



Sarah Walsh
Director, Regulatory Affairs

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (778) 578-3861
Cell: (604) 230-7874
Fax: (604) 576-7074
www.fortisbc.com

October 13, 2023

Residential Consumer Intervener Association
c/o Midgard Consulting Inc.
Suite 828 – 1130 W Pender Street
Vancouver, B.C.
V6E 4A4

Attention: Peter Helland, Director

Dear Peter Helland:

Re: FortisBC Energy Inc. (FEI)
2022 Long Term Gas Resource Plan (LTGRP) ~ Project No. 1599324
Response to the Residential Consumer Intervener Association (RCIA)
Information Request (IR) No. 3 on Rebuttal Evidence

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-150-23 for the review of the LTGRP, FEI respectfully submits the attached response to RCIA IR No. 3 on Rebuttal Evidence.

For convenience and efficiency, if FEI has provided an internet address for referenced reports instead of attaching the 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:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Interveners

FortisBC Energy Inc. (FEI or the Company) 2022 Long Term Gas Resource Plan (LTGRP) (Application)	Submission Date: October 13, 2023
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1 **56. Reference: Exhibit B-38 Rebuttal Evidence p.3**

2 **Hydrogen technology advancement**

3 On page 3 of its Rebuttal Evidence, FEI states:

4 “As described in this Rebuttal Evidence, FEI is aware of and taking steps to
5 appropriately consider and manage the challenges referenced by MS2S.
6 Hydrogen technology is currently still in early stages of development, and FEI’s
7 LTGRP acknowledges and accounts for its attendant uncertainties, as well as its
8 potential. As FEI develops its hydrogen blending strategy in line with government
9 policy, FEI will continue to rely on government regulation and evolving industry
10 standards, and the most reliable sources of information available, which is
11 reflected in FEI’s long-term resource planning.” [underlining added]

12 56.1 Which aspects of hydrogen technology does FEI believe are in early stages:
13 Production? Transmission? Distribution? End uses? Please discuss.

14

15 **Response:**

16 While there are currently technical solutions available to incorporate small-scale volumes of
17 hydrogen into FEI’s gas system, technical solutions to incorporate large-scale on-system
18 hydrogen production and delivery in FEI’s gas system, such as high hydrogen blend
19 concentrations or full conversion from methane to hydrogen, are currently still in the early stages
20 of development. FEI expects the technology development across the value chain to advance into
21 the future to lower the costs of incorporating hydrogen in the near-term and mid-term.

22 FEI’s research, development and prefeasibility validation work to date indicates that the
23 technology to deploy hydrogen production, transmission, distribution and end-use to decarbonize
24 the gas system has been proven by various completed and in-development pilot demonstration
25 projects across Canada, and globally. The pilot projects reviewed, including pilot projects that FEI
26 is planning, tend to consist of two general configurations:

- 27 • co-located, small scale hydrogen production where the hydrogen supply is used directly
28 in industry plant operations to displace natural gas use; or
- 29 • hydrogen is delivered at relatively low blend concentrations in the existing gas distribution
30 system and used by a community of homes and businesses connected to the distribution
31 network.

32 To advance technology for hydrogen deployment at scale in BC, FEI is currently working on early-
33 stage development activities in several areas, for example:

- 34 • working with technology developers to commercialize methane pyrolysis that could
35 produce low-carbon intensity hydrogen in large name plate capacity, distributed low-
36 carbon hydrogen production facilities;

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- 1 • working internally to assess the technical and economic feasibility of repurposing
2 deactivated and underutilized gas pipeline infrastructure for 100 percent hydrogen service;
3 and
4 • working with industrial operations through BC to collaborate and evaluate the feasibility of
5 converting their plant operations to use renewable and low-carbon hydrogen to displace
6 natural gas use in their plant equipment.

7 Please refer to the responses to the BCUC IR1 61 series for discussion of FEI's ongoing work to
8 develop its overall hydrogen deployment strategy.

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12 56.2 Does FEI consider that technical solutions to incorporating hydrogen into its
13 system have yet to be developed, or is FEI's view that there currently are technical
14 solutions to incorporating hydrogen into its system, but that FEI expects the
15 technology to improve in order to lower the costs of hydrogen incorporation?

16 56.2.1 If the latter, is there a risk that FEI will end up overpaying for hydrogen in
17 the near-term and mid-term?
18

19 **Response:**

20 Please refer to the response to RCIA IR3 56.1.
21

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1 **57. Reference: Exhibit B-38 Rebuttal Evidence p.8 Hydrogen embrittlement**

2 On page 8 of its Rebuttal Evidence, FEI states:

3 “MS2S appears to misunderstand the cause of hydrogen embrittlement, the
4 materials that are and are not vulnerable to embrittlement, the influence of
5 operating parameters such as operating pressure on embrittlement, and the
6 prevalence of those materials and operating pressure environments in FEI’s
7 distribution and transmission system. As described further below, most of FEI’s
8 system is likely not vulnerable to hydrogen embrittlement due to the low operating
9 pressure, and in any event, technical assessments are being conducted to ensure
10 the safety and compatibility of hydrogen blends in FEI’s infrastructure, which will
11 specifically evaluate the potential for hydrogen embrittlement.”

12 57.1 Please identify any portions (or specific pipelines) of FEI's system that FEI
13 considers are vulnerable to hydrogen embrittlement due to their higher operating
14 pressures.

15
16 **Response:**

17 FEI considers that its transmission pipelines could be vulnerable to hydrogen embrittlement, as
18 they are made of steel, are of different vintages and operate at high pressures compared to
19 distribution pipelines. However, as discussed, FEI's entire system will be assessed to confirm
20 hydrogen compatibility prior to blending.

21
22

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24 57.2 Please identify any portions (or specific pipelines) of FEI's system that FEI
25 considers are vulnerable to hydrogen embrittlement due to their pipe grade, or
26 combination of pipe grade and operating pressure.

27
28 **Response:**

29 Please refer to the response to RCIA IR3 57.1.

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33 57.3 If FEI determines through its evaluations that these portions are vulnerable to
34 embrittlement, please explain whether and how FEI will need to amend its Long-
35 Term Gas Resource Plan, or amend future resource plans.

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37 **Response:**

38 Please refer to the response to RCIA IR3 57.1.

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1 **58. Reference: Exhibit B-38 Rebuttal Evidence p.9; Exhibit B-14 MetroVan IR1 4.1**
2 **Hydrogen Readiness**

3 On page 9 of its Rebuttal Evidence, FEI states:

4 “Some components of the distribution network may need to be upgraded or
5 replaced beyond a certain hydrogen blend concentration, but this equipment is
6 relatively easily upgraded or replaced, if required. FEI will execute system-wide
7 technical analysis and community level demonstration projects, as well as secure
8 all necessary regulatory approvals, before blending hydrogen into its gas
9 infrastructure.”

10 In response to Metro Vancouver IR1 4.1, FEI states:

11 “Distribution lines make up most of the gas distribution system infrastructure;
12 however, some components of the widespread distribution network include facility
13 equipment such as regulator valves, relief valves and metering and measurement
14 apparatus that may need to be upgraded or replaced beyond a certain hydrogen
15 blend concentration. This equipment is localized at specific points on the
16 distribution network and easily accessible and therefore relatively easily upgraded
17 or replaced, if required.”

18 58.1 Please confirm or otherwise explain whether the equipment that may need to be
19 upgraded such as customer meters, customer regulators, or meter shutoff valves,
20 while being relatively easy to replace, would require a large and potentially cost-
21 prohibitive investment due to the number of installations.

22 **Response:**

23
24 In 2023, FEI received approval from the BCUC to replace existing customer meters with advanced
25 meters and the associated infrastructure to support delivery of hourly metering information from
26 the advanced meters at customer premises.¹ The new meters will be compliant with hydrogen
27 blends of up to 10 percent by volume in natural gas. In addition, FEI conducted independent
28 testing that successfully verified that the meters would function as designed with hydrogen blends
29 beyond 20 percent by volume in natural gas. This will mitigate future cost-prohibitive investment
30 as all customer meters will be hydrogen ready prior to introduction of hydrogen. FEI also intends
31 to review and confirm the hydrogen compatibility of the customer regulators and shut off valves
32 as part of the Advanced Metering Infrastructure Project.

33

¹ FEI Application for a CPCN for the Advanced Metering Infrastructure (AMI) Project Decision and Order C-2-23, dated May 15, 2023.