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British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC V6Z 2N3

Attention: Commission Secretary

Dear Sirs/Mesdames:

Re: FortisBC Energy Inc.
Application for a Certificate of Public Convenience and Necessity for the Tilbury Liquefied Natural Gas Storage Expansion Project

We enclose for filing in the above proceeding the Post-Adjournment Reply Submissions of FortisBC Energy Inc., dated July 31, 2025.

Yours truly,

FASKEN MARTINEAU DuMOULIN LLP

Matthew Ghikas
Personal Law Corporation

Enclosure

BRITISH COLUMBIA UTILITIES COMMISSION

AND

FORTISBC ENERGY INC.

APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE TILBURY LIQUEFIED NATURAL GAS STORAGE EXPANSION PROJECT

POST-ADJOURNMENT REPLY SUBMISSIONS OF FORTISBC ENERGY INC.

JULY 31, 2025

Fasken Martineau DuMoulin LLP
Matthew Ghikas and Niall Rand

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PART ONE: INTRODUCTION

1. Three of the principal interveners in this proceeding (the Residential Consumer Intervener Association (**RCIA**), the Commercial Energy Consumers Association of British Columbia (**CEC**) and the B.C. Sustainable Energy Association (**BCSEA**)), after initially opposing the Application, now support the Tilbury Liquified Natural Gas Storage Expansion (**TLSE**) Project with the benefit of FEI's additional evidence and analysis. They join Tsleil-Waututh Nation (**TWN**) who, prior to the Adjournment Decision, had already confirmed that they do not oppose the Project. Only British Columbia Old Age Pensioners' Organization et al. (**BCOAPO**) and My Sea to Sky (**MS2S**) remain opposed. FortisBC Energy Inc. (**FEI**) submits, for the reasons stated below, that the arguments advanced by the two opposing interveners are unpersuasive. The evidence amply demonstrates that the TLSE Project is in the public interest.

2. These Post-Adjournment Reply Submissions are generally organized to correspond with FEI's Post-Adjournment Final Submissions, except that no interveners raise issues with the Project Description, Environmental and Archaeological Impacts or Consultation and Engagement.[1]

A. AREAS OF SIGNIFICANT ALIGNMENT AMONG THE PARTIES

3. There are a number of matters on which there is now significant alignment among the parties, including:

- CEC, RCIA, BCSEA and MS2S recognize the magnitude of the current customer outage risk associated with a winter T-South no-flow event, and CEC, RCIA and BCSEA recognize the importance of mitigating it.[2]
- CEC, RCIA, BCSEA and (in its pre-adjournment final argument) BCOAPO agree that, irrespective of resiliency, the Tilbury LNG Facility Base Plant (**Base Plant**) has reached the end of its life.[3]

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1 FEI has replied thematically, rather than line-by-line. FEI's silence should not be construed as agreement.

2 RCIA Final Argument, pp. 7 and 16; BCSEA Final Argument, para. 21; CEC Final Argument, paras. 57 and 72; MS2S Final Argument, p. 2.

3 RCIA Final Argument, p. 13; BCSEA Final Argument, para. 22; CEC Final Argument, paras. 50 and 52; BCOAPO Pre-Adjournment Final Argument, paras. 15 and 22.

- CEC, RCIA and BCSEA agree that FEI needs to replace the Base Plant to be able to serve customers in peak times,[4] and that it is not appropriate to plan on the basis that firm load is unserved in normal operations.[5] BCOAPO has not disputed FEI's supplemental evidence regarding FEI's inability to replace Tilbury LNG peaking supply in the market.[6]

- CEC, RCIA and BCSEA concur that Supplemental Alternative 9 is the Preferred Alternative for the reasons articulated by FEI.[7] RCIA also comments favourably on FEI's alternatives analysis approach.[8]

- CEC and BCSEA state that FEI's cost estimate and financial analysis is reasonable and/or consistent with the BCUC's CPCN Guidelines,[9] while RCIA takes no issue with it.[10] BCOAPO, while expressing concern about the potential for capital cost overruns, does not address the calculation of gas supply benefits in the financial analysis.

- None of the post-adjournment intervener submissions raise issues with respect to consultation and engagement or archaeology and environmental considerations.

- CEC, RCIA and BCSEA agree that the TLSE Project is consistent with the applicable of "British Columbia's energy objectives".[11] BCOAPO does not address this topic. MS2S's commentary regarding GHG emissions relates to LNG export and bunkering, which are not part of the TLSE Project.[12]

- CEC, RCIA and BCSEA, who are the only parties that addressed deferral accounts, concur with FEI's proposals (except RCIA was silent regarding the proposed TLSE FX Mark to Market deferral account).[13]

- CEC, RCIA and BCSEA agree with FEI's general approach to terms related to tank allocation.[14] BCOAPO does not address this topic. MS2S incorrectly assumes the

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4 RCIA Final Argument, p. 13; BCSEA Final Argument, para. 22; CEC Final Argument, paras. 51-54.

5 RCIA Final Argument, p. 19; BCSEA Final Argument, para. 55; CEC Final Argument, paras. 51-54.

6 Rather, BCOAPO argues (p. 4) that "This regulatory review was effectively entirely focused on the appropriateness of a new, larger facility to address resiliency concerns, not a process designed to replace one at the end of its useful life." The flaw in BCOAPO's argument is addressed in Part Four, Section A below.

7 RCIA Final Argument, pp. 7, 10, 19-20; BCSEA Final Argument, paras. 58, 63; CEC Final Argument, para. 129.

8 RCIA Final Argument, pp. 19-20.

9 Appendix A to Order G-20-15, dated February 20, 2015.

10 BCSEA Final Argument, paras. 67 and 74; CEC Final Argument, para. 7. RCIA cites FEI's costs and financial analysis at, e.g., p. 14)

11 RCIA Final Argument, p. 14; BCSEA Final Argument, para. 79; CEC Final Argument, para. 165.

12 MS2S Final Argument, p. 5.

13 RCIA Final Argument, p. 20; BCSEA Final Argument, para. 68; CEC Final Argument, paras. 172-173.

14 RCIA Final Argument, p. 24; BCSEA Final Argument, paras. 48-50; CEC Final Argument, para. 179.

> TLSE tank is being used for bunkering and export, rather than being allocated between a resiliency reserve and dependable gas supply.[15]

4. BCOAPO, CEC and RCIA, in particular, note the significant cost of the Project, and FEI acknowledges the impact on customer bills even after factoring-in the gas supply benefits. However, there is a clear and overriding need in this case, which RCIA, CEC and BCSEA have properly acknowledged. RCIA states, for instance, that "an interruption to their [i.e., its constituents'] gas supply, particularly during the winter peak, is a matter of personal health and safety that stands in contrast to their interest in minimizing rate increases."[16] The additional bill impact, as BCSEA acknowledges, "would reflect the true cost of safe service".[17] RCIA adds that "RCIA is not aware of any natural gas distribution utilities that would purposely plan to have inadequate peaking resources to meet firm loads."[18] FEI submits that the evidence supports prioritizing safe, reliable and resilient service in these circumstances.

B. THE FLAWED BASIS FOR BCOAPO'S AND MS2S' OPPOSITION TO THE TLSE PROJECT

5. Before addressing the specific arguments of BCOAPO and MS2S, it is worth highlighting some pervasive shortcomings in their respective arguments.

(a) BCOAPO Now Underestimates Customer Outage Risk, Does Not Acknowledge Expected Peaking Supply Shortfall and Mischaracterizes FEI's Alternatives Analysis

6. BCOAPO's argument depicts FEI as fearmongering and self-interested, dismissing the TLSE Project as a "nice to have just in case".[19] FEI submits that the BCUC should view BCOAPO's posturing with considerable skepticism in light of what BCOAPO said in its Pre-Adjournment Final Argument:

> 15. BCOAPO agrees that FEI needs to assess their system for the highest risk issues, particularly where FEI has little tolerance for variation, and determine how to manage those highest risks. The T-south system serves hundreds of thousands of customers and FEI has identified there is a significant likelihood that a

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15 MS2S Final Argument, p. 8.

16 RCIA Final Argument, p. 6.

17 BCSEA Final Argument, para. 25.

18 RCIA Final Argument, p. 10.

19 BCOAPO Final Argument, p. 6.

> catastrophic event will occur at some point over the life of the Tilbury facility. BCOAPO cannot in good conscious [sic] suggest that FEI do nothing and hope that such an event will not occur. Hope is not a plan. It appears this risk of catastrophic event has been around for a long time – decades – and perhaps FEI's customers have been lucky.
>
> 16. Luck is also not a plan.
>
> […]
>
> 23. While it is understood that a portion of the cost of FEI's proposed 3 Bcf tank would be incurred regardless due to the end of useful life of the existing Tilbury Facility, BCOAPO notes that there does not appear to be any analysis on the record to understand the costs to rebuild the existing facility.

7. As is evident from the above quotes, while BCOAPO had not necessarily accepted the need for a facility capable of providing three days of load support in cold conditions, it expressly acknowledged the underlying risk posed by a winter T-South no-flow event and the end-of-life condition of the Base Plant.[20] BCOAPO's previous position, in short, focused on which alternative was appropriate to meet acknowledged resiliency and gas supply needs that remain unchanged today.

8. FEI submits that the post-adjournment evidence does not warrant BCOAPO's apparent new-willingness to rely on "hope" and "luck" as a plan to address these resiliency and gas supply needs. Contrary to BCOAPO's argument that FEI has "again failed" to provide sufficient evidence to prove that the TLSE Project serves the public interest"[21], the post-adjournment evidence – which addresses all of the BCUC's findings and commentary in the Adjournment Decision (as demonstrated in the Table of Concordance provided as Appendix B to the Supplemental Evidence)[22] and includes a significant amount of independent expert analysis – demonstrates that both the resiliency and gas supply project drivers are now more compelling. The shortcomings raised by BCOAPO appear to be premised on a misreading of the evidence and, more fundamentally, BCOAPO fails to recognize that it is in the public interest for FEI to continue providing an essential service to its more than 1.1 million customers in British Columbia in a safe,

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[20] See also BCOAPO Pre-Adjournment Final Argument, paras. 17, 22-23.

[21] BCOAPO Final Argument, p. 2.

[22] Exhibit B-60, Supplemental Evidence, Appendix B.

reliable and uniterrupted manner. In particular, the more sophisticated, expert-driven customer outage risk analysis in the 2024 Resiliency Plan, among other things:

- Confirms that 600,000 to 640,000 customers will lose service following a winter T-South no-flow event at daily average winter temperatures (+4°C);[23]
- Validates the customer restoration timelines, allowing FEI to measure direct service impacts in customer-outage-days;[24]
- Indicates a very high cumulative probability of a winter T-South no-flow event – even higher than the probabilities discussed before the Adjournment Decision because the probabilities now reflect natural hazards as well as internal hazards;[25]
- Includes a GDP loss analysis based on the actual circumstances of a winter T-South no-flow event, including actual customer outage numbers and local GDP information and the location of the failure on T-South;[26] and
- Includes additional expert evidence describing (qualitatively) the health and mortality risks associated with the loss of heat in winter.[27]

9. With respect to the gas supply need, FEI's Supplemental Evidence includes new engineering analysis confirming the impracticality of refurbishing the Base Plant and information on worsening equipment failures. FEI's Supplemental Evidence, supported by the expert evidence of Mr. Raymond Mason, also details why FEI would be unable to obtain sufficient peaking supply in the market to replace the loss of necessary and dependable peaking gas supply provided by the Tilbury facility.[28]

10. As described in Part Two, Section A below, although BCOAPO critiques aspects of the resiliency risk calculations, BCOAPO's critique: (1) is predicated on incorrect facts in some instances; (2) with respect to consequences, focuses exclusively on GDP loss without disputing the direct customer service impacts; and (3) is otherwise too peripheral to alter the fundamental

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23 Exhibit B-60, Supplemental Evidence, Table 3-1 (pp. 41-42).

24 Exhibit B-60, Supplemental Evidence, pp. 49-52; see also Exhibit B-61, 2024 Resiliency Plan, pp. 28-29.

25 Exhibit B-63, BCUC IR5 126.1.

26 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report.

27 See e.g., Appendix RP 3 to the 2024 Resiliency Plan (Exhibit B-61), PwC Report, p. 14.

28 See FEI Post-Adjournment Final Submissions, Part Four, Section E.

finding of the 2024 Resiliency Plan that a winter T-South no-flow event poses a real and very significant risk to FEI's customers and the province generally.

11. BCOAPO's argument that it is "simply not possible to make a recommendation"[29] with respect to replacing the end-of-life Base Plant is predicated on its mistaken belief that "there were no alternatives presented that focused solely on the replacement of the existing facility without that storage increase included."[30] Supplemental Alternative 4 is a like-for-like replacement of the Base Plant, with no additional gas supply or resiliency. It was fully evaluated as one of four feasible options. There is extensive evidence on the record explaining why the proposed Supplemental Alternative 9 provides far more value for customers than a like-for-like replacement.

12. In summary, FEI submits that the errors and shortcomings in BCOAPO's analysis account for its new comfort with leaving the real and significant risk posed by a winter T-South no-flow event unmitigated, whereas the other customer interveners now support the TLSE Project.

(b) MS2S' Argument is Generally Inconsistent with the Evidence and Disregards the Peaking Supply Need

13. MS2S does not appear to dispute the magnitude of the risk posed by a winter T-South no-flow event. It states, for instance, that "FEI has argued, convincingly, that a 2018-like rupture in T-South would disrupt a significant portion of BC's business and trigger large economic losses."[31] It also acknowledges "the perils of using statistics for low-probability, high-consequence events, like a T-South rupture" and concurs with FEI that probabilistic analysis should not be the BCUC's sole focus.[32] Instead, it argues that other risks are even larger and the risk of a winter T-South no-flow event can be mitigated by other means.[33] As discussed in Part Two, Section D below, MS2S' arguments are inconsistent with the evidence and do not withstand scrutiny.

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29 BCOAPO Final Argument, p. 4.

30 BCOAPO Final Argument, p. 4.

31 MS2S Final Argument, p. 2.

32 MS2S Final Argument, p. 2.

33 MS2S Final Argument, pp. 3-5.

14. Despite the deteriorating condition of the Base Plant being one of the two drivers of the need for the TLSE Project, MS2S did not even mention it. While MS2S evidently believes that there will be (or should be) no further use of the gas system, nothing it offers as "evidence" (much of which is not on the record and should be given no weight) supports its view that peak load will disappear. FEI has provided hypothetical adverse load loss scenarios in response to BCUC commentary in the Adjournment Decision (mDEP 2% and 5%), which demonstrate that there would still be substantial peak load on its system in 2050 – even based on very adverse load loss assumptions.[34] Regardless, MS2S offers no rationale as to why it is just and reasonable for firm customers to routinely face curtailments in normal operations for many years into the future. FEI submits it would be contrary to standard utility practice to deliberately set out to have insufficient supply to meet firm customer loads.

15. As was the case with the statements and assertions in the lengthy preambles to its information requests, MS2S' submissions are replete with assertions without evidentiary support. MS2S had the opportunity to ask information requests and could also have filed evidence when other interveners did so. FEI respectfully submits that maintaining fair, effective and efficient BCUC processes necessitates some consequence for parties who systematically fail to adhere to the rules of evidence in ways that prejudice other parties. As such, while FEI has largely responded to MS2S' arguments, the BCUC should disregard the material in MS2S's submissions that is not on the record and the submissions based upon it.

[34] Exhibit B-60, Supplemental Evidence, Section 4.5.5.2.

PART TWO: PROJECT NEED – MITIGATING UNACCEPTABLE CUSTOMER OUTAGE RISK

16. This Part primarily answers arguments advanced by BCOAPO and MS2S, although FEI has also included some minor points of clarification in response to RCIA and CEC. As noted above, CEC, RCIA and BCSEA all acknowledge the need to mitigate the significant risk that customers currently face from a winter T-South no-flow event.[35,36,37]

A. RESPONSE TO BCOAPO ON CUSTOMER OUTAGE RISK

17. Despite its pre-adjournment position, BCOAPO is now generally dismissive and suspicious of the resiliency need for the TLSE Project.[38] However, as discussed below:

- It is evident that BCOAPO is now significantly underestimating the risk of a winter T-South no-flow event. BCOAPO's critiques of Exponent's risk analysis are in many cases based on factual errors and are otherwise peripheral to the overall risk analysis results. BCOAPO is also not accounting for the ways in which Exponent's calculated risk is understated.

- BCOAPO's three new arguments for opting not to mitigate that risk – i.e., first needing industry accepted standards for resiliency, the extent of FEI's coordination with Enbridge, the Canadian Energy Regulator (**CER**) and BC Hydro, and declining load – are similarly unsound.

- BCOAPO is incorrectly assuming that the TLSE Project need is driven by Transportation customer load, and future load growth. BCOAPO's related rate design arguments have no bearing on Project need.

18. FEI submits that there is overwhelming evidence that customers in the Lower Mainland face an unacceptably large customer outage risk due to a winter T-South no-flow event, and that the risk to vulnerable populations that BCOAPO represents is particularly acute. The public interest is served by addressing this risk promptly, not by avoiding a decision for an indeterminate period and relying on (in BCOAPO's previous words) "hope" and "luck" in the interim.

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35 RCIA Final Argument, pp. 7, 16. E.g., Exponent's analysis demonstrates "the probability of a winter season T-South outage approaches 100% over the life of the TLSE Project."

36 BCSEA Final Argument, para. 21. E.g., FEI customers are "uniquely vulnerable".

37 CEC Final Argument, para. 72. E.g., "the impacts of an outage could be quite severe with respect to health, safety and economic loss".

38 BCOAPO Final Argument, p. 6.

(a) FEI is Correct to Highlight the Significant Risks and the Implications of the BCUC's Decision

19. BCOAPO's criticism of FEI's "undertone" and "ominous predictions"[39] in discussing the risk seemingly suggests that FEI should remain passive and disinterested when it is aware of a very significant risk facing its customers. FEI submits that BCOAPO's expectation is unreasonable.

20. FEI takes its responsibility of providing safe, reliable and resilient service seriously. The 2018 T-South Incident, which prompted this Application, was a near miss. Two more near misses have occurred in the intervening period.[40] The BCUC clearly recognized that British Columbia narrowly avoided catastrophic harm following the 2018 T-South Incident in directing FEI and other major public utilities to explain how they "plan to mitigate the potential impact on customers and stakeholders in response to emergency events". This included "assess[ing] the key reliability risks faced by the utilities at both a transmission and distribution level and strategies or plans to mitigate those risks.[41] The BCUC's Adjournment Decision specified the type of information it wished to see in the 2024 Resiliency Plan, which FEI has provided.[42] The analysis shows a very large customer outage risk, with significant consequences and a high cumulative probability over any reasonable time horizon. No amount of plausible tinkering with assumptions – including BCOAPO's largely peripheral, and frequently erroneous, critiques answered below – change that fact. This is not a risk that FEI should simply accept for its customers unless the BCUC determines it is in the public interest to do so. The evidence that FEI has provided allows the BCUC to make an informed decision in this regard.

(b) Objective Facts Underpin the Resiliency Need and the Assumptions in the Risk Analysis Are Well-Supported

21. BCOAPO characterizes the customer outage risk analysis as "highly subjective and heavily dependant upon assumptions, not facts".[43] However, this characterization fails to acknowledge

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39 BCOAPO Final Argument, p. 6.

40 FEI Post-Adjournment Final Submissions, Part Three, Section D(f).

41 BCUC Letter L-1-19, dated February 5, 2019.

42 See Exhibit B-60, Supplemental Evidence, Appendix B.

43 BCOAPO Final Argument, p. 2.

a number of objective facts that, in and of themselves, demonstrate the very significant risk posed by a winter T-South no-flow event:

- FEI depends on T-South for most of its supply in the winter;[44]
- In the event of a winter T-South no-flow event, Tilbury LNG is a critical source (and potentially the only material source) of supply for the Lower Mainland. FEI cannot access off-system storage, volumes available from the Southern Crossing Pipeline (**SCP**) and line pack would be limited (or potentially non-existent depending on the location of the issue on T-South) and there are physical barriers precluding significant reliance on Mt. Hayes LNG for the Lower Mainland;[45]
- FEI's existing on-system LNG will only support the Lower Mainland load for approximately 7 hours, even at daily average winter temperatures (4°C). At below average temperatures, depressurization will occur even faster (i.e., approximately 5 hours at -1.4°C and 2 hours at -10°C);[46]
- FEI cannot respond fast enough to implement a controlled shutdown, such that the system will depressurize in an unsafe manner;[47]
- Hydraulic modelling shows that, when the system depressurizes, between 600,000 and 640,000 customers will lose service at daily average winter temperatures;[48]
- There has been one T-South no-flow event (the 2018 T-South Incident) and two other near misses in the last 7 years;[49]
- Restoring service to 600,000 or more customers will take a material amount of time, as relighting is a manual process;[50]
- Most customers who will lose gas service are relying on that service for heat and domestic hot water;[51]

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44 FEI Post-Adjournment Final Submissions, Part Three, Section C(a).

45 Exhibit B-1-4, Application, pp. 39 and 70; Tr. 1, p. 174, ll. 23-26 (Hill).

46 FEI Post-Adjournment Final Submissions, para. 56.

47 FEI Post-Adjournment Final Submissions, para. 73.

48 FEI Post-Adjournment Final Submissions, paras. 54-57.

49 FEI Post-Adjournment Final Submissions, Part Three, Section D(f).

50 FEI Post-Adjournment Final Submissions, paras. 59-62.

51 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 7.

- Some of those people who will lose heat and domestic hot water are already vulnerable (e.g., seniors, people with health problems and the poor);[52] and

- The Lower Mainland is the heart of the provincial economy, representing a significant portion of the provincial GDP.[53]

22. Although it was necessary to use assumptions in the risk analysis calculations, there is ample basis for the BCUC to conclude that the analysis and assumptions are reasonable. For example:

- There was substantial rigour around the risk analysis, which was undertaken primarily by external experts (Exponent and, for the GDP loss analysis, PwC);[54]

- The direct customer impacts, in terms of the number and location of customer outages, could be determined with a high degree of confidence using FEI's standard hydraulic modelling;[55]

- The assumptions used to determine the duration of the customer outage (i.e., the pace of restoring service to customers) are based on the workforce estimates and crew productivity rates from FEI's System Preservation and Restoration Plan (**P&R Plan**). Those estimates were prepared by a team of internal experts with a combined 150 years of experience[56] and are based on reasonable assumptions, for instance:

  - AMI is assumed to be in place, and is assumed to virtually eliminate the time required for purging the distribution system;[57]

  - The risk analysis assumed a workforce consisting of FEI's own employees, plus all available (non-employee) gas fitters in the Lower Mainland, plus crews from adjacent jurisdictions under mutual aid;[58] and

  - The productivity rates are based on real experience and efficient crew deployments.[59]

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[52] Exhibit B-61, 2024 Resiliency Plan, Appendix RP 2, Exponent Report, para. 24; see also Exhibit B-60, Supplemental Evidence, p. 40.

[53] Exhibit B-60, Supplemental Evidence, Figure 3-9 (p. 54); Figure 6 from the PwC Report provides a sectoral breakdown of the impacts in the Lower Mainland, demonstrating the breadth of sectoral economic impacts.

[54] FEI Post-Adjournment Final Submissions, paras. 39-41.

[55] FEI Post-Adjournment Final Submissions, paras. 54-58.

[56] Exhibit B-46, FEI Rebuttal Evidence to RCIA, A1 (pp. 1-2).

[57] Exhibit B-60, Supplemental Evidence, fn. 23 (p. 8).

[58] Exhibit B-60, Supplemental Evidence, p. 51.

[59] FEI Post-Adjournment Final Submissions, paras. 84-89.

FEI also performed sensitivity analyses that demonstrate it will take weeks to restore customers, even under very optimistic assumptions. There are also factors that could cause the duration to exceed the assumed restoration period;[60]

- The calculated risk is potentially significantly understated, for the reasons set out in Appendix A of FEI's Post-Adjournment Final Submissions "Modelling Parameters that Tend to Understate Current Risk and the Preferred Alternative's Financial Benefits";[61] and

- Exponent recalculated the risk based on alternate assumptions advanced in IRs, and the overall risk remained very high even in these sensitivities.[62]

(c) BCOAPO's Arguments on Exponent's Probability Analysis Are Unpersuasive

23. BCOAPO suggests that there is "uncertainty as to the appropriate weight" that Exponent's probability analysis should be given,[63] but its reasons for questioning the analysis are unpersuasive for the reasons stated below. BCOAPO's arguments, even if the BCUC were to accept their validity (it should not), would not suggest that the cumulative probability of a winter T-South no-flow event is low.

BCOAPO Mischaracterizes FEI's Submissions on the Role of Probabilistic Analysis

24. BCOAPO questions FEI's reliance on Exponent's quantitative risk assessment because (according to BCOAPO) FEI had originally asserted that "the probability of occurrence was as [sic] a distraction from the key question of how best to mitigate the consequences".[64] More accurately, FEI's position had been that the 2018 T-South Incident demonstrates that a winter T-South no-flow event is *plausible*. The risk management practices articulated by all four relevant experts (Exponent, PwC, Guidehouse and JANA) support addressing plausible high consequence events by mitigating the associated consequences to levels that that can be tolerated.[65]

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60 FEI Post-Adjournment Final Submissions, paras. 60 and 61.

61 See also FEI Post-Adjournment Final Submissions, paras. 69 and Appendix A.

62 See e.g., Exhibit B-63, BCUC IR5 116.4, 120.1 and 120.10; Exhibit B-75, BCUC Confidential IR3 23.4.

63 See BCOAPO Final Argument, bullet list on pp. 11-12.

64 BCOAPO Final Argument, p. 9.

65 See FEI Post-Adjournment Final Submissions, Part Three, Section F(c).

25. The additional probabilistic analysis, which the BCUC requested, supports the resiliency need because it shows that a winter T-South no-flow event is not only plausible but decidedly not a "low probability" over any reasonable time horizon.[66] However, the fact that FEI has undertaken a probabilistic analysis does not render the originally articulated risk management approach any less valid. To the contrary, Exponent has provided further academic support for FEI's original analytical framework, which Exponent refers to as "scenario-based analysis".[67] The scenario-based analysis explains why resiliency investment would be appropriate in this instance even at lower calculated probabilities.

Exponent Appropriately Evaluated Natural Hazards

26. BCOAPO questions why FEI retained Exponent to undertake its own assessment of natural hazards given that JANA had already considered natural hazards in its 2021 Qualitative Safety Risk Assessment Report (**2021 JANA QRA**).[68] FEI submits there was a sound rationale for this approach. First, the scope of the 2021 JANA QRA was limited to only certain pipeline diameters on FEI's own system, and was thus insufficient for the purposes of the 2024 Resiliency Plan (i.e., a holistic vulnerability assessment of FEI's own system and regional infrastructure). Second, natural hazards are location-specific, such that the associated failure rates cannot simply be copied from the pipelines assessed in the 2021 JANA QRA to other pipelines. Third, having Exponent undertake its own assessment of natural hazards for all of the Assessed Vulnerabilities (**AVs**) meant each asset was assessed in relation to the same set of hazards and in the same manner, thus improving the comparability of the results.

27. In any event, there is nothing to suggest that the approach BCOAPO is raising would have resulted in a materially lower calculated risk.

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66 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 2, Exponent Report, para. 22; Exhibit B-63, BCUC IR5 126.1.

67 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 2, Exponent Report, paras. 22 and 242; Exhibit B-63, BCUC IR5 117.5.

68 BCOAPO Final Argument, p. 11.

Exponent Evaluated the Probability of Natural Hazards and Third-Party Damage Based on the Best Available Information

28. BCOAPO expresses concern that Exponent's evaluation of probability of failure did not consider specific mitigations implemented by Enbridge to reduce the risk of natural hazards and third-party damage.[69] There are two answers to this argument:

- First, Exponent's risk calculations for T-South did not reflect any risk for third-party damage due to a lack of available data. As such, the probability of failure in this regard is, if anything, understated regardless of any mitigations implemented by Enbridge.[70]

- Second, Exponent accounted for mitigation of natural hazards indirectly (Enbridge does not provide shippers with the type of information necessary for Exponent to directly quantify the probability of failure on T-South).[71] For example, with respect to non-earthquake-induced landslides, Exponent reduced the lower bound (and thus the average) to 10 percent of the baseline analysis probability of failure. This reduction reflects considerations specific to both urban and non-urban areas.[72] Further, Exponent relied on Hazus damage functions based on historical data from earthquakes for earthquake-induced landslides, surface-wave-induced rupture, and earthquake-induced liquefaction. While not specific to T-South, the Hazus functions incorporate general mitigation measures found in earthquake-prone areas to the extent such measures are represented in the underlying historical data sets used.[73]

T-South Internal Failure Rate Used by Exponent is Reasonable

29. BCOAPO has oversimplified Exponent's rationale for the T-South internal failure rate used in its analysis to the point of inaccuracy.[74] FEI's full submissions in this regard are set out in Part Three, Section D(e) of FEI's Post-Adjournment Final Submissions and can be summarized as follows:

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69 BCOAPO Final Argument, p. 12.

70 Exhibit B-61, 2024 Resiliency Plan, Appendix PR 2, Exponent Report, p. 28; Exhibit B-63, BCUC IR5 116.13.

71 Exhibit B-63, BCUC IR5 116.1.

72 Exhibit B-63, BCUC IR5 116.14.

73 Exhibit B-63, BCUC IR5 116.14.

74 BCOAPO Final Argument, p. 12.

- As FEI and its experts were unable to directly ascertain the internal rate of failure for T-South, Exponent recommended assigning a proxy using a closely comparable pipeline from the 2021 JANA QRA of FEI's own system.[75]

- Exponent reasonably used a "Baseline" scenario value of 6.51e-5/km/year from the 2021 JANA QRA which took into account FEI's pre-existing integrity management program in conjunction with historical industry failure rates that include a range of hazards (including mitigation practices).[76]

- The "Baseline" scenario value is similar to the mean rupture rate of the relevant US Department of Transportation Pipeline and Hazardous Material Safety Administration (**PHMSA**) datasets, which represents approximately 476,366 km of transmission pipelines.[77]

- Assuming EMAT ILI is not only in place, but also that all other actions necessary to maximize the effectiveness of EMAT ILI are also in place, would be idealized insofar as it is not possible to reduce residual risk, including internal failure rates, to zero simply by introducing EMAT ILI. According to Exponent, such an approach would be "optimistic, and not technically rigorous".

30. Once again, BCOAPO's argument does not impugn the central findings of the 2024 Resiliency Plan. Even if the internal failure rate were adjusted downward, which Exponent gave compelling reasons to reject,[78] the expected GDP losses remain well in excess of the TLSE Project cost, and the Preferred Alternative materially reduces the re-calculated risk.[79]

31. Finally, while BCOAPO also suggests that Exponent should not have relied on the same probability of an integrity-related failure for the two T-South pipelines, it offers no evidence to suggest that calculated probabilities would be materially different.[80]

(d) BCOAPO's Arguments on Consequences Focus Only on PwC's GDP Loss Analysis

32. BCOAPO's submissions on consequences focus on PwC's calculation of economic (GDP) losses, which is only one of the three consequence measures.[81] It bears noting that BCOAPO's

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75 FEI Post-Adjournment Final Submissions, para. 113.

76 Exhibit B-63, BCUC IR5 116.4; Exhibit B-75, BCUC Confidential IR3 23.1.

77 Exhibit B-63, BCUC IR5 116.10.

78 Exhibit B-75, BCUC Confidential IR3 23.4.

79 See FEI Post-Adjournment Final Submissions, Part Three, Section D(e).

80 BCOAPO Final Argument, p. 12.

81 BCOAPO Final Argument, pp. 10-11.

pre-adjournment references to the "catastrophic" consequences of a winter T-South no-flow event focused exclusively on the fact that hundreds of thousands of customers will be impacted, rather than GDP losses. The post-adjournment evidence reinforces those direct service impacts. The other two measures of direct customer impacts (customer outages and customer-outage-days) demonstrate the very significant risk facing FEI's customers in the Lower Mainland. There is a high degree of confidence that at least 600,000 customers will lose service within hours on Day 1 of a winter T-South no-flow event assuming the daily average winter temperature of +4°C.[82] There is also significant rigour behind the service restoration period, and hence the customer-outage-days calculations. Simply put, if the direct service consequences alone (irrespective of GDP losses) were previously sufficiently "catastrophic" for BCOAPO to conclude that it "cannot in good conscious [sic] suggest that FEI do nothing and hope that such an event will not occur",[83] then the same should apply now.

33. In any event, as discussed below, BCOAPO's new "observation[s] and concern[s] regarding the derivation of the GDP impact" are based on its erroneous understanding of PwC's methodology and results.

PwC's Analysis Quantified Economic Harm Based on Specific Outage Scenarios

34. BCOAPO incorrectly states that "FEI conceded that GDP loss calculated was for the province as a whole…".[84] To the contrary, unlike PwC's original report prior to the Adjournment Decision, which modelled three hypothetical outage scenarios impacting entire sub-regions of British Columbia, the PwC Report included with the 2024 Resiliency Plan quantified the economic harm based on specific vulnerabilities to FEI's system (i.e., specific AVs both on- and off-system), including those associated with a winter T-South no-flow event.[85] In particular, as explained in Part Three, Section 3(c) of FEI's Post-Adjournment Final Submissions, PwC used AV-specific

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82 See FEI Post-Adjournment Final Submissions, paras. 54-58.

83 BCOAPO Pre-Adjournment Final Argument, para. 15.

84 BCOAPO Final Argument, p. 10.

85 Exhibit B-63, BCUC IR5 141.6.

customer outages at daily average winter temperature in the affected location[86] and granular GDP data for the specific affected area.[87]

35. BCOAPO also criticizes the GDP loss analysis because PwC did not isolate the economic impact to customers only.[88] This critique misapprehends the purpose of PwC's analysis within the overall 2024 Resiliency Plan. As noted above, Exponent considered three consequence metrics. Two of those metrics, customer outages and customer-outage days, quantified the catastrophic direct impact on customers of a winter T-South no-flow event.[89] The GDP loss analysis was specifically intended to capture not only the direct customer impacts, but also the indirect and induced economic impacts the AVs would have within the province.[90] As PwC explained, the "first-round effects of the disruption (direct effects) are designed to measure the impact on FEI customers, the multiplier effects (indirect and induced effects) will fall on both FEI customers and non-customers."[91] The public interest being assessed in this proceeding includes the interest of both customers and non-customers, and the three consequence measures collectively allow the BCUC to assess the impacts on both groups.

36. While PwC's analysis did not disaggregate the estimated GDP impact of a winter T-South no-flow event of $1.7 billion to $3.8 billion as between FEI customers and non-customers, PwC confirmed that both groups would likely experience significant economic disruption, in addition to other health, social and welfare impacts.[92]

PwC's Assumption of Zero GDP Loss from the Residential Sector Understates the Consequences and Risk

37. BCOAPO's second "observation and concern" regarding the derivation of the GDP loss is that "[t]he PwC scope did not include quantified analysis of the impacts on the residential sector

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86 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report; Exhibit B-63, BCUC IR5 141.2.

87 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 8; Exhibit B-63, BCUC IR5 141.2.

88 BCOAPO Final Argument, p. 10.

89 See FEI Post-Adjournment Final Submissions, Part Three, Section C(b).

90 Exhibit B-66, CEC IR5 137.4.

91 Exhibit B-70, BCOAPO IR6 1.4.

92 Exhibit B-70, BCOAPO IR6 1.4.

and that the GDP was derived based only on the impact to industrial and commercial organizations."[93] There are two answers to this argument.

38. First, the approach that PwC took had the effect of potentially understating the GDP losses, not overstating them. It is one of a number of instances, noted in FEI's Post-Adjournment Final Submissions (see para. 69 and Appendix A) where PwC's modelling assumptions were calibrated to ensure that consequences were, if anything, understated.

39. Second, PwC explained that, while some of the impacts to the residential sector would have a negative economic impact, the primary impacts would be on health, education (through school closures) and welfare effects. FEI did not ask PwC to quantify these impacts, but the impacts are nonetheless important.[94]

PwC Interviewed FEI Customers and Representative Organizations

40. BCOAPO appears to question the appropriateness of PwC's selected interviewees, although BCOAPO's point is not entirely clear.[95] The evidence in this regard is clear: PwC employed a methodology that is widely used by economists to measure the economic impacts of different scenarios.[96] PwC undertook a total of 42 interviews with FEI customers or organizations that had direct knowledge of the impact on FEI's customers.[97] The latter group, which BCOAPO fails to note in its Final Argument, included Industry Associations who addressed the impact on their members.[98] FEI submits that these interviewees collectively provided a range of quantitative and directional inputs representing various sectors of the British Columbia economy. Further, PwC assumed zero losses for any industry sector not represented by interviewees, which means that its calculations (all else equal) substantially understated overall losses.[99]

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93 BCOAPO Final Argument, p. 10.

94 Exhibit B-72, CEC IR6 160.4.

95 BCOAPO Final Argument, p. 10.

96 See FEI Post-Adjournment Final Submissions, para. 64.

97 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, Table 2 (pp. 6-7); Exhibit B-70, BCOAPO IR6 2.4.

98 Exhibit B-70, BCOAPO IR6 2.4.

99 Exhibit B-60, Supplemental Evidence, p. 54; Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 8.

The Preferred Alternative Still Provide the Most Value for Customers When Assuming a Shorter Regulatory Shutdown Period

41. BCOAPO's next "observation and concern regarding the derivation of the GDP impact" is:[100]

> While difficult to interpret, the impact to GDP loss reduction appears to be quite sensitive to the length of [T-South[101]] outage. It appears that in the case of a no-flow event of 1.5 days or less, all or most of the alternatives result in potential GDP loss reduction equivalent to FEI's preferred alternative.

The first answer to this argument is that BCOAPO is conflating PwC's GDP loss calculations (consequence measure) with Exponent's calculated risk reduction for various alternatives. The former is a pure consequence measure based on the *status quo*, while the latter reflects the results of probability x consequence based on the different load support durations provided by each Supplemental Alternative. Simply put, even if BCOAPO's observation were correct (which it is not, as discussed in the next paragraph), it would say nothing about PwC's methodology or PwC's calculated GDP losses for the *status quo*.

42. In any event, BCOAPO is not correct in suggesting that "in the case of a no-flow event of 1.5 days or less, all or most of the alternatives result in potential GDP loss reduction equivalent to FEI's preferred alternative". BCOAPO is failing to account for the important distinction between dependable (planning) scenarios and non-dependable (contingent) scenarios. As shown in the figure below, and explained by Exponent, all but one of the scenarios that show material improvement in the reduction in losses assuming a no-flow event of 1.5 days or less are <u>contingent</u> scenarios.[102]

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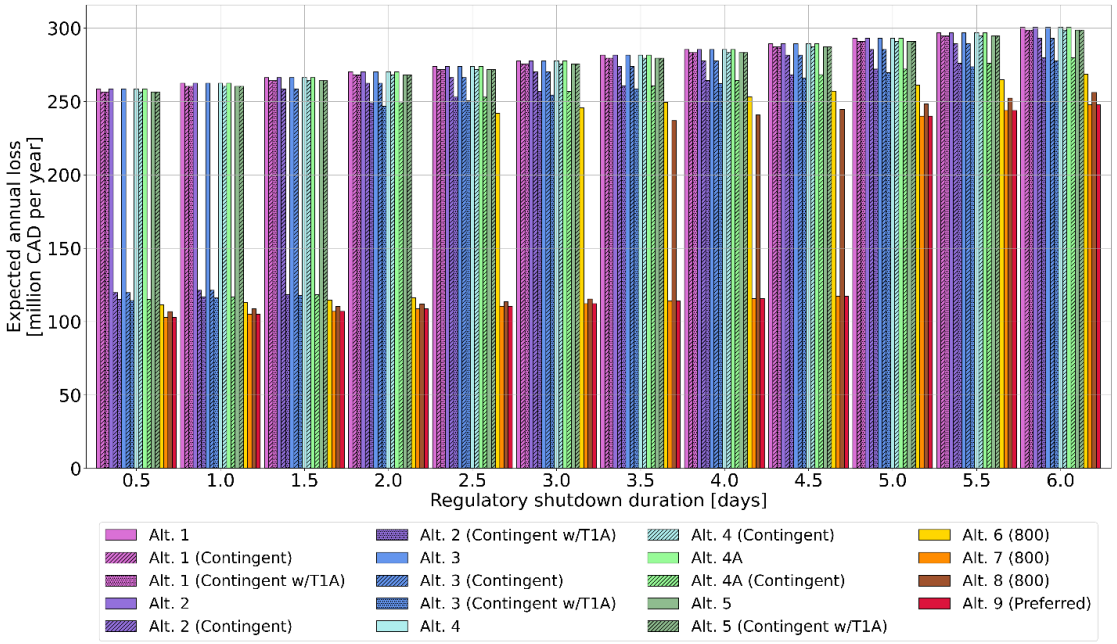
[100] BCOAPO Final Argument, p. 10.

[101] FEI understands BCOAPO to be referring to the duration of the no-flow event itself vs. customer outages *per se*.

[102] Exhibit B-63, BCUC IR6 120.1.

Figure 1: Expected Winter-only GDP Loss for Different Supplemental Alternatives for T-South (AV-1, -2, -3 and -54) at Varying Regulatory Shutdown Periods and at +4ºC



43. Contingent scenarios assume that LNG at Tilbury allocated for planning purposes to gas supply and Rate Schedule 46 LNG sales (as applicable) is nonetheless present on the day of a winter no-flow event. These scenarios, which were included to address BCUC commentary in the Adjournment Decision, are inconsistent with typical utility planning principles and risky because they *assume* rather than *guarantee* LNG volumes will be present when called upon.[103] Further, as explained in Part Four, Section F of FEI's Post-Adjournment Final Submissions, increasing LNG sales will progressively increase the risk that LNG will not be present in Tilbury 1A when a no-flow event occurs.[104]

44. Supplemental Alternative 6 (1 Bcf and 800 MMcf/d) is the only non-contingent alternative for which a shorter no-flow event significantly reduces the associated losses; however, because the entirety of the tank would be set aside as a resiliency reserve and would be unavailable for peaking supply, FEI's firm customers would experience outages in normal operations.[105] Thus, Supplemental Alternative 6 would only address one of the two Project drivers, and only when

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[103] Exhibit B-60, Supplemental Evidence, Appendix C, p. 37.

[104] See also Exhibit B-60, Supplemental Evidence, Appendix C, pp. 38-42.

[105] Exhibit B-60, Supplemental Evidence, p. 116.

assuming a no-flow period that is materially shorter than what occurred in the 2018 T-South Incident.

45. FEI submits that Supplemental Alternative 9 will provide FEI's customers with the greatest value among the viable alternatives because it provides both an adequate resiliency reserve and sufficient dependable LNG for gas supply.

(e) BCOAPO Has Not Acknowledged the Factors that Lead to an Understated T-South Risk

46. All told, none of BCOAPO's arguments about the risk analysis methodology call into question the overall conclusion of the analysis that customers are facing a real and very significant customer outage risk. Moreover, BCOAPO has not acknowledged that there are a number of other modelling parameters that lead to Exponent's risk calculations being understated, as detailed in Appendix A to FEI's Post-Adjournment Final Submissions.

(f) FEI's Approach to Developing the TLSE Project Reflects Sound Planning to Mitigate Real and Significant Resiliency and Supply Risks

47. BCOAPO states that one of its biggest criticisms is that the Supplemental Evidence reflects a "rigid business-as-usual-approach".[106] However, as discussed below, the examples BCOAPO provides (bullet list on page 16 of its submissions) all reflect sound utility planning in these circumstances. FEI's ability to continue dependably serving firm load in normal operations is in doubt; customers face a real and very significant customer outage risk from a winter T-South no-flow event, and there is likely to be long-term need for on-system LNG.[107] The approach that BCOAPO appears to prefer would, by contrast: (1) be inconsistent with industry focus on resiliency; (2) represent poor supply portfolio management; and (3) harm customers economically, as well as in terms of their health, education and overall welfare.

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[106] BCOAPO Final Argument, pp. 2 and 16-17.

[107] As summarized in Part Two, Sections A and B of FEI's Post-Adjournment Final Submissions.

Ignoring Resiliency Pending Specific Industry-Wide Resiliency Standards Is Contrary to Industry Practice and Would Harm Customers

48. BCOAPO appears to suggest (first bullet) that it should be sufficient for FEI to meet "industry best practices in terms of reliability", as distinct from resiliency.[108] In a similar vein, BCOAPO criticizes FEI (second bullet) for seeking approval for the TLSE Project "despite no industry accepted standards" for resiliency.[109] In essence, BCOAPO is arguing that, pending the implementation of resiliency standards akin to electric mandatory reliability standards (**MRS**), FEI should focus solely on FEI's day-to-day ability to deliver gas to customers, and only in respect of its own system.[110] There are several flaws with BCOAPO's arguments in this regard.

49. First, BCOAPO fails to acknowledge that the TLSE Project is, in part, a reliability project. The Base Plant's reliability is declining markedly and (as BCOAPO concedes) it has reached end-of-life. Losing access to the Base Plant will mean FEI is no longer capable of serving firm load in normal operations. While there may not be gas reliability standards akin to electric MRS, there is ample evidence to support a general expectation that offering firm service means planning to have sufficient dependable capacity and energy to serve that customer in normal operations.[111] FEI's Annual Contracting Plans (**ACP**), which are submitted annually to the BCUC for acceptance, are predicated on ensuring that FEI can meet its firm load. CEC, RCIA and BCSEA agree that it is not appropriate to plan on the basis that firm load is unserved in normal operations.[112]

50. Second, there is no gas industry-wide expectation that utilities will disregard resiliency considerations, and refrain from proposing any measures to mitigate customer outage risk, unless and until prescriptive MRS-like standards are in place. The evidence includes:

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[108] BCOAPO Final Argument, p. 16.

[109] BCOAPO Final Argument, p. 16.

[110] BCOAPO Final Argument, pp. 2 and 17.

[111] For example, the majority of MyVoice community panel members surveyed in 2021 indicated that reliability and resiliency are very important: Exhibit B-15, BCUC IR1 7.1 and 7.5.

[112] RCIA Final Argument, p. 19; BCSEA Final Argument, para. 55; CEC Final Argument, paras. 41-45.

- The BCUC had no hesitation in directing FEI to assess risks to gas supply resiliency in the aftermath of the T-South Incident, despite the absence of MRS-like resiliency standards.[113]

- Guidehouse – who are experts in this area – indicated that system resiliency is as important to natural gas delivery as is reliability and that gas utilities "must seek to strengthen [their] resiliency while balancing the need for operational control, redundancy and emergency response capabilities, at a reasonable cost to ratepayers".[114] Mr. Moran of Guidehouse indicated at the Workshop that the industry focus on resiliency is only increasing.[115]

- Guidehouse provided various examples of North American utilities investing in resiliency, noting that specific system characteristics, configurations and operational challenges will generally dictate a set of unique resiliency objectives.[116] The examples included projects from New Jersey Natural Gas that enhanced its systems existing on-system storage[117] and Dominion Energy that enabled 8 days of load support through a new LNG facility.[118] Guidehouse explained that Dominion Energy applied a similar framework to examining resiliency-driven investments:[119]

> Dominion deployed a similar framework to that of FEI in examining possible solutions to its resilience issue. This included examining the opportunity to connect to additional upstream pipelines and off-system storage options to increase diversity of supply and/or acquire incremental storage and transportation services. A key determination made by Dominion is that off-system storage is not a reliable means to resolve a supply shortfall because Dominion cannot control its access to these resources. Instead, they are dependent on the availability of these assets that are controlled and operated by third parties and would be vulnerable to the same risks that Dominion sought to mitigate with an on-system LNG storage facility. In addition, third party off-system storage was not available in the marketplace. Dominion also examined demand response as an option. Similar to FEI, Dominion's analysis identified

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113 BCUC Letter L-31-20, dated June 5, 2020.

114 Exhibit B-1-4, Application, Appendix A, Guidehouse Report, p. 51.

115 See e.g., Tr. 1, p. 123, l. 21 to p. 124, l. 24 (Moran).

116 Exhibit B-15, BCUC IR5 10.2. As discussed in Part Three, Section B of FEI's Pre-Adjournment Final Submissions, this is especially the case for FEI which is uniquely dependent on the T-South system by virtue of the limited infrastructure in BC and the US Pacific Northwest, the limited interconnectedness of that infrastructure, and the location of FEI's service territory in relation to it.

117 Exhibit B-1-4, Application, Appendix A, Guidehouse Report, pp. 56-57.

118 Exhibit B-1-4, Application, Appendix A, Guidehouse Report, p. 57.

119 Exhibit B-15, BCUC IR5 10.8.1.1.

> the critical limitations of demand response. Dominion arrived at a similar conclusion to FEI: demand response is very unreliable and unpredictable.

51. Third, standard risk management approaches, discussed in Part Three, Section F of FEI's Post-Adjournment Final Submissions, already provide a framework for assessing resiliency. The BCUC's determination of resiliency need is really about whether, in light of the cost to mitigate, it is comfortable accepting a significant (93 to 100 percent)[120] probability that, at least once over the next 60 years, at least 600,000 customers will lose gas service for many weeks at a catastrophic economic cost to the province (estimated to be in the range of $16.7 billion[121]). A no-flow event has happened before, and the timing and number of future no-flow events is uncertain. If the BCUC agrees with FEI, CEC, RCIA and BCSEA that this risk is unacceptable, it should approve an investment to allow the risk to be reduced to as-low-as-reasonably-practicable.

52. Fourth, to the extent that BCOAPO is expecting that hypothetical resiliency standards would favour the *status quo* in this instance, that is not a reasonable assumption. Indeed, FEI's Pre-Adjournment Final Submissions provided examples of BCUC decisions related to dam safety that indicate unwillingness on the part of the BCUC or industry standards organizations to accept the potential for severe consequences despite a probabilistic analysis showing that the event has a low probability of occurrence.[122] Moreover, the Energy Transition does not negate the need for attention to resiliency, and indeed some threats are potentially increasing due to climate change.[123]

53. Fifth, waiting for specific industry-wide resiliency standards to be developed, adopted, and "fully understood and tested" would leave FEI's customers relying for an indeterminate period on "hope" and "luck" – two things that BCOAPO was previously adamant were not an appropriate plan that they could countenance in good conscience. It would also leave FEI unable

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120 Exhibit B-63, BCUC IR5 126.1.

121 Exhibit B-63, BCUC IR5 126.1.

122 See FEI Pre-Adjournment Final Submissions, paras. 117-119.

123 Exhibit B-66, CEC IR5 146.1; see also Exhibit B-61, 2024 Resiliency Plan, p. 47.

to dependably serve firm customers in normal operations for an indeterminate period of time, which FEI submits is equally unacceptable.

FEI Has Demonstrated That There Is a Long-Term Use for the TLSE Project

54. BCOAPO also appears to suggest (first bullet, p. 16) that FEI should not be proposing the TLSE Project without certainty about the long-term future load. FEI submits that BCOAPO is giving too much weight to long-term uncertainty when there are known significant issues – i.e., inability to serve firm load in normal operations and a very significant customer outage risk – that exist today and will unquestionably persist for a considerable period. In any event:

- FEI has provided the mDEP 2% and 5% hypothetical adverse scenarios to account for the future uncertainty in long-term load. FEI submits that these hypothetical adverse sensitivities can hardly be characterized as "business as usual". The mDEP 5% scenario, for instance, models the potential impact of an extreme hypothetical accelerated load decline scenario where the annual expected demolition rate more than doubles. BCOAPO appears content to rely on these long-term adverse future load sensitivities in the context of its rate impact arguments,[124] and those same sensitivities demonstrate the high likelihood that significant load will remain on the system in 2050;[125] and

- FEI and Mr. Raymond Mason have explained how the unique characteristics of an LNG facility increase the likelihood of the TLSE Project continuing to provide value for customers over its 60 year expected life.[126]

Being Cognizant of Optimizing the Gas Portfolio Is Good Utility Practice, Not a Fault

55. Bullets 3 to 5 on BCOAPO's list of examples critique the amount of gas supply provided by the Preferred Alternative, including criticizing FEI for expressing a desire to avoid "augmenting peak supply with suboptimal measures" and for favouring an alternative that provides "'full peaking supply' capabilities that exceeds current capabilities".[127] In essence, BCOAPO is criticizing FEI for considering whether alternatives optimize its gas supply portfolio, which is odd given that customers (including BCOAPO's constituents) generally benefit from optimization of the gas

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[124] BCOAPO Final Argument, p. 14.

[125] See FEI Post-Adjournment Final Submissions, Part Five, Section F(e).

[126] Exhibit B-60, Supplemental Evidence, Appendix F, pp. 17, 23-24.

[127] BCOAPO Final Argument, p. 16.

supply portfolio. Gas supply costs represent a significant component of customer bills, and "optimizing the portfolio" in practice means ensuring the gas supply portfolio has the lowest cost while maintaining an acceptable risk profile.[128] Those considerations are no less valid now than they were previously (as evidenced by the BCUC's continued requirement for FEI to file an ACP).

56. The reality is that FEI's load has increased significantly in the 55 years since the Base Plant was constructed. The cost of pipeline capacity and off-system storage to serve that additional load (assuming these supply resources are even available) has also increased to the point where the annual gas supply benefits associated with incremental peaking gas supply exceeds the incremental cost of service associated with constructing a larger facility.

Assessing Whether to Repair or Replace Obsolescent Infrastructure Is Also Good Practice

57. Another BCOAPO "business as usual" critique is "FEI's stated need to address current plant 'obsolescence'".[129] However, the evidence is that the obsolescent equipment is failing with increasing frequency and its continued functioning is critical to FEI's ability to rely on Tilbury for any peaking supply.[130] This is not, contrary to BCOAPO's suggestion, a "nice to have" item. FEI submits that it is impossible to square BCOAPO's critique with its prior acceptance that the Base Plant is end-of-life and needs replacement.

Near-Term Net Customer Additions Are Not the Justification for the TLSE Project

58. BCOAPO's critique of FEI in its final "business as usual" bullet questions the near-term forecast of moderate net customer additions, suggesting that recent actual data is not "the best predictor of the near-term future".[131] However, the forecast near-term increase in net customer additions is not the justification for the TLSE Project. The existing facility is already undersized based on current load, and FEI has reasonably demonstrated that the TLSE Project will continue to be needed in 2050 even if FEI were to experience extreme adverse load loss scenarios.

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128 Exhibit B-60, Supplemental Evidence, pp. 81-82; Exhibit B-63, BCUC IR5 131.7; Exhibit B-69, BCUC IR6 151.1.

129 BCOAPO Final Argument, p. 16 (bullet 6).

130 See FEI Post-Adjournment Final Submissions, Part Four, Section B.

131 BCOAPO Final Argument, p. 17.

Moreover, as discussed in Part Two, Section A(i) below, the near-term peak forecasting approach is used in the ACP and has proven to be accurate, even in recent years.

(g) More Consultation Will Not Make the T-South Risk Disappear

59. BCOAPO suggests that the TLSE Project should be rejected because FEI ought to have consulted further with Enbridge, the CER and BC Hydro. FEI submits that further consultation is not the silver bullet that BCOAPO suggests.

There is No Reason to Expect that Further Consultation with Enbridge and the CER Would Be Fruitful or Materially Change the Risk Analysis

60. BCOAPO contends that FEI should "have engaged with parties whose operations are interconnected to theirs – such as Enbridge or the CER – to better understand and present the actual risks".[132] There are three full answers to this argument.

61. First, FEI's evidence was that it does, in fact, regularly engage Enbridge on a range of matters affecting the T-South system, including regarding managing assets and system integrity, and did so following the 2018 T-South Incident.[133] However, Enbridge does not share detailed information about overall quantification of risk, specific hazards facing T-South, or probabilities of failure.[134] FEI submits that it is unreasonable for BCOAPO to expect otherwise. The information is security sensitive, FEI similarly also does not share this type of information with its customers or the public given its highly sensitive nature, and has not done so in this proceeding.[135] The BCUC found that limiting access to certain highly sensitive security information in the Supplemental Evidence and 2024 Resiliency Plan regarding vulnerabilities faced by specific gas system assets, as well as the analysis of specific consequences which may result from the occurrence of a failure of those specific gas system assets, served the public interest. The BCUC's rationale (which FEI endorses) is that carefully guarding this information maintains public and environmental safety. In particular, inadvertent disclosure could be exploited by malicious actors, potentially leading to

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132 BCOAPO Final Argument, p. 2.

133 Exhibit B-63, BCUC IR5 116.1.

134 Exhibit B-63, BCUC IR5 116.1 and 116.3.

135 Exhibit B-63, BCUC IR5 116.1.

significant interruptions in gas supply services and damage to the environment or public property.[136]

62. Second, BCOAPO has not identified how talking to the CER would, in practice, assist FEI's assessment of the customer outage risk it faces. FEI was in the best position to determine the direct consequences to its system from a T-South no-flow event. FEI determined the number of customers impacted using its standard modelling, determined restoration timelines based on available workforce estimates, detailed work plans and productivity rates, and understands its existing resiliency capabilities that could (or could not) mitigate the consequences.[137] With respect to probability, it is unreasonable for BCOAPO to expect that the CER would provide Enbridge's security sensitive information of this kind to any third party who requests it (assuming it has been provided to the CER at all). FEI and Exponent did consider public information from the CER. In its post-incident report for the 2018 T-South Incident, the CER (then the National Energy Board or NEB) did not identify any outstanding concerns or corrective actions that it required Enbridge to undertake.[138] FEI also confirmed that the CER's processes for responding in an emergency remain substantially the same since the 2018 T-South Incident, further reinforcing FEI's assumptions with respect to how long a regulatory shutdown will last.[139]

63. Third, BCOAPO offers no reason to expect that consultation or access to Enbridge's information would result in the risk associated with a winter T-South no-flow event being anything other than very significant. To the contrary, Exponent's sensitivity analysis, which assumed that Enbridge's integrity management program was, in effect, 20 percent and 49 percent better than the industry standard, respectively, demonstrated that the expected GDP losses remain well in excess of the TLSE Project cost.[140] Risk can never be reduced to zero for any pipeline,[141] and based on PwC and Exponent's expert evaluation, the known consequences will

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136 Decision and Order G-19-25, dated January 28, 2025, p. 5.

137 Exhibit B-63, BCUC IR5 117.1.

138 Exhibit B-32, BCOAPO IR2 3.1.

139 Exhibit B-63, BCUC IR5 120.1.

140 See FEI Post-Adjournment Final Submission, paras. 120-124.

141 Exhibit B-75, BCUC Confidential IR3 23.4.

certainly be catastrophic without mitigation. As discussed in Part Three, Section F(c) of FEI's Post-Adjournment Final Submissions, risk management principles support resiliency investments at lower probabilities of failure when the consequences are intolerable.

Collaboration Between FEI and BC Hydro Will Not Eliminate the Need for the TLSE Project

64. BCOAPO suggests that FEI also "had little or no consultations" with BC Hydro, and implies that this precluded identifying "potential solutions" involving the electric system.[142] BCOAPO does not identify what exactly such a solution would be, but the evidence is clear that BC Hydro's current system cannot replace the large volume of gaseous energy that FEI delivers for space and water heating during cold weather. FEI pointed out that it serves approximately double the energy that BC Hydro provides on a winter day,[143] and explained the potential for a gas outage to cause outages on the electric system.[144] PwC also qualitatively addressed the potential for consequential electric system outages if gas customers tried, in large numbers, to replace gas heat with electric devices, which FEI submits is not a solution in lieu of the TLSE Project.[145]

65. There are also a myriad of practical challenges with basing FEI's system preservation plans on the expectation that customers can quickly switch to electric appliances following a winter T-South no-flow event.[146] Collaboration between FEI and BC Hydro would not change the fact that relying on customers to switch to electric appliances to mitigate resiliency risk is, according to Exponent, inferior to "gas utilities [adopting] a more centralized, utility-led approach to preparation and emergency response" in response to supply disruptions. Exponent also explained:[147]

> FEI and BC Hydro, as regulated entities, have a responsibility to provide safe and reliable energy to their customers. Relying on customers (to mitigate resiliency

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142 BCOAPO Final Argument, p. 3.

143 Exhibit B-72, CEC IR6 155.2.

144 Exhibit B-61, 2024 Resiliency Plan, pp. 8 and 16.

145 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 14.

146 See FEI Post-Adjournment Final Submissions, Part Three, Section C(e); see also Exhibit B-72, CEC IR6 155.3 and 155.6.

147 Exhibit B-72, CEC IR6 156.4.

> risk) would shift the burden of systemic risk mitigation from the utility (which has the expertise and infrastructure) to individual customers, many of whom may not have the knowledge or resources. Not all customers can afford or know how to source appropriate stand-by heating equipment. Vulnerable populations (elderly, low-income, disabled) could face life-threatening situations if the utility assumes personal preparedness will fill the gap.

66. FEI has provided the BCUC with information regarding coordination efforts to date with BC Hydro.[148] Ultimately, losing the gas system, while straining the electric system to the point of needing managed brownouts or worse is not (in BCOAPO's words) a "mutually beneficial solution".[149]

(h) Serving Transportation Customers Is Consistent With FEI's Regulatory Obligations

67. BCOAPO devotes a section of its submissions to "Transportation Customers", suggesting that FEI's evidence regarding Transportation customers returning to FEI's bundled service is "concerning, particularly as it relates to Residential customers for several reasons".[150] FEI submits that it has acted prudently and in accordance with its tariff obligations and BCUC-accepted ACPs, and none of the arguments BCOAPO is making have any bearing on this Application.

68. BCOAPO's first concern is that "FEI purposefully secured capacity in advance of need".[151] First, the BCUC endorsed FEI's recommendation to procure additional pipeline capacity for peaking supply 10 years ago[152] in recognition that the regional infrastructure was nearly fully subscribed and peak load was increasing. The additional pipeline capacity (50 MMcf/d on T-South) has featured in every BCUC-accepted ACP since that time. This approach has proved to be very beneficial for customers; T-South Huntingdon Delivery capacity has since been fully contracted, and FEI has needed that contingency pipeline capacity to meet firm load.[153]

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148 Exhibit B-63, BCUC IR5 124.3.1.

149 Exhibit B-72, CEC IR6 155.2.

150 BCOAPO Final Argument, p. 8.

151 BCOAPO Final Argument, p. 8.

152 Letter L-43-15, dated December 3, 2015.

153 Exhibit B-70, BCOAPO IR6 4.3.

69. BCOAPO next suggests that FEI was not obligated to secure additional capacity for Transportation customers returning to bundled service, but did so anyway despite "only [being] required to accommodate the switch request on a best effort basis".[154] BCOAPO is mistaken. The BCUC-approved framework for the Transportation Service model in place since 2003 is based on the Essential Service Model (**ESM**). The ESM recognizes that FEI: performs an essential service; is the supplier of last resort; is responsible day-to-day for balancing the gas system for bundled and Transportation Service load; and is responsible for the longer-term infrastructure planning and for emergency response. FEI is expressly required under section 26.2 of FEI's General Terms and Conditions to "supply the Customer with system Gas when the Customer wishes to return to system Gas supply if FortisBC Energy is able to secure additional Gas supply and transportation to accommodate the Customer".[155]

70. BCOAPO's argument that FEI is only required to make best efforts to accommodate Transportation Service customers is predicated on a misreading of section 3.3 of the GT&Cs. Section 3.3 applies to interruptible Sales/Transportation customers wishing to become firm Sales/Transportation customers. Under that section, the customer must give 12 months notice. The "reasonable efforts" language only governs within the notice period.[156]

71. The remainder of the items on BCOAPO's list of "concerns" about Transportation customers all relate to BCOAPO's perception that residential customers are paying an unfair portion of the cost of the 50 MMcf/d contingency capacity that has been in FEI's ACP for 10 years (that would be replaced with peaking supply from the TLSE Project) and the TLSE Project generally. FEI submits that the evidence contradicts BCOAPO's attribution of the need for the TLSE Project exclusively to Transportation customers returning to bundled service. More fundamentally, BCOAPO's arguments are matters of rate design, and have no bearing on this

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154 BCOAPO Final Argument, p. 8.

155 See Exhibit B-70, BCOAPO IR6 4.1 for additional information on the Essential Service Model and FEI's tariff obligations.

156 Section 3.3, which is quoted in the response to BCOAPO IR6 4.1, states in part: "Notwithstanding Section 3.3(a), FortisBC Energy will make reasonable efforts to accommodate a Shipper on less than 12 months prior notice if FortisBC Energy is able, with such shorter notice, to arrange for the firm purchase and firm transportation of Gas under a firm sales Rate Schedule 27 or transportation under a firm transportation Rate Schedule." (emphasis added)

Application. This Application is concerned with ensuring that FEI has sufficient peaking supply to meet firm requirements in normal operations, and mitigating the customer outage risk associated with a winter T-South no-flow event, including adverse health, social and welfare impacts that would be most-acutely felt by residential customers and vulnerable populations. The gas supply need underlying the TLSE Project is predicated on a well-established planning principle, and a central facet of the ESM, that FEI needs to plan its resources to meet all of its firm load, regardless of customer class.[157] BCOAPO also overlooks that Transportation customers comprise more than commercial and industrial customers, including schools, institutions, hospitals and public buildings,[158] to inform its perceived impact on residential customers. Ultimately, it is in the best interest of customers for FEI to meet its firm peaking supply requirements in an optimal manner within FEI's overall gas supply portfolio. The gas supply capabilities provided by the TLSE Project will enable FEI to meet full peaking supply requirements in a more optimal way than is done today.

(i) BCOAPO's Concerns Regarding FEI's Near-Term Demand Forecasting Are Unfounded

72. BCOAPO expresses concern about FEI forecasting an increase in load to 2029/30, which it says is "markedly different" than the outlook presented in the Generic Cost of Capital (GCOC) and 2022 Long-Term Gas Resource Plan (**LTGRP**) proceedings.[159] There are several answers to BCOAPO's argument.

73. First, the need for the TLSE Project is not based on meeting growing demand. Once the Base Plant is no longer operating, FEI will have insufficient peaking supply to meet its current firm load in normal operations. From a resiliency perspective, FEI's risk calculations are all performed based on FEI's current customers and the risk is already unacceptable. FEI's analysis in the Supplemental Evidence accounts for long-term declines in load, not long-term load growth. FEI has demonstrated that even in an extreme hypothetical scenario where future load decreases at

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[157] Exhibit B-70, BCOAPO IR6 4.1. In any event, under a "rolled in" rate design, which FEI's rate design is, the cost of incremental assets is not allocated entirely to the triggering party. It is irrelevant from a rate design standpoint whether the most recent load growth was from Transportation Customers or Residential Customers.

[158] Exhibit B-70, BCOAPO IR6 4.1.

[159] BCOAPO Final Argument, pp. 14-15.

5 percent each year (i.e., mDEP 5%), the TLSE Project will still be useful for both gas supply and resiliency. This is because, even when assuming the demolition rate more than doubles, FEI would still be serving hundreds of thousands of customers in the Lower Mainland in 2050 and the Lower Mainland and FEI's other service areas would still need peaking supply.[160]

74. Second, to clarify, FEI is forecasting an increase in peak day demand to 2029/30, which BCOAPO appears to confuse with the annual demand forecast presented in FEI's 2022 LTGRP. The two forecasts are distinct, and the latter does not define FEI's need for peaking supply or align with the months when a winter T-South no-flow event could occur (i.e., winter).[161] It is FEI's most recent peak day demand forecast, prepared as part of the 2025/26 ACP filing, that shows modest annual increases in peak day demand to 2029/30 (0.62 percent on average, or approximately 8 MMcf/d per year by 2029/30).[162] These forecast increases in peak day demand are consistent with the forecast decline in annual customer demand under the 2022 LTGRP's Diversified Energy (Planning) Scenario to 2042.

75. Third, although BCOAPO suggests there are inconsistencies between FEI's evidence on near-term demand growth in this proceeding and its evidence in the GCOC proceeding, BCOAPO has not identified any inconsistencies. In actuality, FEI's evidence in this proceeding is entirely consistent with FEI's evidence in the last GCOC proceeding. FEI's GCOC Stage 1 evidence on "energy/demand risk" was aligned with the 2022 LTGRP, which FEI also referenced in this proceeding.[163] Moreover, the focus of equity investors (and hence the GCOC business risk assessment) is on long-term considerations, not near-term peak demand.[164] It bears noting that

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160 Exhibit B-69, BCUC IR6 144.4.

161 Exhibit B-63, BCUC IR5 118.1.

162 Exhibit B-69, BCUC IR6 144.1.

163 See, for example, Exhibit B-63, BCUC IR5 118.7.1 and 129.1.

164 In the GCOC Stage 1 Decision (Decision and Order G-236-23, dated September 5, 2023), the BCUC summarized FEI's submissions on demand/market risk. At p. 41 notes FEI's cognizance of the 2022 LTGRP evidence and the long-term focus of investor decisions: "In reply to the CEC, FortisBC submits that FEI's evidence in this proceeding on demand/market risk is consistent with the LTGRP proceeding. […] FortisBC explains that investors take a long-term view of risk and would negatively perceive declining market share."

BCOAPO's position in the GCOC proceeding was that FEI was overstating its energy/demand risk, which is the opposite of BCOAPO's submissions in this proceeding.[165]

76. Fourth, FEI's forecasting methods have proven accurate and are therefore a sound basis to assess peak day demand over the near-term to 2029/30. FEI validated the results of the peak day demand forecast for the 2025/26 ACP with actual consumption. The underlying ACP Spline Model[166] used to develop the ACP load forecast has provided particularly accurate projections compared to actuals in recent years, as several winter events have approached the design weather used in the model.[167] FEI submits that, in the context of this kind of near-term load forecasting, the most recent past (i.e., actual daily consumption in the past three years) is the best predictor of the near-term future.[168] The 2025/26 ACP, which included this forecast, has been accepted by the BCUC.[169]

B. RESPONSE TO RCIA ON CUSTOMER OUTAGE RISK

77. RCIA's position is largely aligned with FEI's with respect to the resiliency such that FEI has little to say in reply. FEI addresses minor points below.

(a) The 2024 Resiliency Plan Included Similar Analysis for All Assessed Vulnerabilities

78. Although RCIA agrees that the 2024 Resiliency Plan addresses the BCUC's commentary in the Adjournment Decision, it suggests that "the emphasis [of the 2024 Resiliency Plan] is on the risk of a T-South outage."[170] In fact, the 2024 Resiliency Plan contains essentially the same analysis for every AV, which is set out in the AV-specific appendices and Exponent's report.[171] There is additional discussion about T-South in the body of the 2024 Resiliency Plan because the

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165 GCOC Stage 1 Decision, p. 48: "BCOAPO states that FortisBC's assessment of FEI's demand risk is overstated and points out that increases in non-residential sectors' UPC have more than offset any trend in the lower residential sector UPC."

166 See Exhibit B-69, BCUC IR6 144.2, 144.3, 144.4 and 144.5.

167 Exhibit B-69, BCUC IR6 144.1 and 144.2.

168 Exhibit B-69, BCUC IR6 144.1.

169 Letter L-7-25, dated May 29, 2025.

170 RCIA Final Argument, p. 15.

171 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 2.

body of the document is reporting on the overall results of the analysis, which is that a winter T-South no-flow event represents FEI's greatest customer outage risk.

(b) JANA's Pre-Adjournment Probability Evidence Was Consistent with Exponent's Analysis

79. RCIA indicates that it "is satisfied with Exponent's methodology" and accepts that the probability is high even over the short 20 year horizon; however, RCIA incorrectly suggests that JANA's calculated winter-only probabilities (34.6% and 40.8% over 67 years) were inconsistent with Exponent's analysis.[172] The figures that RCIA is citing from JANA's analysis were based on industry data for ruptures and ignited ruptures (i.e., integrity-related failures) only, which is only one potential cause of a no-flow event. Exponent evaluated many potential causes of no-flow events. As discussed in Part Three, Section D(c) of FEI's Post-Adjournment Final Submissions, Exponent's results for integrity related events are aligned with the industry rupture rates.

(c) FEI Has Already Addressed Why Ryall Engineering's Evidence on Customer Outage Duration Was an Unsound Basis for Resiliency Planning

80. RCIA continues to maintain that the consequences in terms of customer outage days and GDP losses are overstated based on Ryall Engineering's evidence on FEI's approach to restoration and relight. FEI addressed RCIA's arguments on this point at length in Part Three, Section F of FEI's Pre-Adjournment Final Submissions. Ultimately, RCIA acknowledges that for customers "even a shortened interruption to their gas supply has unacceptable health and safety implications" and "justifies a resiliency solution".[173]

(d) RGSD Project Would Not Have Prevented a Widespread Customer Outage

81. RCIA indicates that part of the reason it now favours the TLSE Project is that the RGSD Project is no longer being pursued by FEI.[174] FEI observes that RCIA's original opposition to the TLSE Project had been based on the following mistaken premise:[175]

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[172] RCIA Final Argument, pp. 15-16.

[173] RCIA Final Argument, pp. 17-18.

[174] RCIA Final Argument, p. 17.

[175] RCIA Final Argument, p. 17.

> The combination of the Tilbury Base Plant at 150 MMcf/d of regasification and the RGSD project with a potential peak capacity of 450 MMcf/d provided sufficient resiliency to allow FEI to withstand a T-South no-flow event for all but the 5 coldest days in a normal winter and all but 15 of the coldest days in a design winter.

82. In fact, FEI's evidence was that: (1) even at daily average winter temperatures (+4°C) 150 MMcf/d of sendout from Tilbury is insufficient to avoid the complete loss of the Lower Mainland within hours of a T-South no-flow event; and (2) FEI would not have been able to obtain supply from an expanded SCP for two days. In other words, even with an SCP expansion and the Base Plant in place, FEI would face an unmitigated risk of a Lower Mainland-wide outage for much of a typical winter.[176] FEI discussed this point further in paragraphs 250 to 253 of its Post-Adjournment Final Submissions and paragraphs 158 to 161 of its Pre-Adjournment Final Submissions.

C. RESPONSE TO CEC ON CUSTOMER OUTAGE RISK

83. CEC states that it "accepts FEI's analysis with respect to the number of customers affected and the duration of a potential service loss."[177] However, CEC makes recommendations focused on mitigation that are addressed below.

(a) CEC's Recommendation to Revise the System Preservation & Restoration (P&R) Plan

84. CEC recommends "that the Commission direct FEI to revise its 'Preservation & Restoration Plan' with a view to creating viable alternatives which might minimize potential GDP loss."[178] FEI submits the BCUC should decline to make this direction. This disagreement boils down to a difference in philosophy: The P&R Plan deliberately employs the most efficient crew deployment overall to minimize the period that critical services and premises will be without service. This approach recognizes that loss of service is a health, safety and welfare issue.[179] The CEC, by contrast, favours accepting a longer period where residences will be without heat so as to

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176 Exhibit B-60, Supplemental Evidence, Appendix C, pp. 122-124.

177 CEC Final Argument, para. 57.

178 CEC Final Argument, paras. 4 and 100.

179 Exhibit B-72, CEC IR6 162.1.

attempt to reduce overall GDP losses. No other intervener has advocated making this trade off, and FEI submits that the current P&R Plan remains appropriate.

85. Unless the BCUC no longer adheres to the underlying philosophy of the P&R Plan, there is no reason to revisit the P&R Plan design at this time. There is ample evidence already on the record to understand the implications of the trade-off CEC favours. FEI has confirmed that the approach identified by CEC would prolong the overall relight time, and this stands to reason.[180] The BCUC also has the benefit of PwC's expert assessment with respect to GDP and health impacts on customers. PwC spent many months involved in the preparation of the 2024 Resiliency Plan. As described in Part Three, Section C(f) of FEI's Post-Adjournment Final Submissions, PwC does not support the approach CEC is advocating for. In addition to noting that prioritizing industrial and commercial customers may exacerbate the health, social and welfare impacts and disruption to residential customers, PwC observes that extending the outage duration for residential customers would act as an offset for the potential mitigations to GDP loss that prioritization of industrial and commercial users may offer (e.g., increased duration of social disruptions that limit working at normal levels).[181]

86. Although CEC states that it "does not, in any way, wish to under-value consequences that could occur to individuals…" it is evident that CEC's position rests in part on its view of the health risks being overstated.[182] In particular, CEC "does not accept that a gas outage in the lower mainland creates as much risk as an electrical outage in other locations around the world" and recommends that "the Commission provide limited weight to evidence related to electric utilities when considering potential consequences for losses by the gas utility."[183] This is somewhat at odds with its "accept[ance] that there is a significant potential for [a widespread gas outage to cause] cascading impacts to BC Hydro's electric system, which could seriously exacerbate the consequences."[184] In any event, neither Exponent nor PwC (nor FEI) suggested equating the

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[180] Exhibit B-72, CEC IR6 162.1.

[181] Exhibit B-72, CEC IR6 162.3.

[182] CEC Final Argument, para. 74.

[183] CEC Final Argument, paras. 74 and 78.

[184] CEC Final Argument, para. 72.

impacts of a gas outage with those of an electric outage; to the contrary, PwC concluded that the consequences of a gas system outage would substantially increase when the electric system is affected.[185] However, the health impacts identified by the experts are related in a large way to exposure to cold. It is reasonable to expect, as the experts note, that vulnerable populations, in particular, will be exposed to additional health risk from the loss of their primary source of heat in mid-winter.[186]

87. CEC states: "Further, it is not unreasonable to consider that the densification in the lower mainland could potentially be beneficial when considering the preservation of warmth and substitution opportunities for gas-related outages, such as cooking."[187] There is no evidence to support CEC's conjecture.

(b) CEC's Recommendation on Directed Coordination Between FEI and BC Hydro

88. CEC recommends that the BCUC direct FEI and BC Hydro to "prepare coordinated plans for cooperatively addressing outages on either system."[188] Although FEI would welcome the opportunity to discuss these issues further with BC Hydro, the BCUC should decline to make CEC's recommended directive. First, the recommendation goes well beyond the subject matter of this proceeding and BC Hydro is not a party to this process. Moreover, the BCUC declined to make a similar directive in the 2022 LTGRP Decision.[189] If the BCUC nonetheless determines to issue a directive, it is important to recognize that the security sensitivity of the information involved lends itself to confidential bilateral discussions (akin to what has already occurred) rather than a public process or public reporting.

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185 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 14.

186 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 3, PwC Report, p. 14.

187 CEC Final Argument, para. 76.

188 CEC Final argument, para. 107.

189 In the 2022 LTGRP (Decision and Order G-78-24, dated March 20, 2024, p. 54), the BCUC stated: "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). 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." (emphasis added).

(c) CEC's Recommendation for Analysis Regarding Possible Actions by Customers to Protect Themselves

89. CEC recommends that the BCUC direct FEI to "provide a detailed analysis as to what actions could be most beneficial for customers during a natural gas outage, and how these mitigations might be communicated in advance."[190] CEC's primary suggestion in IRs was for customers to have space heaters on hand, and potentially having FEI provide those heaters in advance.[191] FEI submits that CEC's suggested directive is unwarranted, and CEC's suggestion is based on an unrealistic view of the practicality and effectiveness of such measures.

90. The P&R Plan already includes a communications plan that includes messaging to reduce consumption that would be used upon the occurrence of a supply emergency.[192] While such communications are an important component of the P&R Plan, there are limits to their effectiveness in practice. In the absence of the TLSE Project, no amount of customer willingness to switch to space heaters / back-up systems or turn down the heat could prevent a Lower Mainland outage following a winter T-South no-flow event. Given that the Lower Mainland distribution system would lose pressure within hours during a winter T-South no-flow event, it would not be possible for FEI to communicate with the at least 600,000 customers and for those customers to switch to back-up systems in time (assuming they have purchased, or are in a position to purchase, a back-up energy system).[193]

91. While CEC is suggesting stockpiling heaters or other such measures as complementary to the TLSE Project, rather than as a substitute for it, CEC is still unrealistic about their efficacy. FEI explained:[194]

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190 CEC Final Argument, para. 110.

191 E.g., Exhibit B-72, CEC IR6 156.3.

192 The estimated load support durations and risk analysis in the 2024 Resiliency Plan assumes a level of voluntary reductions in response to public communications that is similar to that achieved during the 2018 T-South Incident. That assumption is likely optimistic for a winter outage, as customers are more reliant on heat (vs. October 2018) and the system will depressurize much faster. See Exhibit B-72, CEC IR6 155.3; see also Exhibit B-15, BCUC IR1 13.3.

193 Exhibit B-72, CEC IR6 156.3.

194 Exhibit B-72, CEC IR6 155.3.

> With the TLSE Project in place, FEI will have additional time to respond to a winter T-South no-flow event, including the potential for voluntary curtailment to have a real impact in delaying or limiting the impacts on both the gas and electric systems. However, as discussed in the responses to BCUC IR1 13.3 and 19.2, it is important to recognize the limits of voluntary curtailment even when there is sufficient time to respond to a no-flow event. FEI's experience during the 2018 T-South Incident demonstrates the practical limits of voluntary curtailments. In particular, curtailing and making public appeals to reduce consumption only reduced expected natural gas demand by approximately 20 percent on the first day of the 2018 T-South Incident and, even so, customers quickly reverted back to their previous energy consumption patterns. FEI expects that the same would likely be the case, both in the context of BC Hydro's customers reducing their electricity usage and, importantly, FEI's customers shifting from gas to electric heating in a timely manner.

92. All of this is also predicated on hundreds of thousands of customers having space heaters / back-up systems on hand on the day of a no-flow event. FEI submits that there are self-evident practical challenges with any strategy dependent on having people pay to install back-up heating systems or keep space heaters on hand over the course of many years (e.g., rental apartments changing hands, change of ownership, cost, etc.). FEI has noted elsewhere the potential challenges for overloading the electric distribution system generally, and this problem also exists within individual buildings and premises.[195]

(d) CEC Accepts a 67-Year Analysis Period, Despite Preferring a Shorter Period

93. CEC expresses a preference for using a shorter financial analysis period of 27 years (20 years plus 7 years construction) to provide a "conservative view of the possible stranded asset risk for the TLSE Project".[196] FEI submits that the objective of the financial analysis should be to provide a best estimate (neither optimistic, nor conservative), rather than introducing a bias. FEI has explained in Part Seven, Section C(b) of the Post-Adjournment Final Submissions why a 20-year useful life, and hence a 27-year financial analysis period, is far too short. Ultimately, CEC also states that it "does not have strong objections to the use of a 67-year life, with its slightly lower

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[195] Exhibit B-72, CEC IR6 156.3.

[196] CEC Final Argument, para. 66.

rate impact for customers."[197] It concludes that the 3.56% rate impact over 67-years "would remain acceptable".[198]

D. RESPONSE TO MS2S

94. As noted above, MS2S does not appear to dispute the magnitude of the risk posed by a winter T-South no-flow event. Instead, it argues that other risks are even larger and the risk of a winter T-South no-flow event can be mitigated by other means, that resiliency is not needed due to declining load, and that, in any event, the TLSE Project cannot be relied on to provide resiliency. MS2S groups its submissions into overlapping eight points, which FEI responds to below.

(a) MS2S' Suggestion that There Are Greater Resiliency Risks is Inconsistent with the Evidence

95. MS2S arguments 1 and 7 make clear that it views the risk of a winter T-South no-flow event as being "lower than other serious vulnerabilities", citing in particular the exposure of the Tilbury facility itself to earthquakes, wildfires, flooding, terrorism, and export and bunkering market risks. MS2S suggests that FEI gave no consideration to these Tilbury-related issues.[199] FEI submits that, in fact, there is ample evidence on the record to demonstrate that:

- The TLSE Project facilities will meet current seismic standards;[200]
- The TLSE Project is located in a well-developed industrial area, which would not be prone to wildfires.[201] The TLSE Project will also have appropriate fire-suppression measures that meet current standards;[202]
- The TLSE Project will rectify the Base Plant's inherent exposure to flooding;[203]
- While the threat of deliberate action cannot be ruled out for the TLSE Project facilities, the Tilbury facility is fenced and staffed, and is not remote.[204] The same

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197 CEC Final Argument, para. 70.

198 CEC Final Argument, para. 67.

199 MS2S Final Argument, pp. 3-4.

200 See FEI Post-Adjournment Final Submissions, Part Six, Section C.

201 An aerial photo of the Tilbury site is included at para. 370 of FEI Post-Adjournment Final Submissions.

202 Exhibit B-67, MS2S IR5 6.1 and 6.3.

203 Exhibit B-63, BCUC IR5 138.2.

204 An aerial photo of the Tilbury site is included at para. 370 of FEI Post-Adjournment Final Submissions.

cannot be said for T-South, which is over 900 km in length and passes through many sparsely populated areas.[205] Exponent's calculated risk for the T-South no-flow event (which MS2S appears to accept) does not even include risks associated with deliberate action, and is thus understated;[206] and

- Contrary to what MS2S asserts, the "business plan" for the TLSE Project is not "mainly focused on becoming an export terminal to Asian countries, as well as a local bunker fuel supplier to LNG-capable vessels".[207] The TLSE Project is entirely allocated to a "resiliency reserve" and for gas supply for customers.

96. MS2S' argument that the risk is "capable of being substantially mitigated by several FEI actions"[208] (which is essentially repeated as MS2S' point #7 on page 7) is similarly flawed. For instance:

- One of the measures that MS2S cites (item b) is to teach people to light their own appliances. FEI's risk calculations already assume that 25 percent of people will be relighting their own appliances, and FEI explained why expecting further self-relights is unreasonable.[209] RCIA, whose expert had originally addressed this specific issue, now acknowledges the risk posed by a winter T-South no-flow event is, by far, FEI's single largest resiliency risk, thus justifying the TLSE Project.[210]

- Replacing the remaining manual meters in the Lower Mainland (item c) would have value in terms of preserving pressure on the system (i.e., helping to avoid an uncontrolled shut-down and eliminating purging and leak surveys); however, it still means the customers will be without service for an extended period of time and must be re-lit.[211] Only a supply-side solution can avoid the certainty that at least 600,000 customers will lose service on Day 1 of a winter T-South no-flow event at daily average winter temperature (+4°C).

- MS2S offered no evidence to suggest that Enbridge's T-South Sunrise Expansion Project (item d) will materially mitigate the probability of a winter T-South no-flow event. Even if one assumes that portions of the T-South system are improved, the vast majority of the system will remain unaltered. Moreover, much of the risk is driven by non-integrity related factors.[212] As Exponent noted, the length of the

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205 Exhibit B-16, BCUC Confidential IR1 1.2.

206 Exhibit B-61, 2024 Resiliency Plan, Appendix PR 2, Exponent Report, p. 28; Exhibit B-63, BCUC IR5 116.13.

207 MS2S Final Argument, p. 3.

208 MS2S Final Argument, p. 4.

209 FEI Pre-Adjournment Final Submissions, Part Three, Section F(b).

210 RCIA Final Argument, p. 15.

211 Exhibit B-1-4, Application, p. 83.

212 See proposed draft allocation terms at para. 440 of FEI's Post-Adjournment Final Submissions.

line is a significant determinant of risk, and the line will still be over 900 km long over challenging terrain.[213]

- "Preparing and practicing a disaster response plan" (items f, g) will not prevent a widespread customer outage following a T-South no-flow event – only new on-system supply can do that. FEI already has the P&R Plan, which focuses on orderly shutdown and mitigating overall harm; however, even at daily average winter temperature (+4°C), the system will currently depressurize (likely in an uncontrolled manner) before FEI can fully implement the P&R Plan.[214]

- MS2S is advocating "strengthening FEI's ability to support Lower Mainland customers with regasified LNG piped from the Mount Hayes facility" (item i); however, FEI provided extensive evidence as to why this approach would not address the risk posed by a winter T-South no-flow event.[215]

- MS2S's remaining mitigation ideas (items a, e and j) involve, in essence, mitigating risk by switching Lower Mainland gas load to electricity. While FEI submits that this suggestion is problematic for a number of reasons (e.g., FEI delivers significantly more energy than BC Hydro provides on a winter day), the mDEP 2% and 5% hypothetical adverse load sensitivities show that significant gas load will remain on the system even under very aggressive load loss assumptions.[216]

(b) FEI's Evaluation Included Long-Term Hypothetical Load Loss Scenarios to Consider Long-Term Need

97. MS2S's arguments 2-6 are all versions of a similar theme: MS2S's belief that the load will and should decline, thus negating the need for resiliency. For instance, MS2S incorrectly suggests that "[i]n its calculation of the need for TLSE2, FEI has excluded the effects of governments' climate action policies and incentives on its gas service business."[217] In fact, FEI's Supplemental Evidence included an entire section devoted to the long-term usefulness of the TLSE Project, and Mr. Mason further addressed the issue in his expert report. Long-term usefulness was one of the five criteria in the alternatives analysis scoring.[218]

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213 Exhibit B-61, 2024 Resiliency Plan, Appendix RP 2, Exponent Report, para. 144.

214 Exhibit B-60, Supplemental Evidence, Table 3-2 (p. 44).

215 FEI's Pre-Adjournment Final Submissions, Part Three, Section E(c); see also Exhibit B-15, BCUC IR1 11.8.

216 FEI Post-Adjournment Final Submissions, para. 326.

217 MS2S Final Argument, p. 5.

218 See FEI's Pre-Adjournment Final Submissions, Part Five, Section F(e); see also Exhibit B-60, Supplemental Evidence, Appendix F, Raymond Mason Report.

98. MS2S' third argument is that "BC Government policy is to decarbonize our economy as quickly as possible. Creating new fossil-fuel infrastructure, such as TLSE2, cannot possibly further that goal." FEI's Post-Adjournment Final Submissions address why the TLSE Project is consistent with "British Columbia's energy objectives", which also include the retention and creation of jobs. The TLSE Project, given its purpose, is not contributing to GHG emissions.[219] Moreover, while decarbonization is a goal, the provincial government's recent policy statements in the "*Power Our Future Report*" have been clear that this is expected to occur with continued use of the gas distribution system "in order to maintain system resiliency, meet peak energy demand, and provide home heating in colder climates."[220]

(c) MS2S Is Still Incorrectly Treating the TLSE Project as an Export and Bunkering Facility

99. MS2S' eighth and final argument is that "FEI may not be able to guarantee a minimum 2bcf of stored LNG at all times" because of needing to fill export and bunkering vessels.[221] As has been the case throughout this proceeding, MS2S has fundamentally misconstrued the planned use of the TLSE Project facility; the TLSE Project is dedicated to a resiliency reserve and gas supply. The existing Tilbury 1A tank is the only LNG storage used for the export and bunkering markets.

100. MS2S' discussion about the unpredictability of vessel refilling schedules and the size of the LNG vessels inadvertently highlights why it is risky to undersize a replacement facility based on the assumption that FEI will be able to use Tilbury 1A volumes for gas supply and/or resiliency. FEI has addressed the problems with such "contingency" scenarios in Part Five, Section F of FEI's Post-Adjournment Final Submissions.

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219 FEI's Pre-Adjournment Final Submissions, Part Ten.

220 Exhibit B-64, BCOAPO IR5 1.2. See also Exhibit B-66, CEC IR5 133.1.

221 MS2S Final Argument, p. 8.

PART THREE: PROJECT NEED – THE TILBURY BASE PLANT HAS REACHED END-OF-LIFE AND MUST BE REPLACED

101. As noted above, BCOAPO explicitly acknowledged in its Pre-Adjournment Final Argument that the facility had reached end-of-life. RCIA, CEC and BCSEA all agree that FEI's post-adjournment evidence demonstrates that the Tilbury Base Plant has reached end-of-life. CEC and RCIA also recognize the importance of Tilbury LNG in FEI's gas supply portfolio, the absence of any viable alternative to on-system LNG to meet peak demand, and the unacceptable potential for firm customer outages in normal operations.

102. BCOAPO's characterization of the TLSE Project as "a nice to have just in case"[222] is incompatible with its acknowledgement of the end-of-life condition of the Base Plant and the following supplemental evidence:

- The deteriorating reliability of the equipment, including equipment failure rates that are multiples of the industry average failure rates;[223]
- The fact that FEI is already operating the tank at only a fraction of its design capabilities due to seismic concerns;[224]
- The independent expert reports identifying serious issues with the Base Plant foundations and advising against refurbishment of the tank;[225]
- The problems that are inherent to the 50 year old design;[226] and
- The absence of capacity on regional infrastructure that could replace, albeit sub-optimally, the peaking supply provided by Tilbury today.[227]

103. Despite the condition of the Base Plant being one of the two drivers of the TLSE Project, MS2S did not even mention it. This is one of several fundamental shortcomings in MS2S' position.

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222 BCOAPO Final Argument, p. 6.

223 FEI Post-Adjournment Final Submissions, para. 160.

224 FEI Post-Adjournment Final Submissions, paras. 178-179.

225 FEI Post-Adjournment Final Submissions, para. 183.

226 FEI Post-Adjournment Final Submissions, para. 160.

227 FEI Post-Adjournment Final Submissions, Part Four, Section E.

PART FOUR: SUPPLEMENTAL ALTERNATIVES ANALYSIS

104. As noted above, RCIA, CEC and BCSEA all agree that the Preferred Alternative (Supplemental Alternative 9) should be approved, echoing FEI's evidence in this regard.[228] RCIA also commented favourably on FEI's Supplemental Alternatives analysis.[229] No intervener has questioned FEI's decision to rule out a number of Supplemental Alternatives due to feasibility or their inability to allow FEI to continue meeting firm load in normal operations. Thus, the submissions below focus on correcting the factual error underpinning BCOAPO's argument.

A. RESPONSE TO BCOAPO REGARDING SUPPLEMENTAL ALTERNATIVES ANALYSIS

105. As explained below, BCOAPO's arguments regarding project alternatives are based on a misreading of the evidence. FEI already evaluated the alternatives that BCOAPO asserts are missing, and FEI's evaluation showed them to be inadequate in various ways.

(a) FEI Considered and Rejected Alternatives Other Than Those Involving On-System Assets

106. BCOAPO incorrectly asserts that FEI has constrained its options for mitigating the risk of a winter T-South no-flow event to those where FEI owns the assets and controls all aspects of the investments, thereby earning a return.[230] As BCOAPO itself recognized in its Pre-Adjournment Final Argument, FEI evaluated options (in BCOAPO's words) "including storage (above and below ground, and on- and off-system), diversity of regional pipelines, and load management" to enhance system resiliency.[231] Ownership and control of supply resources, as discussed below, are part of what make on-system LNG such an effective tool for customer outage risk mitigation.

107. FEI's original (pre-Adjournment Decision) alternatives analysis demonstrated, among other things, that off-system infrastructure (regardless of whether it is owned by FEI or another party) will not prevent a Lower Mainland-wide customer outage on Day 1 of a winter T-South no-

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228 RCIA Final Argument, pp. 7, 10, 19-20; BCSEA Final Argument, paras. 58, 63; CEC Final Argument, para. 129.

229 RCIA Final Argument, pp. 19-20.

230 BCOAPO Final Argument, p. 4.

231 BCOAPO Pre-Adjournment Final Argument, para. 19.

flow event.[232] New off-system pipeline options are very limited, and pipeline capacity will not be able to deliver supply fast enough and/or will not avoid reliance on T-South. FEI cannot access physical gas from off-system storage in winter in the event of a no-flow event.[233]

108. FEI's original alternatives analysis also highlighted the resiliency value associated with on-system LNG's very short response time and deliverability that does not depend on third-party infrastructure or counterparties. Guidehouse addressed the benefits of control and responsiveness in detail and concluded that "on-system storage is the most effective means of risk management for FEI to mitigate the risk of an upstream supply disruption".[234] FEI summarized additional observations from Guidehouse regarding the benefits of on-system storage in Part Three, Section C of FEI's Pre-Adjournment Final Submissions. These unique attributes also make on-system storage particularly valuable in response to changing load.[235]

109. Finally, FEI's Supplemental Evidence included options not owned and controlled by FEI, which BCOAPO also appears to overlook. These included Supplemental Alternative 11 (LNG from Woodfibre LNG) and any SCP extension regardless of ownership or end point.[236] FEI included these options in response to BCUC commentary in the Adjournment Decision, and fully assessed them in Appendix C to the Supplemental Evidence. FEI's analysis demonstrated clear problems with both of these options as alternatives to the TLSE Project, and they were properly screened out.

(b) FEI Evaluated a Like-for-Like Replacement for the Base Plant

110. BCOAPO's other key argument on alternatives is similarly based on an erroneous assumption. BCOAPO states that this proceeding has "effectively entirely focused on the appropriateness of a new, larger facility", and that there were "no alternatives that focused solely

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[232] See FEI Pre-Adjournment Final Submissions, Parts Four and Five.

[233] See FEI Pre-Adjournment Final Submissions, para. 24; see also Exhibit B-63, BCUC IR5 121.1.

[234] Exhibit B-1-4, Application, Appendix A, p. 46; see also Tr. 1, p. 140, ll. 16-21 (Moran).

[235] FEI Post-Adjournment Final Submissions, Part Five, Section F(e).

[236] See FEI Post-Adjournment Final Submissions, Part Five, Section D.

on the replacement of the existing facility without that storage increase".[237] This is plainly incorrect.

111. Supplemental Alternative 4 involved replacing the Base Plant like-for-like to restore its original design capacity consisting of a 0.6 Bcf tank with 150 MMcf/d of regasification. FEI fully assessed Supplemental Alternative 4, and it was one of the four feasible alternatives scored in Step 3 of the Supplemental Alternatives analysis.[238] Supplemental Alternative 4 scored significantly lower than the Preferred Alternative due to, in particular, its lack of added resiliency.[239] The entire Lower Mainland would still lose gas service on Day 1 of a winter T-South no-flow event, even at average winter temperatures. This is discussed in Part Five, Section F(a) of FEI's Post-Adjournment Final Submissions.

112. FEI also evaluated two other alternatives (Supplemental Alternatives 2 and 3) which would only replace the regasification components of the Base Plant while retaining the existing tank.[240] FEI explained in Part Five, Section E(a) why these alternatives fail to maintain FEI's peaking supply, such that they were ruled out at Step 2.

(c) BCOAPO's Recommendation that FEI File a New CPCN for a Like-for-Like Replacement Should be Rejected

113. BCOAPO goes on to recommend that, if the BCUC does not approve a CPCN for the Preferred Alternative, FEI should be directed to develop a separate CPCN to replace the Base Plant that is compliant with the BCUC's CPCN Guidelines.[241] FEI submits that, if the BCUC were to reject the Preferred Alternative, there is ample evidence on the record to allow the BCUC to approve a different alternative. FEI prepared revised cost estimates for the Supplemental Alternatives, including Supplemental Alternative 4 (approximately $827 million[242]), that are consistent with the BCUC's CPCN Guidelines and reflect an AACE Class 4 degree of accuracy.

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237 BCOAPO Final Argument, p. 4.

238 Exhibit B-60, Supplemental Evidence, Table 4-1 and Appendix C, pp. 75-80.

239 Exhibit B-60, Supplemental Evidence, Table 4-16.

240 Exhibit B-60, Supplemental Evidence, Table 4-1.

241 BCOAPO Final Argument, p. 5.

242 Exhibit B-60, Supplemental Evidence, Table 4-9.

114. In addition to being inefficient and unnecessary, requiring a separate CPCN for an alternative that has already been thoroughly assessed and tested as part of this proceeding would increase the supply risk that customers face. LNG facilities, regardless of size, have long lead times. The Base Plant is a critical gas supply asset that is essential for reliable service in normal operations, and reliability of the Base Plant equipment has already deteriorated markedly during the five years that this proceeding has been underway.[243]

[243] Exhibit B-60, Supplemental Evidence, pp. 81-85; see also FEI Post-Adjournment Final Submissions, Part Four, Sections B and C.

PART FIVE: FINANCIAL ANALYSIS

115. CEC and BCSEA concur that FEI's cost estimate and financial analysis are reasonable and/or consistent with the BCUC's CPCN Guidelines.[244] In this Part, FEI responds to BCOAPO's arguments on this topic.

A. RESPONSE TO BCOAPO REGARDING THE FINANCIAL ANALYSIS

116. FEI explains below why the BCUC should reject BCOAPO's arguments regarding the reliability of FEI's updated capital cost estimate, the relevance of the elimination of the carbon tax, and demand forecasting.

(a) Updated Cost Estimate Meets the CPCN Guidelines and Reasonably Mitigates the Risk of Cost Increases

117. BCOAPO appears to suggest that because the Project cost estimate has increased since the Application, the updated cost estimate cannot be relied on.[245] However, it bears noting that both the COVID-19 pandemic and an unusual period of significant inflation occurred since the original estimate was prepared. The updated base capital cost estimate reflects the inflationary-driven increases in material and equipment costs and increased labour costs. Moreover, part of the increase in the overall cost estimate is attributable to FEI's independent expert (Validation Estimating) recommending revisions to the contingency and escalation amounts. These changes will further reduce the potential for cost overruns:

- Increasing the contingency estimate by approximately 19 percent from $118.384 million to $135.800 million (in as-spent $) at a P50 confidence level affords additional margin for unforeseen costs and risks.[246]
- Increasing the escalation confidence level to a higher P70 level (previously only a P50 confidence level) better reflects changes in technical, economic and market conditions over time. In particular, budgeting for escalation with a higher

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[244] BCSEA Final Argument, paras. 67 and 74; CEC Final Argument, para. 7. RCIA cites FEI's costs and financial analysis at, e.g., p. 14).

[245] BCOAPO Final Argument, p. 13.

[246] Exhibit B-60, Supplemental Evidence, p. 194.

confidence level specifically reflects the risk of escalation with projects at the scale of the TLSE Project.[247]

118. FEI's capital cost estimate remains consistent with the BCUC's CPCN Guidelines.

(b) FEI Has Justified the Need for the Project Irrespective of Changes to the Carbon Tax

119. BCOAPO takes issue with justifying a project's costs or bill impacts with reference to the elimination of the carbon tax.[248] BCOAPO's argument is spurious. First, FEI has not sought to justify the TLSE Project based on the carbon tax being eliminated. FEI has been consistent that the TLSE Project is needed to mitigate FEI's exposure to a winter T-South no-flow event and ensure that FEI can continue to provide dependable firm service in normal operations. FEI did not mention the elimination on the carbon tax in its Post-Adjournment Final Submissions. The carbon tax changes were only referenced in two limited contexts within the evidentiary record: (1) as one of several factors that are beyond FEI's control but could impact FEI's revenue requirement and delivery rates;[249] and (2) in presenting a holistic view of estimated bill impacts of the TLSE Project to 2030.[250] FEI submits that, in responding to IRs on these topics, it was appropriate to account for the impacts of a significant change in provincial policy. Indeed, as acknowledged by BCOAPO, it ultimately has a bearing on the total costs borne by its customers through commodity and delivery rates.[251]

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247 Exhibit B-60, Supplemental Evidence, p. 194.

248 BCOAPO Final Argument, p. 14.

249 Exhibit B-72, CEC IR6 157.1 and 157.2.

250 Exhibit B-70, BCOAPO IR6 6.4.

251 BCOAPO Final Argument, p. 14.

PART SIX: BC ENERGY OBJECTIVES AND LONG-TERM RESOURCE PLAN

120. CEC, RCIA and BCSEA support FEI's assessment that the TLSE Project is consistent with the applicable of British Columbia's energy objectives, including with respect to "encourag[ing] economic development and the creation and retention of jobs" and reducing BC greenhouse emissions.[252] BCSEA has only one minor point of disagreement:

> 80. On a minor point, BCSEA respectfully disagrees with FEI that the BCUC's statement that the Pattullo Gas Line Replacement Project supports the 'economic development and jobs' objective is applicable to the TLSE Project. The Pattullo Project would prevent legally certain service interruptions. However, the TLSE Project may or may not ever be activated in response to a No-Flow event on TSouth.

121. The Pattullo Gas Line Replacement Project CPCN decision did recognize the benefits of project construction for economic development and job creation. After describing the evidence in this regard, the BCUC stated: "The Panel is satisfied that the Project will support the objective of encouraging economic development and the creation and retention of jobs and that this is the only directly applicable of BC's energy objectives."[253]

122. BCOAPO does not address British Columbia's energy objectives. As described previously, MS2S' submissions on emissions are coloured by its mistaken impression that the TLSE Project is an export and bunkering facility.

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[252] RCIA Final Argument, p. 14; BCSEA Final Argument, para. 79; CEC Final Argument, para. 165.

[253] Decision and Order C-2-21, dated June 30, 2021, p. 47.

PART SEVEN: ADDITIONAL ORDERS AND TERMS

A. ACCEPTANCE OF THE 2024 RESILIENCY PLAN

123. FEI submitted in its Post-Adjournment Final Submissions that the BCUC should accept the 2024 Resiliency Plan pursuant to section 44.1 of the *Utilities Commission Act* (**UCA**) as part of granting a CPCN for the TLSE Project. Among the interveners, only CEC and BCOAPO call for further review of the 2024 Resiliency Plan in the next LTGRP before it is accepted.

124. FEI submits that its approach, unlike the approach advocated by CEC and BCOAPO, is both efficient and effective. Key issues in this proceeding go to the heart of the content of the 2024 Resiliency Plan. The purpose of the 2024 Resiliency Plan, and the focus of its content, is to identify customer outage risks across the system and assess the relative risk exposure associated with them. In this proceeding, the BCUC is turning its mind to whether FEI is targeting mitigation efforts at the appropriate customer outage risks, which turns on a review of the assessment methodology in the 2024 Resiliency Plan and a comparison of the results for all AVs. The BCUC and interveners have had the opportunity to ask IRs on the 2024 Resiliency Plan, and have done so.

125. CEC's recommendation to review the Resiliency Plan and any updates in the next LTGRP review is tied to its view that FEI and BC Hydro should be working to understand the potential for cascading outages and that the P&R Plan should be revisited, which FEI addresses above. Even if the BCUC were to conclude that FEI and BC Hydro should be working together and/or the P&R Plan should be revisited, reviewing these issues in the LTGRP is unlikely to be beneficial. The P&R Plan is confidential and available to the BCUC only, given its sensitive content. Sensitive information about the impacts of a gas outage on BC Hydro's system would similarly be security sensitive (akin to the appendices in FEI's 2024 Resiliency Plan). Moreover, the LTGRP considers FEI's planning, not BC Hydro's planning.

126. BCOAPO raises the possibility that FEI should file another new Resiliency Plan as part of its next LTGRP.[254] FEI submits that, while it is appropriate to provide material updates to the

[254] BCOAPO Final Argument, p. 17.

BCUC from time-to-time, insufficient time will have passed between the creation of the 2024 Resiliency Plan and the next LTGRP. The 2024 Resiliency required considerable time and expense (including engaging several independent experts) to prepare. As FEI does not anticipate any material updates to the 2024 Resiliency Plan that would warrant being filed in its next LTGRP, filing a new Resiliency Plan would not be an effective or efficient use of resources.

B. TANK ALLOCATION

127. CEC, RCIA and BCSEA concur with FEI's general approach to terms related to tank allocation.[255] One nuance is that CEC recommends "that the Commission adopt FEI's proposal with respect to Tank Allocation in terms of an outline, and direct FEI to provide the specific terms for inclusion in the CPCN."[256] FEI submits that the terms set out in paragraph 440 of FEI's Post-Adjournment Final Submissions are already crafted in a way that would be appropriate for inclusion in a BCUC CPCN order.

128. CEC also recommends that, once the allocations are set, "the Commission should not try to regulate these allocations but should have accountability reporting on a regular basis to enable Commission oversight."[257] FEI agrees with the sentiment that there is no need for the BCUC to perform frequent reviews of the allocation, absent some significant change. FEI submits that FEI's proposal to address the allocation in its ACP filings, as needed (e.g., where load changes materially), will provide appropriate oversight.

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[255] RCIA Final Argument, p. 24; BCSEA Final Argument, para. 48-49; CEC Final Argument, para. 179.

[256] CEC Final Argument, paras. 13 and 180.

[257] CEC Final Argument, para. 182.

PART EIGHT: CONCLUSION

129. FEI has done the work necessary to provide the BCUC with a sound evidentiary basis to evaluate the TLSE Project, and that work has resulted in three interveners now supporting the Project. The BCOAPO and MS2S arguments in opposition to the Project are inconsistent with the evidence and should be rejected. FEI respectfully submits that the TLSE Project is in the public interest and should be approved by the BCUC, as proposed, along with the other requested approvals discussed in Part Eleven of FEI's Post-Adjournment Final Submissions.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

Dated:	July 31, 2025	***[original signed by Matthew Ghikas]***
		Matthew Ghikas
		Counsel for FortisBC Energy Inc.
Dated:	July 31, 2025	***[original signed by Niall Rand]***
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