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~~**CONFIDENTIAL**~~

September 13, 2021

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

**Re: FortisBC Energy Inc. (FEI)**

**Application for a Certificate of Public Convenience and Necessity (CPCN) for the Tilbury Liquefied Natural Gas (LNG) Storage expansion (TLSE) Project (Application)**

**Response to the British Columbia Utilities Commission (BCUC) CONFIDENTIAL Information Request (IR) No. 1**

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FEI respectfully submits the attached response to BCUC CONFIDENTIAL IR No. 1 in the Application referenced above.

## Treatment of Confidential Material

Due to the sensitive and confidential nature of some of the information in the Application, FEI is filing some responses and attachments to information requests on a confidential basis pursuant to Section 18 of the BCUC's Rules of Practice and Procedure regarding confidential documents, as set out in Order G-15-19. FEI's treatment of security-sensitive and commercially-sensitive information in these responses is consistent with BCUC Order G-161-21 and the Revised Confidential Application (Exhibit B-1-3). All of that information will be available to interveners who have previously signed and provided the BCUC Confidentiality Declaration and Undertaking form (Undertaking) and the revised non-disclosure agreement (NDA). In the case of interveners who have only provided the signed Undertaking, they will receive all commercially-sensitive information only.

While some parties submitted information requests on a confidential basis, in order to maximize the amount of information on the public record, FEI has reviewed the preambles, questions, responses, and related attachments and in instances where confidential information is not disclosed, FEI has filed the information publicly, redacting all confidential information (both commercially-sensitive and security-sensitive). In cases where the information requests

were submitted publicly, if the responses or related attachments disclose security-sensitive or commercially-sensitive confidential information, FEI has redacted those portions for the public record.

If further information is required, please contact the undersigned.

Sincerely,

**FORTISBC ENERGY INC.**

***Original signed:***

Diane Roy

Attachments

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## A. PROJECT NEED

**1.0 Reference: PROJECT NEED**

**Exhibit B-1-1 (Confidential Application), pp. 41, 52**

**2018 T-South Incident**

On page 41 of the Confidential Application for a Certificate of Public Convenience and Necessity (CPCN) for the Tilbury Liquefied Natural Gas (LNG) Storage Expansion (TLSE) Project, FortisBC Energy Inc. (FEI) states:

> there was a significant delay before reliable and actionable information was available following the pipeline rupture. The information delay was caused by a number of factors, including the relatively remote location of the rupture, as well as Westcoast's inability to physically inspect the site due to the fire that occurred.

On page 52 Confidential Application, FEI states:

> To recap, the initial T-South "no-flow" situation lasted approximately two days. The speed with which Westcoast was able to resume service was a function of very favourable conditions:

[redacted]

[redacted]

[1] https://www.tsb.gc.ca/eng/rapports-reports/pipeline/2018/p18h0088/p18h0088.html.

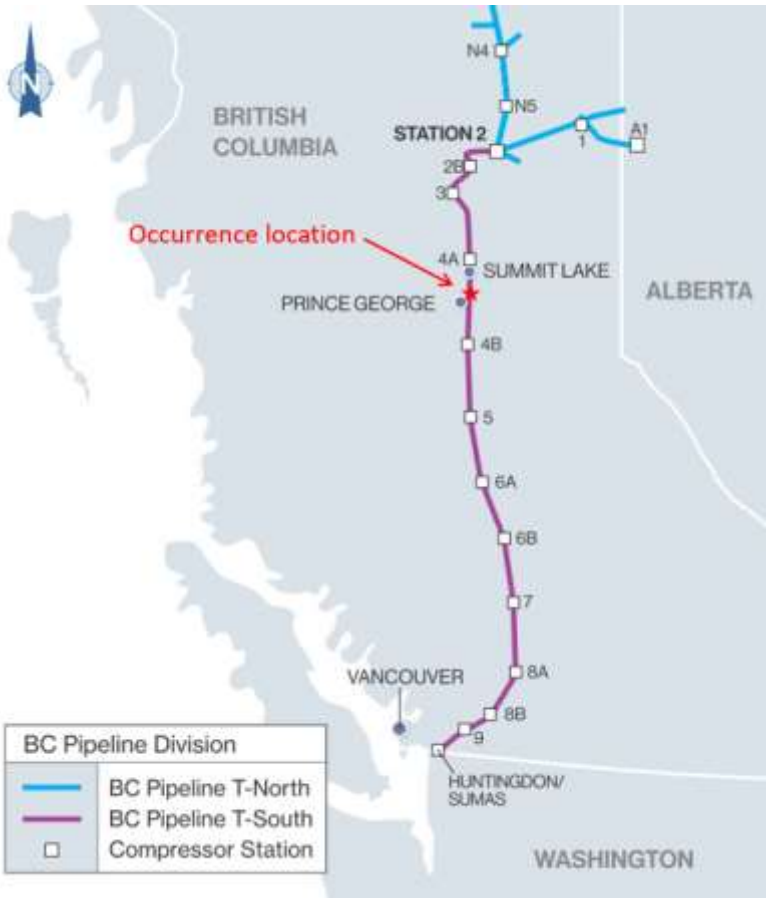
1.2 Please describe the accessibility characteristics of the T-South system.

**Response:**

FEI does not have access to the information required to describe the accessibility characteristics of the entire T-South system in detail.

However, based on publicly available information from the Transportation Safety Board of Canada Pipeline Transportation Safety Investigation Report P18H0088, the T-South system consists of a nominal pipe size (NPS) 36 L2 natural gas pipeline and a NPS 30 L1 natural gas pipeline that extends 917 km from Compressor Station 2 to the Huntingdon Meter Station in Huntingdon, BC, as shown in Figure 1 below. The T-South system spans almost the entire length of the Province of BC in a north to south fashion, passing through mountainous and forested areas that are sparsely populated.

**Figure 1: Map showing Westcoast's T-South natural gas pipeline network and the occurrence location**




1.3 Based on FEI's experience, please provide an estimate of the additional time that may be required to respond to a pipeline rupture in snowy conditions.

**Response:**

While FEI does not have experience with emergency response to a transmission pipeline rupture in snowy conditions, it is FEI's expectation that snowy conditions would likely increase the emergency response time to a pipeline rupture by hours or days depending on the location of the pipeline rupture, the nature of the weather conditions, and the availability of emergency response personnel and equipment. This expectation is based on FEI's several decades of experience in pipeline construction, operations, and maintenance (both planned and unplanned) throughout the province.

FEI has experience with emergency response on its distribution system, and has experienced emergency response delays due to adverse winter weather conditions and corresponding road

closures due to heavy snow, avalanches, and accidents from icy road conditions. One relevant example is an event that occurred on Vancouver Island in December 1996 during a very heavy snowfall that blanketed the Lower Mainland and Vancouver Island with over a metre of snow in some locations. During the storm, the Parksville gate station experienced mechanical problems and FEI lost 2,700 customers because the heavy snow made it impossible to safely travel on some of the roads in Parksville. Parksville is otherwise highly accessible, and if the roads had been in safe drivable condition, then FEI would have been able to reach the station in time and would have prevented 2,700 customers from losing gas supply.

1.4 Please further explain how Westcoast was able to determine quickly that the rupture only affected one of the two lines.

**Response:**

According to the Transportation Safety Board of Canada Pipeline Transportation Safety Investigation Report P18H0088, "an RCMP (Royal Canadian Mounted Police), helicopter, with Westcoast employees on board, surveyed the site. It was confirmed that a natural gas pipeline rupture and ignition had occurred on the NPS 36 L2 pipeline."[2]

[2] TSB Investigation Report P18H0088, p. 5.

**B. PROJECT DESCRIPTION**

**2.0 Reference: PROJECT DESCRIPTION**
**Exhibit B-1-1 (Confidential Application), Appendix E-1, pp. 6-8**
**Contractor Documents**

On pages 6-8 of Appendix E-1, FEI provides a list of technical documents.

2.1 Please provide copies of the most recent revisions of the following documents:

[redacted]

**Response:**

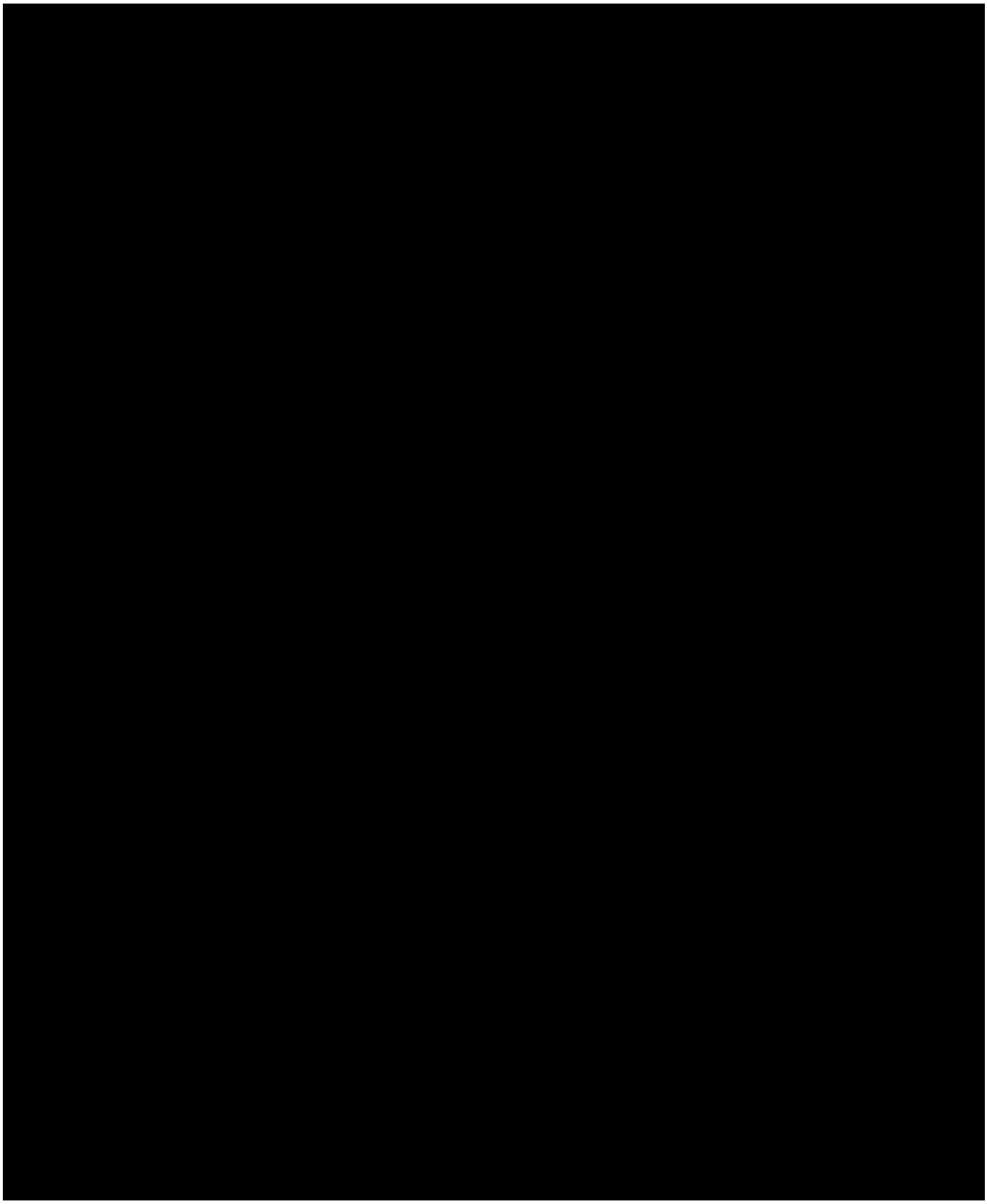
Please refer to Confidential Attachment 2.1 for the requested revised documents.

2.2 Please provide the Process Flow Diagrams and Piping & Instrumentation Diagrams for the TLSE Project.

**Response:**

[redacted]

[redacted]



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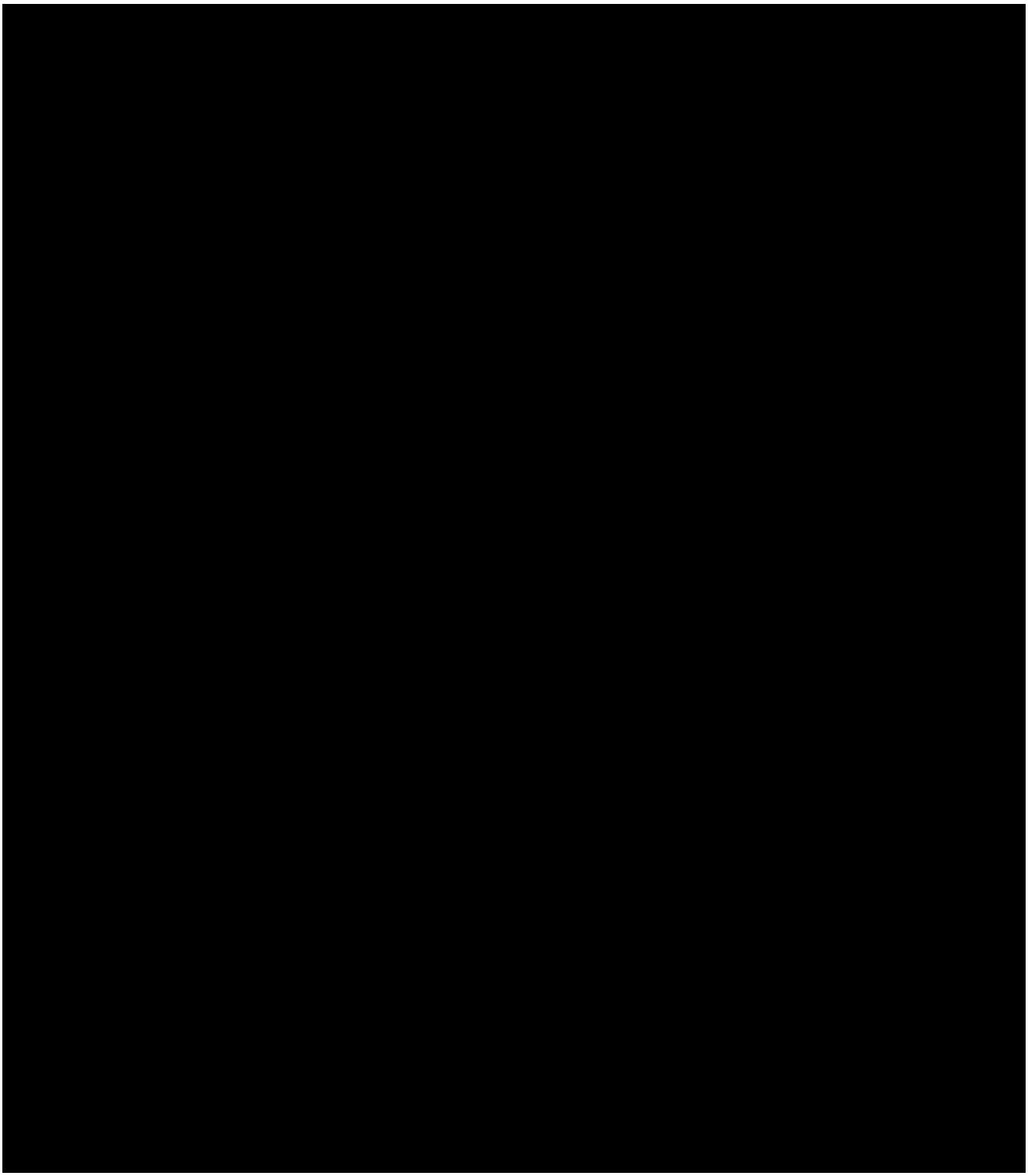
**3.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 13**

**Geotechnical Design Basis**

On page 13 of Appendix E-1, FEI states:



[redacted]

**Response:**

Please refer to the response to BCUC Confidential IR1 3.1.

[redacted]

**4.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 14**

**Ground Improvement**

On page 14 of Appendix E-1, FEI states:

[redacted]

[redacted]

**5.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 20**

**Wind Loads**

On page 20 of the Appendix E-1, FEI states:

[redacted]

5.1 Please confirm whether the designed for wind loads meet the requirements of CSA Z276.

**Response:**

The design of the outer concrete tank for wind meets the requirements of CSA Z276-18. CSA Z276 Clause 7.1.6 states that: "The wind and snow loads for the design of LNG storage containers shall be determined using the procedures outlined in the National Building Code of Canada." The design meets the wind requirements in the British Columbia Building Code (BCBC 2018) which are identical to the requirements of the National Building Code of Canada (NBCC 2015).

5.2 Please provide the wind speed which was assumed for any radiant heat exclusion distance assessments completed by FEI or its contractors.

**Response:**

Radiant heat exclusion distance assessments are not applicable for the Tilbury LNG storage tanks. The existing Tilbury 1A tank and the proposed TLSE tank are full containment tanks with reinforced concrete roofs where tank top fire is not considered a credible scenario according to CSA Z276-18.

5.2.1 Please provide the wind rose used by FEI and its contractors for the Tilbury LNG site.

**Response:**

[redacted]

1
2
3
4
5

**6.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 25**

**LNG Tank Boil-Off Rate**

On page 25 of Appendix E-1, FEI states:

[redacted]

6.1 Please confirm the maximum ambient temperature used in the calculation of boil-off rate.

**Response:**

[redacted]

**7.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 27**

**Pressure and Vacuum Relief Valves**

On page 27 of Appendix E-1, FEI states:

[redacted]

**8.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-1, p. 27-28; Section 5.3.3.3, p. 132; Appendix E-3, p. 4**

**LNG In-Tank Pumps**

[redacted]

On page 132 of the Confidential Application, FEI states:

> Two in-tank pumps (one operating and one spare) will be installed in the 3 Bcf tank as part of the Project in order to provide send-out gas to the regasification package and ultimately to the FEI transmission system.

[redacted]

[redacted]

On page 4 of Appendix E-3, FEI states:

[redacted]

**9.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix E-2, pp. 11-12; Appendix E-1, p. 11; Section 4.4.1.3, p. 109**

**Isolated LNG Tank Foundation**

On page 11 of Appendix E-2, FEI states regarding a 2 BCF tank design:

[redacted]

On page 12 of Appendix E-2, FEI states regarding a 3 BCF tank design:

[redacted]

On page 11 of Appendix E-1, FEI states regarding a 3 BCF tank design:

[redacted]

[redacted]

[redacted]

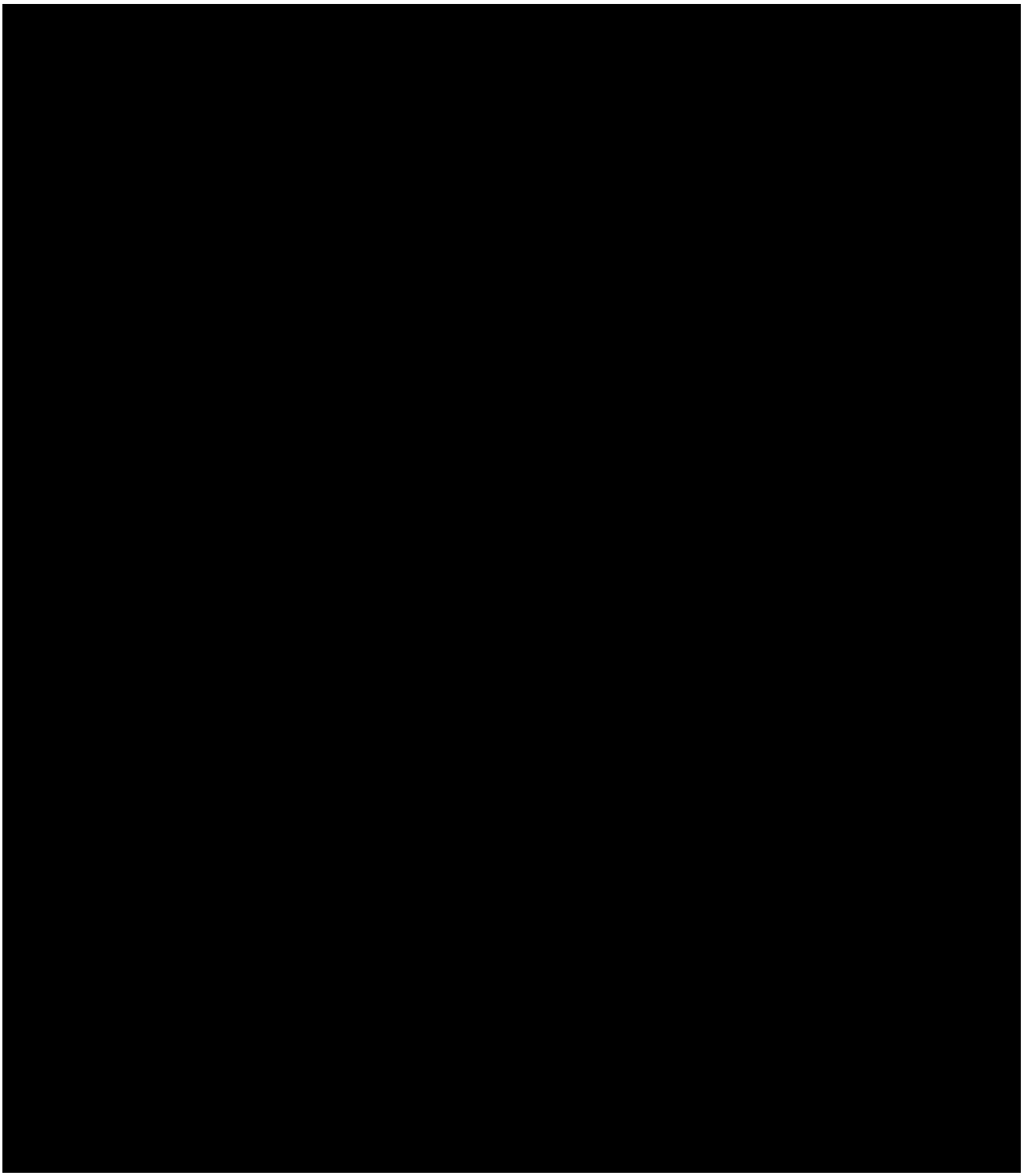
[redacted]

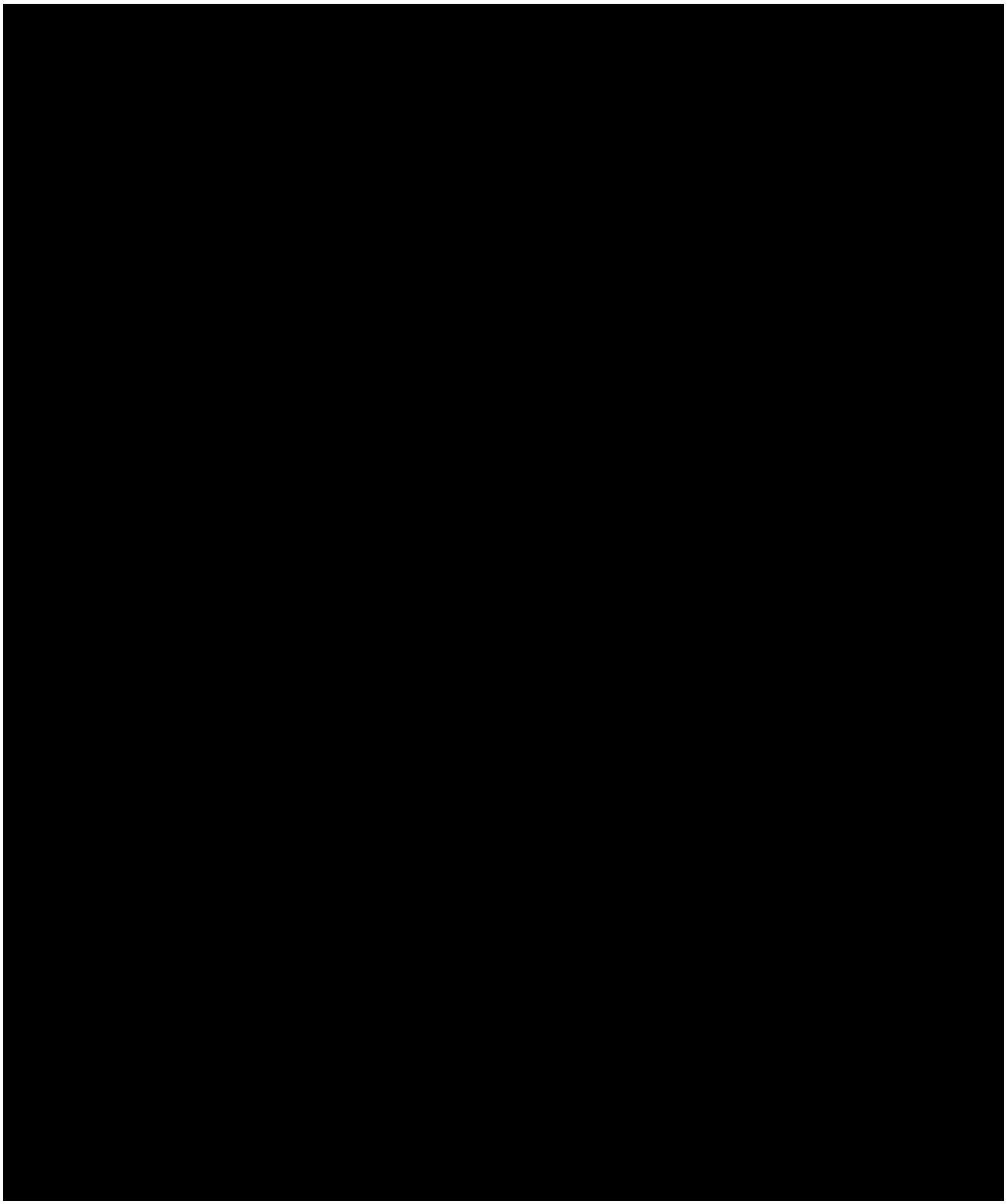
On page 109 of the Confidential Application, FEI states in the section entitled *Criterion 3 – Constructability: Marginal Difference in Constructability Between 2 and 3 Bcf Tanks*:

> Constructability considers the ability to safely and economically construct the LNG storage and regasification equipment as well as the potential impact of construction on FEI's existing LNG operations and the area surrounding the Tilbury site. Constructability also considers any design risks associated with constructing different sizes of LNG storage tanks…
>
> Engineering work completed to date does not indicate any significant safety risks or constructability risks associated with building a 2 or 3 Bcf tank.

9.2 Please explain on what basis FEI determined there were marginal constructability differences between a 2 BCF tank and 3 BCF tank.

[redacted]





**10.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix H, p. 5**

**Auxiliary Systems Basis of Estimate and Cost Estimate**

On page 5 of Appendix H, FEI states:

[redacted]

10.1 Please clarify whether the project referred to in the above preamble is the TLSE Project currently seeking CPCN approval.

**Response:**

[redacted]

[redacted]

[redacted]

**11.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix K, pp. 9-12**

**Major Risks**

[redacted]

11.1 Please provide a summary, based on FEI's current understanding, of the impacts that the TLSE Project may have beyond the property boundary.

**Response:**

[redacted]

11.1.1 Please explain whether the decision to construct a 2 BCF tank vs a 3 BCF tank results in changes (increase or decrease) to the impact of the TLSE Project beyond property boundaries.

**Response:**

[redacted]

11.2 Please explain how FEI is mitigating the identified risk of not having a mature major project management process to manage a project of this scale and complexity.

**Response:**

[redacted]

11.2.1 Please discuss the potential consequences, with respect to Project cost and schedule, if this identified risk is not sufficiently mitigated.

**Response:**

[redacted]

11.3 Please provide an update as to whether there is a need for a flare as part of the TLSE Expansion Project.

**Response:**

There is no identified requirement for a permanent flare as part of the TLSE Project. Based on the work completed to date and FEI's understanding of the air permit requirements FEI does not believe there will be a need for a temporary flare for the TLSE project, however, this will be confirmed through the Metro Vancouver air permitting process, which will take place after detailed design.

11.3.1 Please provide a plot plan which shows the potential location of a temporary flare to be installed as part of the TLSE Project and the potential location of a permanent flare as part of T1B Project.

**Response:**

Please refer to the response to BCUC Confidential IR1 11.3.

With respect to Tilbury 1B, the locations of permanent and temporary flares have not been determined.

**12.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix K, pp. 15-16**

**Project Definition Maturity**

On page 15 and 16 of Appendix K, FEI states:

[redacted]

12.1 Please provide an update on the status of the site-wide QRA, indicating whether it has been completed.

12.1.1 If it has been completed, please provide a summary of the outcomes with respect to layout decisions and FEI's understanding of what expansion projects "can be built reasonably at the current site."

12.1.2 If the QRA has not been completed, please clarify when FEI expects to complete the QRA.

**Response:**

[redacted]

12.1.3 Please explain whether, in FEI's opinion, a QRA study ought to be completed prior to FEI being granted a CPCN for the TLSE Project.

**Response:**

[redacted]

12.2 Please provide an update on FEI's progress with respect to assessing site-wide ground conditions and developing a ground improvement plan.

**Response:**

[redacted]

12.3 Please clarify whether a HAZOP has been completed for the TLSE system (vaporizers, Tank, and Auxiliary piping).

12.3.1 Please explain whether, in FEI's opinion, a HAZOP study ought to be completed prior to FEI being granted a CPCN for the TLSE Project.

**Response:**

[redacted]

[redacted]

**3.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix K, p. 17**

**Project Definition Risks**

On page 17 of Appendix K, FEI states:

[redacted]

13.1 Please summarize which interfacing Tilbury LNG Expansion project components have the most significant impact on the design of the TLSE Project.

**Response:**

[redacted]

**14.0 Reference: PROJECT DESCRIPTION**

**Exhibit B-1-1, Appendix K, p. 17**

**Technical Risks**

On page 17 of Appendix K, FEI states:

14.1 Please explain, based on FEI's most recent work, whether "what can be built at the site reasonably" has been determined.

14.1.1 If yes, please describe what size of tank can be reasonably built.

**Response:**

A 3 Bcf tank can be reasonably built at site given the resiliency requirements and the space available at the Tilbury location.

14.2 Please confirm whether a study to identify temporary and continuous emission sources has been completed.

14.2.1 If confirmed, please submit a copy of the study report.

14.2.2 If not confirmed, please explain when this study shall be completed.

**Response:**

The temporary and continuous emissions sources associated with the TLSE Project have been identified. As noted in Section 5.3.1.3 of the Application, during normal operations venting is not expected to occur; therefore, there would be no continuous emissions as a result of normal operations. Temporary emissions sources are limited to vapourizer emissions when they are in-service and venting from the TLSE LNG tank during upset conditions and during initial commissioning and cool down of the LNG tank.

A study of detailed emission volumes will be completed as part of the detailed design of the TLSE Project.

14.2.3 Please explain whether an emission source study is required to confirm the size of the tank for the TLSE Project.

**Response:**

Continuous and temporary emissions sources have been identified and estimated. An emission source study is not required to confirm the size of the tank as emissions will not vary based on the size of the LNG tank and therefore would not determine the size of the LNG tank that can be built on the site.

14.3 Please explain whether the TLSE Project will lead to an increase in methane emissions at the Tilbury Site.

**Response:**

There will be no continuous methane emissions as a result of normal operations. The only time there is potential for methane emissions is in the unlikely event of a process upset (refer to Section 5.3.1.3 of the Application) and during the initial tank commissioning.

## C. PRICEWATERHOUSE COOPERS ECONOMIC ASSESSMENT

**15.0 Reference: PRICEWATERHOUSE COOPERS ECONOMIC ASSESSMENT**

**Exhibit B-1-1, Appendix B, pp. 5-6**

**Scenario Overview**

[redacted]

[redacted]

Page 6 of Appendix B states that the disruption in scenario 2 and 3 was assumed to last for up to 120 days - the maximum anticipated time to restore supply, based on guidance from FEI and their experience from past disruptions.

15.3 Please provide FEI historical experience of no-flow events where supply had to be restored. Please provide details on the area affected, and the time from a no-flow event to the restoration of supply.

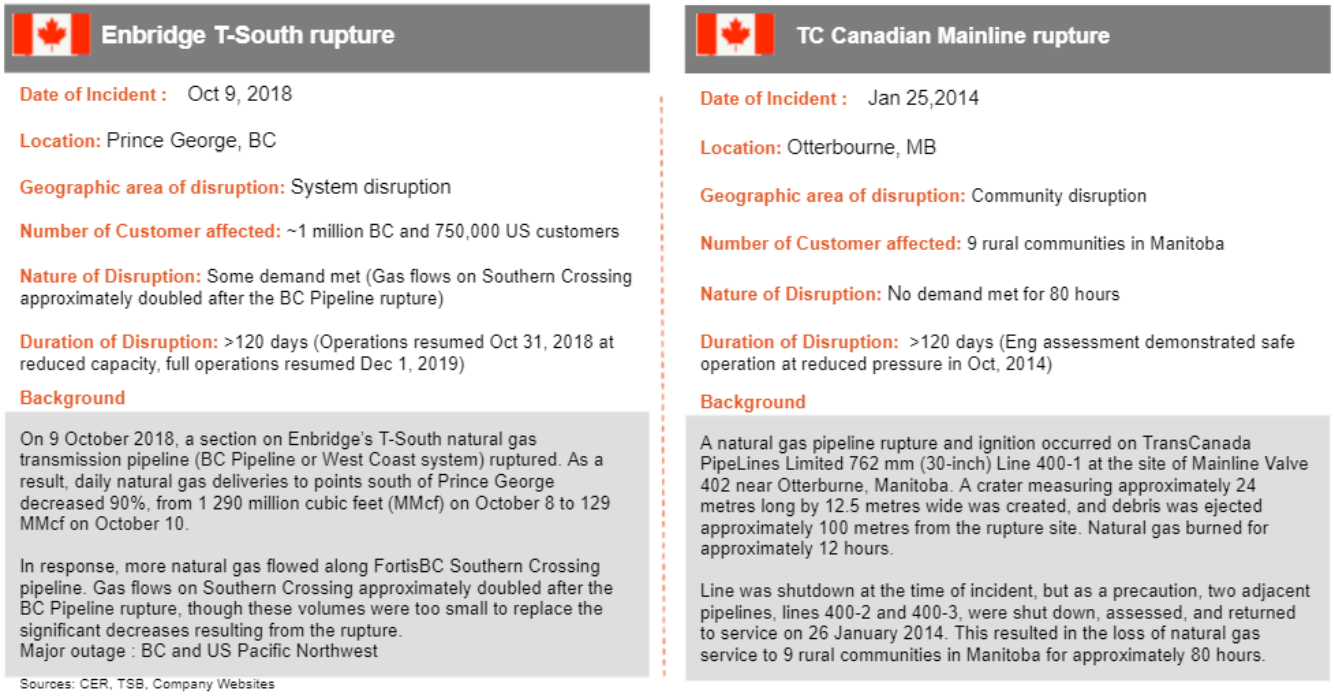
[redacted]

15.4 If available, please provide examples of disruptions in other jurisdictions, including the size of the area affected, and the time from the beginning of the disruption, to restoration of full supply.

**Response:**

The following response was provided by PwC:

We have scanned comparable developed countries with similar dependency on natural gas as an energy source, with primary focus on North America and the EU. Three (3) such examples are provided, in addition to the Enbridge T-South rupture example below:

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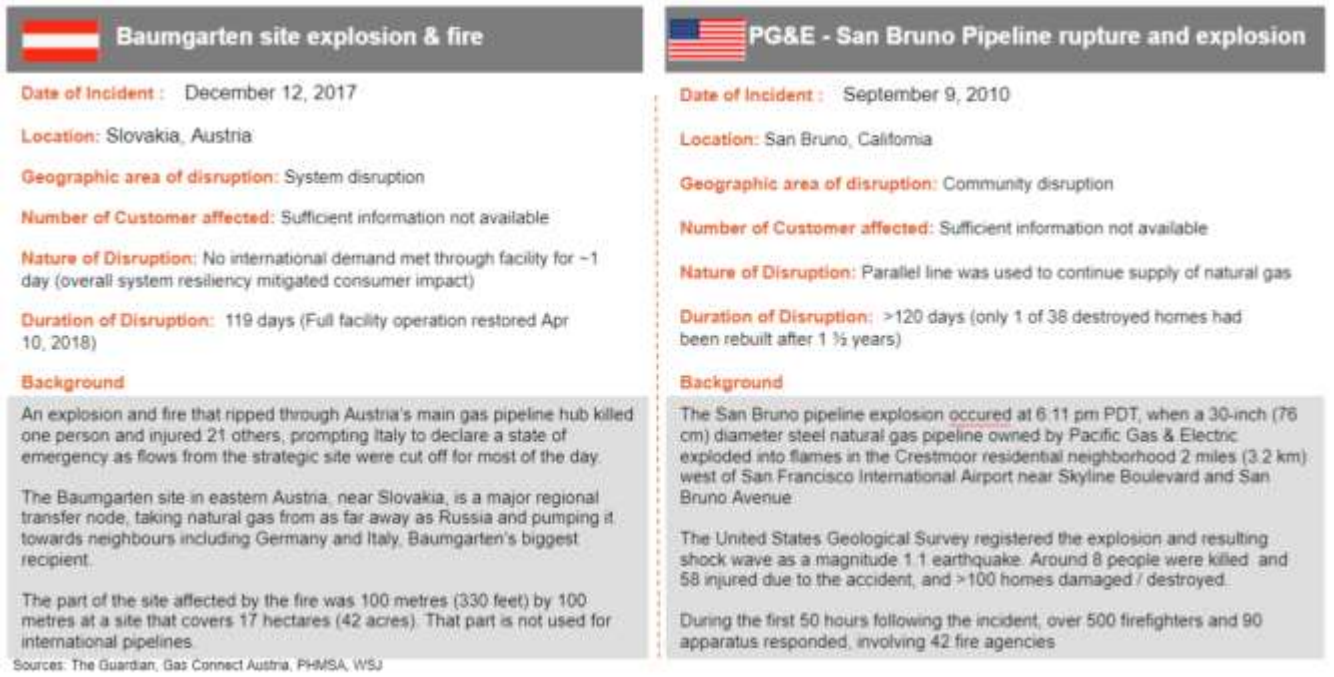


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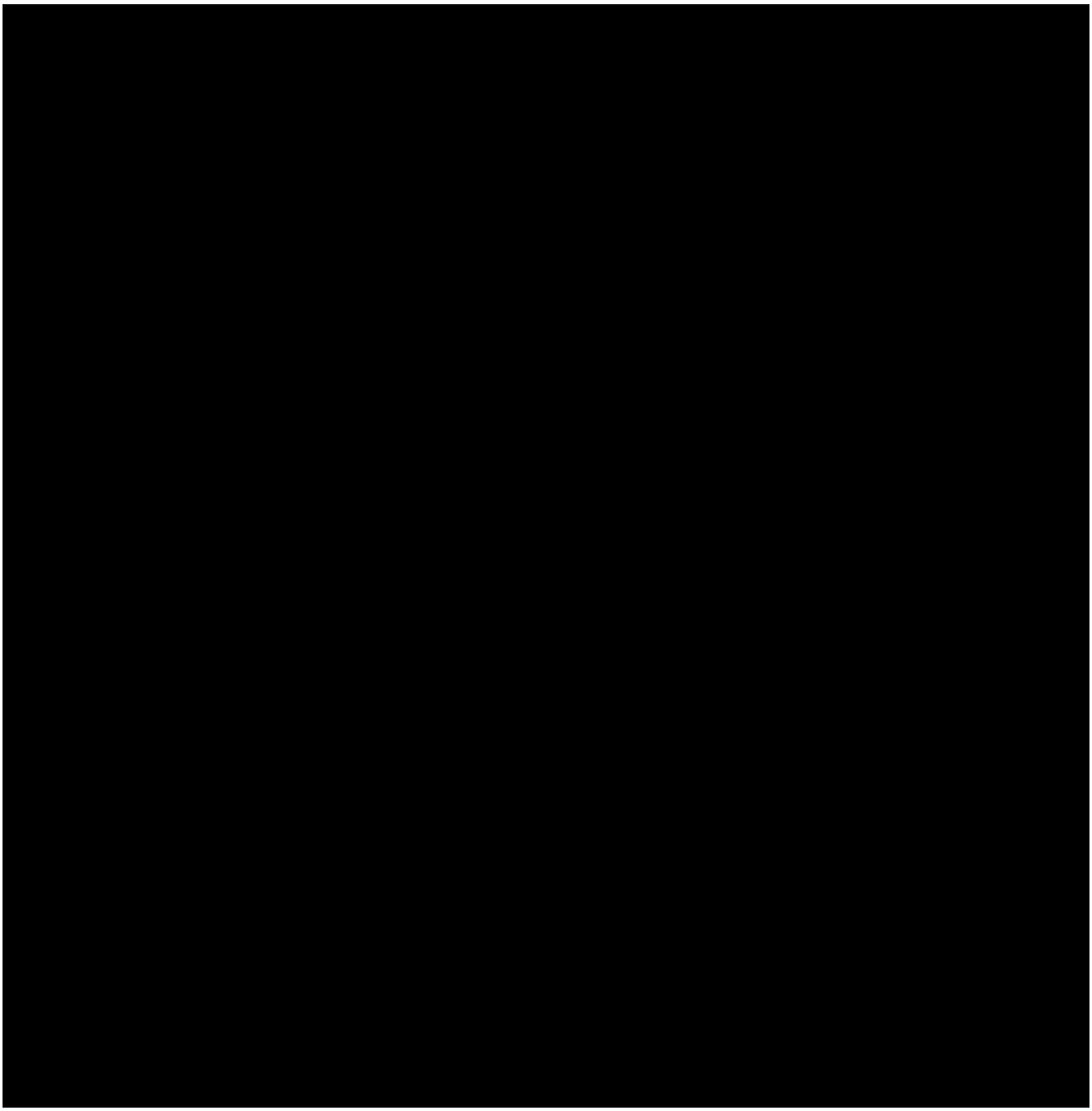
3 In these examples, system resiliency resulted in much shorter duration consumer interruption
4 than the associated system interruption as alternate supply mechanisms were able to be
5 leveraged.

Additional commentary:

- All information sourced from publicly available data which tends to be focused on federal jurisdiction natural gas systems (e.g., gas transmission lines), immediate health and safety impacts (i.e., injuries and fatalities), as well as incident cause. We found limited publicly available information that would specifically characterize and allow quantification of the disruption (e.g., nature and duration of disruption, and number of customers affected).
- Natural gas disruption events are unique and their impact is influenced by a wide range of variables both known and unknown, precluding utility in comparison for purposes of impact assessment. Our report provided a list of recent natural gas disruption events for the purpose of highlighting that they do occur, and at a frequency that may not be widely understood.

  Example: For illustrative purposes, FEIs Huntingdon facility represents a single connection point to upstream suppliers and in the event of disruption to it, supply of natural gas to hundreds of thousands of customers in BC would be at risk. In contrast, a similar disruption in a more resilient system may have an immaterial or no impact to consumers.



15.6 For all scenarios, please provide a breakdown of the assumed demand between FEI and non-FEI customers.

**Response:**

The following response has been provided by PwC:

We would like to note that scenarios were defined, and impacts evaluated, on a provincial level (assessment was not constrained to FEI specific systems or customers).

Impacts may not be constrained to those directly affected by the natural gas disruption as economic modelling considers indirect "knock-on" effects across the stakeholder value chain (i.e., customers and suppliers) to reflect the highly inter-related nature of the BC economy.

An illustrative example of this is:

- Direct impact: Glass production stops or is substantially curtailed because of inability to heat furnaces without natural gas.
- Indirect knock on effects:
    - Customers: Downstream customers may be affected province-wide and suffer a loss of economic activity as a result. For example, logistical companies responsible for the shipping, storage and wholesale of glass suffer lost business. Construction companies may face shortages of key supplies like windows and may need to curtail activity, or shift operations to a less efficient model to work around these shortages.
    - Suppliers: Companies supplying inputs to glass producers may also face a loss of demand and therefore economic output. Industry suppliers would include a broad range of companies across the province and may include sand and silica suppliers, electricity and gas utilities, office suppliers, cleaning and catering services, transportation providers and so on.

# Attachment 2.1

**FILED CONFIDENTIALLY**

# Attachment 2.2

**FILED CONFIDENTIALLY**

# Attachment 9.3

**FILED CONFIDENTIALLY**