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December 22, 2022

Movement of United Professionals
c/o Allevato Quail & Roy, Barristers and Solicitors
405-510 West Hastings St.
Vancouver, BC
V6B 1L8

Attention: Mr. Jim Quail

Dear Mr. Quail:

Re: FortisBC Energy Inc. (FEI)

2022 Long Term Gas Resource Plan (LTGRP) – Project No. 1599324

Response to Canadian Office and Professional Employees Union, Local 378 (known as Movement of United Professionals or MoveUP) Information Request (IR) No. 1

On May 9, 2022, FEI filed the LTGRP referenced above. In accordance with the amended regulatory timetable established in British Columbia Utilities Commission Order G-287-22 for the review of the LTGRP, FEI respectfully submits the attached response to MoveUP IR No. 1.

In its responses, FEI has identified responses which were provided by, contributed to, or developed with its consultants, the Posterity Group and Guidehouse.

For convenience and efficiency, FEI has occasionally provided an internet address for referenced reports instead of attaching lengthy documents to its IR responses. FEI intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

1.0 Topic: Gas and Electrical Resource Planning and Electrification Transformation

Reference: Exhibit B-1 at pages 2-20 to 2-21:

Overall, the policy preference at all three levels of government for the use of electricity across many end uses puts downward pressure on FEI's demand and upward pressure on FEI's rates. Demand is reduced though the focus on energy efficiency of buildings and appliances, and policies which limit FEI's ability to attach new customers. Rates are increased by the need to invest in higher cost gaseous energy in response to emission reduction pressures and these costs are borne across the energy value chain. Taxes add additional upward rate pressure. Downward pressure on FEI's ability to add customer attachments could eventually result in a smaller customer base resulting in higher costs per customer to support decarbonization initiatives.

From a broader perspective, these initiatives change the economics of customer and builder energy-use decisions and underpin the weakness of electrification-centric plans that overlook the opportunity for the gas system to contribute to decarbonization. As economic signals, they also confound the ability for customers to choose the right energy for the right use at the right time, and may result in unintended consequences, such as high energy rates, supply and capacity issues and destabilization of the province's energy system.

Currently, there is a lack of broader understanding associated with the long-term costs and infrastructure requirements needed to completely re-engineer BC's energy system and the implications of electrification policies on the western regional energy system as whole. Absent from energy planning are insights related to the long-term requirements for peak electricity demand, how customers' energy needs will be met in extreme and cold weather events, and the associated costs of ensuring the system meets demand and capacity for a deep electrification scenario. It has yet to be seen if clean electricity could provide more effective decarbonization and further reduce GHG emissions if a broader perspective is employed for its use in the PNW rather than focusing on energy plans at the local level.

These evolving energy and environmental policies are key factors in the LTGRP planning environment and help inform FEI regarding potential impacts on future customer demand and supply over the planning horizon. Market forces create a measure of uncertainty in the market and thus FEI must be prepared for a range of possible outcomes as presented in the LTGRP planning scenarios. FEI's customer demand is discussed in Section 4 and energy supply is discussed in Section 6.

1.1 To what extent is the public interest put at risk if electrification plans for British Columbia are developed without taking adequate account of the trajectory and evolution of the province's natural gas transmission and distribution systems? Please discuss.

Response:

There are many potential risks that could arise that would impact the public if electrification plans for BC do not take into account the evolution of the province's gas system. The issue is complex. Moving forward with an electrification strategy without considering the evolution of the gas system could result in higher costs for British Columbians and negative impacts such as service disruptions for homes, businesses and industry in BC, particularly in cold weather conditions.

FEI has identified the following key risks to the public interest of moving forward with an accelerated electrification scenario rather than a complementary diversified approach to the energy transition:

- Increased rates to be borne by the ratepayers for both the gas and electric systems;
- The increased peak electricity demand may not be met, especially in extreme cold weather events, resulting in service disruptions or the need for rolling blackouts in extreme weather;
- Energy system resiliency will be at risk if BC relies on one energy source, especially with the increased frequency and severity of extreme weather events;
- GHG emissions targets may not be realized; and
- Increased capital and land use.

FEI's Clean Growth Pathway will leverage the decarbonization potential of both the gas and electric energy systems in supporting provincial GHG emission reductions, as well as the affordability, reliability, resiliency, and economic development advantages to the public in pursuing a diversified approach to decarbonization.

1.2 Please discuss FEI's perception of benefits to the British Columbia public interest that would arise from an appropriate degree of compatibility between the FEI and BC Hydro resource plans.

Response:

In FEI's view, benefits to the public interest could result from an appropriate degree of compatibility and transparency in developing FEI and BC Hydro resource plans. Decarbonization pathway analysis conducted by FEI points to the need for greater coordination between the gas and electric systems for effective carbon emission abatement. Collaboration on resource planning is one strategy that could help mitigate the risks associated with a lack of coordination between utilities. Another factor that will contribute to realizing benefits to the BC public interest

is the Province providing policy direction on the respective roles of the gas and electric system in meeting BC's energy needs.

With the urgent need for climate action, it is important to address energy needs and GHG reductions from a system-wide perspective as discussed in the Pathways Report. FEI supports the BCUC process for greater collaboration through the Energy Scenarios for BC Hydro and FEI. In addition, it is important to prioritize the use of existing infrastructure, while addressing the needs for system expansion for both gas and electricity energy systems. Overall energy system resiliency, energy and carbon abatement solution optionality, general energy literacy and DSM programs can all benefit from a strong network of both gas and electricity infrastructure and a collaborative approach to long-range planning.

1.3 Please discuss FEI's perception of risks to the British Columbia public interest that would arise from inadequate compatibility between the FEI and BC Hydro resource plans.

Response:

FEI considers that risks to the British Columbia public interest could result from inadequate compatibility between FEI and BC Hydro long-term resource plans. As discussed in the response to MoveUP IR1 1.1, there are risks associated with an accelerated electrification plan that does not allow for the benefits of continued investment in gas infrastructure to support decarbonization. Coordination between the Province, FEI and BC Hydro will be essential to mitigate these risks. The BC Hydro and FEI Energy Scenarios submitted to the BCUC (Stage One June 15, 2022 and Stage Two August 12, 2022) were an important step in collaborating on resource planning. This exercise identified some gaps between FEI and BC Hydro planning assumptions and speaks to potential risks to the public interest, including the following:

- Rate Impacts: Energy rates will increase from the investments required to achieve GHG reduction targets while maintaining access to safe and reliable energy. The rate impacts for all ratepayers on both gas and electric systems will likely be higher without coordination between utilities. Increased transparency in the full costs for system and customer infrastructure improvements between gas and electric utilities is needed to identify the most cost-effective approach to decarbonization and proper pricing signals (including ratepayer and taxpayer-based incentive programs) to drive behaviors toward the most cost-effective approach.
- Expanding the Supply of Low-Carbon Energy: Meeting demand while expanding the supply of reliable low-carbon electricity and gas to reduce GHG emissions is complex and requires transformative change. Each system requires the support of the other to earn social acceptance, develop a regulatory environment that facilitates coordination between utilities, coordinate capital investments, and advance technologies such as affordable

electricity storage. Further, energy utilities will need greater coordination to produce and deliver reliable quantities of low-carbon energy.

- Meeting Annual and Peak Energy Demand: The ability of BC's energy system to continue to meet annual and peak energy demand to serve BC's growing population and economy is at risk without a coordinated and collaborative approach to long-term resource planning. Currently, both the gas and electric systems depend on one another to meet the magnitude of energy required to serve peak demand on design days and extreme cold weather events. A deep electrification scenario that reduces the role of the gas system in meeting peak demand risks failing to meet the energy requirements of British Columbians when they need it the most. A more robust analysis needs to be undertaken to assess this risk under a deep electrification versus diversified energy pathway. FEI is working with FBC to evaluate these impacts in their shared services territory; however, there are important province-wide energy reliability risks in expanding the provincial electricity system in line with low-carbon objectives without coordination between utilities and a clear role for the gas system.
- Project and Supply Development: Without compatible project development timelines, costs and reliability considerations associated with system expansion and low-carbon energy supply projects for both energy systems, British Columbians may be exposed to the risk of being overburdened with rate increases, issues with meeting energy demand, and service interruptions.
- Coordinated Solutions: Failing to coordinate the gas and electric systems in the development and integration of low-carbon solutions could result in missed opportunities to lower GHG emissions while meeting the energy needs of British Columbians. For instance, the gas and electric systems have opportunities to coordinate the production of electrolytic hydrogen from grid electricity resources for use in the gas system, which would serve to lower GHG emissions, provide a potential peak shaving resource and allow more loads to be served by the gas system to meet demand. Hybrid heating systems are another opportunity with joint gas and electric fuel inputs that would maximize GHG abatement and minimize system costs.

FEI welcomes ongoing collaboration with BC Hydro, the provincial government and the BCUC on resource planning to ensure that the utilities continue to serve the ongoing and future energy needs of British Columbians.

1.4 Please prepare a table pairing the most closely-corresponding planning scenarios employed in the FEI *2022 Long Term Gas Resource Plan* and the BC Hydro *2021 Integrated Resource Plan*, briefly summarizing the degree of compatibility and the degree of incompatibility within each pair.

Response:

The following response has been provided by FEI with contribution from Posterity Group.

FEI offers the following response to further understanding of the results of the BC Hydro and FEI Scenario results and potentially facilitate further dialogue. The table below provides two sets of scenarios presented in the Application and the BC Hydro 2021 Integrated Resource Plan, as examined in the BCUC Energy Scenarios for BC Hydro and FEI (BCUC Energy Scenarios) proceeding,[1] that correspond reasonably closely for the purpose of this response.

FEI selected the following scenarios for comparisons of the key modeling outcomes for energy demand, supply, GHG emissions, rate impacts and future resource needs at 2040 or 2042 as specified in Table 1 below:

- Comparison One: Compares the BC Hydro and FEI scenarios in which the gas system continues to be an integral component of BC's energy system by comparing the FEI DEP Scenario with the BC Hydro Reference Case. Although these two scenarios are not a perfect match, they are the closest comparison for the purpose of this response; and
- Comparison Two: Compares the BC Hydro and FEI scenarios which reflect an electrification-centric approach to decarbonization, by comparing the FEI Deep Electrification Scenario with the BC Hydro Advanced Electrification Scenario.

Table 1 below illustrates key considerations within the two comparisons and across the four selected scenarios, as well as high level observations about the comparisons. The degree of alignment within each pair and across the four selected scenarios is provided through a percentage comparison with FEI's DEP Scenario as the baseline, since:

- A baseline is needed to facilitate the requested comparison;
- FEI considers that use of one of the jointly-modelled scenarios provides the best baseline; and
- FEI's planning scenario (the DEP Scenario) is FEI's view of the best pathway to decarbonize BC's energy systems.

[1] BC Energy Scenarios Project Stage One and Stage Two can be found online at the following links:
- FEI 2022 Long-Term Gas Resource Plan Exhibits B-2 and B-4 at: https://www.bcuc.com/OurWork/ViewProceeding?applicationid=1000
- BC Hydro 2021 Integrated Resource Plan Exhibits B-8, B14, and B-19 at: https://www.bcuc.com/OurWork/ViewProceeding?applicationid=965

Table 1: FEI and BC Hydro Energy Scenario Modeling Comparisons - 2040 or 2042 Outcome as Specified in Table [2]

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
2040 - Total Annual Energy Demand – Electricity and Natural Gas – Residential, Commercial and Industrial Customers (PJ)[3]				
Electric (PJ) [4,,5] From BC Hydro Stage 1 submission	282	255	299	297
Gas (PJ) From FEI Stage 1 submission	176	223	101	91
Total (PJ) BC Hydro + FEI	**458**	**478**	**400**	**388**
Electricity Demand compared to DEP (%)	Base	-10%	6%	5%
Gas Demand compared to DEP (%)	Base	27%	-43%	-48%
Total Annual Energy Demand compared to DEP (%)	Base	4%	-13%	-15%

Observations:

- The analysis suggests that the future need for energy in BC is lower under the electrification scenarios. The increase in electric demand is not proportional to the reduction in gas demand and total energy demand is lower by 13-15% overall.
- The reasonableness of the underlying assumptions for efficiency improvements in the electrification scenarios needs to be closely examined and understood.
- The scale of shifting energy resources, particularly to support peak energy, reliability and resiliency requirements is not reflected in the total (annual) energy demand data.

[2] BC Hydro uses an April 1 to March 31 fiscal year, while FEI uses a January 1 to December 31 calendar year. For comparison purposes, the starting year of the BC Hydro fiscal year is aligned with the FEI calendar year. For example, fiscal 2026 (i.e., April 1, 2025 to March 31, 2026) is considered to be aligned with calendar 2025 (i.e., January 1, 2025 to December 31, 2025).

[3] The Navius model used by BC Hydro does not account for future electric Demand-side Management (DSM) while FEI gas demand includes estimated long-term gas DSM savings.

[4] Annual Electricity Demand converted to equivalent PJ using standard unit conversion of 1 GWh = 0.0036 PJ.

[5] Table 5, BC Hydro Stage Two Submission summarizing Fiscal 2041 outcome.

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
2040 - System Capacity Planning and Peak Demand Estimates				
Electricity (MW)[6] From BC Hydro Stage 2 submission	15,296	13,615	16,183	15,829
Electric capacity compared to DEP (%)	Base	-11%	6%	4%
Gas (TJ/day) From FEI Stage 2 submission	2,046	2,343	1,144	994
Gas capacity compared to DEP (%)	Base	15%	-44%	-51%

Observations:

- In comparison to DEP, in the electrification scenarios the increase in electric peak demand (6%) is much smaller than the corresponding reduction in gas peak demand (44-51%). The underlying assumptions and the implications of this observation need to be more closely understood.
- Electrifying all buildings in BC will mean adding heat sensitive, or low load factor, demand to BC's electricity grid. In the extreme, if a primarily electrification pathway is pursued as BC's decarbonization pathway, BC's electricity grid will need to accommodate the addition of high peak demand for approximately one million more customers than it currently serves for such load.
- The practical implications of maintaining a reliable and resilient energy system through such an undertaking needs to be fully examined.

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Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
2040 - Integrating Renewable and Low-Carbon Gas				
Renewable and Low-Carbon Gas (PJ) From the respective utility Stage 2 submissions	99	3	8	51
Renewable and Low-Carbon Gas - % of gas supply	56%	1%	2%	13%

Observations:

- BC Hydro's Reference Case does not consider decarbonization of the gas supply and so does not include renewable and low-carbon gas, whereas BC Hydro's Accelerated Electrification Scenario is reportedly designed to meet the GHGRS primarily through electrification but still requires substantial decarbonization of gas supplied by FEI. FEI questions the reasonableness of the declining customer base bearing the additional costs of renewable and low-carbon gas in addition to the anticipated increased electricity rates incurred through this decarbonization pathway.
- Further analysis would be required to understand how renewable and low-carbon gas might be distributed with significantly scaled back gas volumes in the system and what this scenario would mean for cost recovery from both gas and electric customers.

2

[6] Table 5, BC Hydro Stage Two Submission summarizing Fiscal 2041 outcome.

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
2042 – Impact of Gas to Electric Fuel Switching on Gas Demand[7]				
Electrification Setting	Moderate	BCH Data	Accelerated	BCH Data
Residential %	Decline in gas fuel share of 17% in space heating; 14% in water heating[8]	Decline in gas use of 13% for space heating; 13% increase in water heating	Decline in gas fuel share of 69% in space heating; 58% in water heating[9]	Decline in gas use of 48% for space heating; 51% for water heating
Commercial %	Decline in gas fuel share of 12% in space heating; 11% in water heating [10]	Decline in gas use of 4% for space heating; 1% increase in water heating	Decline in gas fuel share of 47% in space heating; 45% in water heating[11]	Decline in gas use of 72% for space heating; 97% in water heating
Industrial %[12]	7% decline in gas fuel share	8% increase in gas use	15% decline in gas fuel share [13]	9% decline in gas use

Observations:

- BC Hydro's Reference Case, though not designed to reach the GHGRS Cap, has similar assumptions for gas to electric fuel switching as FEI's DEP scenario which does reach the GHGRS cap by 2030.
- In a deep or accelerated electrification future, BC Hydro appears to consider that electric to gas fuel switching by 2042 would be more advanced in commercial than residential sectors, whereas FEI's modeling results indicate residential fuels switching will be somewhat more advanced by 2042 than in commercial sectors.

1

7 Percent change is from 2020 to 2040 for the BC Hydro scenarios.
8 Except City of Vancouver where estimated decline is 17 percent space heating and 17 percent water heating.
9 Except City of Vancouver where estimates decline is 68 percent space heating and 66 percent water heating.
10 Except City of Vancouver where estimated decline is 12 percent space heating and 12 percent water heating.
11 Except City of Vancouver where estimated decline is 48 percent space heating and 47 percent water heating.
12 Direct-fired heating, heat treating, kilns (pulp and paper), ovens, product drying, space heating, water heating.
13 Except City of Vancouver where estimated decline is 16 percent.

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
2040 - GHG Emissions (Mt CO_2e)				
FEI End Use Emissions Based on Gas Demand	4.3	11.4	5.0	2.4
Impact on BC Provincial Emissions – Navius modelling reflects the usage of electricity and other fuels within the provincial economy for the comparative scenarios.				
Impact on BC Provincial Emissions[14]	24.9	61.0	24.9	24.9

Observations:

- FEI's DEP achieves provincial GHG targets by 2040 and BC Hydro's electrification scenario is the lowest GHG emissions scenario. However, the proportion of renewable and low-carbon gas required to meet this target may be unaffordable for FEI customers.
- FEI's DEP meets the same BC provincial emissions levels as the electrification targets and at a lower cost to British Columbians as the gas infrastructure remains a viable solution in decarbonizing BC's energy system.

1

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
Cumulative Rate Impacts – FEI 2042 and BC Hydro Fiscal 2041				
FEI Residential Rate Impact (%) compared to DEP Scenario	Base	(57%)	117%	187%
Small Commercial (%)	Base	(64%)	105%	645%
Large Commercial (%)	Base	(71%)	99%	624%
General Firm Services (%)	Base	(87%)	36%	169%
BC Hydro Rates Compared to BC Hydro Reference Case:				
	5%	Base	10%	9%

[14] Table 5, BC Hydro Stage Two Submission summarizing Fiscal 2041 outcome.

Description of Measures	Comparison One: Includes Gas Infrastructure		Comparison Two: Electrification Pathway	
	FEI DEP	BC Hydro Reference Case	FEI Deep Electrification	BC Hydro Accelerated Electrification
Observations: • BC Hydro's rate impact analysis results included in their Stage 2 submission to the BCUC Energy Scenarios proceeding could be somewhat misleading as a result of showing their results in comparison to their Reference Case result rather than from a zero base. To understand this, one must first understand the rate implications of their Reference Case, which BC Hydro has identified as its planning scenario but has not presented a rate impact result. For this reason, while FEI presented its rate impact analysis in the FEI Stage 2 submission from a zero-base point, for purpose of this response, FEI is comparing other scenarios to its planning scenario – the DEP Scenario. This format is presented to provide comparative information in the way BC Hydro has presented it in their Stage 2 submission. • FEI is also uncertain if the costs considered in each of the utilities respective rate impact analyses offer an apples-to-apples comparison and recommends additional collaboration to explore this issue further. • The BC Hydro rate increases by 2040 do not appear to be reasonable based on the investment in infrastructure that will be required in the next 20 years, especially for electrification.				

This comparative analysis demonstrates that the nature of energy demand needs to be better understood in order to fully examine the implications of each scenario for peak electricity demand and associated costs throughout the 20-year planning period, and thus for the overall costs of the alternative decarbonization pathways. For other observations made by FEI as a result of the BCUC Energy Scenarios proceeding, please see FEI's Stage 2 submission to that proceeding, filed in the Application proceeding as Exhibit B-4.

Additional discussion about the BCUC Energy Scenarios proceeding can be found in the following IR responses:

- BCUC IR1 31.1 provides background on the modeling process FEI used to develop the comparisons for the BCUC Energy Scenarios proceeding; and
- BCUC IR1 30.3 provides background on the shortcomings of the Electrification Pathway with in-depth discussion on peak day demand and other relevant topics and may provide additional insights into the question of compatibility among scenarios.

1.4.1 Please comment on any significant conclusions that the Commission should draw from this analysis.

Response:

It is FEI's view that the benefits and risks discussed in responses to MoveUP IR1 1.1 through 1.4, along with the body of evidence on the record in this proceeding, should lead the BCUC to accept FEI's LTGRP as being in the interest of customers and the public and that the BCUC should continue to seek all the information that can be made available about the full costs and implications of alternative decarbonization pathways for BC. It is also FEI's view that the

1 information about alternative decarbonization pathways will continue to rapidly evolve as
2 demonstrated in this proceeding to date.

3

2.0 Topic: CleanBC Roadmap to 2030 and Renewable Natural Gas

Reference: CleanBC Roadmap to 2030 at page 29:

Implementing a GHG emissions cap for natural gas utilities

B.C.'s existing pipeline infrastructure can play an important role in reducing greenhouse gases by transitioning away from delivering fossil natural gas to delivering renewable gas. B.C.'s gas utilities have been leaders in enabling this transition.

To help drive this transition, we will introduce a GHG emissions cap that will require gas utilities to undertake activities and invest in technologies to further lower GHG emissions from the fossil natural gas used to heat homes and buildings and power some of our industries.

Following further modelling and analysis, the cap will be set at approximately 6 Mt of CO2e per year for 2030, which is approximately 47% lower than 2007 levels. Since emissions from gas consumption are linked to industry (excluding oil and gas) and the built environment, the cap is consistent with emissions targets for those sectors.

Utilities will determine how best to meet the target, which could include acquiring more renewable gases as well as supporting greater energy efficiency. Measures in CleanBC allow gas utilities to use renewables such as synthetic gas, biomethane, green and waste hydrogen and lignin to achieve this.

The B.C. Utilities Commission will have a mandate to review gas utilities' plans, investments and expenditures to ensure they're aligned with the GHG emissions cap and cost effective, helping to keep rates affordable for people and businesses.

2.1 Does FEI agree that according to this articulation of provincial policy, only emissions arising from the exploitation of Conventional Natural Gas (i.e., fossil gas) will be subject to the emissions cap? If not please discuss.

Response:

The scope of the GHGRS emissions cap remains unclear; therefore, FEI is unable to provide an in-depth description of the policy. However, based on FEI's interpretation of the CleanBC Roadmap, FEI understands that the scope of the emissions cap is focused on emission associated with the combustion of natural gas by customers in the buildings and industry sectors (please refer to the response to RCIA IR1 8.1). Please also refer to the response to BCUC IR1 78.4 that discusses key parameters of the GHGRS that are not yet known.

2.2 Does FEI agree that according to this articulation of provincial policy, the blending of Renewable Natural Gas into the delivered commodity is suggested as a means

to facilitate natural gas utilities' compliance with the emissions cap? If not please discuss.

Response:

Yes, FEI agrees that incorporating renewable and low-carbon gas as part of the fuel mix is one way in which natural gas utilities could achieve compliance with the proposed emissions cap; however, the Province has not yet confirmed the compliance pathways.

And reference Exhibit B-1 at pages 2-9 to 2-10:

2.2.2.2.2 GREENHOUSE GAS REDUCTION STANDARD (GHGRS): EMISSIONS CAP FOR NATURAL GAS UTILITIES

Before the Roadmap, the 2018 CleanBC plan outlined a target for natural gas delivered to industrial and residential consumers to contain at least 15 percent renewable content by 2030. Displacing 15 per cent of the natural gas supply with renewable gas would increase the annual renewable gas supply to approximately 30 PJ and reduce emissions by approximately 1.5 million tonnes. The renewable gas target was thus a substantial part of the buildings emissions reduction strategy.

The Province's approach was updated in the Roadmap with a cap on GHG emissions for natural gas utilities called the GHGRS. The GHGRS will establish an obligation for natural gas utilities to reduce GHG emissions from energy use in the buildings and industrial sectors. FEI expects compliance with the cap to be overseen by the BCUC and that enabling legislation will be developed that will further define how this policy will be implemented for gas utilities. The move from a voluntary renewable gas target to a mandated GHG emissions cap is a substantial change in direction for provincial policy. While details on the GHGRS remain under development, FEI expects that it will place a stringent emissions reduction 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 and for customers that rely on the energy that natural gas utilities deliver.

The GHGRS is the first of its kind in Canada, and will mandate FEI to invest in carbon saving technologies and solutions to displace natural gas consumption by 2030. As described in the report, "the cap will be set at approximately 6 Mt of CO2e per year for 2030, which is approximately percent lower than 2007 levels." The GHGRS would require 1 a GHG reduction of approximately 5.5 Mt of CO2e, which is equivalent to displacing approximately half of the natural gas delivered by FEI.

Additionally, the GHGRS imposes a target of a 61 percent emissions reduction in the buildings sector by 2030. This is an aggressive goal that disproportionately impacts FEI, and is more representative of a 2040 target, thereby requiring a more rapid transition in the buildings sector at greater cost and risk.

It is anticipated that the GHGRS policy framework will enable FEI to invest in a broad set of GHG saving actions such as increasing renewable and low-carbon gases and incenting higher levels of energy efficiency and other measures. Although many uncertainties remain for FEI, the Application provides context around FEI's approach to addressing the Roadmap. FEI will continue to work with the Province and other stakeholders to further clarify issues and implications for FEI and its customers.

And reference *Biomethane Energy Recovery Charge Rate Methodology and Comprehensive Review of a Revised Renewable Gas Program* Exhibit B-17, response to BCUC IR 1.1:

The referenced cap of 6.11 Mt of CO2e refers to the cap on GHG emissions required from all gas utilities in British Columbia by 2030 in the CleanBC Roadmap, which FEI expects the provincial government will implement as the Greenhouse Gas Reduction Standard (GHGRS). […] To achieve the cap, a reduction from 2007 GHG emissions levels of 47 percent or approximately 5.5 Mt is required. FEI's portion of that reduction is approximately 5.3 Mt of CO2e per year. […] Based on these assumptions, approximately 59 PJ of Renewable Gas (50 kgCO2e/GJ X 59 PJ Renewable Gas = 2.950 Mt reduction) would be required to achieve the 2.9 Mt of reductions and, in combination with the other GHG reduction strategies, the GHG reduction cap.

2.3 If "acquiring more renewable gases" (as described in the Roadmap extract) were the strategy adopted by FEI in order to comply with the 2030 gas utility-sector emissions cap, how large an acceleration of the acquisition of RNG does the 59 PJ requirement represent in relation to FEI's projections prior to the publication of the *Roadmap* in October of 2021?

Response:

The original 2018 CleanBC plan set a 15 percent renewable gas content target by 2030. Early in the planning process, the DEP Scenario's 2030 target was approximately 30 PJ of renewable and low-carbon gas supply (equivalent to approximately 15 percent of FEI's 2019 annual demand), and 94 PJ by 2042. FEI's renewable and low-carbon gas team was ramping up its activities and on-track to achieve or surpass this objective.

The updated CleanBC Roadmap to 2030 targets and the possible introduction of the GHGRS would essentially double the goal that was set in 2018 for renewable gas supply from a 15 percent to a 30 percent target by 2030. In response, FEI's DEP Scenario's 2030 target was doubled to

60.2 PJ of renewable and low-carbon gas supply, although the 2042 target only increased to 99 PJ.

Although the elements of the Roadmap have not yet been enacted into law, FEI has considered these additional targets within the Application where possible, and will continue to build on its previously developed GHG emission reduction initiatives. FEI has focused its efforts on significantly ramping-up the procurement of renewable and low-carbon gas supply, and developed these updated forecasts based on its evaluation of the mix of supply potential as discussed in the responses to BCUC IR1 52.4 through 52.6 and 77 series.

2.4 Please discuss the feasibility of that degree of acceleration of the acquisition of RNG within that time-frame, and explain FEI's strategies to achieve it.

Response:

Please refer to the responses to BCUC IR1 52.4 through 52.6.

2.4.1 Without limiting the generality of the above, please discuss the extent to which FEI may seek to rely upon the availability of Environmental Attributes beyond those derived directly from the physical production or refining of biogas or biomethane. Please discuss FEI's perceptions of advantages and risks entailed in this strategy.

Response:

FEI is evaluating opportunities for GHG abatement through the use of carbon capture, utilization and storage, and nature-based solutions that could be used to reduce GHG emissions from FEI's gas supply. For clarity, FEI is not seeking to define the combination of conventional natural gas and the environmental attributes associated with these technologies as RNG. Evaluation of these activities is preliminary as the Province has not yet defined compliance pathways under the GHGRS, and FEI cannot comment on the extent to which FEI may seek to rely on the associated environmental attributes from these activities.

An advantage of a GHG abatement pathway through activities such as carbon capture, utilization and storage and nature-based solutions is that using environmental attributes from sources other than biogas or biomethane offers FEI additional means of reducing emissions and increases the cost effectiveness of FEI's portfolio of measures to reduce emissions. A risk of such a strategy is that offsets are not currently perceived or accepted as a mitigation tool equal to RNG. Additionally, some GHG reduction technologies are not yet commercial and the market is nascent at this time.

For more information on FEI's perceptions of advantages and risks regarding splitting environmental attributes from the underlying physical molecule of energy, please refer to pages 2-3 of FEI's submissions regarding questions in the BCUC Phase 1 Inquiry into the Acquisition of Renewable Natural Gas by Public Utilities in British Columbia.[15]

2.5 Please explain in greater detail FEI's comment that a 61 percent emissions reduction in the buildings sector "is an aggressive goal that disproportionately impacts FEI, and is more representative of a 2040 target."

Response:

FEI's comment that a 61 percent emissions reduction in the building sector "is an aggressive goal that disproportionately impacts FEI, and is more representative of a 2040 target" is in recognition that this emissions reduction target is more stringent when compared with GHG emission reduction targets in other sectors[16] and the Province's overall 2030 reduction target of 40 percent. FEI serves a large proportion of thermal heating load in the buildings sector in BC, and so the target significantly impacts FEI customers, who will bear the costs associated with a disproportionate target. Further, as illustrated in Figure 3-2 in the Application, buildings and communities account for only 14 percent of BC's 2019 emissions, yet are subject to a 61 percent sectoral target, whereas transportation accounts for 27 percent with only a 27-32 percent sectoral target, suggesting a disproportionate impact on the building sector.

2.6 Does FEI understand the Roadmap to enable emissions arising from the use of RNG to be excluded from the "target of a 61 percent emissions reduction in the buildings sector by 2030"?

Response:

FEI's understanding is that emission reductions arising from the use of RNG in buildings will be accounted for in reaching the sectoral target of 61 percent emissions reductions, as discussed in the response to MoveUP IR1 2.1. Because the use of RNG avoids approximately 50 g of CO_2e per MJ when it displaces conventional natural gas, there is a net savings in GHG emissions for every unit of RNG consumed in the buildings sector. It is for these reasons that FEI is pursuing RNG and other low-carbon gases as a key part of its compliance pathway in the DEP Scenario.

[15] FEI Submission dated January 31, 2022: https://docs.bcuc.com/Documents/Arguments/2022/DOC_65489_2022-01-31-FEI-Submission-regarding-Inquiry.pdf.

[16] Sectoral targets in percentages: buildings 59-64, transportation 27-32, industry 38-43, oil and gas 33-38.

2.6.1 To what extent and by what means does FEI consider the acquisition of RNG to be a significant element of meeting the "target of a 61 percent emissions reduction in the buildings sector by 2030"?

Response:

Please refer to the responses to BCUC IR1 72.1, 72.2, and 74.2 that describe FEI's process to determine the appropriate level of planned emission reductions, initiatives undertaken and resulting emission reductions.

2.6.2 Please explain FEI's understanding of the status of this issue and any role of RNG- related tariffs in the context of this emissions target.

Response:

FEI anticipates that significantly expanded volumes of renewable and low-carbon gases will be needed to comply with the GHGRS. As a result, novel approaches to rates and new tariffs will be needed to promote adoption of renewable and low-carbon gases and to effectively and equitably allocate the costs of these gases to ratepayers. The RNG tariff proposed in the Renewable Gas Comprehensive Review is an important step to building out this approach.

2.7 Please discuss more fully the logistical issues, the roles of players external to the utility, and the internal and external resource issues, that FEI anticipates would be involved in order for the "2040 target" to be achieved by 2030.

Response:

FEI interprets this question to be asking to discuss issues related to achieving the proposed 2030 GHGRS emissions cap. Table 9-1 in the Application illustrates an overview of the essential activities that would be undertaken to support the ongoing market transformation across the energy services supply chain to achieve GHG emission targets. For this response, in the table below, FEI has revised Table 9-1 to outline activities that will be accelerated in the ramp up period to 2030 to achieve the GHGRS emissions cap and added considerations for the potential role of external resources and logistical issues that may arise. In terms of internal resources, please refer to the responses to BCUC IR1 78.3 and 78.4, which outline FortisBC's 30BY30 framework that

FEI utilizes to track and monitor the progress on its decarbonization initiatives in support of reaching the proposed GHGRS emissions cap, as well as some of the potential uncertainties.

Table 1: FEI and External Party Investments Required to Reach Decarbonization Targets in the Ramp Up Period to 2030 and to Support Market Transformation Over the 20-Year Planning Horizon

Market Being Influenced	Anticipated Outcome in 2042	Potential Role of External Organizations and Resource Issues
Decarbonization of fuel types through transitioning to renewable and low-carbon gases		
Renewable and low-carbon gases transition	By 2030, FEI's forecast annual demand will be increasingly supplied by renewable or low-carbon gases in the form of hydrogen, RNG, syngas and lignin, and some CCUS associated with gas production or consumption. By 2030, and through the rest of the planning horizon, FEI's renewable and low-carbon gas will be increasingly supplied by BC-based producers. This initiative represents a transformational change within traditional gas supply markets.	• Project Developers to identify and partner on projects • Utilities to partner on hydrogen production, offtake agreements, and infrastructure build out • Provincial and federal governments to develop regulatory and policy framework, de-risk projects with program funding • Clean tech and incubators to advance renewable gas technology • Municipalities, industries and large institutions to act as load sources for renewable gases and clusters • Seek opportunities to engage with Indigenous groups and continue reconciliation activities • Workforce training and capacity building
Hydrogen production and distribution	Hydrogen will make up an increasingly large portion of the renewable and low-carbon gas supplies that FEI will rely on over the planning horizon. This demand for hydrogen will catalyze the development of BC's hydrogen economy and the development of innovative energy solutions in BC that use hydrogen as the key low-carbon fuel. FEI's existing gas delivery system will enable this transition from natural gas to renewable and low-carbon gas in a number of different ways as outlined in Section 7, including the development of hydrogen hubs, the potential repurposing and upgrading sections of the existing gas grid to reliably supply clean, low-carbon hydrogen, and the potential for dedicated hydrogen infrastructure.	• Renewable power developers to build supply for hydrogen • Electric utilities like BC Hydro to manage integration and provide generation • Upstream producers to partner with on hydrogen production • Large industrial customers to act as anchor loads • External contractors to evaluate hydrogen blending and recommend modifications • Gas transmission companies and Indigenous communities to partner on infrastructure • Federal and provincial governments to establish regulatory framework and production incentives • Workforce training and capacity building

Market Being Influenced	Anticipated Outcome in 2042	Potential Role of External Organizations and Resource Issues
Industrial decarbonization	The renewable and low-carbon gases that FEI will leverage to implement its Clean Growth Pathway offer some of the best opportunities for decarbonizing industrial processes within BC. FEI anticipates being a catalyst in the transformation of industrial energy use through its future supplies of RNG, hydrogen, syngas and lignin, and the use of CCUS in association with energy generation and/or use.	• Large industrial customers to act as anchor loads in establishing hydrogen backbone system • Identify projects with pulp mills and cement manufacturing as key targets to build out technology • Federal and provincial government support to transition industrial users to clean energy • Workforce training and capacity building
Carbon Capture, Utilization and Storage	Since the time that FEI undertook its modelling for the supply of renewable and low-carbon gas, the role that FEI expects CCUS to play in the Clean Growth Pathway has grown. FEI anticipates that CCUS will become increasingly commercially available and contribute to GHG emission reductions in FEI's fuel mix earlier than anticipated in the planning horizon.	• Engage upstream players as key project developers to identify and partner on high capital projects • Incubators to advance negative emissions technology • Federal and provincial government support for regulation, technology development and adoption • Workforce training and capacity building
Electrification	The electrification of a degree of current gas load is anticipated over the planning horizon as one of the solutions to reduce carbon emissions in the DEP Scenario. Total electrification of FEI's existing gas demand, however, creates challenges for electricity capacity requirements that FEI considers are insurmountable. FEI's Clean Growth Pathway is based on using the right energy, for the right purpose at the right time.	• Federal and provincial government support supports a complementary emissions reduction strategy, optimizes the use of existing infrastructure, considers peak energy demand, while investing in new infrastructure, technology, DSM, and community solutions • Utilities to partner and identify electrification targets that are the most feasible – economically and technically • Workforce training and capacity building
Low-Carbon Transportation and LNG		
Low-Carbon Transportation	FEI is not anticipating a complete transformation of the transportation sectors it is targeting with its low-carbon fueling supply and services. FEI's Clean Growth Pathway will, however, substantially reduce GHG emissions from one of the hardest to decarbonize sectors and catalyse the development of a marine bunkering industry in BC.	• Engage energy supply chain in identifying and partnering on projects • Municipalities, industries, and large institutions to act as load sources for low-carbon energy to support transportation and marine fueling • Federal and provincial government support for regulation, technology development and adoption • Workforce training and capacity building

Market Being Influenced	Anticipated Outcome in 2042	Potential Role of External Organizations and Resource Issues
DSM Reduces Energy Consumption in Residential, Commercial and Industrial Sectors		
Demand-side Management and high efficiency equipment	Heat pumps (gas and electric), dual-fuel heating systems, deep energy retrofits, building envelope upgrades and HVAC control systems will reduce energy requirements as BC's building stock is transformed to high performance. Waste heat recovery and integrated community energy systems offer some of the emerging innovations that will allow FEI to reach the GHGRS emissions cap for gas utilities.	• Engage all levels of supply chain in identifying and partnering on projects as building retrofits are accelerated in response to climate action • Federal and provincial government support for regulation, technology development and adoption • Workforce training and capacity building essential as current shortages in skilled workers in trades and other professions will be more critical in the coming years
Decarbonization in Commercial and Industrial Processes	Innovative technologies, process improvements and waste heat recovery will be implemented to help transform commercial and industrial processes toward higher efficiency and low-carbon emissions.	
Enabling Activities to Support Market Transformation		
Clean energy workforce capacity	Workforce training and capacity building across the clean energy supply chain ensures decarbonization success.	• Engaging and expanding the workforce in the energy transition is an imperative Federal and provincial government support for workforce development
Utility, government, rightsholder and stakeholder collaboration on climate action	All stakeholders collaborating on an approach to BC's energy system, understanding that there needs to be a multi-faceted approach to decarbonization.	Ongoing consultation and collaboration will be essential to gaining some consensus on BC's energy transition to take urgent climate action while supporting BC's need for safe, reliable, affordable clean energy
Policy and regulatory environment supportive of decarbonization	Policy and regulatory environment are supportive of a diversified, complementary approach to meeting BC's energy needs.	Federal and provincial government support is essential in building collaboration and moving forward with the clean energy transition

Reference: BCUC Stage 2 *Comprehensive Review and Application for a Revised Renewable Gas Program*, Exhibit B-11 at page 81:

6.4.2 Early-Mover Advantage Mitigates Competition Risk

A second supply risk is competition from other purchasers of Renewable Gas. FEI has mitigated this risk to an extent by being a "first-mover" in the market and has an established regulatory path with known guidelines for supply agreements, particularly with respect to RNG. This established history in the Renewable Gas market is attractive to suppliers who are interested in long-term offtake agreements

with a high degree of certainty of regulatory approval. Even so, an increasing number of entities in other jurisdictions, including Énergir in Quebec, are now seeking Renewable Gas supply. Further, the market for RNG is maturing and competition for supply is increasing. Over time, more and more market actors will develop the expertise and proven pathways to purchase RNG and other Renewable Gases. Therefore, to ensure FEI has access to supply at reasonable costs, FEI is working to secure biogas-derived Renewable Gas supply early in this decade rather than waiting for the market to mature further.

2.8 Does FEI also adopt this evidence for the purposes of these proceedings? If not please explain.

Response:

Yes, FEI adopts this evidence for the purposes of these proceedings. Please refer to the responses to BCUC IR1 52.4 through 52.6 where FEI discusses its strategies for the procurement of renewable and low-carbon gas and the response to BCUC IR1 5.2 for a discussion of the ramp-up of acquisition of these fuels by other utilities.

2.9 Is this discussion properly understood to assert that there is a competitive advantage for FEI in accessing RNG arising from its early entry into this market, but that this advantage is temporary in nature and will tend to erode as the market develops? Please clarify and discuss this comment more fully.

Response:

Yes, FEI has benefitted from a temporary first mover advantage in the form of an enabling regulatory framework that has allowed it to acquire RNG across North America. FEI has leveraged this ability to acquire low-carbon intensity RNG to-date for the benefit of its customers; however, this advantage may be temporary in nature for the reasons outlined in the preamble. Please refer to responses to BCUC IR1 52.4 through 52.6 for a description of FEI's activities to ramp-up renewable and low- carbon gas supply.

Reference: Exhibit B-1 at page 7-35:

i. Off-System Supply and Off System Delivery: Off-system supply is where FEI acquires renewable and low-carbon gases in other regions and the gas transportation and consumption is conducted completely outside of FEI systems. This process achieves carbon reduction and credit for FEI customers with the

environmental attributes associated with renewable and low-carbon gas. However since FEI customers continue to physically receive conventional natural gas through FEI infrastructure the capacity requirements to meet peak demand forecasts remain the same on the FEI system. This capacity impact of off-system supply and delivery has the same neutral effect regardless of the form of the offsystem energy delivered. The incorporation of these types of off-system supplies will play an important role while the transition to renewable and low-carbon gas occurs over the planning horizon until more on- or near-system resources that flow directly through FEI systems are developed.

2.10 Please discuss FEI's expectation of the role of off-system supply and off-system delivery of renewable and low-carbon gases in meeting the challenges posed by evolving federal, provincial and municipal climate policy.

Response:

Please refer to the responses to BCUC IR1 58.2 and 58.3.

2.10.1 Please discuss FEI's expectation of the role of Environmental Attributes acquired from extra-provincial processes and transactions in this respect

Response:

Please refer to the response to MoveUP IR1 2.4.1.

2.10.2 Please discuss any current or projected initiatives to develop inter-jurisdictional rules and standards for acquiring or trading in environmental attributes for the purposes of sourcing renewable and low-carbon gases. Please discuss the role that such rules and standards would play.

Response:

Common accounting and other practices by the provincial and federal governments are critical to ensure the integrity of the trade of renewable and low-carbon gases. Consequently, FEI is actively informing the development of common practices, accounting, and registration for low-carbon gas supply to ensure that GHG emission reductions are counted accurately to align with the goals of the provincial government. In this regard, FEI is involved in a number of activities with both the provincial and federal governments including but not limited to the following:

- working with the provincial and federal governments to inform the policy approach for trading the environmental attributes of renewable and low-carbon gases;
- collecting data on FEI's renewable and low-carbon gas supply and environmental attributes;
- reviewing and seeking feedback on these practices from provincial government officials;
- monitoring Statistics Canada developments for including RNG supply in its Renewable and Low-Carbon Fuels Survey in 2023-24 which will quantify RNG supply volumes in Canada; and
- working with the Canadian Gas Association and the federal government to establish a registry of low-carbon gases acquired by utilities across Canada, with the goal of ensuring transparency of renewable and low-carbon gas transactions and their associated environmental attributes.

Common accounting rules, standards and practices of this nature could foster the integrity of the trade of renewable and low-carbon gases, simplify the process, and potentially lower the overall cost of acquiring renewable and low-carbon gas. The implementation of these rules and standards could help stimulate the market for renewable and low-carbon gases and provide additional benefits over the long-term.

3.0 Topic: Hydrogen

Reference Exhibit B-1 pate 3-11:

The first pillar of the Clean Growth Pathway is the transition to renewable and low- carbon fuels to decarbonize the gas supply. FEI's gas distribution infrastructure has a critical role in providing low-carbon and renewable energy, which has enormous potential to reduce BC's GHG emissions by 2030 and throughout the 20-year planning horizon of the LTGRP. As FEI continues to increase RNG supply for its customers, it is also looking at adding clean-burning hydrogen, syngas and lignin to its renewable and low-carbon gas supply portfolio. Hydrogen has a number of benefits, including its versatility as an energy carrier that is carbon-free at the point of use. It can also be made from a range of feedstocks that are abundant in BC. As such, hydrogen is poised to play a key role in decarbonizing the gas network and FEI is working to find the most cost effective ways to integrate and scale up all renewable and low-carbon gas.

And Reference Exhibit B-1 Appendix A-3 Hydrogen Strategy for Canada at Executive Summary Page XVII:

Codes & Standards

The deployment of hydrogen is in the early stages across many jurisdictions and sectors in Canada, and there are gaps in existing codes & standards that need to be addressed to enable adoption. Harmonizing codes and standards across jurisdictions will ensure that best practices are applied across the global hydrogen economy to facilitate the growth of trade and export markets.

3.1 What progress has been made to-date toward the development of standards for blending hydrogen into natural gas and for delivery of a blended product by natural gas utilities?

Response:

Please refer to BCUC IR1 61.3 for a discussion of the development of codes, standards and regulations for the implementation of hydrogen in BC.

3.2 When does FEI anticipate that such standards will be in place?

Response:

Please refer to the response to BCUC IR1 61.3.

3.3 What progress has been made to-date toward the development of standards for heating and other end-user appliances and applications of a blended natural gas-hydrogen commodity?

Response:

Please refer to the response to BCUC IR1 61.3.

3.4 When does FEI anticipate that such standards will be in place?

Response:

Please refer to the response to BCUC IR1 61.3.

3.5 Please summarize the technological and logistical hurdles that must be overcome in order to implement blending hydrogen into natural gas and the use of the resulting product by end-users within FEI's service territory. What is FEI's best estimate of the time-lines for each of these hurdles to be overcome?

Response:

Please refer to the response to BCUC IR1 61.3. for discussion of past and ongoing analysis that FEI has undertaken to identify its overall hydrogen deployment strategy, and BCUC IR1 61.9 for a discussion of the next major steps required to deliver on-system hydrogen to FEI customers.

Reference: Exhibit B-1 pages 3-16 and 3-17:

> FEI envisions low-carbon hydrogen playing a critical role in decarbonizing BC's industrial sector, which is expected to be most difficult to decarbonize to reach the Province's 2030 and 2050 climate goals. Transitioning BC's industry to hydrogen as a heating solution supports the concept of a BC hydrogen backbone system that will involve repurposing and upgrading sections of the existing gas grid to reliably supply clean, low-carbon hydrogen to industrial end users.
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> . . . .

During the blending period, existing technology for 100 percent hydrogen burners is to be investigated and piloted for use in cement kilns. Once commercialized, hydrogen burner technology can be tested and rolled out at industrial facilities, with the goal of converting pulp mills and cement manufacturing facilities to 100 percent low-carbon hydrogen, which would help to 2 achieve net-zero carbon for BC by 2050.

3.6 To what extent is transitioning BC's industry to hydrogen a distinct program from introducing a proportion of hydrogen into the distribution utility's CNG/RNG commodity?

Response:

FEI does not view the transitioning of BC's industry to use renewable and low-carbon hydrogen as distinct from blending hydrogen into the utility's methane-based CNG/RNG supply. Both the delivery of hydrogen as a blend and delivering hydrogen in dedicated facilities are central components of FEI's decarbonization program. Having dedicated hydrogen infrastructure will provide for robust offtake strategies, and multiple use-cases, such as blending in the distribution system and converting large volume customers to 100 percent hydrogen, will help with balancing supply and demand.

3.6.1 Would FortisBC's activity in industry transition to hydrogen be carried out primarily within the FEI gas utility or within another subsidiary (such as FortisBC Alternative Energy Services)? Please discuss.

Response:

It is likely that the production, acquisition, distribution and sale of hydrogen will take place within FEI. The GGRR already contemplates FEI being involved in the production and distribution of hydrogen in the existing gas system. Historically, regulated gas utilities in BC prior to natural gas being available distributed other gases including propane, butane and manufactured gas (which is substantially hydrogen). The manufactured gas was also produced by regulated utilities from pyrolysis of coal; this is similar to what FEI is now considering with Syngas and hydrogen produced via pyrolysis of methane (turquoise hydrogen).

3.6.2 What if any synergies would operate between these two hydrogen-related FortisBC programs?

Response:

Please refer to the response to MoveUP IR1 3.6.1.