plan (in whole or in part). In determining whether the LTGRP is in the public interest, the BCUC must consider whether the following criteria under section 44.1(8) of the UCA support its acceptance:

- (a) The applicability of British Columbia's energy objectives;
- (b) The extent to which the plan is consistent with the applicable requirements under sections 6 and 19 of the *Clean Energy Act*;
- (c) Whether the plan shows that FEI intends to pursue adequate, cost-effective demand-side measures; and
- (d) The interests of persons in British Columbia who receive or may receive service from FEI.

The meaning of "adequate, cost-effective demand-side measures" in section 44.1(8)(c) is prescribed further by the *Demand Side Measures (DSM) Regulation*. On June 27, 2023, by Ministerial Order No. M193, the DSM Regulation was amended. The Panel sought submissions from parties in final argument on how FEI's 2022 LTGRP meets the amended DSM Regulation,² as outlined further in Section 4.2 of this decision.

Sections 6 and 19 of the *Clean Energy Act* apply to electric utilities and are therefore not applicable to the Panel's review of the 2022 LTGRP.

1.2 2017 LTGRP Decision

By Decision and Order G-39-19 (2017 Decision),³ the BCUC accepted FEI's 2017 LTGRP as being in the public interest pursuant to subsection 44.1(6) of the UCA, and directed FEI to file its next LTGRP on or before March 31, 2022. FEI subsequently sought an extension to file its 2022 LTGRP by May 2022. The 2017 Decision included several directives for information to be included in the 2022 LTGRP, which are summarized as Appendix A to this decision.

¹ FEI Final Argument, p. 3.

² Exhibit A-19.

³ https://docs.bcuc.com/documents/proceedings/2019/doc_53485_decision-and-g-39-19-fei-2017ltgrp.pdf

1.3 Regulatory Process

The BCUC established regulatory timetables⁴ for this proceeding, which included the following process to review the 2022 LTGRP:

- Filing of evidentiary updates by FEI in June 2022, August 2022, and February 2023;⁵
- Two rounds of written information requests (IRs);
- A procedural conference held on January 19, 2023;
- Intervener evidence filed by Citizens for My Sea to Sky Society (MS2S), and IRs on the intervener evidence;
- Rebuttal evidence filed by FEI, and IRs on the rebuttal evidence; and
- Written final arguments by FEI and interveners, and reply argument by FEI.

The following parties registered as interveners:

BC Climate Alliance (BCCA)	District of Saanich (Saanich)
British Columbia Hydro and Power Authority (BC Hydro)	District of North Vancouver (District-NV)
British Columbia Old Age Pensioners' Organization et al. (BCOAPO)	First Things First Okanagan (FTFO)
BC Solar and Storage Industries Association (BCSSIA)	GNAR Inc. - Sustainable Home Design (GNAR)
BC Sustainable Energy Association (BCSEA)	Lulu Island Energy Company Ltd. (LIECL)
City of Richmond (CoR)	Metro Vancouver Regional District (MetroVan)
City of Surrey (Surrey)	Movement of United Professionals (MoveUP)
City of Vancouver (CoV)	My Sea to Sky (MS2S)
Commercial Energy Consumers Association of British Columbia (the CEC)	Residential Consumer Intervener Association (RCIA)

Final arguments were filed by BCOAPO, BCSSIA, BCSEA, the CEC, FTFO, GNAR, Local Government Intervenors (representing CoR, CoV, District-NV, LIECL, MetroVan and Saanich), MoveUP, MS2S, and RCIA.

1.4 Purpose of FEI's Long-Term Gas Resource Plan

FEI submits that the 2017 Decision provides a correct and helpful interpretation of the legal framework for the review and acceptance of FEI's long-term resource plans filed under section 44.1 of the UCA. In the 2017 Decision, the BCUC reviewed the legal framework provided by section 44.1 of the UCA, which specifies what a resource plan must include, what factors the BCUC must consider, and that the BCUC must accept the plan if it determines that carrying out the plan would be in the public interest.⁶

The Panel agrees with the interpretation outlined in the 2017 Decision, but observes the 2022 LTGRP involves a heightened emphasis on how FEI charts a path for the utility to decarbonize, due to key government policy developments since the last plan, as outlined further in section 2 of the decision. To date, there have not been any associated changes to the UCA, and thus the BCUC's general approach to reviewing the 2022 LTGRP remains consistent with the 2017 Decision. However, the Panel's determination on whether the 2022 LTGRP is in the

⁴ Order G-146-22; G-222-22; G-287-22; G-17-23; G-99-23; G-150-23; G-317-23.

⁵ Exhibits B-2, B-4, B-20 and B-21.

⁶ FEI Final Argument, p. 4.

public interest will place greater weight on a review of the greenhouse gas (GHG) reduction initiatives that are contained within the plan, compared with previous plans.

1.5 Overview of the Decision

The remainder of this decision is structured as follows:

- Section 2 describes the planning context for FEI's LTGRP, including the impacts of climate policies;
- Section 3 outlines the main components of the 2022 LTGRP in turn, including the filing requirements described under section 44.1(2) of the UCA;
- Section 4 includes the Panel's consideration of each of the criteria outlined in section 44.1(8) of the UCA. In particular, the Panel reviews how FEI plans to reduce GHG emissions in the planning period;
- Section 5 addresses other issues arising in the proceeding;
- In Section 6, the Panel provides its overall determination on whether to accept the 2022 LTGRP; and
- In Section 7, the Panel determines the timing of FEI's next long-term gas resource plan.

2.0 Planning Context for FEI's LTGRP

FEI states the 2022 LTGRP is profoundly shaped by the developments in climate change policy in recent years, in particular, the province's 2018 CleanBC plan and CleanBC Roadmap to 2030 (Roadmap), which set out ambitious targets for reducing GHG emissions. In response to these policies and the need to reduce GHG emissions, the 2022 LTGRP provides a preliminary overview of FEI's plans to transition to a low-carbon energy future and how FEI will shift from distributing conventional gas to distributing renewable and low-carbon gas.⁷

The Roadmap was released by the provincial government on October 25, 2021, as an update to the 2018 CleanBC plan. The Roadmap articulates a plan to fully achieve BC's legislated GHG emission reduction target of 40 per cent below 2007 levels by 2030, and sets the course to reach net-zero by 2050. FEI submits the Roadmap includes ambitious measures that place FEI at the forefront of the global energy transition, and is also anticipated to have a significant impact on FEI's customer rates, competitiveness and throughput. Key measures in the Roadmap that directly impact FEI include:

- An increased carbon tax which will rise to \$170 per tonne by 2030;
- A GHG cap for natural gas utilities (GHG Reduction Standard, or GHGRS);
- A zero-carbon requirement for new buildings and highest efficiency standards for space and water heating equipment by 2030;
- Amendments to the *Greenhouse Gas Reduction (Renewable & Low-carbon Fuel Requirements) Act* and the *Renewable & Low-carbon Fuel Requirements Regulation* decrease the carbon intensity benchmark while including marine and aviation fuels in the amendment; and
- A 75 percent reduction in oil and gas methane emissions by 2030.⁸

The proposed GHGRS represents a cap on natural gas utilities of approximately 6 megatonnes of CO₂ equivalent (Mt CO₂e) per year for 2030 for emissions from energy use in the buildings and industrial sectors. While details on the GHGRS remain under development, FEI expects that it will place a stringent emissions reduction

⁷ Exhibit B-1, p. 1-1.

⁸ Exhibit B-1, 2-8.

obligation on gas utilities. Compliance pathways to achieve the cap have not yet been developed; however, these pathways will be highly consequential for the overall role of gas utilities.⁹

Additionally, FEI notes a growing number of local governments are implementing changes to their building codes, planning guidelines, and zoning bylaws in order to reduce GHG emissions in new building construction projects, and in some cases with existing building retrofits and improvements. This is being achieved by:

- Establishing GHG target limits for new construction, necessitating the use of low-carbon or renewable energies; and
- Incenting developers to use electricity as a low-carbon solution (or in some cases to not connect to a fossil fuel supply grid).¹⁰

Some local governments have also adopted GHG intensity targets.¹¹ FEI defined specific municipal actions in the LTGRP for the City of Vancouver,¹² and FEI intends to make reasonable efforts to model the effect of other specific municipal policies and bylaws in the development of the next long-term gas resource plan, to the extent they are material to the analysis.¹³

In order to address provincial targets for reducing GHG emissions, and changing government policies as described above, FEI has created the Clean Growth Pathway, its 20-year vision for FEI's transition to a low-carbon future. The Clean Growth Pathway provides a framework to transition to a low-carbon energy future supported by the following four pillars¹⁴:

1. Transition to renewable and low-carbon gases to decarbonize the gas supply;
2. DSM programs to reduce energy use among residential, commercial and industrial customers;
3. Support for low-carbon transportation (LCT) infrastructure to reduce emissions in this sector; and
4. Investment in LNG to lower GHG emissions in marine fueling and global markets.

Aspects of FEI's Clean Growth Pathway are discussed throughout section 3 of the decision, and details regarding FEI's planned GHG emissions reductions and estimated rate impacts are outlined in section 4.1.

FEI submits that the BCUC should recognize that long-term resource planning is an iterative process and to an extent can only represent a snapshot in time. FEI observes in the 2022 LTGRP, the planning environment is rapidly changing, and FEI is experiencing more planning uncertainty than seen in previous resource planning processes. FEI adds it is in the best interests of its customers to achieve certainty on the outcome of the 2022 LTGRP proceeding as efficiently as possible, so that FEI may focus its efforts on the next iteration of the plan.¹⁵

3.0 Has FEI Met the Section 44.1(2) Filing Requirements?

In this section, the Panel assesses whether FEI's 2022 LTGRP meets the filing requirements set out in section 44.1(2) of the UCA, including providing the following information:

1. Estimate of demand in the absence of new demand-side measures – section 44.1(2)(a);
2. Energy demand taking into consideration new cost-effective demand-side measures – sections 44.1(2)(b), (c) and (f);

⁹ Exhibit B-1, p. 2-9.

¹⁰ Ibid., p. 2-16 to 2-17.

¹¹ Exhibit B-6, BCUC IR 4.1.

¹² Ibid., BCUC IR 4.3.

¹³ Exhibit B-23, BCUC IR 81.1.

¹⁴ Exhibit B-1, p. ES-5.

¹⁵ FEI Final Argument, p. 113.

3. Facilities – section 44.1(2)(d);
4. Energy purchase – section 44.1(2)(e); and
5. Other information required by the BCUC – section 44.1(2)(g).

Specific issues relating to the above that have been raised by interveners are addressed in each of the following subsections.

In section 3.6, the Panel presents its overall findings on whether the 2022 LTGRP meets the filing requirements as outlined in section 44.1(2) of the UCA.

3.1 Estimate of Demand

FEI explains that it addresses section 44.1(2)(a) of the UCA, which requires utilities to include an estimate of the demand for energy the utility expects to serve in absence of taking new DSM, by:

- Presenting customer counts and demand as of 2019 that forms the base year for the 2022 LTGRP’s annual demand forecast;
- Explaining and presenting the forecasting of customers for each of the demand categories over the forecast period of 20 years;
- Describing the methods used to forecast future demand that includes information about the Traditional Annual Demand Method, which is used for short-term planning for the residential, commercial, and industrial demand category, and the End-Use Annual Demand Method, which is a long-term planning forecast method for 2022 LTGRP;
- Explaining the process of developing alternate future scenarios for forecasting analysis. FEI uses the Diversified Energy Planning (DEP) scenario as the planning scenario and explains why the Reference Case is not an appropriate planning forecast for the 2022 LTGRP;
- Presenting the demand forecast results for each of the demand categories. FEI submits that Deep Electrification and Lower Bound scenarios are determined to be not plausible; and
- Presenting the total annual demand for the DEP scenario.¹⁶

Based upon the above, FEI submits that the 2022 LTGRP meets the requirement set out in section 44.1(2)(a).¹⁷ The following subsections outline several components of FEI’s demand forecasting which are material to the Panel’s determination.

3.1.1 End-Use Annual Demand Forecasting Method

In this subsection, the Panel examines issues related to FEI’s End-Use Annual Demand Forecasting Method (End-Use Method) that FEI used to estimate a range of future annual demand under different scenarios.

FEI uses the End-Use Method to forecast future demand which involves examining different ways that end use trends in energy utilization could potentially impact future demand for gas. In doing so, FEI engaged with Posterity Group to support the preparation of its End-Use Method. FEI submits the End-Use Method has been improved based on learnings from the 2017 LTGRP to enhance the ability to examine the reference case annual demand forecast and analyze how annual demand behaves across alternate future scenarios. This was done by adding new critical uncertainties, updating the end-use studies that provide key inputs to the base year data, examining a closer tie between the Conservation Potential Review (CPR) analyses and the end-use demand

¹⁶ Exhibit B-1, p. 4-2.

¹⁷ FEI Final Argument, p. 35.

forecasting analyses, bringing new market intelligence in the transportation fuels industry to forecast Compressed Natural Gas (CNG) and LNG demand, and adding PowerBI¹⁸ data analytics to improve the ability to display and assess forecasting results.¹⁹

FEI submits that the addition of new critical uncertainties is a key improvement that enables the End-Use Method to be used to forecast a range of scenarios that reflect risks over the planning horizon. These were identified with input from both internal FEI stakeholders and members of the external Resource Planning Advisory Group (RPAG), as well as themes that emerged from the 2022 LTGRP's community engagement workshops.²⁰ The new critical uncertainties include customer growth, natural gas price, carbon price, building codes and standards, non-price driven fuel switching, and the impact of emerging markets, such as LCT and the potential of LNG export.²¹

FEI engaged Energitix to benchmark its End-Use Method against the long-term annual demand forecasting methods used by other utilities and energy planning entities. FEI submits that using an end-use demand forecasting method remains a common practice among gas and electric utilities, particularly those that are of a similar size and facing similar challenges to FEI.²² FEI also notes that the need to analyze various future scenarios due to energy efficiency policies, codes and standards, and energy policies such as electrification and decarbonization drives its decision to use the End-Use Method.²³

FEI's End-Use Method begins with the development of a reference case with 2019 as the base year (Reference Case), which was the latest year possible for the base year given the steps required to produce the LTGRP for filing in the first quarter of 2022.²⁴ The 2019 base year was built from customer account and weather-normalized consumption data, categorized by regions, sectors, segments, rate schedules, and end-uses. FEI and Posterity incorporated FEI's 2021 Conservation Potential Review, 2017 Residential End-Use Survey, 2019 Commercial End-Use Survey, and research and data analysis from the 2017 LTGRP to calibrate the forecast model to 2019 base year actuals and to identify Reference Case end-use changes across the forecast horizon.²⁵

The Reference Case is based on end-use patterns observed, as well as any new changes in law or policy that will affect future demand and have been, or are quite certain of becoming, enshrined in legislation, codes, standards or bylaws in and as of the base year. These considerations are then held static through the planning horizon to provide a reference point from which to model and compare other scenarios, with other critical uncertainties.²⁶

FEI then developed six future scenarios based on the critical uncertainties for annual demand, which represent future conditions that could have the biggest impact on FEI's business, as follows:

- Upper Bound Scenario;
- Diversified Energy (Planning) (DEP) Scenario;
- Price-Based Regulation Scenario;

¹⁸ PowerBI is a data visualization and reporting platform used primarily for business intelligence purposes.

¹⁹ Exhibit B-1, pp. 4-9 to 4-10.

²⁰ Exhibit B-1, Appendix B-3, p. 1; FEI Final Argument, p. 37

²¹ Exhibit B-1, Appendix B-3, pp. 19-20

²² Ibid., p. 4-9; Appendix B-2, Table 1, p. 18.

²³ FEI Final Argument, p. 38; Exhibit B-1, Appendix B-2, p. 15.

²⁴ Exhibit B-1, p. 4-10; Exhibit B-23, BCUC IR2 87.1 and 87.3.

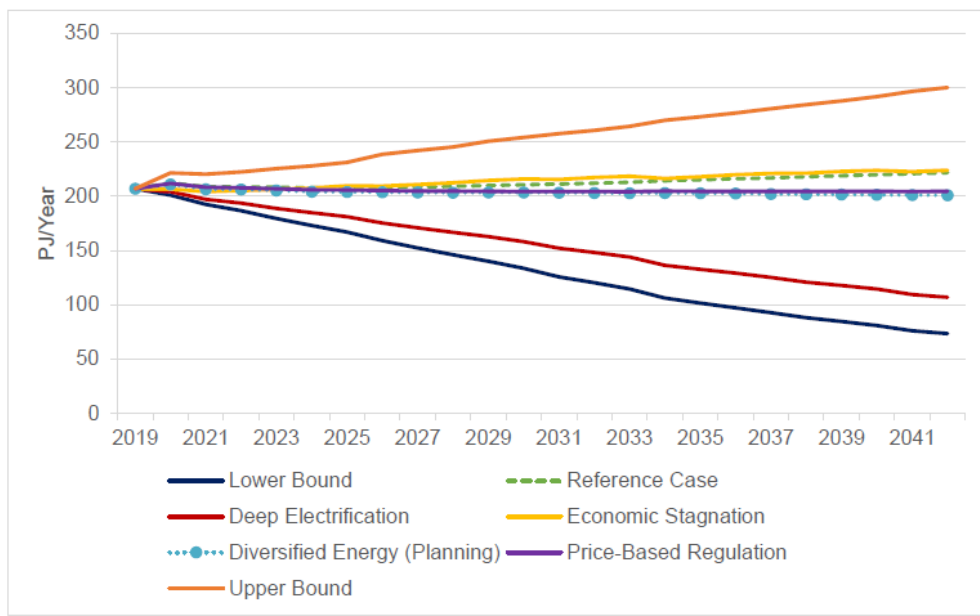
²⁵ Exhibit B-1, p. 4-10.

²⁶ Exhibit B-1, p. 4-10; Exhibit B-6, BCUC IR1 17.2.

- Economic Stagnation Scenario;
- Deep Electrification Scenario; and
- Lower Bound Scenario.²⁷

FEI presents the end-use annual demand for residential, commercial, and industrial sectors for the Reference Case and the six alternative scenarios as outlined in Figure 1 below:

Figure 1: FEI's Annual Demand Scenarios – Residential, Commercial and Industrial Sectors²⁸

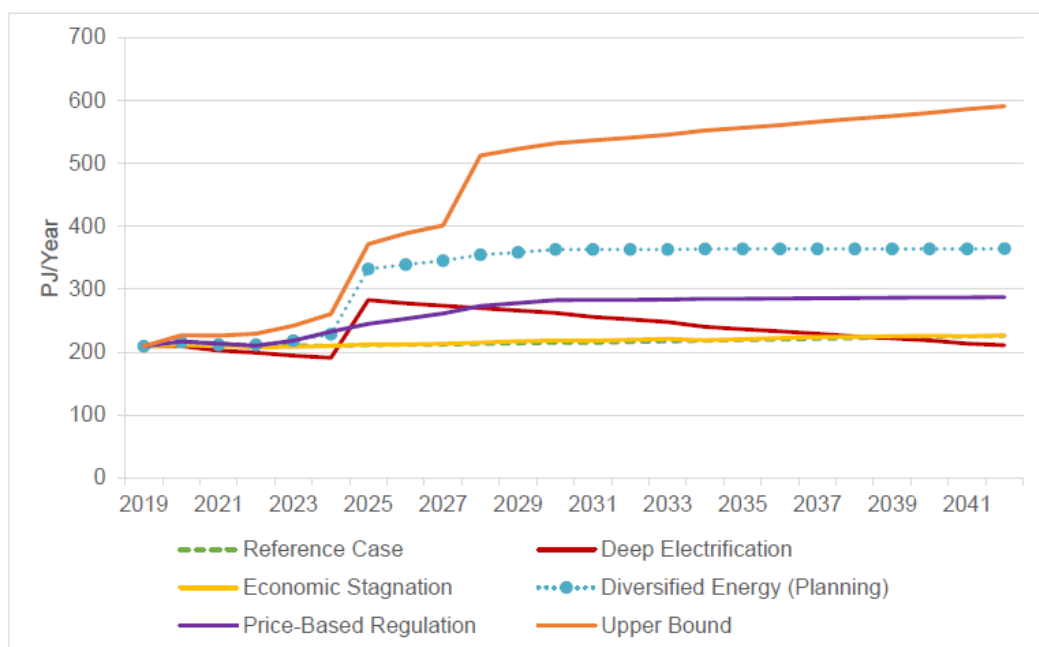


After including the LCT and global LNG annual demand forecast (as discussed in section 3.1.6) and the new large industrial annual demand forecast, FEI's total annual demand over the planning horizon is shown in Figure 2 below:

²⁷ Exhibit B-1, p. 4-16 to 4-27.

²⁸ Ibid., Figure 4-9, p. 4-28.

Figure 2: FEI’s Total Annual Demand Including Low Carbon Transportation – All Categories, All Scenarios²⁹



FEI notes that the broad range of demand between the alternate scenarios is representative of the substantial change and uncertainty in the planning environment.³⁰ FEI does not assign probabilities to the scenarios.³¹

In analyzing the planning environment, FEI believes that a diversified pathway is required in which both the existing gas and electricity systems within BC have an important role to play in decarbonizing energy use in the province. Consequently, FEI has designated the DEP Scenario as its planning scenario for the 2022 LTGRP.³² FEI submits that this scenario optimizes the use of both gas and electric delivery systems to achieve GHG reduction targets in BC, leveraging existing infrastructure and integrating renewable and low-carbon gases into the supply mix,³³ and effectively utilizes both systems at a lower cost.³⁴ Overall, FEI concludes that the DEP Scenario enables it to implement its Clean Growth Pathway and adjust future resource acquisitions to meet GHG emission reduction targets.³⁵

Positions of the parties

FEI submits that its forecast methodologies are sound and have been clearly explained, and that its forecasts present an appropriate range of potential future scenarios, illustrating the potential futures that could unfold over the planning horizon.³⁶ FEI further argues that its End-Use Method has been improved and is consistent with industry standard approaches.³⁷ FEI states the high granularity of the model is a significant benefit of the

²⁹ Exhibit B-1, Figure 4-20, p. 4-40.

³⁰ Ibid., p. 4-27.

³¹ Ibid., p. 4-27.

³² Ibid., p. 4-17 to 4-18.

³³ Exhibit B-10, BCSEA IR 11.1.

³⁴ Ibid., BCSEA IR 11.3.

³⁵ Exhibit B-6, BCUC IR 1.2.

³⁶ FEI Final Argument, p. 35.

³⁷ Ibid., p. 36.

End-Use Method, as outputs can be provided at the end-use level and can be rolled up to the region, segment, sector, or other level.³⁸

BCSEA and BCOAPO agree that FEI has met the section 44.1(2)(a) requirement to provide an estimate of the demand before new DSM.^{39,40}

BCSEA agrees with FEI's load forecast and opposes further fine-tuning.⁴¹ BCSEA also agrees with FEI's points noted above regarding the improvements and benefits of the End-Use Method.⁴²

BCOAPO considers FEI's 2022 LTGRP scenario framework reasonable for resource planning within FEI's operating environment. The framework provides a range of annual demand possibilities and various planning scenarios, allowing for comparisons with a Reference Case.⁴³ Further, BCOAPO submits that the DEP Scenario best reflects the Clean Growth Pathway and recommends its acceptance by the BCUC as the preferred planning scenario in this proceeding and an appropriate basis on which to build future long-term gas resource plans. However, BCOAPO recommends that the BCUC direct FEI to adapt its approach and improve its modelling capabilities such that it is able to directly model the impacts of codes and standards to policies that target fuel switching and reducing new gas connections as part of the DEP Scenario for the next long-term gas resource plan.⁴⁴

In reply to BCOAPO, FEI emphasizes its willingness to make reasonable efforts to model the impact of specific policies and bylaws in the next long-term gas resource plan, just as it has modelled the City of Vancouver's codes and standards in the 2017 and 2022 plans. As modelling is a complex exercise and subject to limitations, FEI submits that specific directions to model particular items can be problematic and should be avoided. Given FEI's track record modelling municipal codes and standards, the challenges for the 2022 LTGRP with respect to timing of new codes and standards, and FEI's commitment for the next long-term gas resource plan, FEI submits that a direction is not required.⁴⁵

The CEC expresses satisfaction with FEI's ongoing use of the end-use model as the main forecasting tool in the LTGRP. The CEC acknowledges that FEI has visibility into the long-term customer forecast, allowing it to analyze and report on customer and end-use trends. The CEC suggests adopting an end-use model that provides a detailed view on various end-use considerations, such as the increased use of gas-driven heat pumps, hybrid heat pumps, electric heat pumps, co-generation applications, and distributed or community solutions.⁴⁶

FEI opposes making detailed adjustments to the forecasts in the 2022 LTGRP, stating that the primary aim of forecasts is not to predict demand with absolute accuracy. Given the uncertainty over the long-term, FEI submits that its scenario forecasts are both robust and reasonable, meeting the requirements for long-term resource planning purposes.⁴⁷

3.1.2 Residential, Commercial and Industrial Customer Forecast

In this subsection, the Panel examines issues related to FEI's residential, commercial, and industrial customer forecast, which is an input into the annual demand forecast.

³⁸ FEI Final Argument, p. 39.

³⁹ BCSEA Final Argument, p. 6.

⁴⁰ BCOAPO Final Argument, p. 4.

⁴¹ BCSEA Final Argument, p. 6.

⁴² Ibid., p. 7.

⁴³ BCOAPO Final Argument, p. 16.

⁴⁴ Ibid., p. 5.

⁴⁵ FEI Reply Argument, pp. 46-47.

⁴⁶ CEC Final Argument, p. 48.

⁴⁷ FEI Final Argument, p. 44

FEI establishes a base customer forecast for each of these customer segments using a method that is consistent with previous plan filings. The residential customer forecast is based on the Conference Board of Canada housing starts forecast for B.C., while the commercial customer forecast considers recent trends in the commercial customer group growth. The industrial customer forecast includes existing customers from the base year (2019 year-end) and known commitments to either join or leave the system.⁴⁸

FEI predicts a 0.48 percent compound annual growth rate for residential customers and a 1.06 percent rate for commercial customers over a 20-year planning period, with no forecast growth or decline in industrial customers.⁴⁹ These trajectories are considered critical uncertainties in FEI's End-Use Method. FEI notes that considerations for future uncertainties around end use energy, such as potential for new large industrial demand, or potential for electrification, are addressed as part of the demand forecast and not as part of the customer forecast.⁵⁰

FEI argues that if energy use and customer numbers are all blended together into one parameter, understanding and testing the effects of specific changes is more difficult. Further, FEI states that addressing a critical uncertainty such as fuel switching partially using assumptions about customer additions and partially through changes in energy end use patterns, would require additional checks and balances within the modelling to ensure that the impact of fuel switching on demand is not being double counted.⁵¹ FEI submits that using one model lever (i.e. customer numbers) to reflect many different critical uncertainties would bury their separate influence rather than reveal it,⁵² and FEI is uncertain if a method currently exists in the energy industry that can tease apart the influence of energy pricing and policies on customer numbers versus usage per customer.⁵³ FEI acknowledges its commitment to continual improvement in annual demand forecasting and plans to explore improvements in its next long-term gas resource plan.⁵⁴

Positions of the Parties

The CEC supports FEI's residential and industrial demand forecasts but highlights concerns about potential downward risks for residential demand.⁵⁵ The CEC recommends using market capture rates to inform residential net customer additions.⁵⁶ For the commercial sector, the CEC advises a more conservative approach⁵⁷ due to a perceived upward bias in historical data (2017-2019) and suggests reconsidering commercial customer numbers and demand in the next long-term gas resource plan.⁵⁸

In reply, FEI argues that the impact of capture rate is evident in historical customer additions. According to FEI, capture rates play a crucial role as intrinsic factors in determining the actual net customer additions recorded annually. However, FEI clarifies that it does not explicitly incorporate capture rates into its forecast due to the unavailability of timely data during the forecast preparation. This limitation arises because capture rates are a backward-looking metric that require data from provincial entities with a one-year lag.⁵⁹

⁴⁸ Exhibit B-1, p. 4-4.

⁴⁹ Ibid., pp. 4-4, 4-5, 4-6.

⁵⁰ Ibid., Section 4.3, p. 4-4.

⁵¹ Exhibit B-6, BCUC IR1 14.3; Exhibit B-23, BCUC IR2 86.3.

⁵² Exhibit B-23, BCUC IR2 86.1.1.

⁵³ Ibid., BCUC IR2 86.2.

⁵⁴ FEI Final Argument, p. 51.

⁵⁵ CEC Final Argument, pp. 2 - 3.

⁵⁶ Ibid., p. 51.

⁵⁷ Ibid., p. 2.

⁵⁸ Ibid., p. 57.

⁵⁹ FEI Reply Argument, p. 42.

3.1.3 Low Carbon Fuels Price Elasticity

FEI submits that the key resources it anticipates acquiring over the next 20 years and beyond to increasingly displace conventional natural gas supplies are renewable natural gas (RNG), hydrogen, syngas and lignin.⁶⁰ Despite the growing presence of these low carbon fuels, FEI confirms that the cost of RNG, hydrogen, syngas and lignin is not modelled as a critical uncertainty. FEI explains that this is due to limited data and potential circular modeling issues if the costs and supply of these fuels were included as uncertainties.⁶¹ Instead, the model assumes that retail rates rely on natural gas and carbon prices as the main drivers for price-driven fuel switching to electricity.⁶²

FEI considers conventional natural gas price elasticity may not apply to low-carbon fuels.^{63,64} FEI and Posterity Group reject using a weighted average cost of renewable and low-carbon fuels to estimate load changes driven by price fluctuations, citing the intentional matching of supply and demand for RNG, and the influence of various factors besides price for renewable gas demand.⁶⁵ Overall, FEI argues that the limitations of the forecast model stem from its exclusion of cost, supply, and demand elasticity considerations for alternative fuels, and FEI finds addressing these issues would be resource-intensive and complex.⁶⁶

Positions of the Parties

MS2S submits the price elasticity of low-carbon gas blends on customer demand is masked in FEI's documentation. While there is much information on the billing implications of the LTGRP, nowhere is there a clear statement of the effect of price elasticity on the invoices that gas customers will receive.⁶⁷

The CEC recommends that the next long-term gas resource plan include consideration of the price of RNG as a critical uncertainty. This would enable a more detailed modeling of the various RNG supply alternatives and better consideration of price elasticities for low carbon fuels. The CEC also recommends that FEI consider hydrogen options for low carbon fuels as critical uncertainties and as a potential substitute for RNG growth in its supply portfolio.⁶⁸

FEI submits that it can consider the CEC's suggestion regarding the sourcing and price of hydrogen and RNG as critical uncertainties for its next long-term gas resource plan.⁶⁹ However, FEI also emphasizes that it should not be directed to include these factors as critical uncertainties, as it might not be feasible or reasonable to do so. FEI further highlighted the challenges in modeling the costs of alternative fuels as critical uncertainties, referring to the lack of market data for low-carbon fuels and the difficulty in establishing demand elasticities. FEI also emphasized the limited research on cross-price elasticity, particularly between renewable low-carbon gas and renewable electricity. Due to these complexities and the absence of transparent cost data for meeting future renewable electricity demand in BC, FEI submits that the CEC's recommendation should be rejected.⁷⁰

⁶⁰ Exhibit B-1, p. 6-10.

⁶¹ Exhibit B-6, BCUC IR 27.5

⁶² Exhibit B-6, BCUC IR 27.7, 27.8, p.152

⁶³ Exhibit B-23, BCUC IR 91.4.1.

⁶⁴ Ibid., BCUC IR 91.4.2.

⁶⁵ Ibid., BCUC IR 91.5.

⁶⁶ Ibid., BCUC IR 91.3.

⁶⁷ MS2S Final Argument, p. 9.

⁶⁸ CEC Final Argument, p. 3.

⁶⁹ FEI Reply Argument, p. 46.

⁷⁰ Ibid.

3.1.4 Traditional vs End-Use Annual Demand Forecast

In the 2017 Decision, the BCUC directed FEI to continue the use of its Traditional Annual Method as a comparison to test its End-Use Method until such time as the BCUC approves a new demand forecast methodology.⁷¹

FEI uses the Traditional Annual Method to produce short-term demand forecasts based on historical data and the short-term Forecast Information System, which has been in use since 2002. FEI further states that by extending the short-term time series forecast over the longer-term planning horizon, FEI can produce a single Business as Usual (BAU) forecast that provides a reference point against which to compare the outcomes of FEI's End-Use Method under various future scenarios.⁷²

FEI submits that its End-Use Method, which is used to create the Reference Case, differs in a number of ways from the Traditional Annual Method, which is used to create the BAU forecast. By the end of the planning period, the two forecast methods differ in result by only five percent due to the various differences between the two methods. FEI states this comparison provides additional confidence that FEI's End-Use Method provides a sound approach for examining alternate future scenarios.⁷³ Therefore, given the relative ease to produce to the BAU forecast, FEI submits it intends to continue to use the Traditional Annual Method forecast as a reference point in future long-term gas resource plans.⁷⁴

Positions of the Parties

The CEC is satisfied with FEI's continued use of the end-use model as its primary forecasting tool and the continued use of the traditional annual method as a check on the End-Use Method until the divergence between the two forecasts becomes problematic.⁷⁵

3.1.5 Plausibility of Lower Load Scenarios

FEI submits that the Lower Bound and the Deep Electrification Scenarios are not plausible. FEI states there is a lack of clear evidence to fully consider all of the challenges of completely electrifying buildings and industry in BC. FEI adds that the conversion of peak heating load for more than 1 million gas customers to electricity within the time required to meet provincial GHG emission reduction targets would involve high costs and implementation delays. In turn, this would cause high gas and electric rate increases and potentially place existing energy delivery networks at greater risk.⁷⁶

In support of these conclusions, FEI filed the Kelowna Electrification Case Study (Study) to illustrate the scale of impacts on peak electricity demand and the subsequent system upgrade and land requirements for the electric utility, FortisBC Inc. (FBC).⁷⁷ The Study shows that at 100 percent electrification of gas load and a mean daily temperature of -26 Celsius, FBC's peak demand in 2040 would more than triple from 472 megawatts (MW) to 1429 MW, with potential rate increases to FBC's electric customers of 145 percent by 2042 compared to 2023 approved rates.⁷⁸

⁷¹ Order G-39-19, 2017 Long-Term Gas Resource Plan.

⁷² Exhibit B-1, p. 4-8.

⁷³ Exhibit B-1, pp. 4-13 to 4-14.

⁷⁴ Exhibit B-23, BCUC IR2 89.1.

⁷⁵ CEC Final Argument, p. 48.

⁷⁶ Exhibit B-6, BCUC IR1 30.3.

⁷⁷ Exhibit B-20.

⁷⁸ Exhibit B-20, p. 1; Exhibit B-23, BCUC IR2 120.1.

Positions of the Parties

RCIA agrees with FEI that Deep Electrification is not a credible alternative based on the Study.⁷⁹

BCSEA states that it “balks at FEI’s conclusion that the Lower Bound and Deep Electrification scenarios are not plausible.” If two of the scenarios are not plausible, then BCSEA questions whether such scenarios can be described as reasonable for long-term planning. To BCSEA, the Study illustrates that switching entirely from gas to electricity would require significant expenditures to meet peak loads. However, BCSEA views that there are also significant challenges to achieving full decarbonization with gas, and that it is too soon to pinpoint the optimal gas/electric split.⁸⁰

In reply, FEI submits that BCSEA does not provide any evidence or compelling argument to contradict FEI’s position and evidence. Although it asserts the Deep Electrification Scenario is not plausible, FEI states that it is still a critical point of comparison and contrast to the DEP Scenario. FEI recognizes the challenges associated with decarbonizing the gas system, and the 2022 LTGRP presents FEI’s plan for how to overcome those challenges. FEI submits that BCSEA’s position does not support the plausibility of the Lower Bound or Deep Electrification Scenarios, and no similar plan has been presented for how electric utilities can overcome the challenges of these scenarios.⁸¹

BCSSIA observes that rejection of Deep Electrification does not prove DEP is the optimal scenario, and that FEI should evaluate intermediate, hybrid gas/electric scenarios, starting with the shared service territory with FBC. It also notes that the Kelowna Study is not a good example for the rest of BC, and may overstate electric requirements in combination with conservative assumptions used by FEI for electric heat pumps.⁸²

In reply to BCSSIA, FEI submits that it was clear that it was “unable to provide extrapolations of the Study to the remainder of its service territory at this time.” However, FEI notes that research from the University of Victoria demonstrates that even in the temperate climate of Metro Vancouver, an electrification-only pathway potentially causes resiliency issues. Regarding heat pump efficiency, FEI notes that BCSSIA presented analysis which was “purely illustrative” and did not file evidence that could be tested. Regarding the hybrid energy solution recommendation, FEI submits that BCSSIA does not refer to material evidence or analysis in support. Increased usage of hybrid energy systems is more akin to the DEP Scenario than an electrification scenario, and further capacity modeling and analysis is needed to understand the impact of hybrid systems on both the gas and electricity systems. For the next long-term gas resource plan, FEI is further considering the use of the gas system to serve peak heating requirements.⁸³

GNAR contends that deep electrification by 2050 is feasible, and that even more ambitious targets like achieving net-zero deep electrification by 2035 are technologically possible. In reply, FEI submits that GNAR does not refer to any evidence on the record to support this claim.⁸⁴

3.1.6 Compressed Natural Gas and Liquefied Natural Gas Forecasts

In this subsection, the Panel examines FEI’s forecasted demand to serve CNG and LNG customers.

⁷⁹ RCIA Final Argument, p. 7.

⁸⁰ BCSEA Final Argument, pp. 7-8.

⁸¹ FEI Reply Argument, pp. 37-38.

⁸² BCSSIA Final Argument, pp. 15-17, 21-22, 26.

⁸³ FEI Reply Argument, pp. 39-41.

⁸⁴ Ibid., p. 38.

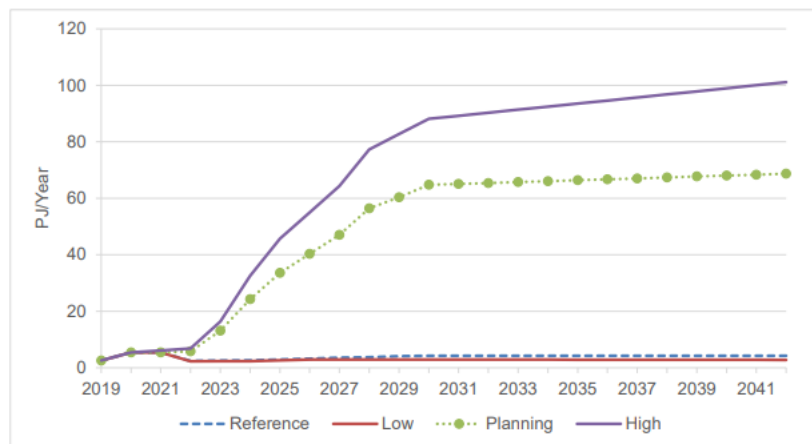
FEI formulated its CNG and LNG demand forecasts by accounting for commitments that have been made by customers, and by forecasting the impacts of a variety of factors.⁸⁵ FEI states that CNG is positioned as a fuel for on-road transport applications such as transit buses, waste haulers and heavy duty on-road trucks; and LNG is positioned as a fuel for off-road and high-horsepower applications such as marine vessels, locomotives, mine haul trucks, and remote industrial power and heat generation applications. In addition, FEI states that potential also exists for LNG to be exported overseas.⁸⁶ FEI notes that to date, CNG demand and the number of CNG customers have continued to grow year over year, displacing diesel fuel in on-road transportation uses, with total demand of over 1.4 petajoules (PJ) in 2021. Similarly, FEI states that LNG has successfully displaced diesel fuel in on-road transportation uses by upwards of 1.5 PJ over the last three years.⁸⁷

FEI developed four long-term forecast demand settings or trajectories for the CNG and LNG segments. These settings are:

- Reference, which assumes the continuation of planning environment conditions and demand trends that existing during the base year of the demand forecast;
- Planning, which is the expected forecast based on initiatives undertaken as part of FEI's Clean Growth Pathway;
- High, which is an upper bound forecast assuming very favourable conditions for expanding service to this customer group; and
- Low, which is a lower bound scenario assuming future conditions were to be very unfavourable for serving this customer group.⁸⁸

Figure 3 below provides FEI's combined CNG and LNG forecast for each of its annual demand settings over the forecast period:

Figure 3: Annual Demand Forecast for Combined CNG and LNG Demand Settings (2020-2042)⁸⁹



The CNG and LNG demand settings as shown above are then mapped to FEI's demand scenarios discussed in Section 3.1.1 of this decision to arrive at the total forecast demand for each demand scenario. For example, FEI uses the Planning CNG and LNG demand setting forecasts as part of the DEP scenario, and uses the High CNG

⁸⁵ Exhibit B-1, pp. 4-14 - 4-15.

⁸⁶ Ibid., Appendix B-3, p. 14.

⁸⁷ FEI Final Argument, p. 12.

⁸⁸ Exhibit B-1, Appendix B-3, p. 14.

⁸⁹ Ibid., p. 4-36. Figure 4-16.

and LNG demand setting forecasts as part of the Upper Bound scenario, etc.⁹⁰ Given FEI has designated the DEP scenario as its planning scenario for the 2022 LTGRP,⁹¹ the remainder of this section will focus on FEI's Planning CNG and LNG demand setting forecasts.

For its Planning CNG demand setting forecast, FEI's assumptions include that the incentives supporting CNG infrastructure under the Greenhouse Gas Reduction (Clean Energy) Regulation (GGRR) are extended beyond 2030 and the BC Low Carbon Fuel Standard continues beyond 2042.⁹² Overall, FEI forecasts the total demand for CNG will be 1.5 PJ by 2040.⁹³

For its Planning LNG demand forecast, FEI identifies the following primary drivers and their expected load impact by 2040:

- Marine Bunkering: FEI assumes that a marine jetty is built to allow ship-to-ship bunkering using LNG from FEI's Tilbury LNG facility (Marine Jetty). The Marine Jetty is currently being pursued by an FEI affiliate⁹⁴ and would be constructed next to the Tilbury LNG storage facility. FEI assumes there will be adoption of LNG for marine bunkering and that transpacific vessels will utilize LNG. FEI forecasts a total load impact of 53 PJ by 2040.⁹⁵
- International Organization for Standardization (ISO) export market: FEI assumes steady ISO export market growth with a forecast total load impact of 6 PJ by 2040,⁹⁶ which is the equivalent of approximately 6,000 ISO containers of LNG per year. FEI identifies that it is currently in discussions with a number of current and prospective customers that have future plans for LNG export, which have informed the forecast.⁹⁷
- Remote power and mining industry growth: FEI assumes growth in this industry will result in a load impact of 4 PJ by 2040.⁹⁸ FEI's forecast is based on its understanding of customer demand requests and an estimate of the potential opportunity.⁹⁹
- Short sea marine market growth: FEI assumes there will be increased LNG vessel adoption by short sea customers with a forecast load impact of 3 PJ by 2040.¹⁰⁰

As noted above, the expected growth in the marine bunkering sector represents the majority of FEI's LNG forecast and as such, the remainder of this section focuses on the expected demand for marine bunkering.

FEI considers that the potential for the marine bunkering market to grow in BC is significant and its forecast is based primarily on a study commissioned by the Port of Vancouver. According to this study, the market potential could exceed 1.2 million tons of LNG per year by 2030. FEI identifies that the Port of Vancouver is a significant hub for transpacific vessels, and the marine industry is starting to transition away from heavy marine fuels and diesel. FEI states that LNG is currently the only commercially viable, scalable alternative to heavy marine fuels and diesel as evidenced by the rapid growth in LNG fuelled vessel orders.¹⁰¹ FEI considers that the

⁹⁰ Exhibit B-1, p. 4-33.

⁹¹ Ibid., p. 4-17.

⁹² Ibid., Appendix B-3, p. 18.

⁹³ Exhibit B-6, BCUC IR 33.11.

⁹⁴ FEI notes that the Marine Jetty will be owned by a non-regulated entity with services provided to it by FEI. Exhibit B-1, p. 3-24.

⁹⁵ Exhibit B-1, p. 3-24; Exhibit B-6, BCUC IR 33.7.

⁹⁶ Exhibit B-6, BCUC IR 33.7.

⁹⁷ Exhibit B-23, BCUC IR 94.5

⁹⁸ Exhibit B-6, BCUC IR 33.7.

⁹⁹ Exhibit B-23, BCUC IR 94.4.

¹⁰⁰ Exhibit B-6, BCUC IR 33.7.

¹⁰¹ Exhibit B-12, CEC IR 26.2.

data in the Port of Vancouver study aligns with its discussions with customers and prospective customers on the potential for LNG marine bunkering services at the Port of Vancouver.¹⁰²

During the proceeding, FEI indicated that since the development of the LNG load forecast as presented in the Application, there have been changes to the expected timing of the demand for marine bunkering LNG due to delays in the Marine Jetty project. Initially, FEI had indicated that final approvals for the Marine Jetty project were expected in 2023 with the Marine Jetty to be in service by the middle of 2024.¹⁰³ However, FEI provided an update that depending on when the necessary permits are obtained, including an environmental assessment certificate, construction could start as early as 2024, and limited bunkering service could begin as early as 2025.¹⁰⁴

In addition to the construction of the Marine Jetty, FEI will require the construction of the Tilbury 1B Expansion facilities to meet the expected demand of its Planning LNG demand setting forecast.¹⁰⁵ Further discussion of the infrastructure requirements associated with serving LNG customers is found in section 3.4.2.2.

MS2S Evidence

MS2S submits that given LNG's contribution to climate impacts, the investment space looks very poor. MS2S states that some of the largest container shipping lines have opted to leapfrog over LNG for carbon-neutral fuels, like Maersk, as well as energy companies like Orsted.¹⁰⁶ MS2S also references a 2021 World Bank report, which concludes that "LNG is unlikely to play a significant role in decarbonizing maritime transport."¹⁰⁷

MS2S provides reference to other ports, such as the Port of Rotterdam, the Port of Singapore, and the Port of Los Angeles, stating that their annual LNG bunkering volumes have decreased over the 2021-2023 timeframe. MS2S also notes that for the Port of Rotterdam and the Port of Singapore, the actual 2022 LNG bunkering volumes have been lower than what FEI is predicting for the Port of Vancouver, despite them being larger ports. MS2S considers that this casts doubt on the accuracy of the 1-1.2 million-ton by 2030 projections by FEI for Port of Vancouver bunkering.¹⁰⁸

MS2S observes that FEI's forecast for marine bunkering demand represents a major expansion for both the Port of Vancouver and for FEI, which has been supplying a small fraction of this LNG to BC Ferries' four dual-fuel vessels and a few long-haul trucking fleets since 2015. MS2S states that based on its knowledge of the forces at play in today's marine industry, it considers a likely outcome would be, at most, 1/8th of FEI's forecast, which would be less than ~ 135,000 tons.¹⁰⁹

FEI Rebuttal Evidence

FEI states that there is credible and reliable evidence that the use of LNG as a marine fuel will continue to rise, including FEI's own bunkering experience in BC, recent and independent Port of Vancouver demand forecasts, vessel order data from DNV, and local market research.¹¹⁰ FEI states that LNG is the leading candidate amongst the various alternative fuel options available in the marine industry and to its knowledge, there are no trans-oceanic battery vessels that are considered pure electric.¹¹¹

¹⁰² Exhibit B-23, BCUC IR 94.3.

¹⁰³ Exhibit B-1, p. 4-16.

¹⁰⁴ Exhibit B-23, IR 94.6.

¹⁰⁵ Ibid., BCUC IR 94.7.

¹⁰⁶ Exhibit C16-6, p. 9.

¹⁰⁷ Exhibit C16-8, p. 9.

¹⁰⁸ Ibid., pp. 5-6.

¹⁰⁹ Exhibit C16-8, p. 12.

¹¹⁰ Exhibit B-38, p. 21.

¹¹¹ Ibid., p. 23.

Positions of the Parties

The CEC submits that FEI has potentially overestimated its LNG bunkering forecasts given that other fuels, such as hydrogen and methanol, are becoming a focus of large shipping companies specifically for GHG emission reduction. The CEC considers that FEI's LNG demand forecast for the marine bunkering sector is already behind the mark by at least two years and expects that the LNG demand forecast as provided during the proceeding will not materialize as expected but rather more slowly than forecast.¹¹²

The CEC also considers that FEI's forecast for LNG demand in the ISO export market segment for the Planning setting is uncertain, given that FEI is still in the very early stages of developing this market. The CEC states that many factors beyond FEI's control could 'derail' the forecasted expansion of ISO LNG exports including geopolitical competition for global LNG supply.¹¹³ The CEC recommends improvements to FEI's forecasting for LNG demand for the marine bunkering and ISO export markets in the next long-term gas resource plan cycle.¹¹⁴

In reply, FEI notes that the CEC does not specify what improvements it recommends. Further, FEI notes that the CEC's doubts regarding FEI's LNG forecast for the marine bunkering and ISO export markets are more in the form of commentary based on its own speculation on these markets, rather than any evidence in this proceeding. Nonetheless, FEI is committed to continually improving its annual demand forecasting methods and will consider methods to improve its annual demand forecast method in its next long-term gas resource plan.¹¹⁵

MS2S submits that FEI's "plans for LNG export and bunkering appear to be both vague, and, in the wake of the recent COP28 agreement to transition away from fossil fuels, declining Asian LNG demand and growing marine industry preference for ammonia and methanol as propulsion fuels, stillborn."¹¹⁶ MS2S disagrees that there is credible and reliable evidence that the use of LNG as a marine fuel will continue to rise, but instead sets out in its intervenor evidence the weaknesses of FEI's evidence, critically the growing industry preference for alternatives other than LNG.¹¹⁷

While BCSEA did not comment on FEI's LNG forecast specifically, it submits that the parts of FEI's LTGRP concerning LNG exports and LNG for international shipping should be rejected. BCSEA does not support FEI's Pillar 4, which is "Investing in LNG to lower GHG emissions in marine fueling and global markets" as it considers it would be inappropriate for FEI customers to bear the risk of LNG investments aimed at reducing GHG emissions outside the Province of BC (i.e., LNG for out-of-province shipping and LNG exports to global markets) in the absence of contractual or regulatory mechanisms to transfer such GHG emissions reductions to BC.¹¹⁸

In reply, FEI submits that BCSEA fails to articulate a clear or compelling basis for its views, does not offer any evidence of increased risk to customers, and overlooks the evidence on the benefits of investment in LNG to FEI's customers and reducing GHG emissions globally. FEI considers that its plan to serve the demand for LNG will ultimately help to *reduce* non-LNG customers' rates, which is especially important in the context of the rising costs of energy due to the energy transition. FEI's evidence indicates that core customers' rates are not expected to increase to pay for further LNG-related investments, as revenue from this market will be used to recover the costs of the infrastructure required to serve LNG customers. FEI submits that the portion of the LTGRP related to LNG investments is in the public interest and should be accepted.¹¹⁹

¹¹² CEC Final Argument, pp. 62-63.

¹¹³ *Ibid.*, p. 64.

¹¹⁴ *Ibid.*, p. 64.

¹¹⁵ FEI Reply Argument, pp. 44-45.

¹¹⁶ MS2S Final Argument, p. 11.

¹¹⁷ *Ibid.*, pp. 10-11.

¹¹⁸ BCSEA Final Argument, pp. 2, 4-5.

¹¹⁹ FEI Reply Argument, pp. 24-26.

BCOAPO did not comment specifically on FEI's LNG forecast; however, BCOAPO submits that it is not unreasonable for FEI to pursue investing in LNG, as this area is designed to reduce GHG emissions and generate additional revenues to assist in offsetting the rate impacts of decarbonizing the gas supply.¹²⁰

Panel Determination

The Panel finds that the end-use methodology used by FEI in the preparation of its demand forecasts is reasonable, appropriate and is consistent with past practice. Additionally, the Panel finds that the demand forecast for residential, commercial and industrial customers, before new demand-side measures, that is included in the Diversified Energy Planning demand scenario, is reasonable and meets the requirements of section 44.1 (2)(a) of the UCA.

The Panel accepts that FEI's demand forecast is a point-in-time plan/demand scenario for a long-term (twenty year plus) planning horizon and includes uncertainty, especially with respect to government decarbonization policies and advancements in low carbon technologies. The Panel agrees that a broad range of annual demand forecasts between the alternate scenarios is representative of the substantial uncertainty in the current planning environment and creates a framework that is reasonable for resource planning for FEI. Given the pace of change and level of uncertainty in the energy industry, the Panel finds that more frequent updates of load forecasts and the consideration of broad ranges of load forecast scenarios collectively constitute the most reasonable approach to forecasting within the context of long-term gas resource plans. The Panel considers that the inclusion of multiple demand scenarios, especially the DEP and Deep Electrification scenarios, aided in the review of the 2022 LTGRP.

The Panel expects that FEI will include multiple alternate demand scenarios in its next long-term gas resource plan; however, the Panel is reluctant to prescribe each of the alternate scenarios. The alternate scenarios that FEI chooses to include in its long-term gas resource plan should be predicated on the relevant prevailing circumstances at the time it is developed. Notwithstanding the Panel's reluctance to prescribe different demand scenarios, it does see value in a degree of continuity in forecasts between iterations of long-term gas resource plans. **Therefore, the Panel directs FEI to include a demand forecast that expands upon its DEP scenario as well as a deep electrification scenario, in its next long-term gas resource plan.**

The Panel considers, at this time, that a deep electrification pathway is unlikely to be reasonably achieved in the short term, for instance by 2030. However, this does not necessarily mean that it will be unachievable over the longer-term planning horizon. The Panel considers that the Kelowna Electrification Study aided the understanding of the challenges associated with significant electrification; however, given its results were not extrapolated to the remainder of FEI's service territory, the Panel finds that study of limited value. The Panel considers that the likelihood of a deep electrification outcome may be strongly influenced by developments in both government policy and technology advances; therefore, the Panel finds it is premature to determine that a deep electrification scenario is not plausible over the planning horizon of this LTGRP.

The Panel considers that the energy transition, electrification and introduction of on-system low carbon gas supply, warrant deeper analysis of regional load forecasts in future iterations of the long-term resource plan to adequately support infrastructure planning, as discussed in Section 3.4.2. Additionally, the Panel considers it important for FEI to directly model the impacts of the emerging use of hybrid systems, codes and standards, and policies that target fuel switching, in order to better understand potential future customer and demand growth in future demand forecasts. **Accordingly, the Panel directs FEI to include the impacts of hybrid systems, codes and standards, and policies that target fuel switching in its demand forecasts in its next long-term gas resource plan.** Finally, the Panel generally agrees with the CEC's suggestion that in the next long-term gas resource plan, FEI should further investigate modelling the price elasticity effects of low carbon gases. As discussed in section 4.1.1, FEI's pursuit of decarbonization is likely to have an upward impact upon rates, and the Panel is not

¹²⁰ BCOAPO Final Argument, p. 12.

convinced that it is reasonable to assume such rate increases will have no impact upon FEI's future demand. While FEI notes this may be an area with limited data at this time, this does not preclude FEI from conducting further research or analysis ahead of its next plan, including consideration of cross-price elasticity effects with renewable electricity.

The Panel finds that FEI's Planning CNG demand forecast, which is included in the Diversified Energy Planning demand scenario, is reasonable for the purposes of outlining FEI's potential demand in a long-term resource plan, and meets the requirements of section 44.1 (2)(a) of the UCA. The Panel recognizes that FEI has grown its CNG customer base in the low carbon transportation sector in recent years and considers FEI's assumptions regarding further growth over the planning horizon to be reasonable.

The Panel accepts FEI's evidence that there is a significant potential sales market for LNG for bunkering and export, which could result in considerable benefits accruing to its ratepayers. Based on FEI's evidence, the Panel considers there is a possibility that such demand may materialize; therefore, **the Panel finds that the Planning LNG demand setting forecast that is included in the Diversified Energy Planning demand scenario is reasonable for the purposes of outlining FEI's potential demand in a long-term resource plan, and meets the requirements of section 44.1 (2)(a) of the UCA.** However, the Panel does not view the Planning LNG demand setting forecast alone to be sufficient justification for further investments in LNG. There is no evidence that FEI has entered into firm contracts for the sales of LNG for bunkering and export, nor is there evidence that such a prospect is imminent. Additionally, the Marine Jetty project, which is necessary for LNG bunkering and export, has not received the necessary permits, including an environmental assessment certificate, nor has a firm construction start date been set. Due to the significant uncertainty associated with this market currently, at this point in time the Panel is not in a position to determine that pursuit of sales, and related infrastructure investments in LNG for bunkering and export market will be beneficial to ratepayers and in the public interest, as discussed further in section 3.4.2. Additionally, the Panel finds that it is reasonable for FEI to continue to evaluate the demand for LNG for bunkering and export and include such an evaluation in its next long-term gas resource plan.

The Panel supports FEI's intent to continue providing the Traditional Annual Method forecast in future long-term gas resource plans, noting that the forecast is relatively easy to produce and continues to have some value as a point of comparison with FEI's End-use Method. In the event a significant divergence emerges between the two forecast methods, FEI and the BCUC may need to re-evaluate the value of using the Traditional Annual Method forecast as part of future long-term gas resource plan filings.

Overall, the Panel finds that the Diversified Energy Planning demand scenario is a reasonable basis for illustrating FEI's total demand forecast in the 2022 LTGRP, and meets the requirements of section 44.1 (2)(a) of the UCA.

3.2 Demand-Side Measures

Section 44.1(2)(b), (c) and (f) require that the LTGRP include a plan of how FEI intends to reduce demand by taking cost-effective DSM; an estimate of demand after DSM; and an explanation of why planned energy purchases and facilities are not planned to be replaced by DSM, respectively. The Panel's findings with respect to planned energy purchases and facilities are outlined in sections 3.3 and 3.4.

The definition of "cost-effective" is provided by the Demand-Side Measures Regulation (DSM Regulation). Following the filing of the Application, the BC Government issued an amended DSM Regulation¹²¹ on June 30, 2023. The amendments include changes to the types of DSM which can be offered by gas utilities, in particular the removal of incentives for gas space and water heating equipment with performance below a certain threshold, with some exceptions for low income and Indigenous customers and certain industrial uses. The

¹²¹ B.C. Reg. 326/2008 — Demand-Side Measures Regulation, amended by M193/2023
https://www.bclaws.gov.bc.ca/civix/document/id/mo/mo/m0193_2023.

amended DSM Regulation also changes the primary test to be used to assess cost-effectiveness to the Utility Cost Test (UCT), and requires the BCUC to use an avoided gas cost of \$34.07/gigajoule (GJ) in 2023/2024, escalated by the Consumer Price Index (CPI) for subsequent fiscal years.¹²²

DSM is one of the pillars of FEI's Clean Growth Pathway, and FEI anticipates expanding its existing DSM activities over the planning horizon to reduce GHG emissions to meet provincial GHG emission reduction targets.¹²³

This section outlines the amount of demand FEI is forecasting to be offset using DSM, followed by a discussion of non-pipe solutions. Cost effectiveness and adequacy of DSM are discussed further in Section 4.2.

3.2.1 The Amount of Demand to be Offset Using DSM

FEI's DSM analysis was informed by the 2021 Conservation Potential Review (CPR), using the cost-effectiveness tests laid out in the DSM Regulation prior to June 2023 as economic screens, in particular the modified Total Resource Cost (mTRC) and UCT.¹²⁴ FEI established a technical advisory committee to provide advice and feedback throughout the development of the 2021 CPR.¹²⁵

From five potential DSM Settings (which contemplate different levels of expenditures and energy savings), FEI has selected the High DSM Setting, which maximises the energy savings and GHG reduction potential of DSM by accelerating building retrofits, high performance new construction, and energy efficiency in commercial and industrial processes.¹²⁶ Under the Diversified Energy (Planning) Scenario with the High DSM Setting, FEI's savings from DSM activities are forecast to be approximately 25 PJ or 13 percent of annual load in 2042.¹²⁷ FEI conducted additional analysis to explore a range of DSM settings, primarily by varying the level of incentive for measures.¹²⁸

FEI provided an analysis showing the potential impact on forecasted savings on the DEP Scenario - High DSM Setting if gas space and water heating equipment with less than 100 percent efficiency is phased out, which suggests cumulative energy savings will be reduced by approximately 12 percent.¹²⁹

Positions of the Parties

Intervenors such as the CEC, BCSEA, BCOAPO and MoveUP support DSM as providing a cost-effective solution for the reduction of GHG emissions.¹³⁰ Several intervenors (BCSEA, RCIA, CEC and BCOAPO) support FEI's selection of a high level of DSM as reasonable and appropriate for the purposes of the 2022 LTGRP.¹³¹

BCOAPO submits that FEI has developed a robust set of demand and DSM scenarios producing a wide range of future demand outcomes after DSM measures that are reasonable given the 20-year planning horizon for resource planning purposes.¹³²

¹²² DSM Regulation, S 4 (1.1)(a).

¹²³ FEI Final Argument, p. 55-57.

¹²⁴ Ibid., p. 24.

¹²⁵ Exhibit B-1, p. 8-25.

¹²⁶ FEI Final Argument, p. 55-57.

¹²⁷ Exhibit B-1, p. 5-1; FEI Final Argument, p. 57.

¹²⁸ FEI Final Argument, p. 60; Exhibit B-1, pp. 5-15.

¹²⁹ Exhibit B-6, BCUC IR 45.1.

¹³⁰ BCOAPO Final Argument, p. 12; MoveUP Final Argument, p. 5; BCSEA Final Argument, p. 4; CEC Final Argument, pp. 38; 83-84.

¹³¹ BCOAPO Final Argument, p. 6; BCSEA Final Argument, p. 10; CEC Final Argument p. 83; 85; RCIA Final Argument, pp. 8; 21.

¹³² BCOAPO Final Argument, p. 4.

Several interveners (BCSEA, RCIA, CEC and BCOAPO) support FEI's selection of a high level of DSM as reasonable and appropriate for the purposes of the 2022 LTGRP.¹³³

While supporting the High DSM scenario, RCIA is concerned that it is no longer achievable in light of the recent amendments to the DSM Regulation, which remove incentives for conventional space and water heating measures. RCIA submits that the challenge for FEI will be to ramp up DSM even more to achieve the savings contemplated in the LTGRP.¹³⁴ MoveUP and the CEC also note that given the current context and recent changes to the DSM Regulation, it is difficult to forecast the future of DSM over a 20 year planning period.¹³⁵

FEI acknowledges in reply that, given the amendments to the DSM Regulation, there are potential DSM savings that FEI will no longer be able to pursue. However, ultimately, the 2022 LTGRP is intended to provide directional information about how the utility intends to pursue adequate, cost-effective DSM. Thus, FEI's choice of the High DSM Setting must be understood as reflecting FEI's intent to maximize the GHG reduction potential of adequate, cost-effective DSM and that FEI will design its DSM expenditures with the High DSM Setting in mind.¹³⁶

BCSSIA submits that DSM could be enhanced by a more ambitious pursuit of dual fuel gas/electric heating systems.¹³⁷ The CEC also submits that these new advanced DSM measures will likely be vital aspects of FEI's transition plan and should be encouraged by the BCUC.¹³⁸

FEI states in reply that further capacity modeling and analysis is needed to understand the impact of hybrid systems on both the gas and electricity systems and the value of avoided capacity compared to other resource options. This could facilitate a better understanding of quantifying the value of the gas peaking service and mitigating the potential increase in gas rates resulting from decreased gas load. FEI expects to provide further information on hybrid systems and peak heating requirements in the next LTGRP.¹³⁹

3.2.2 Non-Pipe Solutions

Further to a BCUC directive from the 2017 LTGRP Decision, FEI updated its analysis of opportunities for DSM to be used to cost-effectively replace or defer infrastructure investments. FEI commissioned ICF Canada (ICF) to update its review of the state of the North American gas utility industry in exploring opportunities and implementing DSM programs that could potentially replace or defer infrastructure investments.¹⁴⁰ FEI submits that ICF's report highlights that there is only modest experience to date with implementing non-pipe solutions (NPS) projects to address peak demand constraints, but interest is starting to grow, especially in response to decarbonization activities.¹⁴¹

FEI cannot currently assess the magnitude of change in peak hour or peak day demand resulting from DSM or validate to what extent peak demand could be reduced reliably. However, FEI's Advanced Metering Infrastructure (AMI) Project will allow FEI to begin installing meters that can provide more precise consumption information that would aid in validation of the peak demand reductions from demand-side measures.¹⁴²

FEI is assessing means of collecting data to measure the impact of programs or projects on peak demand and undertaking pre-feasibility work for potential future NPS activity. Other types of NPS being explored by FEI

¹³³ BCOAPO Final Argument, p. 6; BCSEA Final Argument, p. 10; CEC Final Argument p. 83; 85; RCIA Final Argument, pp. 8; 21.

¹³⁴ RCIA Final Argument, pp. 22-23.

¹³⁵ MoveUP Final Argument, pp. 5, 7; CEC Final Argument, p. 85.

¹³⁶ FEI Reply Argument, p. 48.

¹³⁷ BCSSIA Final Argument, p. 46.

¹³⁸ CEC Final Argument, p. 86.

¹³⁹ FEI Reply Argument, p. 41.

¹⁴⁰ Exhibit B-1, Appendix C-3.

¹⁴¹ FEI Final Argument, p. 61.

¹⁴² Exhibit B-10, BCSEA IR1 20.1.

include natural gas demand response (NGDR) solutions as part of its Innovative Technologies portfolio,¹⁴³ and CNG and LNG NPS, as exhibited by the Gibsons Capacity Upgrade project which employed a local peak shaving CNG unit to avoid a pipeline solution.¹⁴⁴ Given the need for reliable energy during peak winter conditions, FEI is cautious about DSM relying only on behavioural changes in customer, but continues to study their potential.¹⁴⁵

Positions of the Parties

FEI is supportive of the development of a “BC-specific NPS framework that leverages best practices in other jurisdictions, while reflecting the realities of the BC market,” but submits it is too early to speculate on the timeframes for developing such a framework. FEI submits it is “diligently progressing its work on potential NPS,” and expects to report on progress on opportunities for demand and capacity reduction through NPS such as Enhanced Targeted Energy Efficiency and NGDR in the next and subsequent LTGRP.¹⁴⁶

BCSEA supports FEI’s continued development of capacity-focused DSM to replace or defer infrastructure investments. BCSEA encourages FEI to continue to develop a BC-based NPS framework, noting that this will be supported by the implementation of the AMI project.¹⁴⁷

The CEC is supportive of FEI’s commitment to using DSM to replace or defer infrastructure and submits that maximizing cost-effective DSM and deferring infrastructure investments to the greatest extent possible has significant value for ratepayers, as well as for FEI.¹⁴⁸

Panel Determination

The Panel is satisfied that the 2022 LTGRP meets the requirements of sections 44.1(2)(b) (c) and (f) of the UCA.

The Panel finds that FEI’s selected High DSM Setting scenario is reasonable and appropriate for the purposes of the 2022 LTGRP. Therefore, coupled with its finding in section 3.1 that FEI’s demand forecast meets the requirements of section 44.1 (2)(a) of the UCA, the Panel finds that the 2022 LTGRP includes a reasonable estimate of the demand for energy that FEI expects to serve after it has taken cost-effective DSM. In light of the uncertainty of FEI’s planned DSM savings and early stage work on evaluating the impact of NPS on peak demand discussed below, the Panel also finds that the 2022 LTGRP includes an explanation of why the demand for energy to be served by new facilities and energy purchases is not planned to be replaced by DSM.

The Panel accepts that there is uncertainty related to the estimated DSM savings that may be achieved in light of the amended DSM Regulation, as well as the potential for future demand growth to be less than the Diversified Energy Planning forecast, as discussed in section 3.1. However, the Panel is satisfied that FEI’s intended pursuit of the High DSM Setting reasonably reflects FEI’s intent to maximize the GHG emission reduction potential of adequate, cost-effective DSM, and therefore meets the requirements of the UCA. **Given the implications of the amended DSM Regulation, FEI is directed to file in its next LTGRP, an updated Conservation Potential Review based on eligible measures under the amended DSM Regulation to be used to inform its future forecasts of DSM.** The Panel acknowledges FEI’s efforts to engage with its Technical Advisory Committee in the development of its 2021 CPR and expects FEI will continue such efforts in the preparation of its next CPR. The Panel considers FEI’s inclusion of multiple DSM scenarios in the 2022 LTGRP as beneficial to the BCUC’s review and expects FEI to continue to provide multiple scenarios in its next long-term gas resource plan.

The Panel finds that there is value in evaluating NPS as a tool to manage constrained parts of the FEI system, and acknowledges that FEI is progressing its work on potential NPS. The Panel anticipates this will become of greater

¹⁴³ Exhibit B-6, BCUC IR1 47.2, 47.3, 49.1-2.

¹⁴⁴ Exhibit B-1, p. 7-33.

¹⁴⁵ Exhibit B-10, BCSEA IR1 20.

¹⁴⁶ FEI Final Argument, p. 62; FEI Reply Argument, p. 15.

¹⁴⁷ BCSEA Final Argument, p. 9.

¹⁴⁸ CEC Final Argument, p. 87.

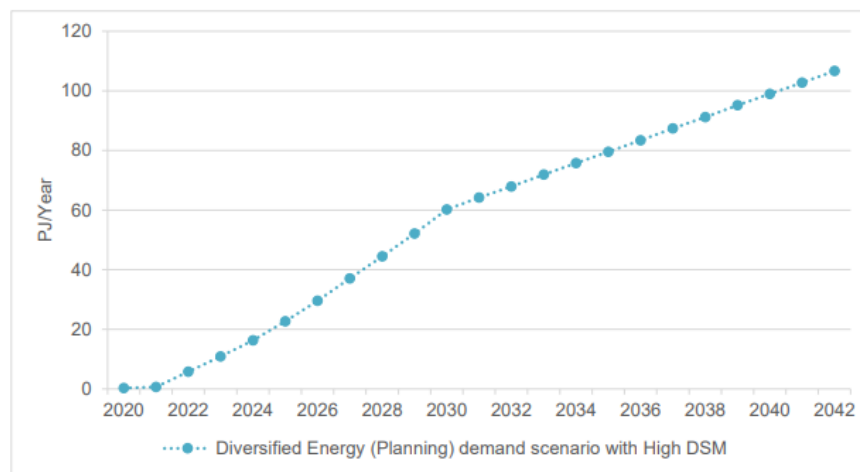
importance as the pace of decarbonization activities increases, with resulting impacts on peak demand on different parts of the FEI system. Therefore, the Panel anticipates that a deeper analysis of regional load forecasts in future iterations of the long-term gas resource plan would be useful to support future DSM estimates and infrastructure planning requirements. **Accordingly, FEI is directed to include in its next long-term gas resource plan the details of its efforts and findings regarding the development of a BC-specific NPS framework.**

3.3 Energy Purchases

Section 6 of the LTGRP sets out FEI’s approach to gas supply portfolio planning, which FEI submits satisfies sections 44.1(2)(e) and (f)¹⁴⁹ of the UCA.¹⁵⁰

FEI explains that consistent with provincial policy and FEI’s Clean Growth Pathway, FEI has targeted long-term acquisition of renewable and low-carbon gas supply to meet provincial targets for carbon emission reductions in 2030 and 2050.¹⁵¹ Further, item 1 of FEI’s 2022 LTGRP Action Plan is to “Accelerate the development and acquisition of renewable and low-carbon gas supplies to meet customer energy needs and contribute to provincial emission reduction targets.”¹⁵² Figure 4 below shows the forecast increase in supplies of renewable and low-carbon gas that FEI expects to acquire annually over the planning horizon.

Figure 4: Forecast Renewable and Low-Carbon Gas Supply¹⁵³



FEI has not developed a separate 20-year forecast for each individual component of its renewable and low-carbon gas supplies (RNG, Hydrogen, Syngas and Lignin) for the Application.¹⁵⁴ However, FEI provides the figure below to illustrate an example of how components of the renewable and low-carbon gas portfolio could evolve to reach the overall portfolio supply forecast. FEI states that it will be better positioned to develop separate forecasts in future long-term gas resource plans as more information about the evolving market for renewable and low-carbon gas becomes available.¹⁵⁵

¹⁴⁹ Section 44.1(2)(e) is the requirement for information regarding the energy purchases that FEI intends to make after taking into account the demand for energy the public utility expects to serve after implementing DSM, and 44.1(2)(f) is an explanation of why demand for energy to be served by new facilities or energy purchases are not planned to be replaced by DSM.

¹⁵⁰ Exhibit B-1, Section 6; FEI Final Argument, p. 63.

¹⁵¹ Exhibit B-1, p. 6-11; FEI Final Argument, p. 64.

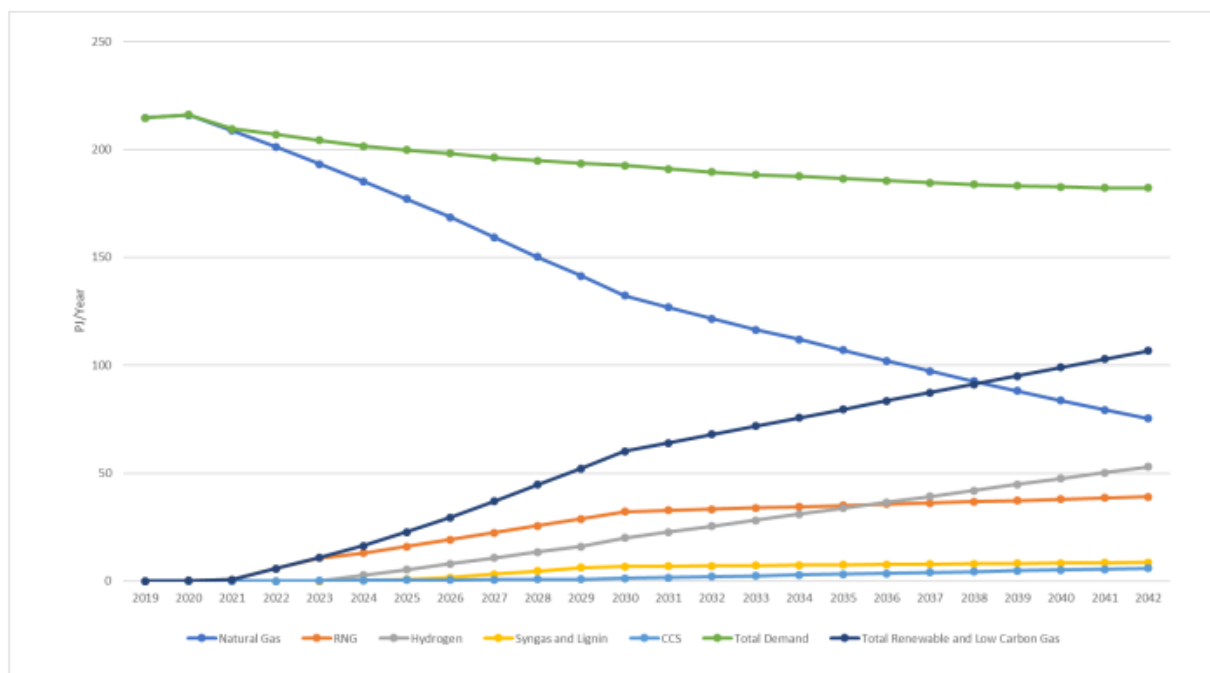
¹⁵² Exhibit B-1, p. 10-1.

¹⁵³ Ibid., p. 6-12, Figure 6-3.

¹⁵⁴ Exhibit B-6, BCUC IR 52.6.

¹⁵⁵ Exhibit B-6, BCUC IR 52.6; FEI Final Argument, p. 67.

Figure 5: Modelled Example of Renewable and Low-Carbon Gas Supply Portfolio Showing the Component Makeup of the Portfolio¹⁵⁶



FEI explains that to 2030:¹⁵⁷

- RNG and hydrogen from off-system supply sources will be relied on more heavily in the early stages of FEI’s carbon reduction transition. Conventional natural gas and RNG will continue to make up the majority of physical deliveries to customers during this period and will be delivered to FEI by displacement as with conventional natural gas purchases. Physical flows of hydrogen on FEI’s gas infrastructure are expected to rise but be limited to smaller amounts and portions of FEI’s system until around 2030 as the technologies and infrastructure needed to manage larger volumes are refined and implemented.
- One or more syngas and lignin projects will displace some industrial load, though natural gas may continue to provide firm back-up service for periods when syngas or lignin production is unavailable.
- Carbon capture, utilization and storage is expected to still be in development stages, perhaps available in small amounts through pilot projects, in 2030.

From 2030-2042:¹⁵⁸

- This is the latter part of the planning horizon for the 2022 LTGRP and as such, FEI considers that it is subject to greater uncertainty. FEI states that the proportion of its customers using conventional methane for space and water heating as opposed to other renewable and low-carbon gas supplies will have decreased, but will still make up a majority of customers. While the development of on-system resources will have grown in the intervening years, FEI anticipates there will still be reliance on off-system supplies.

Beyond 2042:¹⁵⁹

¹⁵⁶ Exhibit B-6, BCUC IR 52.6.

¹⁵⁷ Exhibit B-1, p. 6-12.

¹⁵⁸ Ibid., p. 6-13.

¹⁵⁹ Exhibit B-1, p. 6-13.

- The steps taken earlier in the planning horizon will set FEI on a pathway to deep decarbonization by 2050 and well on its way to achieving carbon neutrality on an annual basis. RNG and hydrogen will both be an important part of FEI's resource mix.

FEI explains that as RNG volumes continue to increase each year, FEI will monitor and make any adjustments that are required to the remainder of the gas supply portfolio through each Annual Contracting Plan. Additionally, as FEI begins to integrate other low-carbon gas supply such as hydrogen, syngas or lignin, FEI will annually assess the impact to the portfolio in each Annual Contracting Plan.¹⁶⁰

In terms of the progress FEI is making towards these supply outlook targets, FEI provides examples of its current and future actions, such as its plans to support development of technologies such as wood-to-RNG. FEI notes that existing and near-term projects include RNG from landfills, anaerobic digestion, wastewater treatment plants, farm waste and wood-to-RNG. FEI states that as of the third quarter in 2022, it has more than 30 biomethane supply agreements that have been approved by the BCUC that are expected to supply a total volume of RNG of approximately 20 PJ per year with a potential maximum RNG supply volume of approximately 23 PJ annually once these biomethane facilities are fully operational in the 2025-2026 timeframe. FEI states that it is also actively negotiating new biomethane supply agreements and, based on current prospects, by 2030, FEI expects its renewable and low-carbon gas portfolio to have more than 30 PJ of RNG based on a continued upward trajectory.¹⁶¹

While FEI expects RNG to be an important fuel that will comprise a large share of its renewable gas portfolio, over the longer term, FEI expects to add other forms of renewable gas such as low-carbon hydrogen. To that end, FEI is advancing early-stage development activities in support of hydrogen, syngas and lignin supply projects. FEI expects to begin pilot and pre-commercial stage projects using alternate forms of renewable gas allowed under the current GGRR and expects to increase supply from these alternate forms of renewable gas, which will complement growth in RNG and add to the total amount of renewable and low-carbon gas available to meet 2040 supply targets.¹⁶² FEI provides price outlooks for each low-carbon gas based on FEI's experience in sourcing gas supply, the B.C. Renewable and Low-Carbon Gas Supply Potential Study, and other industry research available at the time. FEI notes there is uncertainty regarding future costs.¹⁶³

Positions of the Parties

The CEC finds FEI's planning with respect to its gas supply portfolio appropriate in so far as it is satisfied with the steps FEI proposes to take to monitor the planning environment. The CEC recommends that FEI refine its RNG and low carbon gas supply analysis in the next long-term gas resource plan, so that alternative supply scenarios are examined more closely and result in a more transparent discussion of supply alternatives, price risks and strategies going forward.¹⁶⁴

In reply, FEI submits that the next LTGRP is too soon to expect fully-developed renewable and low-carbon gas portfolio alternatives and that a comparison of renewable and low-carbon gas portfolios will only be meaningful for resource planning purposes once FEI has sufficient supply resource alternatives from which to develop and assess a robust set of alternative portfolios. FEI states that leading up to 2030 it expects to need to purchase most of the reasonably priced renewable and low-carbon gas available to it to meet the GHGRS and as such, it is unlikely to have sufficient supply resource alternatives until later in the planning horizon, near or perhaps after 2030.¹⁶⁵

¹⁶⁰ Exhibit B-1, p. 6-13.

¹⁶¹ Exhibit B-6, BCUC IR 52.5.

¹⁶² Ibid., BCUC IR 52.5.

¹⁶³ Ibid., p. 71.8.1.

¹⁶⁴ CEC Final Argument, pp. 92-93.

¹⁶⁵ FEI Reply Argument, pp. 48-49.

BCOAPO submits that FEI has adequately outlined its gas supply purchases under the various resource planning scenarios in a manner that is reasonable for resource planning purposes.¹⁶⁶

BCSEA acknowledges that the LTGRP sets out plans for FEI to secure cost effective and reliable gas supply to meet demand and mitigate price volatility, and supports the LTGRP's commitment to continue to grow the quantities of RNG. BCSEA supports consideration of alternative demand and supply portfolios in future long-term gas resource plans.¹⁶⁷

BCSSIA is concerned that the RNG volume that FEI requires to meet the GHG targets will far exceed the volume that suppliers located in both B.C. and in the rest of North American can realistically supply.¹⁶⁸ BCSSIA is also concerned that FEI has no firm concept as to where FEI will acquire the hydrogen, or by what technologies it will be produced.¹⁶⁹ Furthermore, BCSSIA submits FEI should use its purchase power to encourage the electrification of natural gas suppliers as a means to promote a reduction of GHG emissions upstream.¹⁷⁰

Local Government Interveners submit that FEI has been unable to provide concrete information about the future sources of renewable and low-carbon gas, such as information about timeframes, type of production, or sourcing location. With this degree of uncertainty still outstanding, Local Government Interveners find it difficult to share FEI's optimism about finding sufficient renewable and low carbon gases to meet its claims in this LTGRP. Local Government Interveners consider that FEI does not seem to have a robust mitigation strategy that will address the supply risks associated with low-carbon gases and have concerns about whether this supply will materialize.¹⁷¹

MS2S submits that the LTGRP fails to explain how FEI would acquire sufficient local RNG and hydrogen supply to guarantee their low-carbon role in decarbonizing the gas supply. MS2S states that the LTGRP also understates the likelihood that it will be expensive, as the major available alternatives (RNG, Hydrogen) cost approximately 10 times what fossil gas does, which will inevitably cause mass customer migration away from fossil gas use.¹⁷²

GNAR submits FEI should amend the plan to include scenarios showing a complete phaseout of fossil gas by 2033, 2040, and 2050.¹⁷³

In reply to concerns that FEI's future low-carbon gas portfolio is lacking definition, FEI submits that its assumptions of overall supply availability are based on research that demonstrates that the available resources to produce renewable and low-carbon gas far exceed the 60 PJ by 2030 target. FEI notes that its study and market analysis include commissioned studies by market leaders, supply agreements both executed and in negotiation, and third-party expert studies.¹⁷⁴ FEI submits that it has provided substantial and detailed evidence with respect to its plan to transition towards renewable and low-carbon gases, which bears out the feasibility of its plans. FEI states that those interveners who express concerns or note challenges have not demonstrated with any evidence or compelling argument that FEI's plans with respect to renewable and low-carbon gases are not feasible.¹⁷⁵

¹⁶⁶ BCOAPO Final Argument, p. 4.

¹⁶⁷ BCSEA Final Argument, pp. 6, 9.

¹⁶⁸ BCSSIA Final Argument, p. 34.

¹⁶⁹ *Ibid.*, p. 37.

¹⁷⁰ *Ibid.*, p. 46.

¹⁷¹ Local Government Interveners Final Argument, pp. 9-10.

¹⁷² MS2S Final Argument, p. 11.

¹⁷³ GNAR Final Argument, p. 16.

¹⁷⁴ FEI Reply Argument, p. 8.

¹⁷⁵ FEI Reply Argument, p. 5

FEI also submits that its plans for renewable and low-carbon gases are sufficiently flexible to accommodate uncertainty. FEI states that its LTGRP is built on a diverse portfolio of options that FEI is simultaneously assessing, including different supply types, sources, locations, and distribution pathways. As policy, technology and the market develop, so will FEI's plan for renewable and low-carbon gas.¹⁷⁶

In reply to cost concerns regarding renewable gas alternatives, FEI submits that the costs for renewable and low-carbon gas are expected to go down over time on account of technological improvements that positively impact production volumes and the cost-efficiency and market benefits of economies of scale, just as they did for solar and wind generation, as well as conventional natural gas and electricity when they were first introduced to the market. FEI will continue to seek the most cost-effective supply sources available and negotiate acceptable contract terms.¹⁷⁷

In reply to BCSSIA's recommendation that FEI encourage the electrification of its natural gas suppliers, FEI submits that it has stated on the record that it is currently examining options of procuring natural gas with lower life cycle carbon intensity, including the purchase of certified or abated gas. FEI adds that there is policy uncertainty regarding the acceptability of low carbon natural gas as an emission reduction option since: a) there are multiple certification programs with different criteria and certified gas has a higher cost; b) it is not known whether the BC GHGRS compliance options will include certified gas; and c) on the purchase of natural gas from producers who have electrified their operations, FEI submits that this supply will likely not meet the gas intensity threshold to be considered "low-carbon gas".¹⁷⁸

Panel Determination

The Panel finds the 2022 LTGRP meets the requirements of sections 44.1(2)(e) and (f) of the UCA with respect to planned energy purchases.

The Panel is satisfied that FEI's strategy for incorporating low carbon supply into its overall gas supply portfolio is reasonable for this LTGRP. The Panel notes that FEI has not provided specific details of its expected acquisition of low-carbon gas. The Panel accepts that FEI is not requesting approval of any energy supply contracts within this LTGRP, and future supply contracts will be subject to BCUC review pursuant to section 71 of the UCA. Based on FEI's evidence, the Panel is concerned that the necessary supplies of low-carbon gas may not materialize in the timeframe required to meet the GHG emission reduction requirements in 2030 and beyond, given the significant scale up required in emergent supply markets which may also be subject to increasing competition between purchasers. However, the Panel considers that this concern does not rise to a level warranting a finding that the energy supply component of the 2022 LTGRP does not meet the requirements of the UCA. The Panel considers the amount of low carbon gas available in the planning period will be driven largely by market response to government policy and technology advances. FEI's price outlook¹⁷⁹ indicates the costs of most low-carbon gases will rise over time; however, there is insufficient robust evidence at this time to comment on the reasonableness of these price outlooks. Significant uncertainty remains, particularly with respect to low-carbon gases that are reliant on emerging production technologies.

Given the uncertainty of future low-carbon gas supply, the Panel expects that FEI will include a much greater level of information regarding the anticipated sources of low-carbon gas in its next long-term gas resource plan. Additionally, FEI is encouraged to provide analysis of different portfolios of low carbon gases, and to compare the merits and drawbacks of these portfolios. While the Panel acknowledges there may be limitations to such comparisons in the short-term due to availability of supply, the LTGRP would benefit from a longer-term view of the range of options that may be available to FEI for procuring low-carbon gases. Finally, the Panel appreciates

¹⁷⁶ Ibid., pp. 9-10.

¹⁷⁷ Ibid., p. 16.

¹⁷⁸ Ibid., pp. 58-59.

¹⁷⁹ As outlined in Exhibit B-6, p. 71.8.1.

FEI’s commitment to review the acquisition of certified gas as part of its portfolio and looks forward to further consideration of this topic in the next long-term gas resource plan.

3.4 System Resource Needs

Section 44.1(2)(d) requires that the LTGRP include a description of the facilities that FEI intends to construct or extend in order to serve the estimated demand after taking into account cost-effective DSM. Additionally, as previously noted, section 44.1(2)(f) requires an explanation of why such facilities are not planned to be replaced with DSM. These matters are addressed further in this section of the decision.

FEI identifies the following key aspects of providing a safe, reliable, and secure supply of gas to customers:¹⁸⁰

- Identifying when and where capacity constraints may appear; and
- Planning for the infrastructure and system resources required over the planning horizon.

When planning system expansions to address these system constraints, FEI traditionally considers three resource options as outlined in the following table.

Table 1: Resource Options to Address Capacity Constraints¹⁸¹

Resource Option	Description
Pipelines	To increase throughput capacity, an existing pipeline can be replaced by a larger diameter pipeline or it can be looped with a parallel pipeline.
Compression	Adding compression provides higher supply pressure to move gas and increases gas density which thereby reduces pipeline velocity and pressure drop along the pipeline. Compressors can be added to new or existing sites along the pipeline.
On-System Storage	FEI considers LNG storage to be an on-system storage facility. During low demand periods, gas is liquefied and pumped into the storage facility. Conversely, during high demand periods, stored gas is vapourized and compressed back into the pipeline system to maintain pipeline operating pressure and increase system capacity without having to install throughput capacity from pipelines or compressors.

FEI identifies on-system renewable gas production as a fourth resource option that will become available in the future.¹⁸²

In this section, the Panel provides an overview of FEI’s potential infrastructure requirements outlined in the 2022 LTGRP, including issues arising in the proceeding regarding FEI’s peak demand forecast; infrastructure needs to integrate low carbon gases; and system expansions that may be triggered by LNG demand.

3.4.1 Peak Demand Forecast

FEI operates three main transmission systems: the Vancouver Island Transmission System (VITS), the Coastal Transmission System (CTS), and the Interior Transmission System (ITS). To identify capacity constraints, FEI

¹⁸⁰ Exhibit B-1, p. 7-1.
¹⁸¹ BCUC Staff table based on information from Exhibit B-1, pp. 7-5 to 7-6.
¹⁸² Exhibit B-1, p. 7-5.

develops peak demand forecasts for the ITS, CTS, and VITS by way of the Traditional Peak Method.¹⁸³ Through the demand and capacity balance resulting from these forecasts, FEI determines approximately when demand in the region will reach the capacity of the system to deliver natural gas during peak conditions, thus identifying when system constraints will occur.¹⁸⁴

FEI explains that the Traditional Peak Method is built from a “load gather” process that determines unique daily and hourly use per customer. The values for most customers are based on a regression analysis of average consumption against local temperature using the most recent 24 months of consumption information. Measured values are then extrapolated to the regional design temperature where the customer is located.¹⁸⁵ FEI explains that the peak forecasts resulting from the Traditional Peak Method are “point in time” forecasts that are refreshed annually, and do not account for evolving customer utilization over the planning horizon.¹⁸⁶ FEI further explains that the Traditional Peak Method does not fully reflect the impact of future end-use factors such as increased energy efficiency, DSM and conservation policy and regulations.¹⁸⁷

As part of the 2022 LTGRP, FEI also completed peak demand forecasting under a new exploratory end-use method which links peak demand forecasts to the end-use scenarios used in the annual demand forecasts. FEI states that the exploratory end-use method remains theoretical in nature due to the limited granularity of gas use metering and therefore limited precision in FEI’s ability to analyze the relationship between peak demand and temperature through this method.¹⁸⁸ FEI states that until such time as data from advanced metering becomes available, it will continue to rely on the Traditional Peak Method for infrastructure planning.¹⁸⁹

FEI provides the following table comparing the magnitude of change in annual demand and peak demand for each transmission system over the planning horizon of the LTGRP.¹⁹⁰

Table 2: Change in Demand Over 20-Year Planning Horizon

Region/Transmission System	DEP Annual Forecast	Traditional Peak Demand Forecast
VITS	16 % decrease	27.5 % increase
CTS	13 % decrease	18 % increase
ITS	13.5 % decrease	32 % increase

FEI explains that when considering the DEP Scenario annual forecast, annual demand is the result of a wider range of end-use influences being applied including, among others, electrification, substantial adoption of renewable gases, and high levels of DSM and government policy and program. FEI states that the ramping up of these end-use factors in the forecast period is the driver for the change in the relationship between annual demand and peak demand over the forecast period.¹⁹¹ FEI further states that because of not accounting for future end-use factors in peak demand forecasting, there could be a risk that some capacity upgrades could be installed unnecessarily that might otherwise have been deferred. However, FEI considers the greatest risk is in not anticipating capacity shortfalls because of the inability to directly measure the impact of end-use factors on peak demand.¹⁹²

¹⁸³ Exhibit B-1, p. 7-7.

¹⁸⁴ Ibid., p. 7-9.

¹⁸⁵ Ibid., p. 7-7.

¹⁸⁶ Ibid., p. 7-8.

¹⁸⁷ Exhibit B-6, BCUC IR 54.3.

¹⁸⁸ Ibid., BCUC IR 22.1.

¹⁸⁹ Exhibit B-1, p. 7-8.

¹⁹⁰ Exhibit B-6, BCUC IR 56.3.2.

¹⁹¹ Exhibit B-6, BCUC IR 56.3.1.

¹⁹² Exhibit B-23, BCUC IR 104.6.

Positions of the Parties

The CEC submits it is satisfied with the reasons that FEI presents regarding the use of its Traditional Peak Method, which have prompted it to continue to use this method in long-term planning. Further, the CEC concludes that significant efforts over multiple planning iterations would be required to introduce end-use elements to FEI's Traditional Peak Method or revamp the existing method altogether.¹⁹³

3.4.2 Planned Infrastructure

FEI has considered the future system expansion requirements for each transmission system, as briefly summarized here:

Vancouver Island Transmission System

FEI states that its Traditional Peak Demand forecast shows that there is no need for capacity expansion on the VITS in the forecast period.¹⁹⁴ However, to accommodate the expected 237 million standard cubic feet/day of firm transportation for Woodfibre LNG, FEI states that pipeline looping and additional compression are required.¹⁹⁵

Coastal Transmission System

FEI states that the CTS currently has sufficient capacity to support peak demand throughout the 20-year planning horizon, and that additional expansion requirements will be driven by LNG additions or other large industrial demand in the Lower Mainland, rather than by core customer growth.¹⁹⁶ Similar LNG or large industrial demand additions on the VITS would impact expansion requirements on the CTS, as the natural gas serving the VITS flows through the CTS. The impact of additional LNG demand is further discussed in section 3.4.2.2 below.

Interior Transmission System

FEI projects a need for capacity upgrades on the ITS by winter of 2038-2039 in addition to the capacity gained through the assumed completion of the Okanagan Capacity Upgrade Project (OCU).¹⁹⁷ FEI identifies three potential alternatives to meet this capacity need, including additional compression, a pipeline extension of the proposed OCU project and an LNG storage facility located close to Vernon.¹⁹⁸ Should the OCU project not proceed, FEI identifies potential alternatives such as more extensive pipeline looping from Savona eastward, or an LNG peak-shaving facility in the north Okanagan region.¹⁹⁹

3.4.2.1 Integration of Renewable and Low-Carbon Gas

FEI is planning to incorporate increasing amounts of renewable and low-carbon gasses into its gas supply portfolio, including RNG and hydrogen.²⁰⁰ The location of physical delivery of these resources will ultimately determine the overall scope of any necessary future infrastructure upgrades. FEI's renewable and low-carbon

¹⁹³ CEC Final Argument, p. 97.

¹⁹⁴ Exhibit B-1, p. 7-15.

¹⁹⁵ Ibid., pp. 7-16 to 7-17.

¹⁹⁶ Ibid., p. 7-20.

¹⁹⁷ Ibid., p. 7-29.

¹⁹⁸ Ibid., pp. 7-29 to 7-30.

¹⁹⁹ Exhibit B-10, BCSEA IR 21.15.

²⁰⁰ Exhibit B-1, p. 7-34.

gas planning includes the purchase of off-system supplies, which involves the purchase of environmental attributes associated with renewable and low-carbon gas production outside of BC.²⁰¹

Off-system supplies have no net-impact on the capacity requirements of FEI's infrastructure.²⁰² FEI states that its supply of renewable and low-carbon gasses will predominately be acquired and used outside of FEI's service territory during the early years of the planning horizon (i.e. off-system delivery).²⁰³ On-system delivery will expand by 2030 and through the planning horizon.²⁰⁴ FEI anticipates on-system hubs to deliver locally produced RNG or hydrogen to replace demand for conventional natural gas, thereby reducing the need for upstream transmission pipeline capacity.²⁰⁵

FEI expects that there will be reliable on-system supply of RNG on all three of FEI's transmission systems. FEI states that on-system RNG supply has no detrimental impact on transmission system capacity and will reduce upstream supply requirements.²⁰⁶ The impacts of hydrogen integration on infrastructure are discussed below.

Impact of Hydrogen on FEI Infrastructure Requirements

FEI considers that integration of hydrogen supply into its transmission systems has the most complex requirements from a system planning perspective. The planning of the production and delivery of hydrogen is in its early phases, and FEI states in the Application that it does not yet have sufficient definition to provide projections on the specific impact hydrogen integration will have on the capacity of FEI's system.²⁰⁷

However, during the course of this proceeding, FEI provided further detail with respect to its hydrogen supply planning and the impact on infrastructure:

- FEI is developing a 'Hydrogen Roadmap' plan throughout 2023 and 2024, with support from external consultants.²⁰⁸
- FEI expects to execute a hydrogen blending pilot project within the next three years.²⁰⁹
- FEI states that for both the VITS and CTS, it is not currently considering allowing hydrogen blending into the existing pipeline system due to the impact this would have on the Tilbury and Woodfibre LNG facilities.²¹⁰ However, FEI states that it has yet to determine the optimum strategy to integrate hydrogen supply to its CTS customers; this may be done by blending into the transmission system or by dedicated infrastructure.²¹¹
- Within the next 10 years, FEI anticipates hydrogen supply to primarily be on-system – produced in equal parts through methane pyrolysis (turquoise hydrogen) and electrolysis (green hydrogen).²¹²

Prior to blending hydrogen (initially into the distribution system), FEI expects it will seek BCUC approval of hydrogen acquisitions and approval for tariff amendments.²¹³ FEI anticipates accounting for the cost of hydrogen

²⁰¹ Ibid., p. 7-35.

²⁰² Ibid.

²⁰³ Ibid., p. 7-36.

²⁰⁴ Ibid.

²⁰⁵ Ibid., p. 7-35.

²⁰⁶ Ibid., p. 7-37.

²⁰⁷ Ibid.

²⁰⁸ Exhibit B-6, BCUC IR 61.8.

²⁰⁹ Ibid., BCUC IR 61.3.

²¹⁰ Exhibit B-1, Section 7.4.1.3, p. 7-40.

²¹¹ Exhibit B-6, BCUC IR 61.5.

²¹² Exhibit B-6, BCUC IR 61.3.

²¹³ Ibid., BCUC IR 61.12.

in its existing Biomethane Variance Account, and anticipates adding hydrogen to the definitions within FEI's General Terms and Conditions. FEI expects to file a future application with the BCUC to make these changes.²¹⁴

FEI plans to apply for the acceptance of the purchase of hydrogen pursuant to section 44.2(1)(c) of the UCA.²¹⁵ In the long-term, FEI envisions owning and/or operating low-carbon hydrogen production facilities in BC.²¹⁶

Positions of the Parties

BCSEA submits that FEI's plan is weak on examining the utility's options in the event that 'clean hydrogen' does not emerge as the abundant, affordable, technologically feasible, zero-carbon replacement for piped conventional (fossil) natural gas that FEI hopes for.²¹⁷

RCIA is concerned that the proposed hydrogen initiatives are still in the early stages and require further analysis before they become part of FEI's LTGRP. Accordingly, RCIA submits that the BCUC reject the portion of the plan that relates to dedicated hydrogen infrastructure but, as permitted by subsection 44.1(7) of the *Utilities Commission Act*, FEI be allowed to resubmit this portion of the LTGRP once it has completed its hydrogen deployment strategy.²¹⁸ RCIA recommends that FEI continue to invest in hydrogen development. This means completing its hydrogen deployment strategy, continuing the planned pilot projects, and continuing to use the Clean Growth Innovation Fund.²¹⁹

The CEC supports FEI pursuing the hydrogen options for low carbon-based gas, and recommends that the BCUC direct FEI to assess in the next long-term gas resource plan the range of investments that would be required to upgrade FEI's existing distribution network to accommodate various hydrogen blend concentrations over the planning horizon.

In reply, FEI submits that its 2022 LTGRP hydrogen planning is "appropriately detailed for the current stage of market development" and is aligned with provincial and federal government views with respect to hydrogen.²²⁰ FEI submits that as governments are supportive of developing renewable and low-carbon gas resources, and that expert evidence indicates that its supply and distribution in BC is feasible, it is reasonable for FEI to plan to advance the use of hydrogen.²²¹ FEI acknowledges that it is still in the research, piloting and planning phases of deploying hydrogen in BC.²²² The current technical reviews and gas system assessments will provide more information regarding hydrogen deployment, and this work will inform FEI's next long-term gas resource plan.²²³

FEI submits that the concerns raised by RCIA and the Local Government Interveners, as noted above, are misguided; the BCUC's acceptance of the 2022 LTGRP would not require the construction of any infrastructure or "lock" FEI or BC into any particular pathway.²²⁴ FEI explains that it has not requested any approvals in its 2022 LTGRP other than acceptance of the plan, and that extensions to its system related to hydrogen or the acquisition of hydrogen would require separate approvals by the BCUC.²²⁵ Further, FEI submits that the Clean Growth Pathway and DEP Scenario are inherently flexible, and that FEI's hydrogen strategy specifically "will adapt with the planning environment as technologies and markets develop, policies change, and demand

²¹⁴ Exhibit B-23, BCUC IR 106.14.

²¹⁵ *Ibid.*, BCUC IR 107.1.

²¹⁶ Exhibit B-6, BCUC IR 62.6.

²¹⁷ BCSEA Final Argument, p. 6.

²¹⁸ RCIA Final Argument, p. 10.

²¹⁹ *Ibid.*, p. 17.

²²⁰ FEI Reply Argument, para. 14.

²²¹ *Ibid.*

²²² *Ibid.*, para 15.

²²³ *Ibid.*, para 16.

²²⁴ FEI Reply Argument, para. 44.

²²⁵ *Ibid.*, para. 45.

evolves.”²²⁶ Acceptance of the 2022 LTGRP would not commit FEI to constructing infrastructure contemplated in the plan.²²⁷

3.4.2.2 Impact of LNG Facilities on FEI’s Coastal Transmission System

FEI states that additional system expansion requirements for the CTS will be driven by LNG additions (or other large industrial demand) rather than by core customer growth.²²⁸

An example of an LNG project to be served by FEI is the Woodfibre LNG project, which is a small-scale LNG export and processing facility located at the former Woodfibre pulp mill near Squamish. Although the Woodfibre LNG project will connect to FEI’s VITS system, the gas serving the site must initially flow through the CTS. FEI states that no further expansion of the CTS is required to serve Woodfibre.²²⁹

CTS expansions are required should FEI begin serving the LNG marine bunkering market or begin serving a non-regulated entity operating an LNG plant at the Tilbury site for the purposes of LNG export. FEI expects it would serve the marine bunkering market under Rate Schedule (RS) 46. FEI assumes approximately \$4 billion of revenue from RS 46 marine bunkering customers over the 20-year planning horizon, assuming \$1 billion of new liquefaction capacity is constructed at FEI’s Tilbury LNG facility.²³⁰

New liquefaction capacity at FEI’s Tilbury facility, which could be used to serve the marine bunkering market, has been considered within the government-issued Special Direction No. 5, which currently allows up to \$400 million for the Phase 1 expansion at Tilbury. FEI considers this amount to be insufficient to meet the required LNG marine bunkering market demand, and to absorb inflationary pressures since Direction No. 5 was issued in 2013. FEI states it is currently reviewing options to either amend Direction No. 5 or seek a certificate of public convenience and necessity (CPCN) for a \$1 billion expansion to liquefaction capacity at Tilbury.²³¹

With respect to LNG export, FEI estimates that approximately \$400 million of CTS expansions would be required to serve a non-regulated Tilbury LNG expansion for the purposes of LNG export.²³² The non-regulated Tilbury LNG expansion would be served under RS 50; FEI anticipates \$300 million to \$1 billion in benefits flowing to FEI customers over 40 years in this scenario.²³³ The following table and figure summarize and illustrate system capacity increases which may be required in order for FEI to serve increased LNG liquefaction capacity at the Tilbury site:

²²⁶ Ibid., paras. 49 & 51.

²²⁷ Ibid., para. 45.

²²⁸ Exhibit B-1, p. 7-20.

²²⁹ Exhibit B-6, BCUC IR 65.2.1.

²³⁰ Ibid., BCUC IR 65.1.

²³¹ Exhibit B-23, BCUC IR 109.3.

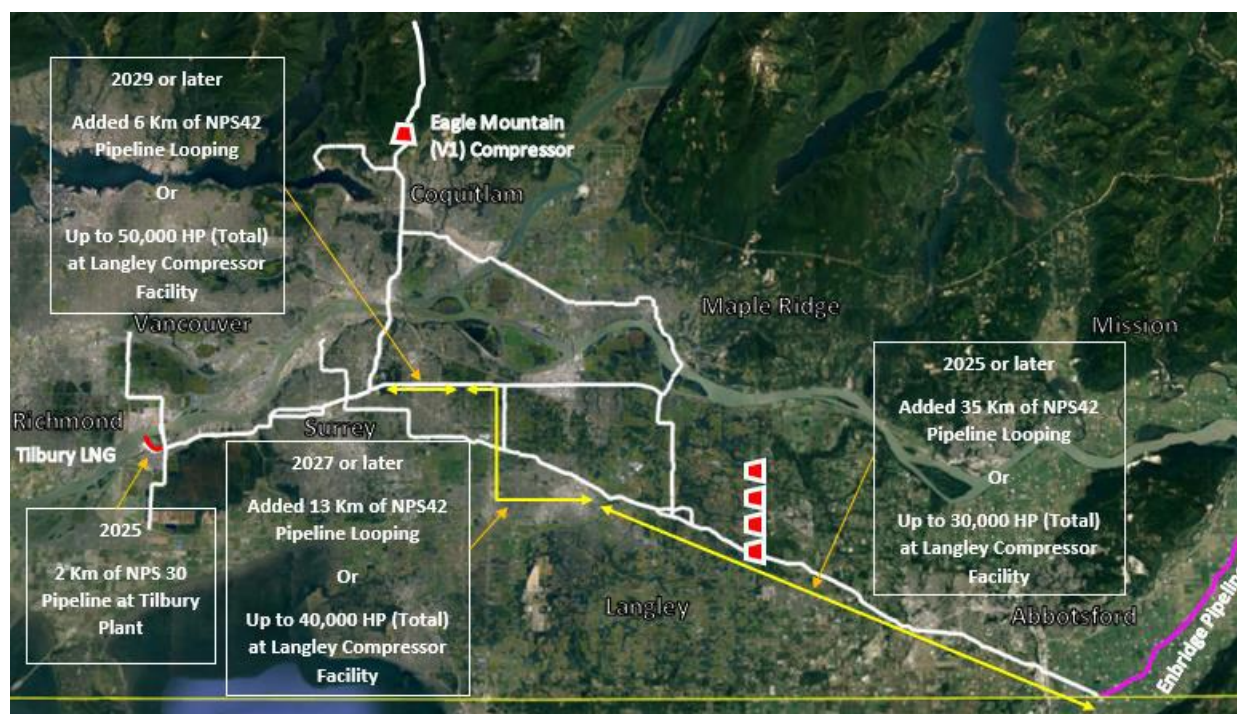
²³² Exhibit B-6, BCUC IR 65.4.

²³³ Ibid., BCUC IR 65.4.1.

Table 3: CTS Expansion Scenarios for LNG²³⁴

CTS Upgrades	LNG Expansion	Timeframe
2 km NPS 30 from Tilbury Plant and up to 15,000 HP Added (up to 30,000 HP total) or 35 km NPS 42 Pipeline Loop	Incremental 100 MMscf/day addition to Liquefaction at Tilbury Plant (up to 135 MMscf/day total) Woodfibre LNG project at 237 MMscf/day	2025 or later
Up to an Additional 10,000 HP Added (up to 40,000 HP total) or additional 13 km NPS 42 Pipeline Loop (48 km total)	Incremental 150 MMscf/day additional Liquefaction at Tilbury Plant (up to 285 MMscf/day total) Woodfibre LNG project at 237 MMscf/day	2027 or later
Up to an Additional 10,000 HP Added (up to 50,000 HP total) or additional 6 km Pipeline Loop (54 km total)	Up to 400 MMscf/day additional Liquefaction at Tilbury Plant (up to 435 MMscf/day total) Woodfibre LNG project at 237 MMscf/day	2029 or later

Figure 6: CTS Expansion Scenarios to Meet Potential LNG-Related Load Growth²³⁵



²³⁴ Exhibit B-1, Table 7-1.

²³⁵ Exhibit B-1, Figure 7-12.

Positions of the Parties

BCSEA rejects the parts of the plan concerning LNG exports and LNG for international marine bunkering.²³⁶

BCOAPo submits that it is not unreasonable for FEI to pursue investing in low-carbon transportation and LNG, as both are areas of focus designed to reduce GHG emissions and to generate additional revenues to assist in offsetting the rate impacts of decarbonizing the gas supply.²³⁷

In reply, FEI submits that BCSEA fails to articulate a clear or compelling basis for its views, does not offer any evidence of increased risk to customers and overlooks the evidence on the benefits of investment in LNG to FEI's customers and reducing GHG emissions globally.²³⁸ Further, FEI submits that evidence indicates that LNG investments will not result in rate increases, the LNG investments represent an opportunity for FEI's customers to benefit from the use of the gas distribution system, and that it is in the public interest to take action to reduce GHG emissions related to international shipping.²³⁹

Panel Determination

The Panel finds the 2022 LTGRP meets the requirements of sections 44.1(2)(d) and (f) of the UCA with respect to planned facilities. The Panel considers FEI's approach to system resource planning to be sufficient for the purposes of the 2022 LTGRP. The Panel is making no determinations with respect to approval of any infrastructure or resource requirements as part of the LTGRP.

The Panel notes that the evidence shows there is no need for capacity expansion on either the VITS or CTS to support peak demand throughout the 20-year planning horizon. FEI projects a need for capacity upgrades on the ITS in the planning period and concluded that amongst several alternatives, the OCU project was the preferred project to meet that capacity need. However, FEI's CPCN application for the OCU was rejected by the BCUC in December 2023,²⁴⁰ and FEI was directed to examine other short-term solutions to meet requirements and file a mitigation plan with the BCUC by the end of July 2024. The Panel expects FEI to include an update on the ITS capacity requirements in the next long-term gas resource plan. The Panel notes the potential limitations of the traditional peak method including its inability to fully reflect the impact of future end-use factors such as increased energy efficiency, DSM and decarbonization policy and regulations. As such, the Panel encourages FEI to enhance its peak demand forecasting methodology in its next long-term gas resource plan.

The Panel recognizes that FEI is not requesting approval of any infrastructure investments related to the supply of RNG, hydrogen or other low-carbon gases. However, the Panel finds that the pursuit of infrastructure investments for the production and delivery of low-carbon gases for sales to its customers as outlined in the LTGRP, to be prudent and reasonable. Such infrastructure investments would require FEI to bring forward an application for review and approval by the BCUC under the appropriate section of the UCA. The Panel considers that FEI must expedite its planning of RNG, hydrogen and other low-carbon gas related infrastructure investments, if FEI is to meet the forecast delivery volumes of these resources that are indicated in this LTGRP over the next 10 years. FEI's pursuit of hydrogen specifically appears to be aspirational at this point, as there is a lack of any level of detailed planning in this LTGRP to explain how FEI will deliver meaningful amounts of hydrogen by 2030 as forecast. By finding that the pursuit of infrastructure investments for the provision of low-carbon gases (such as hydrogen) is prudent and reasonable, the Panel is indicating that it is important that FEI better understand how the integration of low-carbon gases will impact system infrastructure planning. Based on the extent of information presented in this LTGRP, the Panel considers that it is premature to say that hydrogen

²³⁶ BCSEA Final Argument, para 7.

²³⁷ BCOAPo Final Argument, p. 12.

²³⁸ FEI Reply Argument, para. 55.

²³⁹ Ibid., paras. 56-58.

²⁴⁰ Order G-361-23.

will be the ultimate solution to FEI's GHG-reduction objectives. The Panel expects more detail regarding specific low-carbon gas related infrastructure investments in the next long-term gas resource plan.

The Panel anticipates that new infrastructure developments for hydrogen or other low-carbon gases, are likely to impact FEI's grid at the system-wide and regional level in the planning horizon. In this context, long-term resource planning becomes increasingly important, as, for example, the siting of new on-system hydrogen production resources may impact the need for transmission and/or distribution system investments. The LTGRP provides an appropriate forum for review of the regional demand and supply system impacts that FEI anticipates will result from development of potential new on and off-system supply sources, as well as FEI's vision for how it will address these impacts. Accordingly, the Panel expects FEI to include regional-level analysis of its demand and supply resources, including infrastructure requirements, in its next long-term gas resource plan.

As discussed in section 3.1, given the Panel is not in a position to make a finding that pursuit of sales or infrastructure investments in LNG for bunkering and export market will be beneficial to ratepayers and in the public interest, at this point in time, the Panel is not making a determination with respect to the prudence or appropriateness of FEI pursuing specific investments in infrastructure to meet LNG demand, including demand for LNG bunkering and export. However, as discussed in section 3.1, the Panel finds it is reasonable for FEI to continue to evaluate potential opportunities in this market and incorporate developments in this area in future long-term gas resource plans.

3.5 Other Information Required by the BCUC

FEI submits that it has responded to the BCUC's past directives for the 2022 LTGRP and adhered to the BCUC's Resource Planning Guidelines (Guidelines) where relevant and appropriate, which collectively satisfy section 44.1(2)(g)²⁴¹ of the UCA.²⁴²

The 2017 Decision contained several directives for information to be filed in the 2022 LTGRP, which are outlined in Appendix A of this decision. Overall, the Panel is satisfied that FEI has filed information to comply with these directives, but one issue arising in the proceeding relates to FEI's Resiliency Plan, as discussed below.

In the 2017 Decision, the BCUC directed FEI to address security of supply concerns in its next long-term gas resource plan.²⁴³ In response, FEI filed its Gas System Resiliency Plan as part of the Application.²⁴⁴ In Appendix E to the Application, FEI provides its Gas System Resiliency Plan. Within the plan, FEI states that it has assessed various resiliency-enhancing options and has concluded that the resiliency of its system is best enhanced through a portfolio of measures.²⁴⁵ FEI explains that resiliency refers to the ability to prevent, withstand, and recover from system failures or unforeseen events, and that it encompasses concepts such as preparing for, operating through, and recovering from significant disruptions, no matter the cause.

In the table below, FEI identifies three key elements of a resilient gas system that add resiliency in distinct, but complementary ways.²⁴⁶

²⁴¹ Section 44.1(2)(g) requires a long-term resource plan include any other information required by the BCUC.

²⁴² FEI Final Argument, p. 83.

²⁴³ Decision and Order G-39-19 on FEI's 2017 LTGRP.

²⁴⁴ Exhibit B-1, Appendix E.

²⁴⁵ Ibid., Appendix E, p. 1.

²⁴⁶ BCUC staff table based on Exhibit B-1, Appendix E, pp. 7-8.

Table 4: Elements of a Resilient Gas System

Element	Description
Diverse Pipelines and Supply	Access to multiple regional pipelines, preferably separated geographically, to serve the distribution system improves a utility's ability to dependably collect and deliver gas supply to consumers.
Ample Storage	Access to storage, preferably on a utility's own system, allows a utility to manage expected or unexpected changes in supply for a period of time. Stored energy can bridge a shortfall in supply entering the utility system, or if necessary, provide time to shed load or implement a controlled shutdown of portions of the system to avoid pressure collapse.
Load Management Capabilities	The ability to manage load during a period of supply constraint allows an operator to shed load during a controlled shutdown, while ensuring the constrained supply of gas is maintained for the maximum number of customers.

FEI explains that from a resiliency perspective, on-system storage and new pipeline infrastructure are complementary assets to the supply portfolio as each separately addresses short-duration and long-duration supply issues in a cost-effective manner.²⁴⁷

To enhance system resiliency, FEI has proposed the following enhancements, each of which is at a different stage in its development:²⁴⁸

- The adoption and implementation of automated meter reading processes, which FEI states address the need for better load management capabilities, through the Advanced Metering Infrastructure (AMI) project. The BCUC granted a CPCN to FEI for the AMI Project through Order C-2-23;²⁴⁹
- Expansion of FEI's on-system LNG storage, which FEI states will ensure ample energy storage and provide immediate response capabilities to preserve the system during a critical supply emergency, through the Tilbury LNG Storage Expansion (TLSE) project. The BCUC adjourned the TLSE Proceeding by Order G-62-23;²⁵⁰ and
- The addition of new regional pipeline infrastructure, preferably constructed in a corridor different from the T-South system, in order to ensure supply is available during an event that involves a sustained loss of pipeline capacity, potentially through the Regional Gas Supply Diversity (RGSD) project. The BCUC approved FEI to establish the RGSD development account, a non-rate base deferral account to capture actual development costs incurred for a potential RGSD project.²⁵¹

FEI submits that in response to Decision and Order G-62-23, in which the BCUC identified a number of shortcomings in the 2022 Resiliency Plan and adjourned the TLSE Project proceeding, it has spent months preparing a new resiliency plan (2024 Resiliency Plan).²⁵² FEI asserts that the next iteration of the resiliency plan

²⁴⁷ Exhibit B-1, Appendix E, p. 29.

²⁴⁸ Ibid., Appendix E, p. 26.

²⁴⁹ BCUC Order C-3-23, Application for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project.

²⁵⁰ BCUC Order G-62-23, Application for a Certificate of Public Convenience and Necessity for the Tilbury Liquefied Natural Gas Storage Expansion Project.

²⁵¹ BCUC Order G-253-22, Application for Approval of a Regional Gas Supply Diversity Development Account.

²⁵² FEI Final Argument, p. 82.

will be a far more comprehensive and robust analysis that reflects recent BCUC guidance.²⁵³ Further, FEI submits that it plans to update its resiliency plan on an iterative basis going forward and intends that the latest version of the resiliency plan will be included in future long-term gas resource plans for BCUC review.²⁵⁴ In light of the need for FEI to file the 2024 Resiliency Plan in support of the TLSE Project Application, FEI argues that it is reasonable for the Panel to refrain from further evaluation of the 2022 Resiliency Plan.²⁵⁵

Positions of the Parties

BCOAPPO agrees with FEI that its resiliency plan is best considered in separate BCUC proceedings for the sake of regulatory effectiveness and efficiency.²⁵⁶

BCSEA also agrees with FEI that further review of FEI's 2022 Resiliency Plan in this LTGRP proceeding is unnecessary. Further BCSEA agrees with FEI's intention to include an overhauled resiliency plan in future CPCN and long-term gas resource plan filings.²⁵⁷

Panel Determination

The Panel is satisfied that FEI has filed information to comply with the BCUC's directives set out in the decision on the 2017 LTGRP, and has adhered to the BCUC's Resource Planning Guidelines, where relevant and appropriate.

The Panel rejects FEI's 2022 Resiliency Plan as included in the LTGRP. In Decision and Order G-62-23, the BCUC identified a number of shortcomings in the 2022 Resiliency Plan. This Panel agrees with the shortcomings identified in that decision, and for brevity will not repeat them here. The Panel notes that FEI has committed to preparing a new resiliency plan that will include a more comprehensive and robust analysis, and intends to include the latest version of its resiliency plan in future long-term gas resource plans for BCUC review. The Panel considers this commitment to be reasonable and appropriate.

Notwithstanding the rejection of the 2022 Resiliency Plan, the Panel finds that the 2022 LTGRP satisfies the requirements of section 44.1(2)(g)²⁵⁸ of the UCA.

3.6 Overall Findings on Section 44.1(2) Requirements

Based on the foregoing findings, the Panel finds that FEI's 2022 LTGRP meets the filing requirements of section 44.1(2) of the UCA. In reaching this determination, the Panel has identified a number of matters in the above sections that it expects FEI to address in its next long-term gas resource plan.

4.0 Do the Section 44.1(8) Considerations Support Acceptance?

4.1 British Columbia's Energy Objectives

BC's Energy Objectives are outlined in section 2 of the *Clean Energy Act*. FEI identifies the following objectives as being directly applicable to the LTGRP:²⁵⁹

- To take demand-side measures and to conserve energy;

²⁵³ FEI Final Argument, p. 81.

²⁵⁴ *Ibid.*, p. 81.

²⁵⁵ *Ibid.*, pp. 82-83.

²⁵⁶ BCOAPO Final Argument, p. 2.

²⁵⁷ BCSEA Final Argument, p. 10.

²⁵⁸ Section 44.1(2)(g) requires a long-term resource plan include any other information required by the BCUC.

²⁵⁹ Exhibit B-1, p. 1-12.

- To use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;
- To reduce BC GHG emissions, including by 2050 and for each subsequent calendar year to at least 80% less than the level of those emissions in 2007, and by such other amounts as determined under the *Greenhouse Gas Reduction Targets Act*;
- To encourage the switching from one kind of energy source to another that decreases greenhouse gases in British Columbia;
- To encourage communities to reduce greenhouse gas emissions and use energy efficiently;
- To reduce waste by encouraging the use of waste heat, biogas and biomass;
- To encourage economic development and the creation and retention of jobs;
- To foster the development of First Nation and rural communities through the use and development of clean or renewable resources; and
- To maximize the value, including the incremental value of the resources being clean or renewable resources, of British Columbia's generation and transmission assets for the benefit of British Columbia.

FEI submits that the 2022 LTGRP aligns with and supports these objectives.²⁶⁰

The Panel agrees with FEI's characterizations of the applicable energy objectives. As noted in section 1.4 of this decision, the Panel's determination on whether the 2022 LTGRP is in the public interest places weight on the GHG emission reduction initiatives that are contained within the plan. Such initiatives, as articulated by FEI's Clean Growth Pathway, intrinsically link with several of the energy objectives noted above. Accordingly, in the following section the Panel reviews in detail how FEI's Clean Growth Pathway outlines a plan to reduce GHG emissions, with a particular focus upon emissions reductions that may be realized by 2030 in line with the proposed GHGRS.

Additionally, we note the Ministry of Energy, Mines and Low Carbon Innovation (EMLI) filed a letter requesting that the BCUC seek submissions on whether FEI's 2022 LTGRP will meet Energy Objective 2 (g) (to reduce BC GHG emissions).²⁶¹ Parties' responses to the EMLI letter are also summarized below.

4.1.1 FEI's Clean Growth Pathway

FEI's Clean Growth Pathway envisions a future with a diversified energy supply, that maintains and grows both the gas and electricity networks in BC, as the lowest-cost path to reducing GHG emissions in the province, improve the energy system resiliency, foster emerging technologies and innovation, and economic development.²⁶² To support its position, FEI cites the Guidehouse Pathways Report²⁶³, which estimates that by 2050, the societal value of achieving the Diversified Pathway (gas and electricity) is expected to be in excess of \$91 billion higher than the Electrification Pathway.²⁶⁴

The Clean Growth Pathway proposes a framework to transition to a low-carbon energy future supported by four pillars as set out in section 2.0 of this decision.²⁶⁵ As noted previously, FEI is not seeking any approval or acceptance of a DSM plan, gas supply contracts or resource projects that are identified within the LTGRP.

²⁶⁰ FEI Final Argument, p. 92.

²⁶¹ Exhibit E-6.

²⁶² Exhibit B-1, p. ES-5; FEI Final Argument, p. 6.

²⁶³ Exhibit B-1, Appendix A-2.

²⁶⁴ FEI Final Argument, p. 7.

²⁶⁵ Exhibit B-1, p. ES-5.

The first pillar involves increasing the supply of RNG while also adding clean-burning hydrogen, syngas and lignin to FEI's supply portfolio as described in Section 3.3. FEI will continue to supply natural gas, although in smaller quantities, to meet provincial GHG emission reduction requirements.²⁶⁶

The LTGRP uses the BC Renewable and Low-Carbon Gas Supply Potential Study²⁶⁷ as one of many inputs in forming the potential supply of future renewable gas in the Province. The study developed two scenarios which create an upper and lower bound for renewable and low-carbon gas production with BC resources by 2050. The study suggests that the supply potential for renewable and low-carbon gas is robust (i.e., multiple streams of renewable gas are available) and expanding, and could range from 103 PJ to as high as 444 PJ by 2050. Barriers would need to be overcome to meet the higher end of the supply projection.²⁶⁸

FEI plans for RNG (biomethane) to provide most of the growth opportunity in its renewable gas supply portfolio to 2030 as this is the most advanced technology, it is easy to develop, and BC has a robust framework for the development of RNG with strong price support.²⁶⁹ FEI will rely on out-of-province sources to meet its 2030 GHG emission reduction goals.²⁷⁰

The remaining low carbon supply sources are yet to be developed. Syngas and lignin supply potential are identified in Vancouver Island and the Interior regions to support targets after 2030 and for specific industrial applications. FEI identifies a number of barriers for the development of this market, including large capital costs and long-term recovery of investments, among others.²⁷¹ Hydrogen is expected to play an important role in the reduction of GHG emissions especially beyond 2030.²⁷² Of note, the technological development, supply market, demand and the characteristics of the public policy support for hydrogen are all in early stages.²⁷³

The second pillar, DSM, refers to efficiency improvements that are driven by the influence of FEI's DSM incentives programs, which are being expanded to reduce GHG emissions as outlined in Section 3.2.²⁷⁴

The third pillar, LCT infrastructure, seeks to convert medium-duty and heavy-duty fleet vehicles and marine vessels to lower-carbon alternative fuels like compressed natural gas (CNG), LNG, and RNG. FEI states these actions allow it to reduce provincial GHG emissions in the transportation industry, which make up the largest share of overall provincial emissions, and dramatically improve local air quality. FEI also identifies opportunities for the supply of remote power generation in non-grid connected communities and industrial sites currently using higher emitting fuels.²⁷⁵

The Panel does not further address Pillar 4 respecting LNG in this section, as LNG has been addressed in section 3.1.6 and 3.4.2.2 in the decision, and emissions reductions associated with LNG sales would not necessarily be attributable to FEI, and/or may not be accounted as part of BC's GHG inventory.²⁷⁶

As outlined previously in Section 3.1, FEI modelled several load scenarios in the 2022 LTGRP. FEI's Clean Growth Pathway vision is applied to FEI's DEP Scenario,²⁷⁷ which is FEI's scenario in the LTGRP designed to meet the

²⁶⁶ Ibid., p. 3-11.

²⁶⁷ Ibid., Appendix D-2.

²⁶⁸ FEI Final Argument, p. 16.

²⁶⁹ FEI Final Argument, p. 16; Exhibit B-6, BCUC IR1 52.4.

²⁷⁰ FEI Final Argument, p. 17.

²⁷¹ FEI Final Argument, pp. 16-17; Exhibit B-6, BCUC IR1 52.4.

²⁷² FEI Final Argument, p. 18.

²⁷³ Exhibit B-23, BCUC IR2 114.1.

²⁷⁴ Exhibit B-1, p. 9-2, p. 5-1.

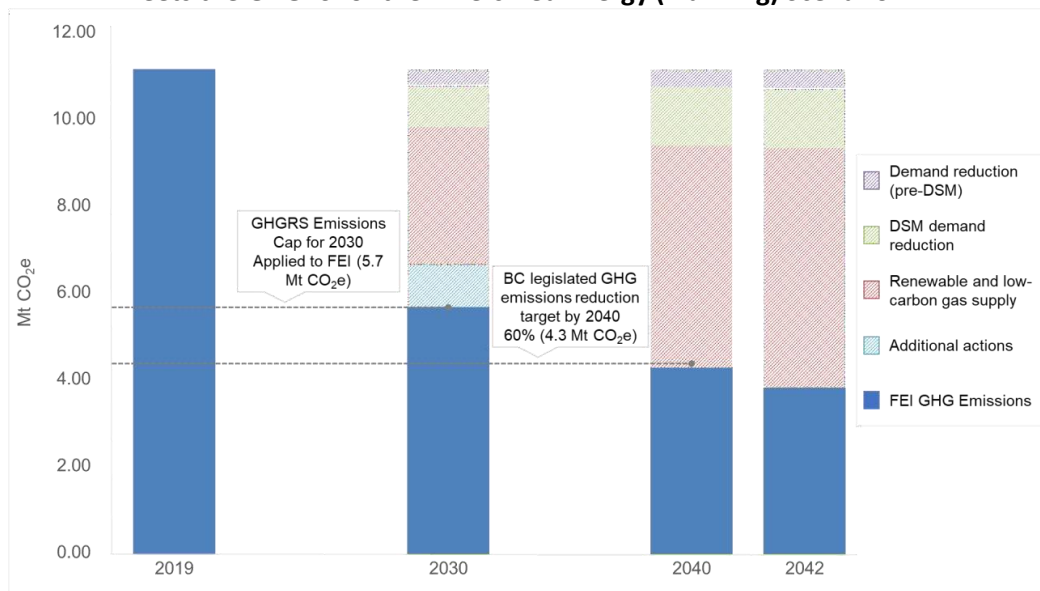
²⁷⁵ Exhibit B-1, pp. 3-20 - 3-21; FEI Final Argument, pp. 25-26.

²⁷⁶ Exhibit B-1, p. 9-6.

²⁷⁷ Exhibit B-1, p. 9-1.

proposed GHGRS.²⁷⁸ FEI projects four sources of GHG emission reductions: 1) demand reduction; 2) DSM; 3) transition to renewable and low-carbon gas supply; and 4) additional actions.²⁷⁹ Figure 7 depicts the breakdown of GHG emission reductions in the planning horizon.

Figure 7: GHG Emission Reductions for Residential, Commercial and Industrial Customers Meets the GHGRS for the Diversified Energy (Planning) Scenario²⁸⁰



Demand reduction includes natural efficiency, i.e. efficiency improvements that occur through the natural replacement of older, less efficient equipment with newer, more efficient equipment without the influence of DSM incentives, and some electrification of end uses.²⁸¹

The transition to renewable and low-carbon gas supplies has the largest impact on GHG emission reductions for residential, commercial and industrial customers. FEI assumes the acquisition and allocation to these customer groups of 60.2 PJ of renewable and low-carbon supply by 2030 and 99 PJ by 2040.²⁸²

Additional actions refer to emission reduction opportunities not yet modelled as they are in early stages of development. FEI intends to model these measures in the next LTGRP.²⁸³ This category represents 21% of FEI's 2030 emission reduction target (or 0.9 Mt CO₂ equivalent) and it is necessary for FEI to meet the CleanBC Roadmap 2030 emissions target.²⁸⁴ In addition, for some potential measures in this category it is not confirmed if the emission reductions would be allowed under the proposed GHGRS.²⁸⁵

GHG Emission Reduction Methodologies

FEI uses two methodologies to calculate GHG emission reductions in the 2022 LTGRP: end use and life cycle.

²⁷⁸ Exhibit B-1, p. ES-15, Exhibit B-6, BCUC IR 74.2.

²⁷⁹ Exhibit B-1, pp. 9-2 - 9-3.

²⁸⁰ Ibid., p. 9-4.

²⁸¹ Ibid., p. 9-2.

²⁸² Ibid., p. 9-2.

²⁸³ Exhibit B-1, pp. ES-16; 9-2; Exhibit B-6, BCUC IR 74.2.

²⁸⁴ Exhibit B-6, BCUC IR 74.1; 74.2.

²⁸⁵ Exhibit B-6, BCUC IR1 74.2, footnotes 118-119.

The end use emissions are associated with the consumption of fuel at the end use appliance.²⁸⁶ FEI states that the end use methodology would best align with the proposed GHGRS as the provincial GHG emission inventory and the CleanBC Roadmap account for GHG emissions on a sector-by-sector basis and the CleanBC Roadmap describes the GHGRS as a tool to reduce emissions in the building and industry sectors.²⁸⁷ At the time of filing, the GHG accounting framework for the GHGRS is uncertain.²⁸⁸

Life cycle emissions represent the GHG emissions from upstream fuel production to fuel consumption at the end use appliance. The life cycle emission factors from low-carbon gases such as syngas, lignin, and hydrogen will be quantified as FEI acquires these new gas supplies. The process would include quantifying the GHG intensity estimates for out-of-province supply and new infrastructure construction. The end use emission factor is a subset of the life cycle emission factor.²⁸⁹

Rate Impact

Table 5 provides a 20-year directional view of the potential rate impact of different scenarios by customer class. The calculation of rate impacts considers multiple components: cost of gas (considering a mix of conventional and renewable gas, and volume by type of gas and price), carbon tax, storage and transport, delivery, and assumptions regarding matters such as major capital projects, among others.²⁹⁰ The calculations do not consider future rate design changes and are not indicative of a detailed rate forecast.²⁹¹

Table 5: Summary and Comparison of Average Projected Delivery Rate Changes for Alternate Scenarios²⁹²

	Effective Rate Change (2022 - 2042, %)												
	Average UPC (2022 - 2042)	Reference		Upper Bound		Diversified Energy (Planning)		Deep Electrification		Economic Stagnation		Price Based Regulation	
		Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual	Cumulative	Annual
Residential (RS 1)	60	73%	2.8%	77%	2.9%	118%	4.0%	235%	6.2%	20%	0.9%	130%	4.3%
Small Commercial (RS 2)	293	41%	1.7%	64%	2.5%	102%	3.6%	207%	5.8%	1%	0.0%	121%	4.0%
Large Commercial (RS 3)	3,253	40%	1.7%	69%	2.6%	107%	3.7%	206%	5.7%	-3%	-0.2%	130%	4.2%
General Firm Service (RS 5)	18,542	44%	1.9%	80%	3.0%	114%	3.9%	150%	4.7%	10%	0.5%	146%	4.6%

With regards to commodity supplies and costs, FEI produced an outlook of renewable and low-carbon gas supply volumes and prices for the different scenarios.²⁹³ Outlooks are FEI's best estimates of a potential portfolio and have higher degree of uncertainty and subjectivity compared to forecasts which are data-driven. FEI used outlooks instead of forecasts because of limitations in the availability of actual data due to the early stage of development of the renewable and low-carbon gas industry.²⁹⁴

The rate impact analysis includes some of the costs associated with integrating renewable and low-carbon gasses in FEI's transmission and distribution systems. FEI did not develop any capital estimates specific for hydrogen infrastructure for inclusion in the rate impact analysis, as developments in this area are still at a preliminary stage; although FEI factored in, to a certain extent, some potential future capital expenditures.²⁹⁵

²⁸⁶ Exhibit B-6, BCUC IR 71.1.

²⁸⁷ Ibid., BCUC IR 71.5.

²⁸⁸ Exhibit B-23, BCUC IR2 115.3.

²⁸⁹ Exhibit B-6, BCUC IR 71.1, 71.1.1.

²⁹⁰ Exhibit B-1, pp. 9-12; 9-15; Exhibit B-23, BCUC IR2 117.

²⁹¹ Exhibit B-1, p. 9-11.

²⁹² Exhibit B-6, BCUC IR1 75.2.

²⁹³ Ibid., BCUC IR 71.8.1

²⁹⁴ Exhibit B-23, BCUC IR 113.1.

²⁹⁵ Exhibit B-6, BCUC IR 77.4.1.

FEI notes that investments in LCT and LNG would help to offset customers rate impacts of decarbonizing the gas supply, and improve local air quality.²⁹⁶

MS2S Evidence

MS2S provided evidence of studies which report that when hydrogen leaks in the atmosphere it extends the global warming potential of methane. MS2S adds that if validated by further research, these findings would reduce the usefulness of hydrogen as a fossil-free energy alternative and will slow the widespread adoption of hydrogen technologies.²⁹⁷ In rebuttal, FEI replied that MS2S does not challenge that hydrogen is carbon neutral at the point of combustion and, on the potential effects of hydrogen extending the life of methane, FEI submits that to its knowledge, there is no guidance from world leading authorities (such as the Intergovernmental Panel on Climate Change) or from Canadian federal or provincial governments on the subject. FEI adds that it will monitor the evolution of climate science and rely on emission factors as established by government authorities where available.²⁹⁸

Positions of the Parties

This section summarizes the positions of the parties on two issues: a) whether the LTGRP will meet the BC Energy Objective 2(g) regarding GHG emissions reduction, including responses to the letter filed by EMLI;²⁹⁹ and b) other matters respecting the Clean Growth Pathway for the Diversified Energy Planning Scenario.

Whether the LTGRP will meet the BC Energy Objective 2(g)

BCOAPO, BCSEA, Local Government Interveners, Move Up, RCIA, and CEC submit that FEI's LTGRP aims to meet the CEA energy objective 2(g), and some interveners note that the current context is challenging and the outcome of the LTGRP is uncertain.³⁰⁰ BCSEA also considers that the success of the LTGRP in reducing BC GHG emissions will depend on the BC Government implementing the emission cap through the GHGRS.³⁰¹

FEI submits in its reply that while FEI is not solely responsible for meeting the provincial GHG emission reduction targets, the LTGRP plans for GHG emission reductions in line with those targets.³⁰²

BCSSIA submits the LTGRP meets the CEA energy objective 2(g) but not to the full extent possible; that FEI could seek GHG emission reductions upstream of its operation.³⁰³ FEI's reply on this matter is addressed in section 3.3.

FTFO submits its belief that the LTGRP does not support the province's clean energy transition or align with legislated targets. Specific areas of concern are FEI's reliance on RNG and hydrogen for transitioning to renewable and low-carbon gas, the expansion of fossil gas exploration, and the construction of additional distribution infrastructure, that is FEI's production and delivery network.³⁰⁴

²⁹⁶ FEI Final Argument, pp. 26-27.

²⁹⁷ Exhibit C16-6, Appendix C, p. 16.

²⁹⁸ Exhibit B-38, p. 15.

²⁹⁹ Exhibit E-6.

³⁰⁰ BCOAPO Final Argument, p. 27; BCSEA Final Argument, pp. 2-3; LCI Final Argument, p. 14; MoveUp Final Argument, p. 8; RCIA Final Argument, p. 23; CEC Final Argument, p. 104.

³⁰¹ BCSEA Final Argument, p. 2.

³⁰² FEI Reply Argument, p. 54.

³⁰³ BCSSIA Final Argument, pp. 45-46.

³⁰⁴ FTFO Final Argument, pp. 1-2.

FEI replies to FTFO that FEI does not intend to expand its conventional natural gas “production network” as FEI does not produce natural gas, and that FEI’s transition to low-carbon and renewable gases will reduce the need for upstream gas processing and extraction.³⁰⁵

GNAR submits it has concerns about FEI’s purchase of “environmental attributes” of biogenic methane from extra provincial suppliers, and that this approach does not contribute to the physical reduction on GHG emissions. GNAR submits that legal mechanisms allow FEI to export the environmental attributes of fossil gas.³⁰⁶

FEI considers GNAR’s perspective is incorrect, that FEI’s purchases of biomethane displace an equal amount of conventional natural gas and that these matters are well established.³⁰⁷

MS2S submits the LTGRP doesn’t provide confidence that FEI can meaningfully contribute to provincial GHG targets without making its service cost-prohibitive and the LTGRP should be rejected. MS2S submits it has elaborated extensively on the reasons in its final arguments in the FEI Biomethane Energy Recovery Charge Rate Methodology and Comprehensive Review of a Revised Renewable Gas Program (BERC) proceeding.³⁰⁸

In reply to MS2S, FEI submits that in the BERC proceeding, MS2S’ argument on this matter consisted of assertions without evidentiary support, which do not warrant further reply.³⁰⁹

Clean Growth Pathway and Diversified Energy Planning Scenario

MoveUp finds the Clean Growth Pathway presents the most constructive starting point among the planning scenarios in FEI’s LTGRP that includes strategies that make the scenario more resilient and able to respond to a broader set of circumstances.³¹⁰

BCOAPO supports the Clean Growth Pathway and agrees with FEI that preserving customer energy choice, low-carbon fuel diversity, maximizing DSM initiatives and leveraging the existing gas system are practical and strategic approaches in terms of resilience, reliability, affordability, and environmental sustainability while lowering risk for BC residents and businesses.³¹¹ BCOAPO submits it is concerned with FEI’s policy responses to affordability, and is concerned that the DEP scenario’s rate increases will be much higher than the 118 percent indicated in the Application. BCOAPO considers that FEI’s directional rate impact calculations do not provide sufficient information, and recommends the BCUC direct FEI to elevate affordability to the strategic level as Pillar 5 of the Clean Growth Pathway, to increase its priority.³¹²

In response to concerns about affordability, FEI submits that BCOAPO’s recommendations should be rejected, that affordability is in every pillar of the Clean Growth Pathway and it is part of two resource planning objectives that state “ensure cost-effective, secure and reliable energy for customers” and “provide cost-effective DSM and lower carbon solutions”. FEI further submits that FEI needs to balance affordability concerns with the costs associated with increasing government ambitions to reduce GHG emissions and, in this context, affordability and affordable rates must be viewed through the lens of FEI’s ability to transition to low-carbon fuels at the lowest reasonable cost.³¹³

³⁰⁵ FEI Reply Argument, p. 55.

³⁰⁶ GNAR Final Argument, pp. 5-6.

³⁰⁷ FEI Reply Argument, pp. 55-56.

³⁰⁸ MS2S Final Argument, pp. 8, 12.

³⁰⁹ FEI Reply Argument, p. 56.

³¹⁰ MoveUp Final Argument, (pdf) p. 7.

³¹¹ BCOAPO Final Argument, p. 5.

³¹² Ibid., pp. 39 ,41.

³¹³ FEI Reply Argument, pp. 30-31.

The CEC recommends that the BCUC accept the DEP scenario as the more appropriate planning direction for FEI, and provides a series of recommendations for future LTGRP.³¹⁴ The CEC also submits that FEI's transition towards a renewable and low-carbon future needs to be managed and paced properly, lest it augment the risk of an ever-shrinking customer base facing increasingly unaffordable rates.³¹⁵

BCSEA submits that the Panel should not seek to determine whether the Clean Growth Pathway would be more or less cost-effective than an electrification approach as it is not necessary to make such a decision in the short term and it would not be desirable or possible due to the uncertainty of some key components of the plan, such as hydrogen.³¹⁶ BCSEA submits it supports the Clean Growth Pathway Pillars 1 and 2, generally supports Pillar 3 (LCT), but does not generally support Pillar 4, on LNG (as addressed in section 3.4.2.2). BCSEA considers the Diversified Energy pathway is a realistic basis in the short term, likely for the medium term (until around 2030), although it has reservations on the realism of the plan in the latter half of the planning period due to the heavy reliance on clean hydrogen replacing conventional natural gas.³¹⁷ This last point is addressed in section 3.3.

RCIA recommends the BCUC approve the DEP scenario, but does not support the construction of hydrogen related infrastructure as noted in section 3.4.2.1 of the decision.³¹⁸

FTFO has concerns and doubts about the DEP's reliance on RNG and hydrogen and the "high cost of all RNG varieties," as addressed in section 3.3.³¹⁹

Local Government Interveners consider that it is premature to justify FEI's commitment to a particular pathway. They submit that a commitment to the Clean Growth Pathway would constraint Local Government Intervener's understanding of other energy transition pathways that may be critical for them in their policy making role. Local Government Interveners also submit that the BCUC should compel FEI to fully address the many fundamental questions about the viability, availability, costs, and risks that remain outstanding regarding FEI's plans for renewable gases, irrespective of whether it accepts or rejects FEI's 2022 LTGRP.³²⁰

In response to Local Government Interveners, FEI submits that it has evaluated alternative decarbonization scenarios that facilitates comparison of decarbonization pathways and that Local Government Interveners do not identify any alternative decarbonization pathway that FEI has not considered. FEI further states that if the contracted supply of renewable and low-carbon gasses is lower than forecast, FEI expects to use other initiatives to meet BC's decarbonization targets.³²¹

BCSSIA submits that the LTGRP contains many unresolved risks that would be largely mitigated by taking a more diversified approach to decarbonization, with less reliance on the displacement of natural gas with RNG and hydrogen, and more reliance on electrification.³²²

GNAR submits that hydrogen can extend the presence of greenhouse gases. GNAR notes the lack of guidance regarding the global warming potential of hydrogen should not be mistaken for a lack of risk, and more secure environmentally friendly alternatives like electrification should be relied upon.³²³

³¹⁴ CEC Final Argument p. 3.

³¹⁵ *Ibid.*, p. 21.

³¹⁶ BCSEA Final Argument, p. 4

³¹⁷ *Ibid.*, pp. 2, 4-5.

³¹⁸ RCIA Final Argument, p. 28.

³¹⁹ First Things First Okanagan Final Argument, p. 2.

³²⁰ Local Government Interveners Final Argument, pp. 3, 8.

³²¹ FEI Reply Argument, pp. 14-15.

³²² BCSSIA Final Argument, pp. 14-15, 44-45.

³²³ GNAR Final Argument, p. 7.

In response to interveners concerned about committing to a specific pathway, FEI replies that the Clean Growth Pathway keeps decarbonization pathways open, is flexible, and does not lock FEI or the Province into any pathway, as FEI has only requested the acceptance of the 2022 LTGRP. FEI adds that it has not requested the approval of any other infrastructure project contemplated in the plan and will seek other approvals, such as CPCNs for extensions to FEI's system or energy supply contracts, in separate processes.³²⁴

Panel Discussion

The Panel will first address the Clean Growth Pathway following which the Panel will address the LTGRP relative to the BC energy objectives, in accordance with section 44.1 (8)(a) of the UCA.

The Panel understands that FEI's Clean Growth Pathway "envisions a future with a diversified energy supply, that maintains and grows both the gas and electricity networks in BC, as the lowest-cost path to reducing GHG emissions in the province, improve the energy system resiliency, foster emerging technologies and innovation, and economic development."³²⁵ Given this vision is broader than the scope of simply FEI's operations, the Panel sees merit in considering the reasonableness of the Clean Growth Pathway separately from the specific elements of the LTGRP.

The Panel considers that the Clean Growth Pathway is based on a host of assumptions and assertions, and represents simply a point in time forecast, for which there is no certainty that the future will unfold consistent with these assumptions. These assumptions, as well as the government policy and energy technologies are ever changing, as discussed in the foregoing sections of this decision. Given this uncertainty, the Panel finds it premature to determine whether the Clean Growth Pathway will indeed prove to be the lowest cost path to reduce GHG emissions in the province, as asserted by FEI. The Panel expects FEI to provide updated cost information in its next long-term gas resource plan.

Regarding the overall energy (natural gas and electricity) delivery system in BC, the Panel considers that the system is more 'resilient' when there are both gas and electricity systems, from purely a practical sense due to diversity. However, maintaining both systems is not the sole alternative for ensuring a resilient supply of energy to residents of British Columbia. For instance, diversification of BC's electric grid, higher penetrations of distributed generation, and energy storage can all work to improve the resiliency of BC's energy system absent natural gas. As such, the Panel is concerned that a full-scale commitment to the Clean Growth Pathway may constrain the adoption or change of course to other energy transition pathways that may prove to better serve the public interest. The Panel notes that resiliency is not an objective listed in the CEA; therefore, the Panel makes no determinations regarding whether the resiliency of the overall energy system in BC should be considered of greater importance as compared to GHG emission reductions, or a deep electrification pathway, or BC Energy Objectives, at this point in time.

The Clean Growth Pathway is also predicated on increasing the number of customers with resulting increases to total demand and growth in the gas network. Although increased growth may lead to lower ratepayer impacts in the long-term, the Panel is concerned that this growth will also require increased amounts of low carbon gas and/or other GHG emission reduction initiatives, such as DSM, to achieve provincial GHG targets including the Province's commitment to net-zero by 2050. The current low carbon gas supply source uncertainty, identified in section 3.3., presents a risk to the achievement of the Clean Growth Pathway. Therefore, the Panel expects FEI to address whether continued growth in the gas network best serves ratepayer and public interest in its next long-term gas resource plan.

³²⁴ FEI Reply Argument, pp. 19-21.

³²⁵ Exhibit B-1, p. ES-5; FEI Final Argument, p. 6.

The Panel notes that certain interveners have made submissions disputing the science associated with low carbon gases, and whether their use to displace natural gas will reasonably result in the expected reductions in GHG emissions, as forecast by FEI. As previously stated in this proceeding, “the Panel determines that examination of emerging climate science related to gaseous fuels is not within the scope of the LTGRP proceeding. The BCUC does not have the expertise or jurisdiction to make determinations regarding the potential climate impact of different gases. Nothing the BCUC could theoretically determine in this proceeding would supersede BC legislation regarding GHG emissions policies or carbon accounting.”³²⁶ Rather, the BCUC relies upon government to provide legislation and regulations, for which the BCUC will determine if the utilities are acting consistent with such regulations and legislation.

The Panel finds that the first pillar of FEI’s plan to focus on the incorporation of low carbon gas to displace natural gas, as set out in its Diversified Energy Planning scenario, aspires to meet the proposed GHGRS reduction requirements and the Panel finds that this strategy is consistent with the applicable BC Energy Objectives as identified by FEI. As discussed in section 3.3, although the Panel is concerned that the necessary supplies of low carbon gas may not materialize in the timeframe required to meet the GHG emission reduction requirements in 2030 and beyond, it does not warrant a rejection of the first pillar of the Clean Growth Pathway. If FEI determines in its next long-term gas resource plan that there is insufficient low carbon gas supplies, lower than anticipated availability of DSM savings, or lack of other GHG reduction alternatives than needed to meet the prevailing prescribed GHG reduction requirements, then FEI should include an evaluation of demand destruction in its next long-term gas resource plan.

The second pillar, DSM, is discussed in sections 3.2 and 4.2 and is found to be consistent with sections 44.1 (2) and 44.1 (8) of the UCA. Accordingly, the Panel accepts the second pillar of the Clean Growth Pathway.

The Panel finds that the pursuit of using CNG & LNG for transportation, the third pillar, is reasonable, as it is anticipated to result in reductions in overall GHG emissions due to displacement of fuels with higher carbon intensities. Therefore, the Panel accepts the third pillar of the Clean Growth Pathway. For clarity, the Panel does not consider marine bunkering to be included in Pillar 3.

The Panel is not persuaded that the fourth pillar, pursuing investments in infrastructure for LNG for marine bunkering and export, is reasonable, as discussed in section 3.4. Therefore, the Panel rejects the fourth pillar of the Clean Growth Pathway pursuant to section 44.1 (7) of the UCA.

To meet the proposed GHGRS emissions cap, FEI will need to identify a further 0.9 Mt CO₂ equivalent of GHG emissions reductions through additional actions which are currently unspecified. At present, the Panel notes that there is no certainty how or when these additional GHG reductions may be achievable, and FEI has limited time to model and implement any new actions by 2030. However, since further details for the GHGRS have not yet been issued, there is also uncertainty regarding the potential compliance pathways available to FEI. Accordingly, the Panel is unable to comment further on the likelihood of FEI realizing GHG reductions by 2030 through additional actions not otherwise modelled in the 2022 LTGRP. That said, the Panel encourages FEI to continue to investigate new GHG reduction initiatives, and the Panel expects that in its next long-term gas resource plan FEI will present more detailed information on its complete suite of planned actions to meet 2030 emissions targets, guided by further details regarding the GHGRS as applicable. As noted above, this analysis should include demand destruction if alternative means of GHG reductions are not available.

The Panel finds there is no need to add a fifth pillar to the Clean Growth Pathway to elevate affordability to the strategic level as proposed by BCOAPO. The Panel notes section 44.1 of the UCA requires a review of the public interest associated with a long-term gas resource plan. The Panel considers that reviewing ratepayer impacts is a component of the review of the public interest. The Panel expects that pursuing decarbonization will put upward pressure on rates. While directionally rates are expected to increase, it is not possible at this point to

³²⁶ Exhibit A-9, Order G-17-23 p. 3.

know the extent of the potential rate impacts due to the uncertainty of infrastructure and commodity costs, and the ability of FEI to meet GHG emission reduction targets. The Panel finds that the ratepayer information included in evidence to be sufficient for the purposes of evaluating this LTGRP pursuant to the requirements of the UCA.

The Panel agrees with FEI’s assessment of the applicable energy objectives and, based on the foregoing, finds the 2022 LTGRP, with the exception of the 2022 Resiliency Plan and the fourth pillar of the Clean Growth Pathway, supports or is consistent with the applicable energy objectives.

Finally, the Panel notes that on February 15, 2024, the British Columbia’s Energy Objectives Regulation under the CEA was amended by Order in Council (OIC) No. 60, which included amendments to BC’s energy objectives. OIC No. 60 provides that energy objective 2(g), regarding reducing BC GHG emissions, has priority over certain other energy objectives. Although this prioritization is new and was implemented by government during the latter stages of the proceeding, the Panel notes that it has already considered objective 2(g) in its determinations where required and does not consider that this new prioritization impacts the determinations made. The Panel notes that FEI’s next long-term gas resource plan will need to be developed in accordance with the amended Energy Objectives Regulation.

4.2 Adequate and Cost-Effective DSM

Section 44.1 (8)(c) of the UCA requires the BCUC to consider whether the plan shows that the public utility “intends to pursue adequate, cost-effective demand-side measures.” The definition of adequacy and cost-effectiveness is provided by the DSM Regulation.

Following the filing of the Application, the BC Government issued an amended DSM Regulation.³²⁷ The amendments include changes to the types of DSM which can be offered by gas utilities, in particular the removal of incentives for gas space and water heating equipment with performance below a certain threshold, with some exceptions for low income and Indigenous customers and certain industrial settings. The amended DSM Regulation also mandates the use of the Utility Cost Test when assessing cost-effectiveness, and requires the BCUC to use an avoided gas cost of \$34.07/GJ in 2023/2024, escalated by CPI for subsequent fiscal years.³²⁸

FEI submits that while the DSM Regulation has been amended, FEI’s long-term plan and intention is to continue to file DSM expenditure plans with the BCUC that are guided by the High DSM Setting, meet the adequacy requirements at the time and maximize the potential for cost-effective DSM as defined in the DSM Regulation.³²⁹

FEI provides estimates of cost-effectiveness over the period covered by the Plan, summarising the results for a variety of cost-effectiveness tests including the Total Resource Cost test prescribed by the DSM Regulation prior to June 2023. In all years and for all tests, the results are above 1.0, indicating the benefits exceed costs over the period.³³⁰ Given the timing of the Application prior to DSM Regulation amendments, the estimates of cost-effectiveness include incentives for conventional gas space and water heating.

³²⁷ B.C. Reg. 326/2008 — Demand-Side Measures Regulation, amended by M193/2023
https://www.bclaws.gov.bc.ca/civix/document/id/mo/mo/m0193_2023.

³²⁸ DSM Regulation, S 4 (1.1)(a).

³²⁹ FEI Final Argument, p. 25.

³³⁰ Exhibit B-1, p. 5-35.

FEI notes the amendments to the DSM Regulation which use RNG as the basis for the avoided cost of gas (\$34/GJ in 2023/24), generally make DSM activities more cost effective, and are designed to facilitate advanced DSM measures.³³¹

FEI describes how the portfolio of DSM activities meets the adequacy requirements as set out in Section 3 of the DSM Regulation, including DSM offerings designed for Indigenous communities; low income customers; rental apartment buildings; educational programs; support for developing codes and standards; and tiered incentives to promote the adoption of higher levels of BC's Energy Step Code.³³²

Positions of the Parties

FEI submits that the 2022 LTGRP clearly demonstrates its intention to pursue adequate, cost-effective DSM, even considering the amendments to the DSM Regulation of June 27, 2023. FEI emphasises that the legal test in Section 44.1(8)(c) requires that FEI show that it "intends to pursue" adequate and cost-effective DSM, and does not state that the LTGRP must "meet" the requirements of the DSM Regulation.³³³

FEI states that the filed 2024-2027 DSM expenditure schedule reflects the adequacy and cost-effective requirements of the amended DSM Regulation, including the phasing out of incentives for conventional gas space and water heating equipment with efficiencies less than 100 percent and the pursuit of advanced DSM.³³⁴

FEI submits that it has demonstrated an intent to pursue adequate DSM as defined by both the previous and current DSM Regulation. The current DSM portfolio meets the new adequacy requirement to provide DSM specifically to reduce energy consumption in housing or public buildings owned or operated by Indigenous governing bodies.³³⁵

FEI submits that its choice of the High DSM Setting must be understood as reflecting FEI's intent to maximize the GHG reduction potential of adequate, cost-effective DSM and that FEI will design its DSM expenditures with the High DSM Setting in mind. FEI's actual DSM plans and implementation of DSM programs will be on a more detailed level than the 2022 LTGRP, and will evolve to adapt to evolving circumstances, including changes to the DSM Regulation.³³⁶

BCOAPO, BCSEA, BCSSIA, the CEC and RCIA agree that FEI has demonstrated its intent to pursue adequate and cost-effective DSM.³³⁷

Panel Discussion

The Panel is satisfied that FEI has demonstrated its intent to pursue adequate, cost-effective demand-side measures which meets the requirements of section 44.1 (8)(c) of the UCA.

The Panel notes the current DSM plan, with associated targets, as outlined in the 2022 LTGRP is outdated and includes measures which are no longer allowed under the DSM Regulation. However, the Panel is assured by FEI's submission that its DSM programs will evolve in response to legislative updates, including recent changes to the DSM Regulation. The Panel accepts that FEI's 2024-2027 DSM expenditure schedule demonstrates its intent to continue to bring forward adequate, cost-effective DSM portfolios consistent with the requirements of the

³³¹ FEI Final Argument, p. 58.

³³² Exhibit B-1, pp. 5-7 to 5-8.

³³³ FEI Final Argument, p. 97.

³³⁴ Ibid., pp. 99-100.

³³⁵ Ibid., p. 100-101.

³³⁶ Ibid., p. 104.

³³⁷ BCOAPO Final Argument, p. 4, 6, 24; BCSEA Final Argument, p. 9-10; BCSSIA Final Argument, p. 46; CEC Final Argument, p. 87; RCIA Final Argument, p. 23-24.

amended DSM Regulation. The Panel agrees that FEI's selection of the High DSM Setting reflects FEI's intent to maximize the GHG reduction potential of its DSM expenditures. Finally, the Panel notes no interveners have suggested that FEI has not demonstrated its intent to pursue adequate and cost-effective DSM.

4.3 The Interests of Customers

FEI highlights the following key factors that indicate that the 2022 LTGRP is in the interest of persons in BC who receive or may receive gas service from FEI:

- The Clean Growth Pathway, as modelled through FEI's DEP Scenario, will provide British Columbians with the most reliable, resilient, and cost-effective pathway to meet the emissions reductions required by government policy, as well as provide other important benefits for customers.
- The 2022 LTGRP is sufficiently flexible to adapt to the uncertainty of the energy transition.
- The 2022 LTGRP is deeply informed by stakeholder consultation, including current and potential customers, and stakeholders support a diversified energy pathway.³³⁸

FEI will be seeking increased input from customer groups and the public in the next long-term gas resource plan due to the level of interest in energy planning, urgency to address climate change, and the future implications of energy policy.³³⁹

Positions of the Parties

The CEC encourages FEI to continue to work with potential customers in areas of the province that are either remote or presently under-served and pursue opportunities to serve these areas better. The CEC is satisfied with FEI's stakeholder engagement process for the development of the 2022 LTGRP.³⁴⁰

Panel Discussion

The Panel finds that the 2022 LTGRP considers the interests of persons in BC who receive or may receive gas service from FEI. The Panel accepts that the 2022 LTGRP is informed by stakeholder consultation and considers the plan to be sufficiently flexible to adapt to the uncertainty of the energy transition. The Panel notes that FEI is committed to seeking increased input from customer groups and the public in the development of its next long-term gas resource plan, due to the urgency related to addressing climate change and the future implications of energy policy.

4.4 Overall Findings on Section 44.1(8) Considerations

The Panel finds that FEI has provided sufficient evidence to satisfy the Panel that the 2022 LTGRP has met the requirements set out in section 44.1(8) of the UCA as discussed above, and therefore supports acceptance of the 2022 LTGRP as being in the public interest, with the exception of the 2022 Resiliency Plan and Pillar 4 of the Clean Growth Pathway, which are rejected pursuant to section 44.1 (7) of the UCA.

5.0 Other Issues Arising in the Proceeding

In this section, the Panel addresses select issues arising in this proceeding which are not directly related to the core filing requirements or legislated considerations of a long-term resource plan.

³³⁸ FEI Final Argument, p. 105.

³³⁹ Exhibit B-23, BCUC IR 111.2.

³⁴⁰ CEC Final Argument, p. 103.

5.1 Collaboration with BC Hydro

In December 2021, the BCUC initiated a process to explore energy scenarios to achieve GHG targets and the resulting interdependent long-term implications for FEI and BC Hydro, stating:

BC Hydro and FEI [...] have a significant and correlated role in achieving these GHG reduction objectives as the electric and gas energy systems in BC display many interdependencies, such as in the emerging industries of hydrogen and syngas production, carbon capture and storage and liquefied natural gas, to name a few.³⁴¹

The BCUC requested that FEI and BC Hydro share the data required to file load forecast results based on each other's scenarios contained in their respective resource plans. Additionally, the BCUC requested appropriate supporting commentary regarding the supply resource impacts, rate impacts and associated GHG emission impacts that may be needed to meet the load scenarios.³⁴²

FEI filed information to comply with the BCUC's request as an evidentiary update to the 2022 LTGRP proceeding, which resulted in the development of additional gas load forecasts based upon the assumptions outlined in BC Hydro's Reference Load Forecast and Accelerated Electrification scenario, as detailed in BC Hydro's 2021 Integrated Resource Plan (IRP).³⁴³

FEI submits there is room for improvement regarding collaboration with BC Hydro on scenario modelling. The utilities' respective load forecasting models function very differently, require inputs in different forms, and cover different geographic areas.³⁴⁴ Regarding future collaboration with BC Hydro more generally, FEI submits that while there are benefits to comparative information, additional cross-utility tasks increase complexity, timelines, and resource requirements for utilities.³⁴⁵

Positions of the Parties

MS2S submits efforts by BCUC to encourage such inter-utility cooperation have, to date, met with little success.³⁴⁶ MS2S says the deficiencies in the LTGRP highlight the need for an integrated energy strategy across sectors. MS2S proposes that an inter-utility task force be established, and FEI's next plan should be founded on a provincial integrated energy strategy outlining energy targets and trajectories for various fuels.³⁴⁷

GNAR recommends the Province take a leadership role in facilitating collaboration between FEI, BC Hydro and local communities.³⁴⁸

The Local Government Interveners submit that FEI's next long-term gas resource plan filing should be reviewed within a process that integrates FEI's plans for the gas system with BC Hydro's plans for its electric system. The lack of robust, coordinated planning between FEI and BC Hydro represents a material threat to BC achieving its GHG reduction targets. To the extent that the BCUC's jurisdictional constraints prevent effective coordinated planning, the BCUC should seek legislative amendments from the Province.³⁴⁹

³⁴¹ https://docs.bcuc.com/documents/proceedings/2021/doc_65110_2021-12-03-bcuc-request-information-on-fei-bch-energy-scenarios.pdf p. 1.

³⁴² https://docs.bcuc.com/documents/arguments/2022/doc_65400_2022-01-21-fei-bch-energy-scenarios-request.pdf.

³⁴³ Exhibit B-2 and B-4.

³⁴⁴ Exhibit B-6, BCUC IR 31 series.

³⁴⁵ Exhibit B-23, BCUC IR 121.3.

³⁴⁶ MS2S Final Argument, p. 5.

³⁴⁷ *Ibid.*, pp. 12-13.

³⁴⁸ GNAR Final Argument, p. 17.

³⁴⁹ Local Government Interveners Final Argument, pp. 3, 13.

MoveUP submits resource plan oversight needs to ensure electric and gas plans take account of each other.³⁵⁰

BCSSIA recommends the evaluation of a hybrid energy solution as a co-ordinated undertaking between FEI, BC Hydro and FBC.³⁵¹

The CEC submits FEI's DEP scenario is not reconciled with BC Hydro's potential electrification scenarios, and recommends that the BCUC direct both utilities to collaborate together with ratepayer intervener groups to reach agreement on suitable compatible scenarios for their next resource planning cycles.³⁵²

FEI supports a collaborative approach to meeting the energy needs for the province. The Study is an example of collaboration between gas and electric utilities, and FEI remains open to further collaboration with BC Hydro on a more detailed examination of cost differences between the Diversified and Deep Electrification pathways. FEI notes one of the largest barriers to deeper analysis in areas served by both FEI and BC Hydro is access to information. In reply to CEC, FEI submits requiring the utilities to collaborate with interveners, which often have competing priorities, would complicate an already complex and novel undertaking.³⁵³

Panel Discussion

Although the Panel views collaboration between the major utilities in BC as important, it does not make any determinations on this matter in this decision. Similar issues and submissions arose in the BC Hydro 2021 IRP, which were addressed in the BCUC's Decision and Order G-58-24 (IRP Decision).³⁵⁴ The Panel agrees with the comments regarding collaboration in the IRP Decision, which are equally applicable to FEI. In summary, greater collaboration between FEI and BC Hydro (and other utilities) on resource planning would be resource intensive and may not result in agreement between the utilities, and the BCUC should not be prescriptive on policy issues. The Panel endorses the proposal in the IRP Decision that in their next long-term resource plans, FEI and BC Hydro identify planning assumptions that are common to each plan, and provide information on those assumptions to facilitate a comparison of the approaches taken by each utility. These assumptions may include:

- Customer growth rates by region;
- Cross-price elasticity;
- Volume of fuel switching;
- Capture rates of new customers for major end-uses (e.g. space and water heating);
- Hydrogen production or other low carbon gas facilities located within BC; and
- Whether Provincial GHG emission reduction targets are assumed to be met in certain scenarios, and the relative contribution to emissions reductions in BC by gas and electric utilities.

For FEI, there may also be further areas for co-ordination on resource planning issues with FBC in the companies' shared service territory.

³⁵⁰ MoveUp Final Argument, pp. 2-3.

³⁵¹ BCSSIA Final Argument, pp. 22-26.

³⁵² CEC Final Argument, p. 3.

³⁵³ FEI Reply Argument, pp. 63-64.

³⁵⁴ Order G-58-24, p. 39-40.

The Panel anticipates that such coordination between the major utilities in BC will facilitate the delivery of cost-effective, safe and reliable service while meeting BC's energy objectives, and encourages FEI to address such opportunities in the development of its next long-term gas resource plan.

5.2 Main Extension Test

FEI has received approval from the BCUC to use a 40-year Discounted Cash Flow (DCF) and discontinue the 20-year term DCF for its 2016 Main Extension (MX) Test.³⁵⁵ In the 2022 LTGRP, FEI explains the relevant policy and regulatory impact on the existing gas delivery system that enables the transition from natural gas to renewable and low-carbon gas in various ways, including the development of hydrogen hubs and potential repurposing and upgrading the existing gas grid to supply hydrogen. In the Biomethane Energy Recovery Charge Rate Methodology and Comprehensive Review of a Revised Renewable Gas Program (BERC) proceeding, FEI proposes a new residential gas connections service to provide residential dwellings attached to the system with 100 percent RNG.³⁵⁶

FEI views the policy and regulation changes as an opportunity to evolve the energy delivery services. FEI states that its gas system assets will continue to be useful in a low-carbon or net-zero GHG emissions future, which limits the risks associated with stranded assets. For the same reason, the 40-year DCF term used in the MX Test remains appropriate at this time.³⁵⁷

FEI is currently unable to determine to what extent the existing gas will need to be modified for hydrogen or how much dedicated hydrogen infrastructure will be needed. Regardless of whether or not these costs should be included in the MX Test, FEI does not expect any changes will have to be made to the MX Test itself.³⁵⁸

Similarly, FEI states that the MX Test does not need to be updated to reflect the cost of RNG as part of residential gas connections services, if it is approved, as there are no additional capital costs for providing it to customers due to its interchangeability with conventional gas.³⁵⁹

Panel Discussion

The Panel notes that FEI's existing main extension test predates the energy transition and does not consider BC's energy objectives. Given this and FEI's stated strategy to move down the diversified energy pathway and significantly decarbonize its system, the Panel sees merit in considering BC's energy objectives and decarbonization in the main extension test in the future. Even though at the moment, FEI is unable to determine to what extent the cost of RNG, hydrogen, or societal cost should be included in the MX test, the Panel believes that in the future it would be prudent to evaluate the merit of incorporating such costs, as well as BC's energy objectives and other implications of the energy transition in FEI's main extension policy. Accordingly, the Panel recommends the BCUC review FEI's main extension policy.

5.3 Resource Planning Guidelines

FEI would be supportive of, and would participate in, a review of the Resource Planning Guidelines, should the BCUC decide to undertake such a review. FEI submits any updates made to the Guidelines should be directed at improving the ongoing process of resource planning and should not aim to direct any energy transition, but to enable it through a good planning process.³⁶⁰

³⁵⁵ Order G-147-16.

³⁵⁶ FEI BERC Application, Exhibit B-1.

³⁵⁷ Exhibit B-6, BCUC IR 15.1, p.91.

³⁵⁸ Ibid., BCUC IR 15.2, p.92.

³⁵⁹ Ibid., BCUC IR 15.3, p.92.

³⁶⁰ Exhibit B-23, BCUC IR 121.4.

Positions of the Parties

MoveUP submits the Guidelines' approach to resource planning applies too constricted a field of vision to enable the BCUC to ensure that the future planning trajectories being designed by the utilities collectively present strategies to respond effectively to rapid upcoming changes.³⁶¹ Additionally, MoveUP submits that dynamic processes are now needed that are responsive to accelerating disruptive change within a supremely complicated operating environment.³⁶² FEI replies that the current Guidelines do not constrain resource planning, and cautions against putting resource planning on pause to establish new formal processes and requirements which will slow and divert resources from the actual planning.³⁶³

Panel Discussion

The Panel considers that a review of the Resource Planning Guidelines is warranted, and recommends the BCUC undertake such a review. The Panel agrees with MoveUP that utilities are currently experiencing accelerating disruptive change within a supremely complicated operating environment, which the Panel considers warrants a review of the Guidelines. The Panel notes that FEI states it would support a review of the Resource Planning Guidelines if ordered by the BCUC. The review should not impede FEI's progress on the completion of its next long-term gas resource plan, but should consider opportunities to streamline process and facilitate the energy transition. A review should also consider any guidance that would enable more streamlined review processes of long-term resource plans, including the implementation of applicable efficiencies from the BCUC's Regulatory Efficiency Initiative.³⁶⁴

5.4 Other Intervener Recommendations

Some interveners provided recommendations for future long-term gas resource plans or other BCUC proceedings. While the Panel has reviewed all such recommendations, for brevity only certain issues are highlighted below where the Panel has material comments in response.

BCOAPO submits FEI should consider a rate mitigation plan in a separate proceeding, and in advance of a Multi-year Rate Plan (MRP) review, such that the direction determined in a proceeding on the rate mitigation plan be available for input into the next MRP review.³⁶⁵ In reply, FEI submits BCOAPO's proposal for a proceeding is neither necessary nor feasible. FEI notes the most commonly used rate mitigation strategy would be the use of deferral accounts to defer recovery of costs to future years. Any rate mitigation strategy should be considered as part of FEI's gas cost reports where commodity and midstream rates are reviewed, or during a Revenue Requirements proceeding when actual or projected costs would be known. Additionally, FEI will likely file its next MRP before the BCUC's decision on the LTGRP.³⁶⁶

GNAR recommends FEI amend its plan to include scenarios showing a complete phaseout of fossil gas by 2033, 2040, and 2050.³⁶⁷ In reply, FEI submits under sections 28(1) and 38 of the UCA, FEI has a statutory duty to serve its customers. Further, there is no evidence to suggest that demand for FEI's service offerings will cease over the planning horizon, and the existing gas network will be a key component in meeting GHG emission reduction targets.³⁶⁸

³⁶¹ MoveUP Final Argument, p. 5.

³⁶² Ibid., p. 2.

³⁶³ FEI Reply Argument, p. 65.

³⁶⁴ https://docs.bcuc.com/documents/other/2023/doc_75555_bcuc-regulatory-efficiency-initiative-final.pdf.

³⁶⁵ BCOAPO Final Argument, pp. 41-42.

³⁶⁶ FEI Reply Argument, pp. 34-35.

³⁶⁷ GNAR Final Argument, p. 16.

³⁶⁸ FEI Reply Argument, pp. 60-61.

MS2S submits FEI should resubmit its LTGRP, and the resubmitted plan should focus the use of available RNG and hydrogen in the hardest-to-decarbonize sectors first.³⁶⁹

Panel Discussion

The Panel declines to direct FEI to include the various recommendations described above in its next long-term gas resource plan.

With respect to BCOAPO's recommendation, the Panel views any such rate mitigation is more appropriately addressed during a rates application, as opposed to a standalone proceeding, or as part of a resource planning proceeding.

Regarding GNAR's recommendation, the Panel considers that it is appropriate for FEI to develop scenarios that address government legislation or policy regarding GHG emissions reductions in its next long-term gas resource plan. However, the Panel notes that at present there is no such policy direction to indicate the use of natural gas would be prohibited by a certain date and as such, a specific direction to this effect is not warranted at this time. If policy or legislation is put in place requiring the prohibition of natural gas, then the Panel expects FEI to consider that policy or legislation in its next long-term gas resource plan.

With respect to MS2S' recommendation, the Panel considers that prioritizing specific uses of low carbon gas appears to be a policy issue; therefore, the Panel declines the recommendation. However, the Panel considers that it would be helpful for FEI to include its views on this matter in its next long-term gas resource plan.

6.0 Is the 2022 LTGRP in the Public Interest?

Pursuant to section 44.1(6) of the UCA, and in consideration of the findings herein this decision, the Panel finds that carrying out the 2022 LTGRP is in the public interest. The Panel accepts the 2022 LTGRP, with the exception of the Resiliency Plan component, and Pillar 4 of the Clean Growth Pathway, which were rejected, as outlined earlier in the decision.

The Panel finds that the LTGRP is an aspirational pathway forward that results in a reasonable likelihood that FEI will meet its prescribed GHG emission reduction requirements and serves the public interest. Although it is possible that FEI will not meet 2030 GHG emission reduction requirements, it is the Panel's view that rejection of the entirety of the LTGRP, as proposed by some interveners, would likely preclude FEI from ever reaching its objective. The Panel considers that such an outcome would not serve the public interest.

The Panel concludes FEI has provided information to address each of the filing requirements outlined in section 44.1(2) of the UCA, and that the respective components that have been accepted provide a reasonable basis for outlining activities that FEI intends to pursue in the short term, and a range of long-term scenarios that could potentially unfold. Additionally, acceptance of the LTGRP (excluding the two components specified above) is supported by each of the considerations outlined in section 44.1(8) of the UCA. Notwithstanding acceptance of the LTGRP, in various sections of this decision the Panel has identified a number of matters that it expects FEI to address in its next plan. Overall, while this LTGRP represents a reasonable first step in outlining how FEI is planning for a low carbon future, the next long-term gas resource plan will need to go further. FEI will need to demonstrate greater sophistication in modelling how its demand may be affected by the energy transition, and provide more detailed support for its planned actions to address GHG emission reductions.

The Panel reiterates that the 2022 LTGRP filing does not seek any specific approvals for any of the projects, resource requirements, or plans detailed within it nor does the Panel make any findings regarding the prudence

³⁶⁹ MS2S Final Argument, p. 12.

of such. Future specific resource needs will be brought forward at the appropriate time by FEI for evaluation and BCUC approval under the appropriate sections of the UCA.

7.0 The Next LTGRP Filing

Section 44.1(2) of the UCA states in part: “a public utility must file with the commission, in the form and at the times the commission requires, a long-term resource plan...” In this section, the Panel determines the timing for FEI to file its next LTGRP, and summarizes the directives outlined elsewhere in this decision that specify the information to be filed in the next LTGRP.

7.1 Filing Date for the Next LTGRP

FEI submits in recognition of the public interest in the BCUC’s timely oversight of utility resource plans, and the challenges that the energy transition poses for all stakeholders in remaining current, FEI intends to file its next long-term gas resource plan within approximately two to three years of the conclusion of this proceeding. Filing the next long-term gas resource plan earlier will provide FEI with the opportunity to absorb the policy and technological changes that have occurred since the submission of the 2022 LTGRP and to update the BCUC on any associated impacts to FEI’s long-term planning. In particular, FEI notes it would be important to file the next long-term gas resource plan after the Province clarifies the compliance pathways to meet the GHGRS emissions cap, such that FEI can calibrate its long-term resource planning to the Province’s long-term goals for GHG emission reduction.³⁷⁰

Positions of the Parties

BCOAP0 and BCSEA support FEI’s proposal to file its next long-term gas resource plan in two to three years.³⁷¹

RCIA submits a new long-term gas resource plan could be filed once FEI’s hydrogen strategy is complete, or the hydrogen strategy be reviewed in a dedicated hearing.³⁷²

Local Government Interveners submit FEI should make a new filing within a timeframe to address the many unresolved planning questions from this proceeding. Notably, the details of the GHGRS and climate-aligned energy framework are critical information the provincial government needs to provide to help narrow the planning uncertainties that FEI currently faces.³⁷³

MoveUP submits there is a need for dynamic resource planning processes that are responsive to accelerating disruptive change within a supremely complicated operating environment, such as an evergreen approach adopted by BC Hydro.³⁷⁴

In reply, FEI has concerns about an “evergreen” resource plan, noting the UCA requires a review and acceptance process that necessitates a point-in-time submission. Additionally, FEI submits caution should be taken that taking shortcuts in the planning process is not at the expense of good information and analysis on which to make planning decisions.³⁷⁵

³⁷⁰ FEI Final Argument, p. 118.

³⁷¹ BCSEA Final Argument, p. 2; BCOAP0 Final Argument, p. 6.

³⁷² RCIA Final Argument, p. 18-19.

³⁷³ Local Government Interveners, Final Argument p. 2.

³⁷⁴ MoveUP Final Argument, p. 2.

³⁷⁵ FEI Reply Argument, p. 66.

Panel Determination

Pursuant to section 44.1(2) of the UCA, the Panel directs FEI to file its next long-term gas resource plan on or before March 31, 2026. The Panel notes this is within the two to three year timeframe following this decision as proposed by FEI and supported by some interveners.

The Panel finds that more frequent filings of long-term gas resource plans are appropriate to address the challenges FEI faces during the energy transition. The Panel agrees that this period of time should allow FEI the opportunity to absorb the policy and technological changes that will have occurred since the submission of the 2022 LTGRP and update the BCUC on any associated impacts to FEI's long-term planning, as well as addressing issues raised in this proceeding. The Panel expects that FEI will include its Hydrogen Strategy in its next long-term gas resource plan filing.

In determining a filing date for FEI's next long-term gas resource plan, the Panel recognizes that significant changes in government policy, technology or other external factors in the interim period may result in significant and unforeseeable changes that could substantially alter FEI's planning assumptions or near-term actions. Accordingly, FEI may request that the BCUC amend the filing date where circumstances indicate that commencing the review of the next long-term gas resource plan in March 2026 would not be effective or efficient.

DATED at the City of Vancouver, in the Province of British Columbia, this 20th day of March 2024.

Original signed by:

T. A. Loski
Panel Chair / Commissioner



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Utilities Commission

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**ORDER NUMBER
G-78-24**

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

FortisBC Energy Inc.
2022 Long Term Gas Resource Plan

BEFORE:
T. A. Loski, Panel Chair

On March 20, 2024

ORDER

WHEREAS:

- A. On May 9, 2022, FortisBC Energy Inc. (FEI) filed its 2022 Long Term Gas Resource Plan (LTGRP) for acceptance by the British Columbia Utilities Commission (BCUC), pursuant to section 44.1(2) of the *Utilities Commission Act* (UCA). FEI seeks BCUC acceptance of the 2022 LTGRP pursuant to section 44.1(6) of the UCA;
- B. By Orders G-146-22; G-222-22; G-287-22; G-17-23; G-99-23; G-150-23; and G-317-23, the BCUC established and amended regulatory timetables for the review of the LTGRP. The regulatory process included: filing of evidentiary updates by FEI in June 2022, August 2022, and February 2023; two rounds of written information requests (IRs); a procedural conference; filing of intervenor evidence, and IRs on the intervenor evidence; rebuttal evidence filed by FEI, and IRs on the rebuttal evidence; written final arguments by FEI and interveners; and reply argument by FEI; and
- C. The BCUC has reviewed the evidence and submissions filed in this proceeding, and makes the following determinations.

NOW THEREFORE for the reasons outlined in the Decision issued concurrently with this order, the BCUC orders as follows:

- 1. Pursuant to section 44.1(6) of the UCA, FEI's 2022 LTGRP is accepted in part. The components of FEI's 2022 LTGRP pertaining to (i) investments in Liquefied Natural Gas for marine fueling and global markets, and (ii) the resiliency plan, are rejected.

2. Pursuant to section 44.1(2) of the UCA, FEI must file its next long term gas resource plan on or before March 31, 2026.
3. FEI must comply with all other directives outlined in the Decision issued concurrently with this order.

DATED at the City of Vancouver, in the Province of British Columbia, this 20th day of March 2024.

BY ORDER

Original signed by:

T. A. Loski
Commissioner

Directives in 2017 Decision

Directive in 2017 Decision
<p>FEI is directed to:</p> <p>Update the information filed in the 2017 LTGRP proceeding to respond to the BCUC's directive in the 2014 LTRP Decision to provide an analysis of FEI's End-Use Method as compared to other end-use methods, including an assessment of the of FEI's method compared to other models that incorporate some form of end-use modelling combined with econometric modeling;</p> <p>Provide a detailed explanation of any changes to its demand forecast methodology as it evolves between now and the next LTGRP filing; and</p> <p>Include high level assessment of the effectiveness of the Traditional and End-Use Models compared to actual results.</p>
<p>FEI is directed to continue use of its Traditional Method as a comparison to test its End-Use Method until such time as the BCUC approves a new demand forecast methodology.</p>
<p>FEI to continue to provide the following information:</p> <p>DSM funding scenarios, reflecting the results of the most recent CPR, that include a "reference" DSM funding scenario with "high DSM" and "low DSM" scenarios that are relative to the reference scenario;</p> <p>An analysis of each DSM scenario, at a portfolio level and for each DSM category (residential, low-income, commercial etc.), including:</p> <p>Total Resource Cost/modified Total Resource Cost test results;</p> <p>Utility Cost Test result, expressed as a ratio and \$/GJ;</p> <p>Delivery rate impact;</p> <p>Estimated total bill impact (including delivery and commodity), \$ and %, with residential split between high and low use gas customers; and</p> <p>Estimated gas (GJ) and GHG emission reductions.</p>
<p>To provide an update of FEI's analysis of opportunities for DSM to be used to cost-effectively replace or defer infrastructure investments in its next LTGRP.</p>
<p>FEI to address the implications for FEI's long-term resource and conservation planning of the 2018 CleanBC plan released by the Government of BC on December 6, 2018 and to provide an update on its analysis of GHG targets. In particular, the Panel expects that FEI should address the long term impacts to FEI of:</p> <p>Initiatives targeting more energy efficient buildings, in terms of gas demand and FEI's DSM activities;</p> <p>Requirements for 15 percent of natural gas consumption to be from renewable gas;</p> <p>Industrial electrification, with respect to demand for natural gas;</p> <p>How 2018 CleanBC's plans for clean transportation affect FEI's forecast for its NGT programs; and</p> <p>Other initiatives to be developed by the Government of BC over the next 18 to 24 months.</p>
<p>The Panel directs FEI to address security of supply concerns in its next LTGRP.</p>

FortisBC Energy Inc.
2022 Long-Term Gas Resource Plan
Decision and Order G-78-24

GLOSSARY AND ACRONYMS

ACRONYM / GLOSSARY	DESCRIPTION
2017 Decision	The BCUC's decision on FEI's 2017 Long-Term Gas Resource Plan (Order G-39-19)
AMI	Advanced Metering Infrastructure
Application	FEI's 2022 Long-Term Resource Plan
BAU	Business as Usual
BC Hydro	British Columbia Hydro and Power Authority
BCOAPO or BCOAPO et al.	British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, Tenants Resource and Advisory Centre, and Together Against Poverty Society
BCCA	BC Climate Alliance
BCSEA	BC Sustainable Energy Association
BCSSIA	BC Solar and Storage Industries Association
BERC	Biomethane Energy Recovery Charge
BCUC	British Columbia Utilities Commission
CEA	Clean Energy Act
CEC	Commercial Energy Consumers Association of British Columbia
Clean Growth Pathway	FEI's 20 year vision for FEI's transition to a low-carbon future
CNG	Compressed Natural Gas
COR	City of Richmond
COV	City of Vancouver
CPCN	Certificate of Public Convenience and Necessity
CPI	Consumer Price Index
CPR	Conservation Potential Review
CTS	Coastal Transmission System
DCF	Discounted Cash Flow
DEP	Diversified Energy Planning
District-NV	District of North Vancouver

ACRONYM / GLOSSARY	DESCRIPTION
DSM	Demand Side Measures
EMLI	Ministry of Energy, Mines and Low Carbon Innovation
End-Use Method	End-Use Annual Demand Forecasting Method
FTFO	First Things First Okanagan
GGRR	Greenhouse Gas Reduction Regulation
GHG	Greenhouse Gas
GHGRS	Greenhouse Gas Reduction Standard
GNAR	GNAR Inc – Sustainable Home Design
Guidelines	BCUC's Resource Planning Guidelines
ICF	ICF Canada
ISO	International Organization for Standardization
IR	Information Request
IRP	Integrated Resource Plan
ITS	Interior Transmission System
LCT	Low-Carbon Transportation
LIECL	Lulu Island Energy Company Ltd.
LNG	Liquefied Natural Gas
Local Government Interveners	Representing the City of Richmond, City of Vancouver, District of North Vancouver, Lulu Island Energy Company, Metro Vancouver Regional District, and the District of Saanich
LTGRP	Long Term Gas Resource Plan
MetroVan	Metro Vancouver Regional District
MoveUP	Movement of United Professionals
MRP	Multi-Year Rate Plan
MS2S	My Sea to Sky
Mt CO ₂	Megatonnes of Carbon Dioxide
mTRC	Modified Total Resource Cost
MX	Main Extension
NPS	Non-Pipe Solutions
PowerBI	A data visualization and reporting platform used primarily for business intelligence purposes
RCIA	Residential Consumer Intervener Association
RGSD	Regional Gas Supply Diversity

ACRONYM / GLOSSARY	DESCRIPTION
RNG	Renewable Natural Gas
Roadmap	British Columbia's CleanBC Roadmap to 2030
RPAG	Resource Planning Advisory Group
RS	Rate Schedule
Saanich	District of Saanich
Study	Kelowna Electrification Case Study
Surrey	City of Surrey
TLSE	Tilbury LNG Storage Expansion
UCA	<i>Utilities Commission Act</i>
UCT	Utility Cost Test
VITS	Vancouver Island Transmission System

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473
and
FortisBC Energy Inc.
2022 Long Term Gas Resource Plan

EXHIBIT LIST

Exhibit No.	Description
<i>COMMISSION DOCUMENTS</i>	
A-1	Letter dated May 11, 2022 – Appointing the panel for review of the FEI 2022 Long Term Gas Resource Plan
A-2	Letter dated May 31, 2022 – BCUC Order G-146-22 establishing a regulatory timetable with public notice
A-3	Letter dated August 12, 2022 – BCUC Order G-222-22 establishing an amended regulatory timetable
A-4	Letter dated August 19, 2022 – BCUC providing guidance for intervener participation
A-5	Letter dated September 8, 2022 – BCUC submitting Information Request No. 1 to FEI
A-6	Letter dated September 21, 2022 – BCUC response to GNAR extension request to file Information Request No. 1
A-7	Letter dated October 14, 2022 – BCUC Order G-287-22 establishing an amended regulatory timetable
A-8	Letter dated January 4, 2023 - BCUC providing Procedural Conference Information
A-9	Letter dated January 25, 2023 – BCUC Order G-17-23 with Reasons for Decision and a regulatory timetable
A-10	Letter dated February 13, 2023 – BCUC requesting further information
A-11	Letter dated March 13, 2023 – BCUC submitting Information Request No. 2 to FEI
A-12	CONFIDENTIAL - Letter dated March 13, 2023 – BCUC submitting Confidential Information Request No. 2 to FEI
A-13	Letter dated May 1, 2023 – BCUC Order G-99-23 establishing an amended regulatory timetable
A-14	Letter dated June 14, 2023 – BCUC amending the Panel for the review of the application

- A-15 Letter dated June 15, 2023 – BCUC Order G-150-23 establishing an amended timetable with Reasons for Decision
- A-16 Letter dated June 22, 2023 – BCUC Information Request No. 1 to MS2S
- A-17 Letter dated September 15, 2023 – BCUC will not be issuing Information Requests on Rebuttal Evidence
- A-18 Letter dated September 28, 2023 – BCUC amending the panel for the review of the application
- A-19 Letter dated October 5, 2023 – BCUC requesting matters to be addressed in final arguments
- A-20 Letter dated November 20, 2023 – BCUC Order G-317-23 establishing an amended timetable

COMMISSION STAFF DOCUMENTS

- A2-1 Letter dated December 7, 2022 - BCUC staff submitting BC Hydro 2021 Integrated Resource Plan - FEI and BC Hydro Energy Scenarios – BC Hydro’s Stage One Submission, BC Hydro’s Stage Two Submission and BC Hydro’s Stage Two Additional Information
- A2-2 Letter dated March 16, 2022 – BCUC staff submitting BC Centre for Innovation and Clean Energy’s report on Carbon Intensity of Hydrogen Production Methods

APPLICANT DOCUMENTS

- B-1 **FORTISBC ENERGY INC. (FEI)** - 2022 Long Term Gas Resource Plan (LTGRP) dated May 9, 2022
- B-2 Letter dated June 15, 2022 – FEI submitting Energy Scenarios Stage 1 Modelling Results
- B-3 Letter dated July 8, 2022 – FEI submitting confirmation of G-146-22 Compliance of Public Notice
- B-3-1 Letter dated July 13, 2022 – FEI submitting confirmation of G-146-22 Compliance of Public Notice - Correction
- B-4 Letter dated August 12, 2022 – FEI Energy Scenarios Stage 2 Submission
- B-5 Letter dated October 7, 2022 – FEI submitting request to amend the Regulatory Timetable
- B-6 Letter dated December 22, 2022 - FEI submitting response to BCUC information Request No. 1
- B-7 Letter dated December 22, 2022 - FEI submitting response to BCCA-FTFO information Request No. 1

- B-7-1 **CONFIDENTIAL** - Letter dated December 22, 2022 - FEI submitting response to BCCA-FTFO information Request No. 1 confidential Attachment 4.3
- B-8 Letter dated December 22, 2022 - FEI submitting response to BC Hydro information Request No. 1
- B-9 Letter dated December 22, 2022 - FEI submitting response to BCOAPO information Request No. 1
- B-10 Letter dated December 22, 2022 - FEI submitting response to BCSEA information Request No. 1
- B-11 Letter dated December 22, 2022 - FEI submitting response to BCSSIA information Request No. 1
- B-12 Letter dated December 22, 2022 - FEI submitting response to CEC information Request No. 1
- B-13 Letter dated December 22, 2022 - FEI submitting response to GNAR information Request No. 1
- B-14 Letter dated December 22, 2022 - FEI submitting response to MetroVan information Request No. 1
- B-15 Letter dated December 22, 2022 - FEI submitting response to MoveUP information Request No. 1
- B-16 Letter dated December 22, 2022 - FEI submitting response to MS2S information Request No. 1
- B-17 Letter dated December 22, 2022 - FEI submitting response to RCIA information Request No. 1
- B-18 Letter dated January 16, 2023 - FEI submitting Proposed Evidentiary Update Summary
- B-19 Letter dated January 19, 2023 - FEI submitting potential alternative timetables
- B-20 Letter dated February 24, 2023 – FEI submitting Evidentiary Update
- B-21 **CONFIDENTIAL** - Letter dated February 24, 2023 – FEI submitting confidential Port of Vancouver Study
- B-22 Letter dated April 28, 2023 – FEI submitting request for amendment to the regulatory timetable
- B-23 Letter dated May 3, 2023 – FEI submitting public response to BCUC Information Request No. 2
- B-23-1 **CONFIDENTIAL** - Letter dated May 3, 2023 – FEI submitting confidential response to BCUC Information Request No. 2

- B-24 **CONFIDENTIAL** - Letter dated May 3, 2023 – FEI submitting confidential response to BCUC Confidential Information Request No. 2
- B-25 Letter dated May 3, 2023 – FEI submitting response to BCOAPO Information Request No. 2
- B-26 Letter dated May 3, 2023 – FEI submitting response to BCSEA Information Request No. 2
- B-27 Letter dated May 3, 2023 – FEI submitting response to BCSSIA Information Request No. 2
- B-28 Letter dated May 3, 2023 – FEI submitting response to CEC Information Request No. 2
- B-29 Letter dated May 3, 2023 – FEI submitting response to CoR Information Request No. 2
- B-30 Letter dated May 3, 2023 – FEI submitting response to MoveUP Information Request No. 2
- B-31 Letter dated May 3, 2023 – FEI submitting response to MS2S Information Request No. 2
- B-32 Letter dated May 3, 2023 – FEI submitting response to RCIA Information Request No. 2
- B-33 Letter dated May 25, 2023 – FEI submission regarding need and scope for Oral Hearing or Information Request No. 3
- B-34 Letter dated June 8, 2023 – FEI reply submission regarding need and scope for Oral Hearing or Information Request No. 3
- B-35 Letter dated June 23, 2023 – FEI submitting Information Request No. 1 on Intervener Evidence to MS2S
- B-36 Letter dated June 28, 2023 – FEI submitting notice of intent to file rebuttal evidence
- B-37 Letter dated August 3, 2023 – FEI submitting confirmation of timeline for filing rebuttal evidence
- B-38 Letter dated August 18, 2023 – FEI submitting Rebuttal Evidence in response to MS2S evidence
- B-39 Letter dated October 13, 2023 – FEI submitting response to BCOAPO Information Request No. 3 on Rebuttal Evidence
- B-40 Letter dated October 13, 2023 – FEI submitting response to BCSEA Information Request No. 3 on Rebuttal Evidence
- B-41 Letter dated October 13, 2023 – FEI submitting response to BCSSIA Information Request No. 3 on Rebuttal Evidence
- B-42 Letter dated October 13, 2023 – FEI submitting response to CEC Information Request No. 3 on Rebuttal Evidence
- B-43 Letter dated October 13, 2023 – FEI submitting response to MS2S Information Request No. 3 on Rebuttal Evidence

B-44 Letter dated October 13, 2023 – FEI submitting response to RCIA Information Request No. 3 on Rebuttal Evidence

INTERVENER DOCUMENTS

C1-1 **MOVEMENT OF UNITED PROFESSIONALS (MOVEUP)** - Letter dated June 6, 2022 submitting request to intervene by Jim Quail

C1-2 Letter dated September 15, 2022 – MoveUP submitting Information Request No. 1 to FEI

C1-3 Letter dated March 17, 2023 – MoveUP submitting Information Request No. 2 to FEI

C1-4 Letter dated May 22, 2023 – MoveUP submission on scope of further process

C1-5 Letter dated June 8, 2023 – MoveUP reply submission regarding need and scope for Oral Hearing or Information Request No. 3

C2-1 **BRITISH COLUMBIA HYDRO AND POWER AUTHORITY (BC HYDRO)** - Letter dated June 7, 2022 submitting request to intervene by Chris Sandve

C2-2 Letter dated September 15, 2022 – BC Hydro submitting Information Request No. 1 to FEI

C2-3 Letter dated March 6, 2023 – BC Hydro submitting Confidentiality Declaration and Undertakings

C3-1 **BC SUSTAINABLE ENERGY ASSOCIATION (BCSEA)** - Letter dated June 24, 2022 submitting request to intervene by Thomas Hackney

C3-2 Letter dated September 15, 2022 – BCSEA submitting Information Request No. 1 to FEI

C3-3 Letter dated March 20, 2023 – BCSEA submitting Information Request No. 2 to FEI

C3-4 Letter dated May 23, 2023 – BCSEA submission on scope of further process

C3-5 Letter dated June 8, 2023 – BCSEA reply submission regarding need and scope for Oral Hearing or Information Request No. 3

C3-6 Letter dated June 20, 2023 – BCSEA submitting Information Request No. 1 to MS2S

C3-7 Letter dated September 15, 2023 – BCSEA submitting Information Request No. 3 to FEI on Rebuttal Evidence

C4-1 **CITY OF SURREY (SURREY)**– Letter dated July 28, 2022 request to intervene by Benjie Lee

C5-1 **BC CLIMATE ALLIANCE (BCCA)** – Letter dated August 9, 2022 request to intervene by Judy O’Leary

C5-2 Letter dated September 15, 2022 – BCCA and FTFO submitting Information Request No. 1 to FEI

- C6-1 **RESIDENTIAL CONSUMER INTERVENER ASSOCIATION (RCIA)** – Letter dated August 9, 2022 request to intervene by Samuel Mason
- C6-2 Letter dated September 15, 2022 – RCIA submitting Information Request No. 1 to FEI
- C6-3 Letter dated March 20, 2023 – RCIA submitting Information Request No. 2 to FEI
- C6-4 Letter dated May 25, 2023 – RCIA submission regarding need and scope for Oral Hearing or Information Request No. 3
- C6-5 Letter dated September 15, 2023 – RCIA submitting Information Request No. 3 to FEI on Rebuttal Evidence
- C7-1 **BC SOLAR AND STORAGE INDUSTRIES ASSOCIATION (BCSSIA)** – Letter dated August 10, 2022 – request to intervene by Steve Davis
- C7-2 Letter dated September 15, 2022 – BCSSIA submitting Information Request No. 1 to FEI
- C7-3 Letter dated March 20, 2023 – BCSSIA submitting Information Request No. 2 to FEI
- C7-4 Letter dated May 25, 2023 – BCSSIA submission regarding need and scope for Oral Hearing or Information Request No. 3
- C7-5 Letter dated June 23, 2023 – BCSSIA submitting Information Request No. 1 on Intervener Evidence to MS2S
- C7-6 Letter dated September 15, 2023 – BCSSIA submitting Information Request No. 3 to FEI on Rebuttal Evidence
- C8-1 **COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BC (CEC)** – Letter dated August 10, 2022 request to intervene by David Craig
- C8-2 Letter dated September 15, 2022 – CEC submitting Information Request No. 1 to FEI
- C8-3 Letter dated March 20, 2023 – CEC submitting Information Request No. 2 to FEI
- C8-4 Letter dated May 25, 2023 – CEC submission regarding need and scope for Oral Hearing or Information Request No. 3
- C8-5 Letter dated June 23, 2023 – CEC submitting Information Request No. 1 on Intervener Evidence to MS2S
- C8-6 Letter dated September 15, 2023 – CEC submitting Information Request No. 3 to FEI on Rebuttal Evidence
- C9-1 **CITY OF RICHMOND (CoR)** – Letter dated August 10, 2022 request to intervene by Anthony Capuccinello Iraci
- C9-2 Letter dated March 20, 2023 – CoR submitting Information Request No. 2 to FEI
- C10-1 **CITY OF VANCOUVER (CoV)** – Letter dated August 10, 2022 request to intervene by Ian Neville

- C11-1 **DISTRICT OF NORTH VANCOUVER (DISTRICT-NV)**- Letter dated August 10, 2022 request to intervene by Rebecca Bittel
- C12-1 **DISTRICT OF SAANICH (SAANICH)** - Letter dated August 10, 2022 request to intervene by Rebecca Newlove
- C13-1 **FIRST THINGS FIRST OKANAGAN (FTFO)** - Letter dated August 10, 2022 request to intervene by Margaret Holm
- C14-1 **LULU ISLAND ENERGY COMPANY LTD. (LIECL)** – Letter dated August 10, 2022 request to intervene by Anthony Capuccinello Iraci
- C15-1 **METRO VANCOUVER REGIONAL DISTRICT (METROVAN)** – Letter dated August 10, 2022 request to intervene by Roger Quan
- C15-2 Letter dated September 15, 2022 – MetroVan submitting Information Request No. 1 to FEI
- C15-3 **WITHDRAWN** - Letter dated August 2, 2023 – MetroVan requesting extension to the regulatory timetable
- C15-4 Letter dated August 2, 2023 – MetroVan submitting notification of representative change
- C16-1 **MY SEA TO SKY (MS2S)** – Letter dated August 10, 2022 request to intervene by Eoin Finn
- C16-2 Letter dated September 15, 2022 – MS2S submitting Information Request No. 1 to FEI
- C16-3 Letter dated December 15, 2022 – MS2S submitting notice of Emma Hume as Legal Counsel
- C16-4 Letter dated January 17, 2022 – MS2S submitting comments on process and anticipated evidence
- C16-5 Letter dated March 20, 2023 – MS2S submitting Information Request No. 2 to FEI
- C16-6 Letter dated May 16, 2023 – MS2S submitting Intervener Evidence
- C16-7 Letter dated July 21, 2023 – MS2S submitting response to BCSEA Information Request No. 1 on Intervener Evidence
- C16-8 Letter dated July 21, 2023 – MS2S submitting response to BCUC Information Request No. 1 on Intervener Evidence
- C16-9 Letter dated July 21, 2023 – MS2S submitting response to CEC Information Request No. 1 on Intervener Evidence
- C16-10 Letter dated July 21, 2023 – MS2S submitting response to BCSSIA Information Request No. 1 on Intervener Evidence
- C16-11 Letter dated July 21, 2023 – MS2S submitting response to FEI Information Request No. 1 on Intervener Evidence

- C16-12 Letter dated September 15, 2023 – MS2S submitting Information Request No. 3 to FEI on Rebuttal Evidence
- C17-1 **GNAR INC - SUSTAINABLE HOME DESIGN (GNAR)** – Letter dated August 10, 2022 request to intervene by E. Dearden
- C17-2 Letter dated September 15, 2022 – GNAR submitting extension request to file Information Request No. 1
- C17-3 Letter dated September 20, 2022 – GNAR submitting Information Request No. 1 to FEI
- C18-1 **BRITISH COLUMBIA OLD AGE PENSIONERS’ ORGANIZATION ET AL. (BCOAPO ET AL.)** – Letter dated August 12, 2022 late request to intervene by Leigha Worth
- C18-2 Letter dated September 15, 2022 – BCOAPO submitting Information Request No. 1 to FEI
- C18-3 Letter dated March 20, 2023 – BCOAPO submitting Information Request No. 2 to FEI
- C18-4 Letter dated May 25, 2023 – BCOAPO submission regarding need and scope for Oral Hearing or Information Request No. 3
- C18-5 Letter dated September 15, 2023 – BCOAPO submitting Information Request No. 3 to FEI on Rebuttal Evidence

INTERESTED PARTY DOCUMENTS

- D-1 **WAUTHY, J. (WAUTHY)** – Submission dated June 14, 2022 Request for Interested Party Status on behalf of the University of British Columbia (UBC)
- D-2 **MINISTRY OF ENERGY, MINES AND LOW CARBON INNOVATION (EMLI)** – Submission dated June 20, 2022 Request for Interested Party Status by Jennifer Davison
- D-3 **CLIMATE ACTION SECRETARIAT, MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY (MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY)** – Submission dated June 28, 2022 Request for Interested Party Status by Ashley Sarauer
- D-4 **MICHAELS, L. (MICHAELS)** – Submission dated July 7, 2022 Request for Interested Party Status
- D-5 **CANADIAN GEOTHERMAL ENERGY ASSOCIATION (CANGEA)** – Submission dated September 28, 2022 Request for Interested Party Status by Alison Thompson
- D-6 **ZERO EMISSIONS BUILDING EXCHANGE (ZEBx)** – Submission dated October 19, 2022 Request for Interested Party Status by Roberto Pecora

LETTERS OF COMMENT

- E-1 WATERS, S. (WATERS) – Letter of Comment dated August 6, 2022
- E-2 EVANS, G. (EVANS) – Letter of Comment dated August 5, 2022
- E-3 CROSBY, K. (CROSBY) – Letter of Comment dated August 10, 2022

- E-4 SHARP, E. (SHARP) – Letter of Comment dated August 20, 2023
- E-5 PIDSKALNEY, D. (PIDSKALNEY) – Letter of Comment dated October 7, 2023
- E-6 MINISTRY OF ENERGY, MINES AND LOW CARBON INNOVATION (EMLI) – Letter of Comment dated November 20, 2023