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December 5, 2018

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

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

Project No. 1598963

Application for Use of Lands under Sections 32 and 33 of the *Utilities Commission Act* in the City of Coquitlam for the Lower Mainland Intermediate Pressure System Upgrade Projects (the Application) – Phase Two

Response to the British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

On June 28, 2018, FEI filed the Application referenced above. In accordance with BCUC Order G-190-18 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to BCUC Phase Two IR No. 2.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties



FortisBC Energy Inc. (FEI or the Company) Application for Use of Lands under Sections 32 and 33 of the <i>Utilites Commission Act</i> in the City of Coquitlam for the Lower Mainland Intermediate Pressure System Upgrade Projects (the Application)	Submission Date: December 5, 2018
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Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

A. ISSUE 4 – REMOVAL OF EXISTING PIPELINE

2 7.0 Reference: REMOVAL OF EXISTING PIPELINE

Exhibit B-12, p. 28; Exhibit C1-8, p. 2 and 5–7

Planning Considerations

On page 2 of Exhibit C1-8, the City of Coquitlam (City) states:

- 6 The City's position is that the preferred and most cost-effective approach is for 7 FEI [FortisBC Energy Inc.] to remove the entire 5.5km of NPS [Nominal Pipe 8 Size] 20 Pipeline underneath Como Lake Avenue as soon as possible (i.e., when 9 the NPS 30 Pipeline is in service), rather than fill it with concrete and then 10 remove it separately in the future.
- 117.1Does FEI agree that regardless of cost allocation between FEI and the City, it12would be more cost-effective to remove the entire 5.5 kilometre (km) of NPS 2013Intermediate Pressure [IP] gas line underneath Como Lake Avenue as soon as14possible when the NPS 30 IP gas line is in service?
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16 Response:

FEI does not agree that removing the entire 5.5 kilometres of NPS 20 IP gas line, without
coordinating with future infrastructure installations, is cost-effective. It would also not minimize
the impact to residents, commuters, businesses and FEI's customers.

20 The City has identified a section of the existing NPS 20 IP gas line from the intersection of 21 Como Lake Avenue and Clarke Road to North Road that it has suggested should be removed 22 by FEI as soon as possible after the NPS 30 IP gas line is in service to facilitate the installation 23 of the City's planned 250 millimetre water main and 450 millimetre sanitary sewer. The length 24 of this section of NPS 20 IP gas line is approximately 380 metres. FEI agrees that regardless of 25 cost allocation between FEI and the City, and assuming that the City will coordinate installation 26 of its planned 250 millimetre and 450 millimetre utilities for the same time as the NPS 20 IP gas 27 line removal, that it would be more cost-effective to remove this section of the NPS 20 IP gas 28 line underneath Como Lake Avenue after the NPS 30 IP gas line is in service.

However, if the City does not install its proposed 380 metres of new utilities immediately after the NPS 20 IP gas line is removed and before the trench is back filled such that the established construction work zones, pavement cut, and trench excavation to remove the NPS 20 IP gas line can be utilized to install the City's new utilities, it would not be more cost-effective, regardless of cost allocation.

On page 6 of Exhibit C1-8 the City states that it believes that "sooner or later" FEI will have to remove the entire 5.5 kilometres of NPS 20 IP gas line to make space for other utility projects.



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The length of the remaining NPS 20 IP gas line that the City is suggesting should also be removed is approximately 5.12 kilometres. To date, the City has not identified any specific sections of the remaining 5.12 kilometres of the NPS 20 IP gas line, other than the 380 metre section referenced above, that conflicts with the location of proposed utility projects.

- 5 The City has not demonstrated whether it has considered if the space left by the suggested 6 removal of the remaining 5.12 kilometres of the NPS 20 IP gas line, or portions thereof, would 7 be negatively impacted or unfeasible for use due to excessive depth, insufficient spacing, offset 8 to other adjacent utilities, or other reasons. Given the speculative nature of the City's claims 9 regarding the use of the space, it may be the case that it is not necessary to remove all or some 10 portions of the remaining 5.12 kilometres of the NPS 20 IP gas line to make space for other
- 11 utility projects in the future.
- Furthermore, if the City does not utilize the space occupied by the NPS 20 IP gas line,customers, residents, commuters and businesses will be unnecessarily inconvenienced.

FEI therefore does not agree that, regardless of cost allocation, it would be more cost-effective
to remove the entire 5.5 kilometres of NPS 20 IP gas line underneath Como Lake Avenue as
soon as possible after the NPS 30 IP gas line is in service.

17 Regardless of cost allocation between FEI and the City, for any sections of the NPS 20 IP gas 18 line that may need to be removed to facilitate installation of the City's or other third party utility 19 infrastructure after commissioning of the NPS 30 IP gas line, the most cost-effective and 20 practical approach would be to coordinate planning and construction efforts in order to remove 21 the identified section(s) of the NPS 20 IP gas line which are in conflict at the same time as the 22 installation of the new utility project. This approach would avoid construction costs associated 23 with the removal of sections of the NPS 20 IP gas line ahead of time that do not actually conflict 24 with the new utility project.

This approach would also avoid cost inefficiencies associated with mobilizing construction efforts multiple times to the same location to initially remove the NPS 20 IP gas line, and then some time afterward re-establishing new construction work zones, re-implementing traffic management plans, re-cutting the paving, re-excavating the same trench that the NPS 20 IP gas line was previously removed from, and then re-backfilling the trench after installation of the new utility project.

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1 On page 5 of Exhibit C1-8, the City states:

The City is not aware of a standardized approach for how decommissioning endof-life natural gas pipelines in underground municipal areas should proceed; however, there are two basic options: (i) the pipeline owner can make the pipeline safe (e.g., by filling it to prevent its collapse which could cause a sinkhole or other damage), leave it in place and subsequently remove it when the space is needed (FEI's position), or (ii) the pipeline owner can immediately remove the pipeline, backfill and restore the surface (the City's position).

9 7.2 Please discuss whether FortisBC Energy Inc. (FEI) considers that there is a 10 "standardized approach" for how decommissioning end-of-life natural gas 11 pipelines in underground municipal areas should proceed.

13 Response:

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FEI agrees with the City's statement that abandonment in place is not the only approach for decommissioning a natural gas line, and that removal is another option. However, FEI's plan to abandon the NPS 20 IP gas line safely in place is an industry accepted process for end-of-life pipeline assets and follows FEI's historical practice. It was also a considered decision.

18 In the response to CEC IR 1.45.4, Exhibit B-6 of the FEI Application for a CPCN for the LMIPSU 19 Projects (the LMIPSU CPCN Proceeding), FEI outlined the regulations governing the 20 abandonment of pipelines in BC including CSA Standard Z662, *Oil and gas pipeline systems* 21 and the *Oil and Gas Activities Act*, and emphasized that FEI must also comply with all federal 22 and provincial regulatory requirements including the *Environmental Management Act* and 23 associated regulations. A copy of that IR response is included as Attachment 7.2a.

In response to BCUC IR 1.11.7.1, Exhibit B-4 in the LMIPSU CPCN Proceeding, FEI addressed
the potential adverse effects abandoning the pipe in place would have on future space
restrictions, access to right-of-ways, and long-term environmental effects. A copy of that IR
response is included as Attachment 7.2b.

- FEI has adopted an industry accepted approach to decommissioning end-of-life gas lines governed by CSA Z662 and FEI internal standards. This is an industry accepted process for end-of-life pipeline assets. After commissioning the new NPS 30 IP gas line, FEI intends to decommission and abandon the NPS 20 IP gas line with the following steps that include: Empty the abandoned gas line of any service fluids;
- 33 2. Excavate the segment;
- 34 3. Cut the abandoned gas line into shorter segments;
- 35 4. Purge, clean, cap and seal the segments;



- 5. Physically separate the abandoned gas line from any in-service piping; 1
- 2 6. Remove the abandoned gas line's cathodic protection;
- 3 7. Where warranted, fill the segments with structural grout to prevent gas line collapse; and
- 4 8. Backfill and restore pavement in accordance with the Operating Agreement, and in accordance with the City's Paving Specifications. Please also refer to the response to BCUC Phase 2 IR 2.8.3.
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- 11 On pages 6 to 7 of Exhibit C1-8, the City states:
- 12 The City believes that FEI's current plan to leave the decommissioned NPS 20 13 Pipeline in place would require FEI to, (i) in the short term: • make the pipeline 14 safe by filling it with concrete (as planned by FEI). • excavate Como Lake Avenue 15 in numerous places to access the pipeline and fill it with concrete, • backfill such 16 excavations and repair damage to the road, and (i) in the future, • excavate 17 Como Lake Avenue again to remove the pipeline or sections of it, • remove and 18 dispose of pipeline filled with concrete, and • backfill such excavations and repair 19 damage to the road.
- 20 7.3 Please confirm that FEI agrees with the City's assessment as summarized 21 above.

23 Response:

24 FEI does not currently plan to excavate Como Lake Avenue a second time to remove the NPS 25 20 IP gas line or sections of it, as stated in the City's assessment. FEI provides details of its planned decommissioning process in the response to BCUC Phase 2 IR 2.7.2. 26

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- 33 On page 7 of Exhibit C1-8, the City states:



FortisBC Energy Inc. (FEI or the Company) Application for Use of Lands under Sections 32 and 33 of the <i>Utilites Commission Act</i> in the City of Coquitlam for the Lower Mainland Intermediate Pressure System Upgrade Projects (the Application)	Submission Date: December 5, 2018
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The crux of Issue 4 appears to be FEI's assumption that the City's water main 1 2 and sewer upgrade project between North Road and Clarke Road is at a "very 3 preliminary" stage as stated by FEI in section s.1 of its Application. FEI's 4 assumption in regard to the timing of the City's project is not correct. Detailed 5 designs for the water main replacement and the proposed sanitary sewer are 6 underway. The water line has been in the City's DCC program for a number of 7 years, and the sanitary sewer is being added to the 2018 Development Cost 8 Charges project list. Appendix G shows where the NPS 20 Pipeline conflicts with 9 the planned alignment of the City's new water and sanitary sewer lines. These 10 lines are needed to serve the current and planned major developments near this 11 section of Como Lake Avenue, as shown at Appendix E and Appendix F.

- In Table 3-2 on page 28 of Exhibit B-12, FEI shows the schedule for the removal of the
 380 metre (m) segment of the NPS 20 IP gas line between North Road and Clarke Road
 in the Burquitlam area (380m segment).
- 7.4 Please provide comment on whether FEI agrees with the "assumption" posited
 by the City on page 7 of Exhibit C1-8.

18 **Response:**

19 At the time Exhibit B-1 was prepared, FEI had only received very preliminary information from 20 the City regarding its designs for the water main replacement and the proposed sanitary sewer.

FEI is prepared to remove this portion of the NPS 20 IP gas line if the City exercises its rights under the Operating Agreement to request such a removal. If the City were to request the removal of the 380 metre segment of the existing NPS 20 IP gas line under the Operating Agreement, the timing of such removal could occur in accordance with Table 3-2.

It is not possible to remove the 380 metre segment of the existing NPS 20 IP gas line between
North Road and Clarke Road prior to firstly fully commissioning the NPS 30 IP gas line and
associated facilities, which is expected to occur by Q2 2020.

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- 317.5Please confirm that the schedule shown in Table 3–2 for the 380m segment32assumes removal of the pipeline at the earliest opportunity in order to provide33space for the proposed new utility projects.
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1 Response:

FEI confirms that the schedule shown in Table 3-2 assumes removal of the relevant segments
of the NPS 20 IP gas line at the earliest opportunity after commissioning of the NPS 30 IP gas

- 4 line.
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8 7.6 Assuming that the City formally requested removal ahead of time, please explain 9 why preparatory work on the removal of the NPS 20 IP gas line (for example, 10 with respect to detailed engineering, Traffic Management Plans, permitting, and 11 construction contract) cannot commence prior to the abandonment date of the 12 NPS 20 IP gas line.

14 **Response:**

Preparatory work on the removal of the NPS 20 IP gas line could commence prior to the abandonment schedule for the 380 metre segment between North Road and Clarke Road shown in Table 3-2 on page 28 of Exhibit B-12 provided that key decisions or conditions have been satisfied including:

- 19 a. A formal request from the City under the Operating Agreement on a timely enough basis;
- b. If such a request was made by the City on a timely enough basis to avoid the planned
 decommissioning activities and to allow for the removal of the gas line before completion
 of the Project, FEI would seek approval from the BCUC for this change from the BCUC's
 direction with respect to abandonment in Order C-11-15; and
- c. FEI has sufficient resources available to proceed once the City's request has beensubmitted to FEI.
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Page 8

8.0 **REMOVAL OF EXISTING PIPELINE** Reference:

Exhibit B-1, p. 12, Appendix B, 1957 Operating Agreement; Exhibit C1-8, p. 8; Decision on Application for a Certificate of Public **Convenience and Necessity for the Lower Mainland Intermediate** Pressure System Upgrade (Order C-11-15), p. 24 Responsibility for **NPS 20 IP Gas Line Removal**

No. 2

On page 8 of Exhibit C1-8, the City states:

8 With respect to the 1957 Operating Agreement between the City and FEI, the 9 City's position is that this agreement does not permit FEI to decommission and 10 abandon its pipelines in underground areas in Coguitlam. The City's position is 11 that a decommissioned pipeline is effectively garbage, and the 1957 Operating 12 Agreement does not permit FEI to abandon its garbage in Coquitlam. The City 13 believes that the 1957 Operating Agreement applies only to in-service functioning FEI pipelines and that permanently decommissioned pipelines do fall within the 14 term "the said works" as used in the agreement. 15

- 16 The City further believes that this Issue 4 needs to be considered in the context 17 of the legislative scheme surrounding gas utilities operating in municipalities, 18 including the Community Charter, the Gas Utility Act and the Utilities Commission 19 Act. The City's position is that in the absence of an operating agreement providing otherwise, the City can require FEI to remove its decommissioned NPS 20 21 20 Pipeline from the City's lands.
- 22 Section 1 of the 1957 Operating Agreement (appended to Exhibit B-1) states:

23 The Corporation and the Company hereby agree that the conditions upon which 24 the Company may, pursuant to the "Gas Utilities Act" and the said Certificate of 25 Public Convenience and Necessity, place, construct, renew, alter, repair, 26 maintain, remove, operate and use its pipes and other equipment and appliances 27 for mixing, transmitting, distributing, delivering, furnishing and taking delivery of 28 gas (which pipes and other equipment - including gas regulating vaults and vents 29 therefrom and cathodic protection equipment - and appliances are hereinafter 30 called "the said works ") upon, along, across, over, or under any public street, lane, square, park, public place, bridge, viaduct, subway, or watercourse in the 31 32 Municipality (all or any of which are hereinafter called "public property") shall be 33 those set out in the paragraphs hereof numbered 2 to 17 and the Corporation 34 hereby consents to the Company undertaking construction or work on or over 35 any public property in the Municipality in compliance with such terms and 36 conditions.



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- 1 Section 4 of the 1957 Operating Agreement states:
- 2 Upon the written request of the Corporation or the Municipal Engineer on its 3 behalf, the Company shall change the location (which in the case of pipe means 4 any change of either or both of line and elevation) of any part of the said works 5 on public property to some other reasonable location on public property, and 6 shall carry out each such change with reasonable speed.
- 7 On page 12 of Exhibit B-1, FEI states:
- 8 FEI has the right under its CPCN to construct and operate the Project, including
 9 abandoning the NPS 20 IP pipeline in place.
- On page 24 of the Decision on Application for a Certificate of Public Convenience and
 Necessity for the Lower Mainland Intermediate Pressure System Upgrade (Order C-11 15) the British Columbia Utilities Commission (BCUC) stated:
- 13The Panel approves FEI's abandonment plans and discontinuance of CP as14proposed for both the Coquitlam Gate and Fraser Gate IP Projects. The15steps FEI plans to take to minimize environmental and social impacts are16appropriate as they are both cost effective and result in a minimum of disruption.17Further, the Panel notes that the interveners raised no concerns concerning18pipeline abandonment.
- 198.1Please comment on the City's position that the 1957 Operating Agreement20applies only to in-service functioning FEI pipelines. Please specifically reference21the definition of "the said works" in section 1 of the 1957 Operating Agreement.

23 **Response:**

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FEI disagrees with the City's position that the Operating Agreement would not apply to the NPS 25 20 IP gas line after it is decommissioned.

26 It is not possible to "remove" any pipe that has not first been decommissioned, meaning that 27 decommissioned pipes must be contemplated within the definition of "the said works". The 28 definition of "the said works" in Section 1 of the Operating Agreement specifically references the 29 removal of pipes and other equipment:

301. The Corporation and the Company hereby agree that the conditions upon31which the Company may, pursuant to the "Gas Utilities Act" and the said32Certificate of Public Convenience and Necessity, place, construct, renew,33alter, repair, maintain, remove, operate and use its pipes and other34equipment and appliances for mixing, transmitting, distributing, delivering,35furnishing and taking delivery of gas (which pipes and other equipment -



including gas regulating vaults and vents therefrom and cathodic protection
 equipment - and appliances are hereinafter called "the said works")...
 [Emphasis added]

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5 The removal of works is also specifically referenced elsewhere in the Operating Agreement, including Sections 2, 9, 11 and 15. Section 2 provides that FEI cannot, among other things, 6 7 remove the works until the City has approved such removal. Section 9 places an obligation on 8 FEI to repair any damage to the City's property caused by FEI in, among other things, removing 9 the works. Section 11 obligates FEI to indemnify and hold the City harmless for damages (other 10 than those caused or arising from any willful act or negligence on the part of the City) caused by or arising out of, among other things, FEI removing the works. Section 15 provides that, among 11 12 other things, removal of FEI works shall not interfere with other works laid down by the City. By

13 necessity any works that are to be removed will no longer be in-service.

Section 16 of the Operating Agreement, in particular, provides that the said works placed on any public property remain the property of the Company and which shall be entitled <u>at any time</u> to remove the same subject to the terms of the Operating Agreement. This is entirely consistent with the Operating Agreement applying to the works throughout the time they remain placed on public property. The provision does not state that the Company's rights with respect to the works end when the works are no longer in-service.

FEI is not required by law to remove abandoned gas lines and the applicable legislation contemplates abandonment in place. Specifically, Section 40 of the *Oil and Gas Activities Act*, S.B.C. 2008, c. 36 requires compliance with the *Pipeline Regulation*, B.C. Reg. 281/2010. Section 11 of the *Pipeline Regulation* provides that a pipeline must be abandoned in accordance with CSA Z662 and the area must be restored in accordance with the requirements of the *Environmental Protection and Management Regulation*, B.C. Reg. 200/2010. "Abandon" is defined in the *Pipeline Regulation* as permanently removing a gas line from service.

27 28 29 30 8.1.1 Please comment on the City's position that the abandoned pipeline is 31 "effectively garbage", and that the Operating Agreement does not 32 permit FEI to abandon its "garbage." 33 34 **Response:** 35 The City's characterization of the abandoned gas line as "garbage" is an inapt analogy. The 36 gas line remains FEI's property and responsibility after it is decommissioned. As described in 37 FEI's response to BCUC Phase 2 IR 2.8.1, the Operating Agreement allows abandonment in



place, and abandonment in place is also contemplated by the Oil and Gas Activities Act. The 1 2 City's pejorative characterization of the abandonment does not appear to take into account the

3 steps taken by FEI to abandon the gas line in place, and that it was a considered decision to do 4 SO.

5 FEI selected abandonment of the NPS 20 IP gas line as the least impact end-of-life solution as 6 further explained below. When carrying out abandonment, FEI will identify, manage and mitigate 7 the potential environmental, public or stakeholder legacy issues. FEI does not foresee any 8 significant adverse effects as a result of abandoning the pipeline in place. FEI must comply with 9 all federal and provincial regulatory requirements including the Environmental Management Act

10 and associated regulations.

11 If the NPS 20 IP gas line were removed, the impact from the construction and removal would be 12 similar to constructing another gas line; therefore, leaving the NPS 20 IP gas line in place is the

13 least impact solution.

14 There were a number of reasons FEI decided to abandon the gas line in place rather than 15 remove it. These include the following:

- 16 Removal would face significant logistical and construction challenges given the urban • 17 location and the development that has occurred since the pipe was installed:
- 18 Removal of pipe from parks and sensitive environmental areas could result in • 19 environmental impacts:
- 20 Removal would incur traffic impacts for pipe located beneath active roadways;
- 21 Removal of pipe from beneath roads, railways and other utilities increases the risk of • 22 damage to third party assets, disrupting services to homes and businesses;
- 23 Removal along residential streets would result in disturbances such as noise and dust; • 24 and
- 25 The cost of removal is estimated to be significantly higher than the cost to abandon the 26 pipeline in place.

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Abandonment of gas pipelines is governed by CSA Z662 and FEI internal standards. This is an 28 29 industry accepted process for end-of-life pipeline assets. After commissioning the new NPS 30 30 IP gas line, FEI intends to responsibly decommission the gas line according to the industry 31 accepted approach for decommissioning end-of-life gas lines as described in the response to 32 BCUC Phase 2 IR 2.7.2.



Page 12

As the BCUC found in Order C-11-15 with respect to abandonment, the steps FEI plans to take to minimize environmental and social impacts are appropriate as they are both cost effective

- 3 and result in a minimum of disruption.
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8.2 Please provide FEI's position of the applicability of section 4 of the 1957 Operating Agreement. Specifically, please comment on FEI's position on the removal of the NPS 20 IP gas line being interpreted to have the same meaning as to "change the location".

10 11

12 **Response:**

The Operating Agreement has to be read in the context of the other sections that contemplate the operation of the business of a gas utility. Section 4 of the Operating Agreement is the only provision that applies when the City requests a permanent change in the location of works on public property. This can be contrasted with Section 6 of the Operating Agreement which addresses either party requesting that a temporary change be made to the location of the other party's work.

FEI notes that, all other things being equal, in the case of a request for a change in the location of an abandoned line, the cost to the City will be less because the cost of the change under Section 5 of the Operating Agreement will not include the cost of installing the works in their new location.

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- 268.3Please explain whether FEI's interpretation is that the BCUC's determination in27Order C-11-15 provides the authority for FEI to abandon, rather than remove, the28decommissioned NPS 20 IP gas line.
- 29 30 **Response:**

FEI's interpretation of BCUC Order C-11-15 is that FEI is authorized to abandon the decommissioned NPS 20 IP gas line as part of the Project. Directive 8 of BCUC Order C-11-15 specifically approved FEI's abandonment plans for the Project. The BCUC made its decision after reviewing evidence and receiving submissions from FEI and the interveners in that proceeding.



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Section 121 of the Utilities Commission Act provides in part that nothing in or done under the 1 2 Community Charter or the Local Government Act supersedes or impairs an authorization 3 granted to a public utility. A certificate of public convenience and necessity is an "authorization" 4 as defined in Section 121 of the Utilities Commission Act. The City is purporting to exercise its 5 powers under the Community Charter or the Local Government Act to prevent FEI from 6 abandoning the gas line in place. The City's position renders Directive 8 of BCUC Order C-11-7 15 approval meaningless, "superseding" and "impeding" the certificate of public convenience 8 and necessity.

9 While FEI is authorized to abandon the decommissioned NPS 20 IP gas line as part of the 10 Project, FEI would subsequently remove the gas line, or portions of the gas line, if requested by 11 the City under the Operating Agreement. If such a request was made by the City on a timely 12 enough basis to avoid the planned decommissioning activities and to allow for the removal of 13 the gas line before completion of the Project, FEI would seek approval from the BCUC for this 14 change from the BCUC's direction with respect to abandonment in Order C-11-15.

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18	8.3.1	Please discuss if FEI considers that there are any circumstances where
19		other legislation or regulation would require FEI to remove the NPS 20
20		IP gas line, at FEI's cost.
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22 Response:

Theoretically it is possible that FEI could be ordered to remove the NPS 20 IP gas line at its cost under the *Oil and Gas Activities Act* to mitigate a risk to public safety or to protect the environment. However, FEI is not aware of any circumstances that would warrant such an order.

FEI could also have been required to remove the NPS 20 IP gas line at its cost as part of the Project under the Certificate of Public Convenience and Necessity.

As described in FEI's response to BCUC Phase 2 IR 2.8.1, FEI is not required by law to remove abandoned gas lines and the applicable legislation contemplates abandonment in place. Section 11 of the *Pipeline Regulation* provides that a where a gas line such as the NPS 20 IP gas line it to be abandoned, it must be abandoned in accordance with CSA Z662 and the area must be restored in accordance with the requirements of the *Environmental Protection and Management Regulation*. FEI will abandon the NPS 20 IP gas line in accordance with these requirements.



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8.4 If FEI were to bear some or all of the costs of removing the NPS 20 IP gas line, please briefly explain the mechanism by which FEI would recover the costs associated with the removal.

8 **Response:**

9 There are options for recovery of the costs of removal, and the recommended option would 10 depend on the amount of costs FEI's customers would be responsible for.

11 The normal course for the treatment of removal and abandonment costs is to charge the costs

12 to the net salvage deferral account.¹ FEI followed the approved treatment in the Project CPCN

13 Application where approximately \$4.3 million was included in the net salvage deferral account

14 for abandonment-in-place of 20 kilometres of the NPS 20 IP line.

Since the net salvage deferral is in place to cover normal course removal and abandonment costs, if the quantum of the removal costs would not distort the net salvage deferral account balance, then this established treatment would continue to be recommended.

However, larger amounts would require separate consideration. The forecast balance in the net
salvage deferral account for all of FEI's Distribution Mains (the asset class to which the NPS 20
IP gas line belongs) as at December 31, 2019 is \$35.725 million². If FEI is required to remove
the entire 5.5 kilometers in Coquitlam with an estimated cost of approximately \$77 million (over
twice the amount of the forecast provision balance), then the options would be to:

- Record the removal cost as part of the Project cost and include it in future depreciation rates; or
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 2. Receive a separate determination from the BCUC setting out the time period for recovery of the removal cost by way of a new separate deferral account.
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¹ BCUC Decision and Order G-141-09, dated November 26, 2009, Appendix A to the Order, Pages 13-14 established the accounting treatment for proceeds and negative salvage costs to be recorded in the net salvage deferral account.

² FEI 2019 Annual Review Evidentiary Update, September 26, 2018, Appendix A, Section 11, Schedule 10, Line 40.



Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

9.0 Reference: **REMOVAL OF EXISTING PIPELINE** 1 2 Exhibit B-12, pp. 23, 25 and 28; Exhibit C1-8, p. 7 3 **Construction Works** 4 On page 23 of Exhibit B-12, FEI states: 5 The removal of the NPS 20 IP gas line will involve impacts to a number of 6 existing third party utility mains and service connections including buried water, 7 sanitary and storm, and above ground power and telecommunications. 8 On page 25 of Exhibit B-12, FEI states: 9 Between Dogwood Street and the intersection of Como Lake Avenue and Clarke 10 Drive, the NPS 20 IP gas line passes under the south sidewalk along Como Lake Avenue. There is an existing overhead 60 kV transmission power line in this 11 12 location that would severely restrict FEI's ability to access and remove the NPS 13 20 IP gas line; 9.1 14 Please clarify whether the removal of the NPS 20 IP gas line will cause 15 disruptions for existing utilities' service provision. 16 17 **Response:** 18 The City has not issued a request to FEI under the Operating Agreement to remove the NPS 20 19 IP gas line and, as such, FEI has not completed a detailed study to determine the disruption to 20 third party utility service provisions that would occur during the removal of the NPS 20 IP gas 21 line. Based upon a preliminary assessment of adjacent utilities, FEI has identified that there is 22 the potential to impact the utilities as referenced on pages 23-25 of Exhibit B-12. If FEI was to 23 remove the NPS 20 IP gas line, FEI would work with third party utilities to mitigate potential 24 disruptions to service as much as practicable. 25 26 27

- 28 29
- 9.2 Please explain how third party utilities would be compensated for any disruptions.
- 30 **Response:**
- 31 FEI does not generally provide compensation to third party utilities for disruptions. However,

32 FEI works with third party utilities to minimize potential disruptions and provides reimbursement

33 for limited costs that may be incurred by the third party utility as a result of FEI's work, as further

34 described below.



When FEI undertakes construction activities (including installation, maintenance and repair work) in proximity to third party utility infrastructure, FEI works with the third party utility owners to obtain the necessary permits and approvals required to undertake the work. This includes establishing the permit conditions and requirements to mitigate potential disruptions to third party utility service as much as practicable. If required, FEI would seek approval to temporarily disrupt the utility service, or relocate the utility service (temporarily or permanently) in order to complete the required construction activity while minimizing service disruptions.

8 For example, as outlined in the attachment to Exhibit C1-5, the Final Agreed Terms and 9 Conditions, FEI will reimburse the City for the cost of work that is required to be completed on 10 the City's electrical infrastructure as a result of the Project. The Final Agreed Terms and 11 Conditions also provide that FEI will compensate the City for oversight by the City's inspector 12 when work is required on the City's infrastructure as part of the Project.

FEI expects to adopt the same approach to any disruption to third party utility service arising from the removal of any portion of the NPS 20 IP gas line. FEI's NPS 20 IP gas line removal cost estimate included allowances for costs that would be incurred by the third party utilities provider to maintain service or minimize service disruptions during the gas line removal process.

- 17 18 19 Please confirm if this is included in the cost estimates. 20 9.2.1 21 22 **Response:** 23 Please refer to the response to BCUC Phase 2 IR 2.9.2. 24 25 26 27 9.3 Please clarify the implications of the "severe restrictions" on access and removal 28 of the NPS 20 IP gas line due to the 60 Kilovolt (kV) transmission power line. 29 30 Response: 31 FEI records indicate that the NPS 20 IP gas line exists under or adjacent to the south sidewalk 32 along Como Lake Avenue between Dogwood Street and the intersection of Como Lake Avenue 33 and Clarke Road. This alignment also positions approximately 300 metres of the NPS 20 IP 34 gas line directly under the 60 kilovolt overhead power lines, and very close to the base of some
- 35 of the power-line support structures. Therefore the implications of the severe restrictions on



1 access and removal of the NPS 20 IP gas line due to the 60 kilovolt transmission power line 2 could include:

No. 2

- Requirement to temporarily support the power poles;
- Inability to use equipment in proximity to the power lines due to the risk of arcing and to
 maintain safe limits of approach; and
 - Shut down or relocation of the power-line in advance of the removal of the existing NPS 20 IP gas line.
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In Table 3-1 on page 28 of Exhibit B-12, FEI shows the earliest possible schedule for the
 removal of the 5.5km NPS 20 IP gas line. Table 3-2 shows the schedule for the removal
 of the 380m segment.

15 On page 7 of Exhibit C1-8, the City states:

16 FEI has proposed that if the NPS 20 Pipeline is abandoned in place and future 17 City works conflict with the abandoned pipeline, the City's contractor would be 18 required to expose the NPS 20 Pipeline using precautions as this pipeline is 19 believed to contain asbestos, and then wait for FEI to remove the conflicting 20 parts of the pipeline prior to continuing with the work. This approach would 21 greatly complicate the contractor's schedule and construction activity, and this 22 would increase costs to the City. This would also cause increased costs for FEI 23 as a result of repeated excavation and repaving in the same area.

- 9.4 If the NPS 20 IP gas line is abandoned, please provide comment on the City's
 assertion that asbestos risk would incur complications to the contractor's
 schedule and construction activity.
- 27

28 **Response:**

The standard excavation procedure for working around a natural gas line does not change based upon the coating type used, even if asbestos is thought to be present in the coating.

FEI believes that if a contractor follows standard excavation procedures for working around gas lines, including those coated with coal tar pipe wrap that can contain asbestos, and sufficient

33 notice is provided to FEI for removal activities, complications to the contractor's schedule and

34 construction activity would not be incurred.



1 Section 20.79 (1) of the WorkSafe BC Regulations provides:

Before excavating or drilling with powered tools and equipment, the location of all
underground utility services in the area must be accurately determined, and any
danger to workers from those utility services must be controlled.

5

FEI's safe digging practices, as well as provincial regulations, require hand digging to expose
buried utility lines before digging with powered excavation equipment. FEI does not permit the
use of powered equipment within one metre of a gas line when locating and exposing.
Mechanized equipment should only be used to break the surface (see Section 39(7) of the *Gas Safety Regulation*). If it is not practical to hand dig, hydrovacing is acceptable.

These safe digging practices apply for all FEI gas lines and will continue to apply to the existingNPS 20 IP gas line after it is abandoned.

Coal tar pipe wrap can contain asbestos, and FEI has confirmed that the coal tar pipe wrap on parts of the existing NPS 20 IP gas line contains Chrysotile asbestos. FEI has not tested the entire line for asbestos, however FEI assumes that asbestos is present throughout the line as it was constructed as one project in the late 1950s. The coal tar impregnated asbestos felt is applied to steel pipe stock in a manufacturing setting. This resulting hardened barrier is an effective shield to prevent moisture penetration to the steel pipe. This material is not friable during hydrovac or hand exposure activities.

FEI has established procedures and safety measures to mitigate the risk to workers when performing removal activities on sections of the NPS 20 IP gas line that may conflict with planned utility construction. FEI would coordinate this work with the City's contractor to complete the removal activities in a timely manner. Please also refer to FEI's response to City Phase 2 IR 1.10.5.

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Page 19

10.0 **Reference: REMOVAL OF EXISTING PIPELINE**

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Exhibit B-12, p. 29–33

Cost Estimates

4 With respect to the cost components of the NPS 20 IP gas line removal, on page 29 of 5 Exhibit B-12, FEI states:

No. 2

- 6 Owners costs comprise project management, stakeholder engagement, 7 permitting etc. and was set at approximately 15% of the estimated construction 8 costs. EPCM includes external engineering, procurement, and construction 9 management services and was also set at approximately 15% of the estimated 10 construction costs. Property and right-of-way (ROW) includes costs related to 11 temporary land required during construction and was set at approximately 1% of 12 construction costs. Inspection includes onsite presence of multi-disciplinary 13 inspection services throughout the construction process and was set at 14 approximately 2% of construction costs. Contingency was set at 25% of the total 15 estimate costs.
- 16 10.1 Please briefly explain the rationale for the assumptions of the cost allocation for 17 the NPS 20 IP gas line removal.
- 18

19 **Response:**

20 FEI engaged Ram Engineering (RAM) to prepare an AACE Class 5 cost estimate for the NPS 21 20 IP gas line removal. RAM had previously assisted FEI with various permitting, estimating, 22 construction management, and utility relocation scope items for the NPS 30 IP gas line.

23 Section 3.1 of Exhibit B-12, FEI's Evidence on Phase 2 Issues, describes that, in general, 24 because the NPS 20 IP gas line and NPS 30 IP gas line are both routed along Como Lake 25 Avenue, the approach to remove the NPS 20 IP gas line would be analogous to the NPS 30 IP gas line construction process. Therefore, RAM adopted the following similar high level cost 26 27 estimate categories for the NPS 20 IP gas line removal cost estimate:

- 28 1. Owners Costs;
- 29 2. Engineering, Procurement, and Construction Management (EPCM);
- 30 Property and Right of Way (ROW);
- 31 4. Construction Inspection;
- 32 5. Construction Costs; and
- 33 6. Contingency.



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For the construction cost estimate (Item 5 above) RAM referenced the NPS 30 IP gas line 1 2 construction drawings and survey records which also identifies the NPS 20 IP gas line route, the 3 existing third party utilities that parallel and cross the NPs 20 IP gas line, and the NPS 20 IP gas 4 line depth of cover. RAM also referenced the NPS 30 IP gas line project to inform the NPS 20 5 IP gas line removal construction cost estimate inputs including working hour assumptions, traffic 6 restriction assumptions, utility relocations, and construction productivity assumptions, and to 7 account for the different constraints associated with removal of the NPS 20 IP gas line as 8 compared to the NPS 30 IP gas line installation. On that basis, RAM prepared a unit and 9 quantity take off construction cost estimate that included unit costs for the resources, 10 equipment, and consumable materials that would be required to remove approximately 5.5 11 kilometres of the NPS 20 IP gas line.

12 For the remaining cost estimate categories (Items 1, 2, 3 and 4 above), other than contingency, 13 RAM referenced the corresponding NPS 30 IP gas line project budget cost estimate categories 14 to establish their costs as a percentage of the NPS 30 IP gas line construction cost estimate. 15 For the NPS 30 IP gas line Item 1 (Owners Costs) and Item 2 (EPCM) approximates 10 percent 16 to15 percent of the NPS 30 IP gas line construction cost budget respectively. RAM assumed 17 that these estimate categories for the NPS 20 IP would involve a similar level of effort compared 18 to the NPS 30 IP gas line project and, therefore, they were also approximated as 15 percent of 19 the NPS 20 IP gas line removal construction cost estimate (Item 5).

For the NPS 30 IP gas line Item 3 (Property and ROW) approximates 1 percent to 2 percent of the NPS 30 IP gas line construction cost budget. RAM assumed that the NPS 20 IP gas line removal would incur similar relative costs compared to the NPS 30 IP gas line project. Therefore, Item 3 for the NPS 20 IP gas line was approximated as 1 percent of the NPS 20 IP gas line construction cost estimate (Item 5).

For Item 4 (Inspection) RAM assumed that the NPS 20 IP gas line inspection scope would involve less effort compared to the NPS 30 IP gas line project inspection because there would be no pipe welding inspection, non-destructive weld inspection, or coating inspection associated with the NPS 20 IP gas line removal. Therefore, RAM assumed that the NPS 20 IP gas line removal inspection would approximate 2 percent of the NPS 20 IP gas line estimated construction cost estimate (Item 5).

RAM, when considering the existing information available, the estimate inputs and assumptions, and the cost estimate approach as detailed above, assumed a 25 percent contingency (Item 6) for Items 1 through 5 to account for the unknowns associated with the NPS 20 IP gas line removal. However, no risk assessment was completed to validate this contingency amount or to determine an accuracy range. Considering the high level nature of the estimate, the actual cost is likely to fall within the AACE Class 5 upper bound and lower bound estimate accuracy range of +100 percent and -50 percent.



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Please explain what assumptions FEI has made with respect to the road

remediation costs and specifications associated with the removal of the NPS 20

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- 8 **Response:**

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gas line.

9 FEI assumed that the City or other third party utility owner would install their proposed new 10 utility in the same trench as the NPS 20 IP gas line at the same time or very quickly after the 11 NPS 20 IP gas line had been removed. As such, FEI did not include any costs for final repaying 12 of Como Lake Avenue after the NPS 20 IP gas line would be removed. FEI only included costs 13 to install a temporary asphalt patch along the trench after the NPS 20 IP gas line is removed 14 and the trench is backfilled. If FEI had to include costs for final repaying of sections of Como 15 Lake Avenue after the NPS 20 IP gas line was removed, then FEI would base the estimate of 16 such costs on the appropriate paving scenario from Section 2.4 of Exhibit B-12.

No. 2

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- 21 On pages 30 to 31 of Exhibit B-12, FEI states:

. . .

- In order to determine the allocation of costs under the Operating Agreement, FEI first needs to determine the cost of the installation of the 5.5 kilometres of NPS 20 IP in 1957. Since FEI's records do not provide the level of detail necessary to 25 determine the install cost of the NPS 20 gas line in 1957, FEI has prepared an 26 estimate of the installation cost in current 2018\$ in section 3.4.1 below.
- 27
- To determine the installed value of the NPS 20 IP gas line, FEI itemized the current NPS 30 IP budget estimate in sufficient detail to provide the granularity necessary for FEI to determine which budget components would not be relevant to gas line construction in 1957, and then applied appropriate factors and assumptions to the relevant budget components.
- 33 The main assumptions FEI applied to this approach included:

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1	 The level of effort in terms of project management, stakeholder
2	engagement, permitting, engineering etc. to execute a gas line
3	construction project in 1957 compared to 2018 would be 10% to 30%;
4	 No trenchless construction was utilized in the construction of the NPS 20
5	IP gas line in 1957;
6	 Much of the front end preparation and sophisticated construction
7	practices executed by modern utility contractors including safety, security,
8	environmental, traffic management, and stakeholder requirements etc.
9	would not have been required in 1957; and
10	 Average construction productivity for the NPS 20 IP gas line would be 3
11	to 10 times faster in 1957 compared to the average construction
12	productivity currently measured by FEI during the ongoing NPS 30 IP gas
13	line construction.
14	Table 3-5 shows the 1957 NPS 20 IP gas line installation cost estimate.
15 10.3 16 17 18	Please explain whether FEI considers that there are any other cost estimation methodologies that could be used to determine the cost of installing the NPS 20 IP gas line in 1957.
19 Response:	

20 This response also addresses BCUC Phase 2 IR 2.10.3.1.

21 FEI has not identified any other cost estimation methodologies that could be used to determine 22 the cost of installing the NPS 20 IP gas line in 1957.

23 FEI performed a search of internal record files, but found no records pertaining to the original 24 cost to install the NPS 20 IP gas line in 1957. FEI also searched internal record files for other 25 assets to determine if original cost data exists for IP gas lines of similar vintage installed in the 26 1950s and 1960s that could be used as a reference for the NPS 20 IP gas line. However, there 27 is no such original cost data available.

28 FEI believes the engineering estimate it completed, which provided an estimate for the cost to 29 install the NPS 20 IP gas line based on the NPS 30 IP gas line budget with a range of possible 30 cost outcomes based on reasonable assumptions, provides the best estimate of the original 31 cost.

32 Given the unavailability of another methodology, it is not possible to discuss the pros and cons of different methodologies. 33



Page 23

10.3.1 Please briefly discuss the pros and cons of each methodology, including FEI's chosen methodology.

7 <u>Response:</u>

- 8 Please refer to FEI's response to BCUC Phase 2 IR 2.10.3.
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 12 10.4 Please explain on what basis FEI considers that the level of effort in terms of 13 project management, stakeholder engagement, permitting, engineering etc. to 14 execute a gas line construction project in 1957 compared to 2018 would be 10 15 percent to 30 precent.
- 16

17 Response:

FEI determined that the only feasible method available to estimate the cost to install the NPS 20 IP gas line in 1957 was to reverse engineer the cost estimate from the 2018 budget cost to install the NPS 30 IP gas line. Therefore, FEI had to first assume what the physical environment along Como Lake Avenue and the general operating environment would have been in 1957 to install the NPS 20 IP gas line in terms of project management requirements, permitting requirements, property and right-of-way requirements, safety, engineering, environmental, and construction standards etc. Compared to 2018, FEI assumed in 1957 that:

- 25 1. Como Lake Avenue was substantially less developed;
- 26 2. The number of existing buried and overhead utilities along Como Lake Avenue was significantly less;
- 28 3. Como Lake Avenue was significantly less trafficked;
- 4. Natural gas was a new source of energy and lifestyle commodity with an associated
 sense of urgency to install the necessary infrastructure such as the NPS 20 IP gas line
 to supply residential, commercial, municipal, and industrial customers;
- 32 5. The level of stakeholder engagement to acquire the necessary permits and approvals33 would have been less;



- The detailed routing and engineering was based on a less constrained work space that
 did not require as sophisticated techniques and engineering deliverables;
- 3 7. The procurement processes for both materials and services was less sophisticated; and
- Pipeline construction required less indirect effort associated with back-office processes,
 safety, environmental, and construction management.
- 6

Based on the above general assumptions, FEI applied the following factors from the 2018 NPS
30 IP gas line budget costs to determine a cost estimate for project management and
stakeholder engagement, permitting and approvals, detailed engineering, procurement,
construction management, and property and right-of-way for the NPS 20 IP gas line installation
in 1957 (in 2018 dollars):

- The project management scope for the NPS 20 IP gas line installation in 1957 would be
 30 percent of the project management scope for the NPS 30 IP gas line installation in
 2018;
- The engineering, procurement, and construction management (EPCM) scope for the
 NPS 20 IP gas line installation in 1957 would be 30 percent of the EPCM scope for the
 NPS 30 IP gas line installation in 2018;
- The permits and approvals scope for the NPS 20 IP gas line installation in 1957 would
 be 10 percent of the scope for the NPS 30 IP gas line installation in 2018; and
- The property and right-of-way costs for the NPS 20 IP gas line installation in 1957 would
 be 10 percent of the same scope for the NPS 30 IP gas line installation in 2018.
- 22

Therefore, FEI considers that the overall level of effort for the above mentioned project execution phases would be 10 percent to 30 percent of that required to execute a gas line construction project in 1957 compared to 2018.

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10.5 Please explain how FEI determined the range for construction productivity to be 3 to 10 times faster in 1957.

3132 **Response:**

FEI has no recorded data pertaining to the construction productivity achieved by the NPS 20 IP gas line construction when it was installed in the City in 1957. Therefore, FEI considered the



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- various factors that impact pipeline construction productivity, the construction productivity
 achieved by the ongoing NPS 30 IP gas line construction, the NPS 30 IP gas line construction
- 3 constraints, and compared the differences between both the physical environment along Como
- 4 Lake Avenue and the general operating environment when the NPS 20 IP gas line was installed
- 5 in 1957 to that in 2018.
 - 6 Pipeline construction productivity is defined as the rate at which the pipeline construction will 7 progress (i.e., the rate at which the construction process steps are executed) to install the 8 complete pipeline and this productivity is typically estimated in metres per day.
- 9 For cross-country pipeline construction, where the site access and underground terrain are 10 mostly unconstrained, the pipe welding/jointing is typically the slowest construction process step 11 which limits the overall construction productivity. This is because the construction process steps 12 advance in a linear sequential fashion such that the overall construction cannot progress faster 13 than the slowest process step. In contrast, for urban pipeline construction, where the terrain 14 includes numerous, closely spaced below ground utilities and services and where the above 15 ground construction workspace is constrained by traffic, trees, power lines and property and 16 business accesses, the trench excavation for larger diameter pipe would be the slowest 17 construction process, and therefore limits the overall rate of pipeline construction productivity.
- 18 The trench excavation process, such as the required trench width and depth to accommodate 19 the safe installation, welding and operation of the pipe, the above ground and buried obstacles, 20 the excavator size to dig the trench, and capacity of haulage vehicles which could be mobilized 21 and operated on site within the available construction workspace to remove the excavated 22 trench material, dictates urban pipeline construction productivity.
- 23 Further to the above narrative, FEI inspectors have recorded the NPS 30 IP gas line 24 construction productivity at approximately 30 metres to 40 metres per day; it is heavily 25 influenced by the surrounding urban development, confined construction workspace, traffic 26 management restrictions, and sub-surface constraints which dictate the slow rate at which the 27 trench is excavated and then backfilled after the gas line is installed. Comparatively, the smaller 28 NPS 20 IP gas line size, in a less urban development, less confined workspace, with less 29 restrictive traffic requirements, and fewer sub-surface constraints, which FEI assumed would 30 have existed along Como Lake Avenue in 1957 would have resulted in higher NPS 20 IP gas 31 line construction productivity.
- Notwithstanding the smaller NPS 20 IP gas line size and the less restrictive environment in which to construct a gas line that FEI assumed existed in 1957, and which would have likely resulted in significantly greater productivity rates compared to the NPS 30 IP gas line, FEI also assumed that certain factors might have also prevailed in 1957 that could have constrained the NPS 20 IP gas line construction productivity by other means such as construction schedule and construction timing limitations. As such, FEI considers that the NPS 20 IP gas line construction



1 contractor might have been restricted, for whatever reason, to a construction schedule that 2 resulted in an average construction productivity rate of approximately 100 metres per day. 3 Therefore, based on an assumed five day working week, this scenario would have resulted in 4 an overall construction schedule of approximately three to four months to install the 5.5 5 kilometres of NPS 20 IP gas line. FEI considers this a credible lower productivity scenario that 6 would have seen the gas line construction completed within one year.

7 FEI also considered a practical upper bound limit in terms of a relatively unrestricted 8 construction schedule, but instead the NPS 20 IP gas line construction execution plan could 9 have been limited to working between the various intersections along Como Lake Avenue, while 10 maintaining north-south bound roads open for vehicles and pedestrians. FEI assumed that the 11 distance between the intersections in 1957 would have been similar to 2018 which would have 12 restricted the NPS 20 IP gas line construction contractor to work within construction zones 13 approximately 300 metres in length. Compared to the previous scenario, the contractor would 14 have been given a relatively long unrestricted work space with no schedule restrictions in which 15 to install the NPS 20 IP gas line as quickly as possible. As a result, FEI assumed that the NPS 16 20 IP gas line construction could have achieved an average productivity rate of 300 metres per 17 day.

18 Therefore, comparing the assumed average 100 metres per day construction productivity 19 scenario, and the assumed 300 meters per day construction productivity scenario to the 2018 20 average NPS 30 IP gas line construction productivity of 30 metres per day, FEI determined the 21 range for construction productivity to be 3 to 10 times faster in 1957.

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- 10.6 Please explain how the uncertainty ranges in points 1 to 4 on page 31 of Exhibit B-12 relate to the high/ low estimates in Table 3-5. For example, the line item for project management has a value of \$1.0 million for each column of Table 3-5.
- 27project management has a value of \$1.0 million for each column of Table 3-328which does not appear to capture the uncertainty range outlined in point 1.

30 **Response:**

31 This response also addresses BCUC Phase 2 IR 2.10.6.1.

FEI did not apply any ranges to the line items for Project Management, EPCM, Permits and Approvals, Property and ROW, Materials, and Inspection for NPS 20 IP gas line to account for uncertainty. Instead, FEI determined estimated costs for these line items utilizing the NPS 30 IP gas line 2018 control budget for reference and applying various assumption based factors as detailed in FEI's response to BCUC Phase 2 IR 2.10.4.



For the Pipeline Construction line item FEI also utilized the NPS 30 IP gas line 2018 control 1 2 budget for reference but determined a high and low cost estimate to account for the uncertainty 3 in the 1957 construction productivity assumptions for the NPS 20 IP gas line construction as 4 detailed in FEI's response to BCUC Phase 2 IR 2.10.5. 5 As a result the total high and low base cost estimates in Table 3-5 (excluding contingency) 6 comprise the same estimated costs for line items 1 to 6 but different estimated costs for line 7 item 7. The contingency was calculated as a percentage of the total high (Total of Items 1 to 6 8 plus high cost estimate) and the total low (Total of Items 1 to 6 plus low cost estimate) base cost estimates. 9 10 11 12 13 Please explain the high/low range for the contingency line item. 10.6.1 14 15 **Response:** Please refer to FEI's response to BCUC Phase 2 IR 2.10.6. 16 17 18 19 20 21 On page 33 of Exhibit B-12, FEI states: 22 Costs and proceeds from the retirement and removal of depreciable gas plant in 23 service are accounted in the net salvage deferral account. 24 10.7 Please explain whether FEI has made any assumptions with respect to the 25 salvage value of the removed NPS 20 IP gas line. 26 27 Response: 28 FEI did not assume a salvage value for the removed NPS 20 IP gas line. A licensed disposal 29 facility that is equipped to receive and dispose of sections of the NPS 20 IP gas line that may be 30 removed from Como Lake Avenue provided indicative costs to receive and dispose of the NPS 31 20 IP gas line pipe materials. The disposal facility does not provide steel salvage services and 32 as such, FEI did not provide for any salvage value for removing and disposing of the NPS 20 IP

33 gas line pipe.



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1 If FEI were required to remove the NPS 20 IP gas line under the Operating Agreement, beyond 2 the limited amounts that are removed as part of the decommissioning process, it would 3 investigate further whether it would be able to realize any salvage value from the 4 steel. However, any salvage value could be offset by the cost of transporting the pipe to a 5 facility to have the coating removed, meaning that disposal without recovery of salvage value 6 may ultimately be more cost-effective.

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Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

Page 29

1 B. ISSUE 5 – REMEDIATION OF COMO LAKE AVENUE

- 2 11.0 Reference: REMEDIATION OF COMO LAKE AVENUE
 - Exhibit B-12, pp. 3–4

Requirements for Road Remediation

On	page 3 of	f Exhibit	B-12	FFI	states.
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6 Under section 8 of the Operating Agreement, FEI is required at its cost to 7 reinstate the paving or surface on public property which it has disturbed in as good a state of repair as it was prior to its disturbance and in accordance with 8 9 reasonable specifications, and subject to the supervision of, the Municipal 10 Engineer. FEI is committed to repairing any damage to Como Lake Avenue 11 resulting from the Project in accordance with the Operating Agreement, and in 12 particular, in accordance with the City's Paving Specifications as described in 13 Section 2.2 below.

- On page 4 of Exhibit B-12, citing the report by WSP Canada Inc. (WSP) to undertake a
 pre-construction assessment of the 5.5km section of Como Lake Avenue (WSP Report),
 FEI states:
- 17 The extent of the distressed pavement area would indicate that there likely many 18 sections [sic] where a full width rehabilitation treatment could be the best life 19 cycle cost approach to managing these pavements and coordinating the future 20 utility cut repairs. Many of these pavements would likely be rated as being in 21 "Fair" to "Poor" condition.
- 22 ...
- In our opinion, based on the observed surface conditions of the pavements,
 including the type, severity, and scope of distresses observed along Como Lake
 Avenue and Spuraway Ave, several sections of these roadways will likely need a
 full width rehabilitation treatment or extensive repairs within the next five to ten
 years.
- 11.1 Please explain if it is standard practice to undertake a pre-construction
 assessment of road conditions where there are to be future utility works causing
 road damages.
- 31

32 Response:

Undertaking a pre-construction assessment of third party infrastructure assets is done on a case
 by case basis and can be dependent upon consultation with third parties and any resulting



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agreed upon requirements in relation to the risk of damage to the asset as a result of FEI's construction in close or direct proximity to the asset. A pre-construction assessment may also

- construction in close or direct proximity to the asset. A pre-construction assessment may also
 be undertaken where a potential dispute over pre-existing conditions or satisfactory restoration
 is anticipated.
- 5 The information gathered during a pre-construction assessment varies and can include 6 photographs, videos, installation of vibration monitoring equipment and documentation of pre-7 construction conditions. The pre-construction assessment is performed to establish a baseline 8 reference and to assist in clarifying whether any post-construction damage was likely the result 9 of FEI construction activities or if it was related to pre-existing conditions.
- 10 11 12 13 11.1.1 Please discuss the purpose of the pre-construction assessment with 14 respect to agreement of specification and/or costs of road remediation 15 with a municipality. 16 17 Response: 18 The purpose of the pre-construction assessment with respect to agreement of the specifications 19 and/or costs is to establish a baseline reference to assist in determining whether any post-20 construction damage was likely the result of FEI construction activities or if it was related to pre-21 existing conditions. 22 23 24 25 Please explain whether, based upon the WSP Report, FEI considers that the 11.2 26
- 26 current condition of Como Lake Avenue would meet the City's Paving
 27 Specifications.
 28

29 **Response:**

- 30 Since the WSP Report did not include a detailed structural or sub-subsurface examination of the
- 31 pavement and roadway, FEI cannot determine if the current condition of Como Lake Avenue
- 32 meets the City's Paving Specifications.
- WSP used a manual visual site survey method to complete an assessment of the existing
 pavement condition including mapping the type, severity, and extent of the existing distresses.
 WSP's scope of work did not include a detailed field testing and analysis of the layers of



Page 31

pavement structure and its subgrade foundation. WSP provided the following comment on the
 typical service life (WSP Report, page 9):

No. 2

3 Typically, the service life of an arterial pavement will depend on the pavement 4 structure, sub-surface conditions, and traffic loading on the roadway; these items 5 were not assessed or evaluated during this survey. Depending on these factors, 6 the distresses evident in a pavement, and the level of service expectations of the 7 municipality, the typical service life of a municipal arterial pavement in the Lower 8 Mainland region can likely range between 12 to 40 plus years, with many arterial 9 pavements typically seeing rehabilitation cycles in the range of 20 to 30 years. A 10 more detailed structural and traffic loading assessment would be required to 11 determine recommended rehabilitation treatments and timing for the pavements 12 along this route. [Emphasis added]

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- 15
- 16 11.3 Please clarify FEI's position with respect to its responsibility under the 1957
 17 Operating Agreement to repair pavements where the condition of the road is currently classified as "fair" or "poor".
- 19

20 **Response:**

As referenced on page 5 of Exhibit B-12, FEI's Evidence on Phase Two Issues, FEI considers the City's Paving Specifications for restoration of trenches to be reasonable and that by complying with these specifications, FEI would satisfy the requirements of the Operating Agreement. FEI will repair pavement damage resulting from the Project in accordance with the City's Paving Specifications regardless of the classification of the road condition in the WSP Report. However, FEI does not believe that it is required under the Operating Agreement to repair those parts of Como Lake Avenue that have not been damaged by the Project.

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Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

1	12.0	Reference	e: REMEDIATION OF COMO LAKE AVENUE
2			Exhibit B-12, pp. 8–19
3			Road Remediation Scenarios
4		On page	8 of Exhibit B-12, FEI states:
5 6 7 9 10 11 12 13 14		FI to as ac Co m un la of	El understood that the City's objective was to not just repave all four lanes but also repair the subgrade (road base layer and replace the lower layers of sphalt) on Como Lake Avenue, and that the cost for this work would be in access of \$3.2 million. FEI believed that the \$3.2 million would provide an acceptable contribution to the City's overall repair and paving objectives for to Lake Avenue which the City estimated to be \$6.2 million. Of this \$6.2 fillion, the City considered its share to be approximately \$3.0 million, which buld include repairing the subgrade (road base (gravel) and replacing the lower yer(s) of asphalt) and the City providing the project management and delivery this paving work.
15 16 17 18		On page paving ar FEI's obli Specifica	s 9 to 12 of Exhibit B-12, FEI outlines paving "Scenario 1", comprising the id restoration of the trench and asphalt key. FEI submits this scenario satisfies gations under the 1957 Operating Agreement and aligns with the City's Paving ions.
19 20 21		On pages paving or estimates	s 12 to 15 of Exhibit B-12, FEI outlines paving "Scenario 2", comprising the ver and repair of four lanes, which FEI submits is the City's demand. FEI capital costs of \$4.6 million for "Scenario 2."
22 23 24 25		On page Scenario similar to Burnaby i	s 15 to 18 of Exhibit B-12, FEI outlines paving "Scenario 3", comprising 1 with additional paving over two full lanes. FEI submits that this scenario is the approach FEI negotiated with the City of Vancouver and the City of n respect of the construction of the NPS 30 IP gas line.
26 27		In Table scenario.	2-4, FEI provides a summary of cost of service and rate impacts for each
28 29 30 31	Respo	12.1 PI th onse:	ease confirm and explain, in the view of FEI, whether Scenario 1 represents e minimum restoration required to satisfy the 1957 Operating Agreement.
32 33 34	As se Specif FEI w	t out in Fl fications fo ould satisf	El's response to BCUC Phase 2 IR 2.11.3, FEI considers the City's Paving r trenches to be reasonable and that by complying with these specifications, / the requirements of the Operating Agreement. FEI confirms that Scenario 1

cenario 1 35 represents the minimum restoration required to satisfy the Operating Agreement so long as the



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construction of the NPS 30 IP gas line does not damage the pavement beyond the trench area.
As set out on page 9 of Exhibit B-12, FEI's Evidence on Phase Two Issues, Scenario 1 is based
on FEI's expectation that impact to the pavement resulting from the construction of the NPS IP
30 gas line will be limited to the trench. If additional pavement is damaged outside the alignment
of the trench due to the NPS 30 IP gas line construction, FEI will repair the damaged pavement
in accordance with the City's Paving Specifications.

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12.2 Please discuss if Scenario 1 represents FEI's preferred scenario.

12 **Response:**

Scenario 1 represents FEI's preferred scenario. However, as set out in FEI's response to BCUC Phase 2 IR 2.12.1, Scenario 1 is based on FEI's expectation that the construction impact for the installation of the NPS 30 IP gas line will be limited to the trench. The planned width of the trench is 2.5 metres, which is less than the two lanes of roadway. The width of the trench will be restored in accordance with City's Paving Specifications.

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 19
 20
 21 12.2.1 Please confirm whether FEI still intends to offer a contribution of \$3.2 million to the City under Scenario 1.
 23
 24 <u>Response:</u>
 25 For the reasons set out below, FEI does not intend to offer a further contribution of \$3.2 million
- to the City under any scenario.

27 In late 2017 and in early 2018, FEI was amenable to considering an additional contribution of 28 \$3.2 million toward the paving of Como Lake Avenue from curb to curb in support of the City's 29 objective to repair the subgrade below the asphalt and completely repave the 5.5 kilometre 30 length of Como Lake Avenue. FEI proposed this contribution as part of an overall proposal in 31 late 2017 and early 2018 in an effort to resolve the outstanding issues with the City and to 32 obtain the permits and approvals necessary for the construction of the Project. However, in 33 June 2018, the City rejected FEI's proposed \$3.2 million contribution towards the City's repair and repaying of Como Lake Avenue. At a meeting on June 5, 2018, the City informed FEI that 34 35 rather than requiring a \$3.2 million financial contribution toward the repaving of Como Lake 36 Avenue, the City was requiring FEI to pave the entire width of the 5.5 kilometre section of Como



Lake Avenue including road remediation (repairing the subgrade below the asphalt) and provide 1 2 a \$6.0 million letter of credit to secure performance of the paving work.

3 As of June 2018, FEI had been unable to reach a negotiated resolution of outstanding issues with the City. In particular, the City was continuing to refuse to issue the Engineering Drawing 4 5 Approvals unless FEI agreed to:

- (i) repave (including replacing the lower layers of asphalt) the entire width of Como Lake Avenue for 5.5 kilometres after completion of the Project and provide security in the amount of \$6 million for all the paving work; and
- 9 (ii) remove, at its cost, 380 meters of the abandoned NSP 20 IP gas line.

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11 In a meeting on June 20, 2018 and in a letter dated June 28, 2018, FEI informed the City that 12 FEI was unable to agree to the City's request because it represented a significant departure 13 from the requirements of the Operating Agreement and would result in FEI incurring significant 14 unwarranted costs that would have to be recovered from customers. FEI also informed the City 15 that it would be filing an application to the BCUC seeking an order to allow FEI to proceed with 16 the construction of the Project based on the terms of the Operating Agreement and the technical 17 terms agreed to between FEI and the City.

18 As a result, FEI has had to incur internal and external costs in support of its application to the 19 BCUC to obtain an order allowing FEI to proceed with the construction of the NPS 30 IP gas 20 line.

21 However, FEI will provide a financial community contribution relating to the Project in the 22 amount of \$150 thousand towards the construction of the Riverview Forest bike park as agreed 23 in October 2017. In addition, FEI has agreed to pay \$12 thousand to the City for the installation 24 of traffic cameras along the 5.5 kilometre section of Como Lake Avenue as set out in the Final 25 Agreed Terms and Conditions.

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- 29 12.3 Please explain whether the \$4.6 million estimate for Scenario 2 encapsulates the 30 same scope of work that was estimated by the City to require a cost of \$6.2 31 million.
- 32

33 Response:

34 FEI's understanding is that the City's estimated cost of \$6.2 million includes the scope of work

35 for Scenario 2 and repairs to the base, sub-base and subgrade outside of the trench area due to



pre-existing damage. FEI's Scenario 2 scope of work covers only the replacement of the full 125 1 2 millimetre thickness of asphalt from curb to curb (please refer to Exhibit B-12, FEI's Phase 2 3 Evidence, pages 14 and 15 for more detail). 4 5 6 7 Please clarify the reasons for any material differences in scope and/or 12.3.1 8 cost estimations. 9 10 **Response:** 11 Please refer to FEI's response to BCUC Phase 2 IR 2.12.3. 12 13 14 15 12.4 Please explain whether, in negotiations with the City of Vancouver and the City of 16 Burnaby, FEI proposed a scenario similar to Scenario 1. 17 18 Response: 19 Yes, during negotiations with the City of Vancouver and the City of Burnaby, FEI initially 20 proposed a scenario similar to Scenario 1. 21 22 23 24 12.4.1 Please explain why an approach similar to Scenario 3 was ultimately 25 undertaken in the City of Vancouver and the City of Burnaby. 26 27 **Response:** 28 FEI's objective during the consultation and engagement efforts with the three cities was to work 29 collaboratively with each city to identify opportunities for mutually agreeable resolutions to the 30 concerns and issues raised by each city. FEI advised each city that the NPS 30 IP gas line

32 2.5 metre trench excavation, temporary working space, changes to pavement markings, and33 changes to in-pavement traffic loops.

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As part of an overall negotiated resolution of concerns and issues with the City of Vancouver (CoV) in order for FEI to obtain the permit and approvals for the construction of the Project, FEI

construction would generally involve two lanes of the roadway. The impacts would include the



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1 agreed to full lane repaying rather than just trench pavement repair. However, FEI's approach 2 with respect to repaying in the "non-trench" lanes was dependent on whether or not the 3 pavement was damaged as a result of the construction of the NPS 30 IP gas line. The CoV 4 advised FEI that it would be more cost effective for the CoV if all four lanes of East First Avenue 5 from Clark Drive to Nanaimo Street and two lanes from Boundary Road to Nanaimo Street were 6 repaved immediately following completion of the NPS 30 IP gas line construction. FEI agreed 7 to undertake the additional paving and the CoV agreed that the costs of repaving the additional 8 two "non-trench" lanes or any lanes not damaged by the NPS 30 IP gas line construction would 9 be borne by the CoV.

In the case of the City of Burnaby (CoB), the CoB advised FEI of its infrastructure upgrade objectives. FEI's agreement with the CoB with respect to repaying was also part of an overall resolution of outstanding concerns and issues with the CoB in order for FEI to obtain the permits and approvals for the construction of the Project. FEI and the CoB collaboratively developed a mutually acceptable approach to repaying which involved dividing the Project into two sections.

15 In the western section (primarily along Lougheed Highway for a length of 5 kilometres), FEI 16 agreed to full lane repaving rather than just trench pavement repair. The approach to repaving 17 in the adjacent "non-trench" lane was dependent on whether or not the pavement was damaged 18 as a result of the construction of the NPS 30 IP gas line, and FEI agreed to repave, at FEI's 19 cost, only those lanes where the pavement was disturbed by the construction of the NPS 30 IP 20 gas line.

In the eastern section (along Broadway Avenue between Bainbridge Avenue and Underhill Avenue a 2 kilometre, two lane road; and a 3 kilometre undeveloped municipal road way), FEI agreed to contribute up to \$4 million towards the restoration of the 2 kilometre section of Broadway Avenue and municipal infrastructure and utility upgrades (e.g., curbs, street lighting, storm sewers), and the construction and paving of the Burnaby Urban Mountain Trail from Underhill Avenue to Production Way.

Please refer to the response to City Phase 2 IR 1.8.1 for a list of the roads and number of lanes
that have been repaved to date within the CoB and the CoV where the NPS 30 IP gas line
installation has been completed.

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- 3312.4.2Please explain any significant differences in the scope of work being34proposed in the City of Coquitlam, compared to that undertaken in the35City of Vancouver and the City of Burnaby, which would result in36different levels of damage to the affected roads.



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2 **Response:**

Overall, the scope of work for the installation of the new NPS 30 IP gas line in the City of
Coquitlam is similar to that undertaken in the City of Vancouver and the City of Burnaby and is
not expected to result in different levels of damage to the affected roads.

6 The precise location of the new NPS 30 IP gas line within the width of the roadway varies 7 throughout the Project, and the trench impact is between one and two lanes depending on the 8 precise location. In the City of Vancouver and the City of Burnaby, the construction working 9 space is often limited to one side of the roadway (e.g. closing the two northern lanes and traffic 10 diverted to the two southern lanes), while in the City of Coquitlam the construction working 11 space is generally located within the two centre lanes. This could result in less repair work 12 required for concrete curbs within the City of Coquitlam as there will be limited excavation in

13 close proximity to the existing curbs.

14 The scope of work for the decommissioning and abandonment activities in the City of Coquitlam

is similar to that undertaken in the City of Vancouver and the City of Burnaby, however, would
 result in localized damage at different locations on the affected roads.

17 The scope of the abandonment of the existing NPS 20 IP gas line work will affect the location of 18 damage to the affected roads in each municipality differently, as the existing NPS 20 IP gas line 19 is not located within the same roadway as the new NPS 30 IP gas line for the entire project 20 route. In the City of Vancouver, all of the existing NPS 20 IP gas line runs one block to the south 21 of the new NPS 30 IP gas line. In the City of Burnaby, the existing NPS 20 IP gas line runs 22 along Broadway Avenue, meaning that the existing NPS 20 IP gas line and the new NPS 30 IP 23 gas lines will be located along the same roadway for approximately 45 percent of the Project 24 length in the City of Burnaby. In the City of Coguitlam, the existing NPS 20 IP gas line and the 25 new NPS 30 IP gas lines will be located along the same roadway for all of the Project length 26 within the City of Coquitlam. In the locations where the existing NPS 20 IP gas line and the new 27 NPS 30 IP gas lines are located in the same roadway, this roadway will be impacted on two 28 separate occasions and in different locations within the given roadway.

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- 12.5 Please explain why the cost estimates for Scenario 2 are more than four times higher than the cost estimated for Scenario 3.
- 33 34



FortisBC Energy Inc. (FEI or the Company) Application for Use of Lands under Sections 32 and 33 of the <i>Utilites Commission Act</i> in the City of Coquitlam for the Lower Mainland Intermediate Pressure System Upgrade Projects (the Application)	Submission Date: December 5, 2018
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1 Response:

2 The cost estimates for Scenario 2 are more than four times higher than the cost estimated for 3 Scenario 3 due to the following:

- Scenario 2 is four lanes wide while Scenario 3 is two lanes wide;
- Scenario 3 includes costs for paving to a 50 millimetre depth outside the trench for a
 width of two lanes while Scenario 2 includes costs for paving to a 125 millimetre depth
 outside the trench for a width of four lanes;
- Scenario 2 includes costs for the additional existing pavement removal outside of the
 trench which are not included in Scenario 3;
- Scenario 2 includes an additional mobilization cost to pave the lanes outside of the original workspace;
- Scenario 2 includes costs for more traffic control costs due to the additional mobilization
 costs; and
- Scenario 2 includes costs for additional traffic loop restoration.

15



Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 2

1	13.0	Refere	nce: REMEDIATION OF COMO LAKE AVENUE
2			Exhibit C1-8, pp. 9–10, Appendix H
3			Road Damage
4		On pag	ge 9 of Exhibit C1-8, the City states:
5 6			The City believes that FEI's position does not have due regard to the following causes of damage to the Como Lake Avenue curb lanes:
7 8 9			 numerous lateral cuts for relocation of many of the more than 800 lateral utilities and other services that cross the Project route (as described above);
10 11 12 13 14			 changes to pavement markings (e.g., lane markings) for traffic management during construction, which includes grinding off portions of the surface layer of asphalt to remove existing markings, applying interim markings across all lanes, and grinding off portions of the surface layer of asphalt to remove the interim markings;
15 16 17 18			• changes to the in-pavement traffic loops during construction, which includes relocation of the loops to accommodate temporary lane configurations, and then restoration of the loops back to their original locations. Both of these steps involve damage to the pavement.
19 20			 excessive wear and tear from FEI's large excavators and other heavy construction equipment operating in all lanes; and
21 22			 cuts to access the NPS 20 Pipeline to either remove it or fill it with concrete once it has been decommissioned.
23 24 25 26 27		13.1	For each of the points above, please provide FEI's position as to a) whether construction work on the project will incur the damages that the City suggests and b) whether paving Scenarios 1, 2, and 3 assume repairs/ restoration to address these damages.
28	<u>Respo</u>	nse:	
29	Please	refer t	o the response to City Phase 2 IR 1.1.2 for additional information on how many

30 lateral cuts outside of the construction working space FEI expects to be required. Paving 31 Scenarios 1, 2 and 3 do not specifically address these lateral cuts because FEI does not 32 anticipate that it will be making lateral cuts or impacting the curb and outside lanes of Como 33 Lake Avenue.

Please refer to the response to City Phase 2 IR 1.1.10 for additional information on changes to
 pavement markings to accommodate traffic management plans. In the City of Burnaby and City



- of Vancouver, FEI's construction contractor minimized damage to the pavement through the use
- 1 2 of hydro-blasting or surface grinding. This practice mitigated damage to the pavement. Paving
- 3 Scenarios 1, 2, and 3 assume that full depth paving repairs to address changes to pavement
- 4 markings are not required due to the installation technique.
- 5 Please refer to the response to City Phase 2 IR 1.1.7 for additional information on changes to 6 the in-pavement traffic loops during construction.
- 7 Please refer to the response to City Phase 2 IR 1.1.1 for additional information on the use of 8 large excavations and other heavy construction equipment.
- 9 Please refer to the response to City Phase 2 IR 1.6.1 for additional information on the cuts to
- 10 access the NPS 20 IP gas line to either remove it or fill it with concrete once it has been
- 11 decommissioned. All paving scenarios assume repairs / restoration to address these damages.
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- 16 On page 10 of Exhibit C1-8, the City states:
- 17 FEI has already begun construction on its LMIPSU Project and the damage to 18 roads in other municipalities has been substantial. Attached at Appendix H is a 19 collection of photos taken on August 1, 2018 and September 13, 2018 20 respectively, which shows extensive damage to the lands adjacent to the main 21 trench, including excessive wear and tear from FEI's large excavators and/or 22 heavy construction equipment.
- 23 13.2 Please provide comment on FEI's position as to whether the photos demonstrate 24 "extensive damage" or "excessive wear and tear" to the lands adjacent to the main trench. Please provide labels to the photos where applicable. 25

27 **Response:**

28 A list and description of the photos is provided in the table below.

Photograph Number	Photograph Location
1	Burnaby – Lougheed Highway between Willingdon Avenue and Alpha Avenue
2	Burnaby – Lougheed Highway between Willingdon Avenue and Alpha Avenue



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Photograph Number	Photograph Location		
3	Burnaby – Lougheed Highway between Beta Avenue and Delta Avenue		
4	Vancouver – East 1 st Avenue between Woodland Drive and Nanaimo Street		
5	Vancouver – Woodland Drive at East 1 st Avenue		
6	Vancouver – East 1 st Avenue between Woodland Drive and Nanaimo Street		
7	Vancouver – Graveley Street between Kootenay Street and Boundary Road		

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2 None of the photos provided by the City show unanticipated, unexpected or surprising 3 "extensive damage" or "excessive wear and tear" to the lands adjacent to the trench for the NPS 4 30 IP gas line. The photos show that the construction footprint is contained within the one or 5 two lanes as planned for this construction work. In general, construction impact has not 6 occurred outside of the planned construction work space. FEI and its construction contractor 7 are committed to restoring impacted areas, and have successfully done so to date. Should 8 there be any impact outside of the planned work space due to the Project, FEI and its 9 construction contractor will restore these areas as well.

Attachment 7.2

Attachment 7.2a

FORTIS BC	FortisBC Energy Inc. (FEI or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Lower Mainland Intermediate Pressure (IP) System Upgrade (LMIPSU) Projects (the Application)	Submission Date: March 12, 2015
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13 **Response:**

Due to the urban location of the NPS 20 Coquitlam Gate IP pipeline, there are a number of site specific considerations, and other factors, that ultimately influence the abandonment decision for this pipeline. It is FEI's understanding that pipeline abandonment in place (as opposed to abandonment through removal) to be the most common form; however, it is the specific requirements pertaining to a particular pipeline that would dictate whether the pipeline should be abandoned in place, removed or partially removed.

Regulations governing the removal and abandonment of pipelines in BC include CSA Z662 and the Oil and Gas Activities Act (OGAA). The BC Oil and Gas Commission regulates pipeline abandonment and removal under OGAA, in particular under section 40. Requirements are prescribed under section 11 of the Pipeline Regulation. FEI must also comply with all federal and provincial regulatory requirements including the Environmental Management Act and associated regulations. CSA Z662-11 Clause 10.16.1 specifically states:

"The decision to abandon a section of piping, in place or through removal, shall be made
on the basis of an assessment that includes consideration of current and future land use
and the potential for safety hazards and environmental damage to be created by ground
subsidence, soil contamination, groundwater contamination, erosion, and the creation of
water conduits."

With regard to the NPS 20 Coquitlam Gate IP pipeline, the decision to abandon the pipeline in place was based on a number of factors including site specific considerations that limit the ability of the pipeline to be removed after commissioning of the replacement NPS 30 Coquitlam Gate IP pipeline.



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1 FEI's abandonment decision was informed during the NPS 30 Coquitlam Gate IP pipeline route 2 selection phase of the Project. The routing process acquired data pertaining to the terrain, urban 3 environment, including residential, commercial and industrial development, environmentally 4 sensitive locations, roads and traffic and third party above and below ground infrastructure from Coquitlam Gate station in Coquitlam to East 2nd & Woodland station in Vancouver. This 5 6 informed the NPS 30 pipeline routing in terms of identifying sub-surface constraints and 7 construction challenges along the route corridor and, because both the existing NPS 20 and 8 replacement NPS 30 pipelines would be located within the same road allowance, or offset a 9 couple of blocks, this understanding also informed FEIs decision with regard to abandonment of 10 the NPS 20 pipeline. Fundamentally, the impacts from removal of the existing NPS 20 pipeline 11 would result in a second major linear disturbance through the same communities and compound 12 the impacts from the NPS 30 pipeline construction immediately prior. Overall, the negative 13 impacts in terms of Health and Safety, Community and Stakeholder and Environment would be 14 significantly greater. The site specific and general considerations informing the abandonment 15 decision include:

- The gas flow in the existing NPS 20 pipeline must be maintained to supply customers while the NPS 30 IP pipeline is constructed and commissioned. Therefore, it is not possible to remove the existing NPS 20 IP pipeline prior to, or in conjunction with, the construction and installation of the proposed NPS 30 pipeline. The abandonment construction would occur after the NPS 30 pipeline construction, effectively doubling the construction impacts to the municipalities of Coquitlam, Burnaby and Vancouver;
- Unlike construction of a new pipeline, which targets the optimum location to effect construction as efficiently and safely as possible while minimizing impacts, even in a highly urbanized environment, the removal of the NPS 20 pipeline would have to contend with any obstacle encountered on the NPS 20 running line and utilize any available or non-standard construction technique to remove the decommissioned pipe;
- Considering the consistent urban nature of the pipeline route and the development in, around and over the NPS 20 pipeline in the intervening years since installation, in terms of buildings, paving, infrastructure and other structures and utilities, there would be significant logistical and construction challenges with removing the NPS 20 pipeline along the majority of the alignment;
- Removal of the NPS 20 pipeline from parks and sensitive environmental areas (e.g. watercourse crossings) could result in environmental impacts;
- As the majority of pipeline is located beneath active roadways, removing the existing
 NPS 20 pipeline would incur traffic impacts;



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- Removing the pipeline from beneath roads, railways and other utilities, particularly where
 the pipeline is buried deep, or overlain by third party assets, increases the risk for
 damage to these third party assets, and disruption to services provided by these to
 homes, schools and businesses, etc.
- Sections of the pipeline are installed along residential streets which would result in
 human environment (noise, dust, nuisance etc.) impacts during removal construction;
 and
- The preliminary screening cost estimate to remove and dispose of the majority of the existing NPS 20 pipeline is approximately \$75 million as detailed in the response to BCUC IR 1.11.7. This compares to \$3.1 million estimated cost to abandon the pipeline in place. There may be potential salvage value from recovery of the pipe steel during disposal; however, any salvage value would not likely offset the disposal costs, resulting in no net value to FEI.
- 14 Based on these considerations, FEI has selected abandonment of the NPS 20 Coguitlam Gate 15 pipeline in place as the lowest cost, least overall impact end-of-life solution as detailed in Exhibit 16 B-1, section 3.3.3. FEI will endeavor to identify, manage and mitigate potential environmental, 17 public or stakeholder legacy issues. This will include any adverse effects from abandonment, 18 resulting from pipe degradation after removal of cathodic protection (refer to the responses to 19 CEC IRs 1.45.1, 1.45.7, 1.45.8, 1.45.9, 1.45.10, 1.45.11 and 1.45.14), which, however, will be 20 mitigated by sectionalizing the pipeline, filling with a structural grout where warranted to prevent 21 potential future collapse, and sealing open ends to prevent abandoned sections of pipe from 22 acting as a water conduit and causing erosion.
- Therefore, in the case of the NPS 20 pipeline, abandonment in place is proposed by FEI as an appropriate solution, and is the preferred alternative compared to pipeline abandonment through removal, as it can mitigate removal impacts through avoiding the significant disturbance to existing road, railway and utility crossings, natural areas, parks, environmentally sensitive areas and communities along the route alignment.
- Notwithstanding the above, after the NPS 30 Coquitlam Gate IP pipeline is commissioned, removal and disposal of short sections of the NPS 20 pipeline will be required to facilitate the abandonment process. However, these locations will involve small scale excavations and be chosen where the NPS 20 pipeline has least depth of cover, is readily accessible and will minimize local construction impacts. The removal of further sections of pipeline is not considered feasible based on the site specific considerations previously outlined.
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FORTIS BC ^{**}	FortisBC Energy Inc. (FEI or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Lower Mainland Intermediate Pressure (IP) System Upgrade (LMIPSU) Projects (the Application)	Submission Date: March 12, 2015
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- 11.7.1 Please describe the adverse effects abandoning the pipe in the situ will have on future space restrictions, access to ROW's, and long-term environmental effects.
- 30 **Response:**

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FEI has selected abandonment of the NPS 20 Coquitlam Gate IP pipeline as the least impact end-of-life solution as further explained below. When carrying out abandonment, FEI will identify, manage and mitigate the potential environmental, public or stakeholder legacy issues. FEI does not foresee any significant adverse effects as a result of abandoning the pipeline in place.



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FortisBC Energy Inc. (FEI or the Company) Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Lower Mainland Intermediate Pressure (IP) System Upgrade (LMIPSU) Projects	Submission Date: March 12, 2015
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It should be noted that gas flow in the existing NPS 20 pipeline must be maintained to supply 1 2 customers while the NPS 30 pipeline is constructed and commissioned. Therefore, it is not 3 possible to remove the existing NPS 20 IP pipeline prior to, or in conjunction with, the 4 construction and installation of the proposed NPS 30 IP pipeline. After commissioning of the 5 NPS 30 IP pipeline, the existing NPS 20 will be decommissioned, degassed and disconnected from the Metro IP system. If the NPS 20 were then removed, the impact from the construction 6 7 and removal would be similar to constructing a second 20km pipeline through the same communities; therefore, leaving the NPS 20 in place is the least impact solution. Abandonment 8 9 of gas pipelines is governed by CSA Z662 and FEI internal standard DES 04-01-10. This is an 10 industry accepted process for end-of-life pipeline assets.

In the response to CEC IR 1.45.1, FEI provides an assessment of potential environmental
 impacts as noted by the Det Norske Veritas "Pipeline Abandonment Scoping Study" prepared
 for the National Energy Board in 2010.

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