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March 4, 2021

B.C. Sustainable Energy Association
c/o William J. Andrews, Barrister & Solicitor
1958 Parkside Lane
North Vancouver, B.C.
V7G 1X5

Attention: Mr. William J. Andrews

Dear Mr. Andrews:

Re: FortisBC Energy Inc. (FEI)

Project No. 1599152

**Application for a Certificate of Public Convenience and Necessity for the
Okanagan Capacity Upgrade Project (Application)**

**Response to the B.C. Sustainable Energy Association (BCSEA) Information
Request (IR) No. 1**

On November 16, 2020, FEI filed the Application referenced above. In accordance with the British Columbia Utilities Commission Order G-335-20 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to BCSEA IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

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1 **1.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, pp.25, 41**

3 On page 25 of the Updated Application, FEI states:

4 “The most significant constraint on maintaining minimum pressure into the north
5 and central Okanagan is the pressure limitation to 5171 kPag (750 psig) between
6 Ellis Creek Control Station in Penticton and the SN9-3 Control Station south of
7 Kelowna.”

8 1.1 Is this in effect the Updated Application’s “problem statement”?

9
10 **Response:**

11 The Project needs and objectives are provided in Section 4.1 of the Updated Application. As
12 stated there, FEI must:

- 13 1. Increase the delivery capacity of the ITS to meet peak demand requirements and to
14 maintain safe and reliable gas service to FEI customers in the central and north
15 Okanagan regions; and
- 16 2. Ensure all construction related activities are completed on time for the winter of
17 2023/2024 to avoid service interruptions to customers.

18 These needs form the “problem statement” for the Updated Application. The quoted text
19 illustrates how the forecasted capacity shortfall manifests itself, but is not the “problem
20 statement” itself. In other words, addressing the pressure limitation constraint described above
21 would not necessarily on its own address the needs and objectives of the Project.

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25 1.2 Does FEI have data on pressure minima in the north and central Okanagan? If
26 so, please provide a graph and table showing the historical annual minimum
27 pressure in the area of concern, along with the expected future annual minimum
28 pressures in the short term and upon completion of the proposed OLI PEN 406
29 Extension.

30
31 **Response:**

32 The following tables and figure provide the requested information for historical actuals on the
33 coldest winter day of the calendar year and forecast expectations for a Design peak day for
34 2021 through 2039 assuming the OCU Project is in service by the winter of 2023-24.

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Table 1: Actual Inlet Pressure at Kelowna #1 and Polson Gate Stations

Coldest Winter Day 2011-2020

Year	Date	Kelowna Weather		Kelowna #1 Gate Inlet Pressure (psig)	Polson Gate Inlet Pressure (psig)
		(°C)	(DD)		
2011	2/25/2011	-12.8	30.8	577	587
2012	1/18/2012	-18.7	36.7	556	540
2013	12/7/2013	-14.7	32.7	504	495
2014	2/6/2014	-16.1	34.1	447	432
2015	12/31/2015	-11.5	29.5	524	519
2016	12/16/2016	-17.5	35.5	576	568
2017	1/11/2017	-17.8	35.8	526	517
2018	2/21/2018	-13.6	31.6	573	569
2019	2/5/2019	-15.8	33.8	536	525
2020	1/14/2020	-18.9	36.9	538	519

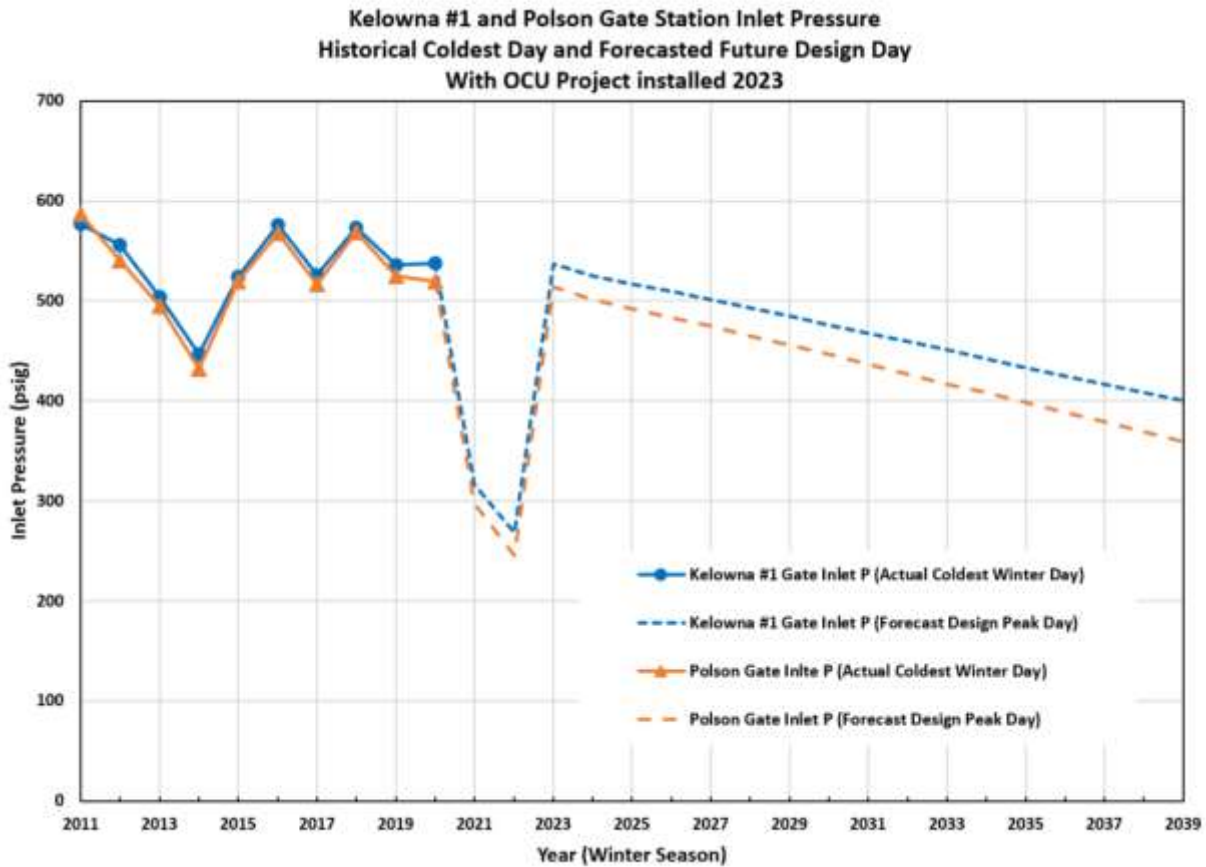
Table 2: Forecast Inlet Pressure at Kelowna #1 and Polson Gate Stations

Design Peak Day 2021-2039

Year	Date	Kelowna Weather		Kelowna #1 Gate Inlet Pressure (psig)	Polson Gate Inlet Pressure (psig)
		(°C)	(DD)		
2021	Forecast	-25.9	43.9	316	297
2022	Forecast	-25.9	43.9	268	245
2023	Forecast	-25.9	43.9	537	514
2024	Forecast	-25.9	43.9	525	501
2025	Forecast	-25.9	43.9	517	492
2026	Forecast	-25.9	43.9	509	483
2027	Forecast	-25.9	43.9	501	475
2028	Forecast	-25.9	43.9	493	465
2029	Forecast	-25.9	43.9	485	456
2030	Forecast	-25.9	43.9	476	447
2031	Forecast	-25.9	43.9	468	437
2032	Forecast	-25.9	43.9	459	427
2033	Forecast	-25.9	43.9	451	417
2034	Forecast	-25.9	43.9	442	408

Year	Date	Kelowna Weather		Kelowna #1 Gate Inlet Pressure (psig)	Polson Gate Inlet Pressure (psig)
		(°C)	(DD)		
2035	Forecast	-25.9	43.9	433	398
2036	Forecast	-25.9	43.9	425	388
2037	Forecast	-25.9	43.9	417	379
2038	Forecast	-25.9	43.9	408	369
2039	Forecast	-25.9	43.9	400	359

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1.3 Please provide a graph and table showing the historical annual minimum pressures in the Capacity Shortfall Area and the annual peak day demand in the area.

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1 **Response:**

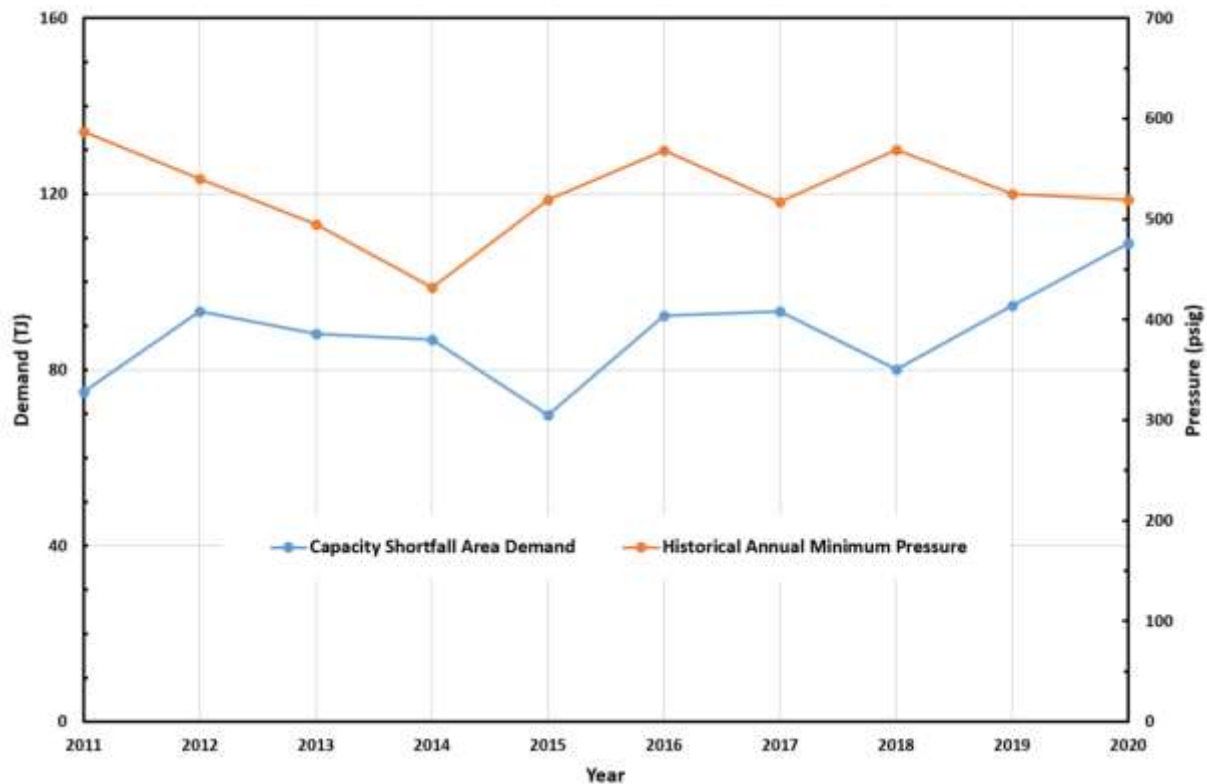
2 Please refer to the table and figure for the requested information.

Minimum Station Inlet Pressure and Peak Demand in the Capacity Shortfall Region - Coldest Winter Day 2011-2020

Year	Date	Kelowna Weather		Kelowna #1 Gate Inlet Pressure	Polson Gate Inlet Pressure	Capacity Shortfall Region Daily Demand	Actual System Daily Demand
		°C	DD	psig	psig	TJ/d	TJ/d
2011	2/25/2011	-12.8	30.8	577	587	75	180
2012	1/18/2012	-18.7	36.7	556	540	93	224
2013	12/7/2013	-14.7	32.7	504	495	88	212
2014	2/6/2014	-16.1	34.1	447	432	87	205
2015	12/31/2015	-11.5	29.5	524	519	70	165
2016	12/16/2016	-17.5	35.5	576	568	92	219
2017	1/11/2017	-17.8	35.8	526	517	93	220
2018	2/21/2018	-13.6	31.6	573	569	80	192
2019	2/5/2019	-15.8	33.8	536	525	95	221
2020	1/14/2020	-18.9	36.9	538	519	109	252

3

**Minimum Pressure and Peak Demand in the Capacity Shortfall Region
Coldest Winter Day 2011-2020**



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1.4 Do the annual minimum pressures in the Capacity Shortfall Area coincide with the annual peak day demand? If not, please explain.

Response:

FEI expects the minimum pressures experienced across the system to coincide with the period of highest system demand that occurs on the peak day of the year. Gas flows increase as a result of increased demand on the system. During these conditions, the pressure at any downstream point in the transmission system decreases the further from the supply. The rate of pressure degradation increases as flow increases through the pipeline system. Consequently, highest demand inevitably coincides with lowest pressures.

As new customers attach to the system they collectively contribute to increasing demand, producing higher flows and causing lower pressures in the system than would have been experienced on the system in the same weather in previous years. The need for the OCU Project is determined by forecasting the increase in peak demand and consequently the declining pressure in the existing system. The Project must increase the pressure in the areas of concern by identifying solutions to meet the required customer demand in a way that can reduce the rate of pressure decline as gas flows through the system, or to increase the pressure available at pressure control points in the system to overcome the higher rate of pressure decrease caused by the increased demand.

1.5 If the timing of annual minimum pressure in the area of concern is not correlated with the annual peak day demand, then please address:

- (a) what explains the timing of the pressure minima in the Capacity Shortfall Area,
- (b) whether there is a historical downward trend in the annual minimum pressure in the area of concern,
- (c) whether Project “need” should be evaluated in terms of the annual minimum pressure in the area of concern rather than the forecast peak day demand in relation to estimated system capacity.

Response:

Please refer to the response to BCSEA IR1 1.4.

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1 **2.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, p.16; Figure 3-5: Capacity Shortfall Region**

3 FEI states on p.16 of the Updated Application:

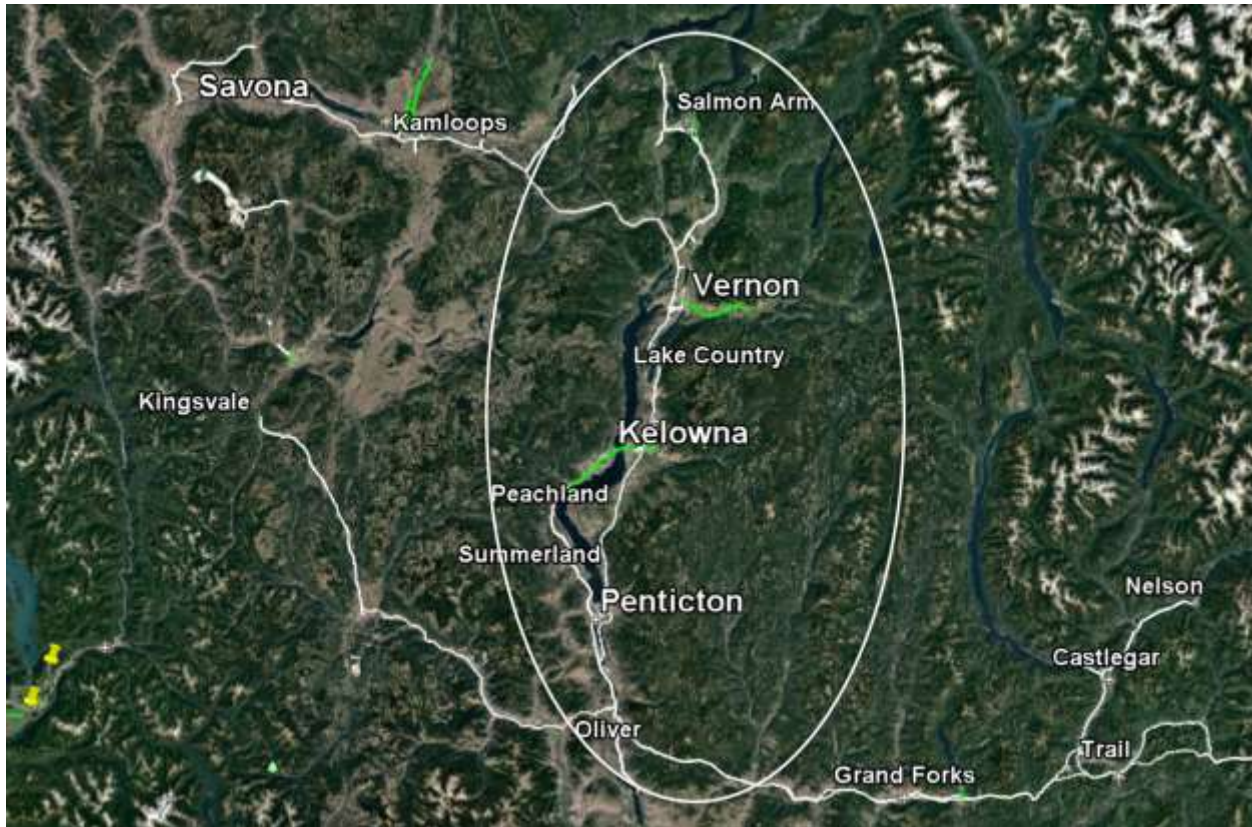
4 “Currently, approximately 60 percent of the demand on the ITS is concentrated
5 in the Okanagan region, which includes Kelowna. The population growth in this
6 area has led to a corresponding increase in the demand for gas, and thus an
7 increased demand on the ITS.” [underline added]

8 Figure 3-5 shows the Capacity Shortfall Region.

9 2.1 Please provide a version of Figure 3-5 that shows the “Okanagan region” in
10 which 60% of the demand on the ITS is concentrated.

11 **Response:**

12 The area circled in the figure below shows the Okanagan region in which 60 percent of the
13 demand on the ITS is concentrated.
14



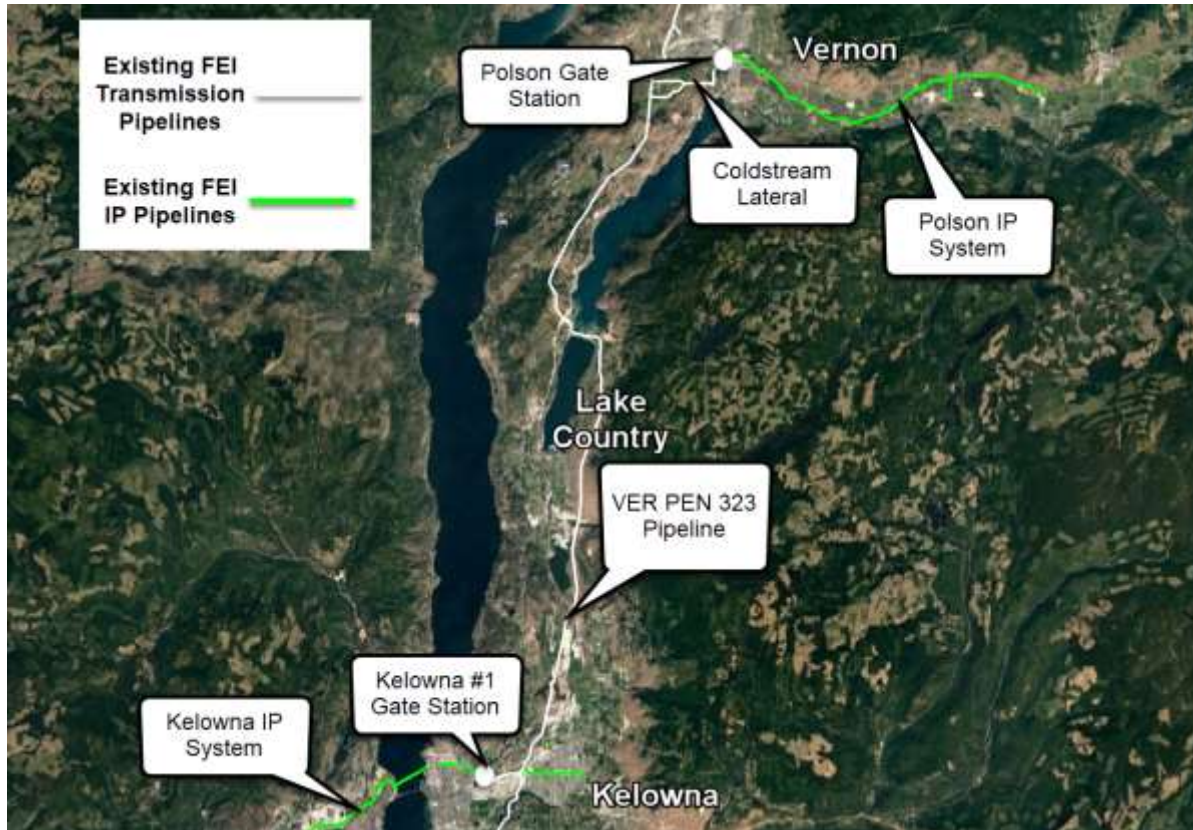
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2.2 Please provide a more detailed version of Figure 3-5 that shows the pipelines and pipeline segments within the Capacity Shortfall Region.

Response:

The figure below shows additional details of the pipelines and pipeline segments within the circled Capacity Shortfall Region in Figure 3-5 of the Updated Application.



2.3 When FEI says “approximately 60 percent of the demand on the ITS is concentrated in the Okanagan region” does this refer to annual energy or to annual peak demand?

Response:

This statement refers to peak day demand, not annual energy consumption.

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2.4 What percentage of the peak demand on the ITS is within the Capacity Shortfall Region?

Response:

Approximately 10 percent of the peak demand on the ITS is on systems which will first experience a capacity shortfall, representing the communities of West Kelowna in the central Okanagan and Lavington and Lumby in the north Okanagan as shown in the circled area in Figures 3-9 and 3-10 of the Updated Application. As demand on the ITS increases, the magnitude of the capacity shortfall will increase and, along with it, the number of customers affected in the case of a shortfall will rise. The Capacity Shortfall Region as circled in Figure 3-5 of the Updated Application represents about 40 percent of the peak demand on the ITS.

2.5 Please explain how the two IP pipelines shown within the Capacity Shortfall Region on Figure 3-5 relate to the Capacity Shortfall and the proposed OLI PEN 406 Extension.

Response:

The two IP pipelines shown will be the first to experience low pressures during periods of high demand. These pipelines serve customers in the identified capacity shortfall regions and, when pressure drops too low in the VER PEN 323 pipeline, the IP systems will drop below minimum required pressures and customers in the surrounding area will be the first to be impacted. With the completion of the OCU Project, FEI will be able to maintain adequate inlet pressures even during peak demand periods. This will allow stable operation of these IP pipelines, and the downstream district regulating stations and distribution systems, to reliably serve the customers supplied by these pipelines.

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1 **3.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, p.17; Figure 3-6: ITS Historical and Forecast Peak**
3 **Demand; FEI 2017 Long-Term Gas Resource Plan, Exhibit B-1 in**
4 **BCUC proceeding, page ES-8, pdf p.20**

5 FEI states on p.17 of the Updated Application:

6 “Figure 3-6 below illustrates the historical increase in peak demand as well as the
7 forecast increase in peak demand on the ITS according to historical loads and
8 the 2019 load forecast (the most recent load forecast at the time of project
9 development).”

10 3.1 Please confirm, or otherwise explain, that Figure 3-6 shows peak demand in the
11 entire ITS area and not the peak demand in the “Okanagan region” or in the
12 Capacity Shortfall Region shown in Figure 3-5.

13
14 **Response:**

15 Confirmed. The peak demand in Figure 3-6 represents the peak demand for all customers in all
16 regions served by the ITS.

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20 3.2 Why does FEI analyze the need for a capacity increase in one portion of the ITS
21 by examining the entire ITS rather than examining the need for a capacity
22 increase in the Capacity Shortfall Region itself?

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24 **Response:**

25 FEI has considered demand in all regions served by the ITS when addressing capacity
26 constraints. The Capacity Shortfall Region, and the low pressure that occurs there, is
27 influenced by the demand though a much larger portion of the ITS than just the immediate
28 vicinity. Solutions to address capacity constraints, as illustrated by the range of alternatives
29 considered in the Updated Application, can also be located distant from the area that is first
30 impacted. Please also refer to the response to BCUC IR1 2.3 for a more detailed discussion of
31 how demand in the ITS, both overall and locally, affects the capacity to supply gas to customers
32 in the Okanagan region.

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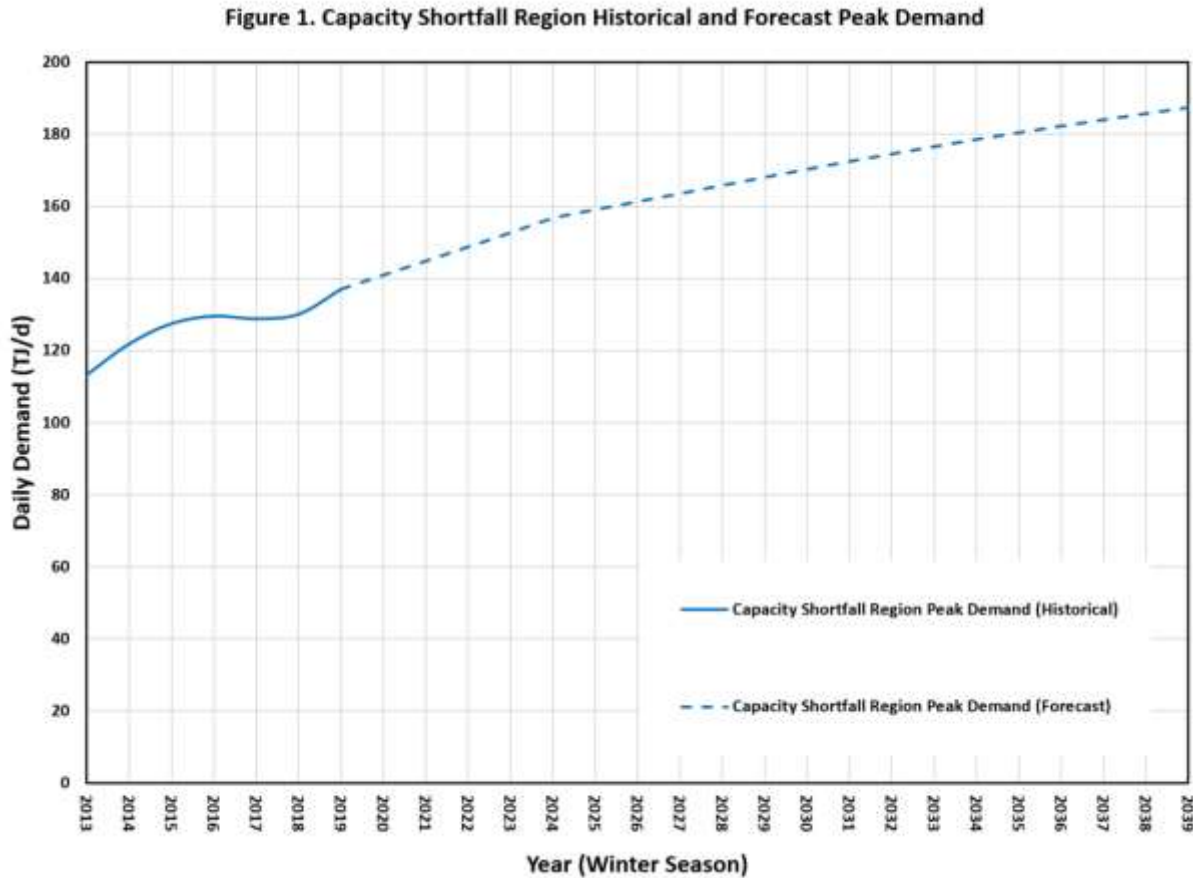
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36 3.3 Does FEI have historical and forecast peak demand figures for the Capacity
37 Shortfall Region? If so, please provide a graph like Figure 3-6 for the Capacity
38 Shortfall Region.

39

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1 **Response:**

2 The figure below shows the historical and forecast peak demand for the Capacity Shortfall
3 Region.



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8 3.4 Please provide a breakdown of the historical and forecast peak demand figures
9 by residential, commercial, industrial and Natural Gas for Transportation. Are any
10 additional types of load included?

11
12 **Response:**

13 FEI has provided a breakdown of the forecasted peak demand in Appendix L of the Updated
14 Application in all Regions. Please refer to the tab "ITS Peak Day Demand" in Appendix L-3 -
15 ITS Account and Peak Day Demand Forecast Details by Rate Schedules_Live Spreadsheet.
16 The worksheet includes breakdowns by community and system wide totals are shown in rows
17 142 to 152. The "ITS Accounts" tab identifies all the rate schedules considered in the peak
18 demand forecast. These rate schedules include all firm residential, commercial, industrial, and
19 Natural Gas for Transportation peak demand. There are no other types of load included.

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1 The historical loads were not collected into FEI's hydraulic model in past years in a manner that
2 would enable FEI to provide a similar breakdown. Consequently, historical information cannot
3 be presented in a similar fashion. However, very similar proportioning of load among customer
4 rates schedules would be represented in the historical peak demand.

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8 3.5 FEI says that forecast peak demand does not include interruptible load. Please
9 confirm, or otherwise explain, that historical peak demand does not include
10 interruptible load. If the historical peak demand in Table 3-6 does include
11 interruptible load, please provide a version that excludes interruptible load.
12

13 **Response:**

14 Confirmed. The peak demand represented in Figure 3-6 does not include interruptible load.
15
16

17
18 3.6 Please clarify whether the ITS Historical Peak Demand shown in Figure 3-6 is
19 temperature normalized.
20

21 **Response:**

22 Temperature normalization is not considered in peak demand forecasting. Peak demand for
23 system capacity planning purposes is determined using extreme winter temperatures, not
24 typical or normal winter weather. This is to ensure that FEI has sufficient infrastructure in place
25 to meet the forecast demand of its customers at all times, even during peak periods that occur
26 during low temperature conditions.
27
28

29
30 3.6.1 Please explain why the Historical Peak Demand line meets the
31 Forecast Peak Demand line at 2019. Did 2019 experience a 20-year
32 coldest day?
33

34 **Response:**

35 FEI did not experience a 1 in 20 year coldest day in 2019. The historical peak demand values
36 shown in Figure 3-6 of the Updated Application are the historical estimates of peak demand
37 under design temperature conditions from FEI's hydraulic models for the ITS. The values do
38 not represent the actual peak demand on the ITS for the coldest day that occurred in 2019 or
39 any previous year represented in the figure.

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3.7 Please explain how or if the Forecast Peak Demand takes into consideration future changes in winter temperatures and/or extreme weather events as a result of climate change.

Response:

Please refer to the response to BCUC IR1 8.4.

3.8 Please provide a version of Figure 3-6 showing what FEI refers to as “ITS Capacity.” The intention is to show historical changes in ITS Capacity in relation to the historical ITS annual peak demand.

Response:

The figure below shows how FEI’s peak demand forecast and capacity on the system has changed between the 2017 LTGRP and the Updated Application. FEI’s forecast peak demand in 2019 was higher than forecast in the 2017 LTGRP. This reflects actual net customer additions in 2016, 2017, and 2018 that were above that 2017 LTGRP forecast. Please see the response to BCUC IR1 4.1.2 for additional discussion of the difference in peak demand forecasts between the 2017 LTGRP and the Updated Application.

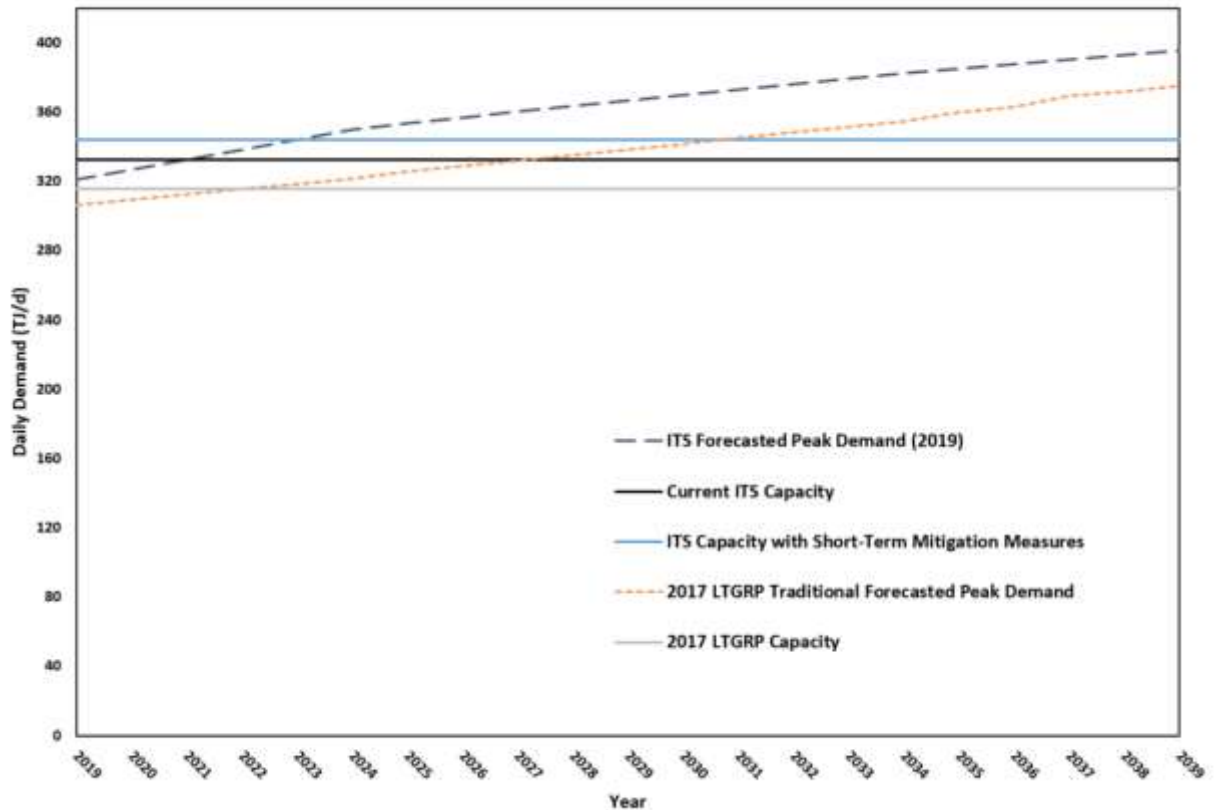
With respect to the representation of capacity between the two forecasts, the 2017 LTGRP forecast reflected capacity at the traditional design minimum inlet pressure and is represented as a capacity of 315 TJ per day in the figure against the 2017 LTGRP peak demand forecast.

The “Current ITS Capacity” reflects that the existing Kelowna #1 and Polson Gate Stations had some capacity to accept inlet pressures below the minimum design criteria of 350 psig without requiring mitigation measures. This raises the available capacity reflected in that capacity line. FEI also re-examined the historical maximum Industrial demand and revised it downward in the capacity shortfall region where reasonable to do so. This also has the effect in these plots of raising the capacity line relative to the peak demand curve. The combined effect provided a capacity of 333 TJ per day against the 2019 peak demand forecast.

Then with the mitigation measures, including potential higher delivery pressures from Enbridge at Savona, the temporary ability to achieve the higher capacity is reflected in the higher short-term capacity representation of 344 TJ per day shown in the figure as “ITS Capacity with Short-Term Mitigation Measures”. In addition, please refer to the response to BCUC IR1 10.2 for a breakdown of the capacity impact of the mitigation measures.

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Peak Demand Forecast and Capacity in the Updated Application and 2017 LTGRP



FEI cites the following sources on p.18:

⁸ Statistics Canada, Table 17-10-0135-01, Population estimates, July 1, by census metropolitan area and census agglomeration, 2016 boundaries. July 1, 2018 data.

⁹ Population projections prepared for FBC by BC Stats.”

3.9 Please provide copies of the sources referred to in footnotes 8 and 9.

Response:

The source referred to in footnote 8 can be found at the following link:

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710013501>

Please refer to Attachment 3.9 for a copy of the fully functional Excel spreadsheet containing the source data referenced in footnote 9.

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FEI states in footnote 10 on page 18:

“¹⁰ System design temperature is determined for each region by calculating the coldest day which is statistically likely to occur once in a 20-year period. FEI’s system is designed to meet the peak demand which would occur during this extreme cold weather event. The statistical 20-year low is calculated using information from local weather stations, and is updated as weather trends change.” [underline added]

3.10 What is the region for the system design temperature used in determining the ITS Historical and Forecast Peak Demand shown in Figure 3-6? Is the region coincident with the ITS?

Response:

The ITS spans four weather zones, each with its own design temperatures related to an index weather station whose weather history determines the local system design temperature. The regions are:

- Thompson – indexed to the Kamloops Airport (YKA) weather station;
- North and Central Okanagan – indexed to Kelowna International Airport (YLW);
- South Okanagan – indexed to the Penticton Airport (YYF); and
- West/Central Kootenay – indexed to West Kootenay Regional (Castlegar) Airport (YCG).

FEI calculates the peak demand for each customer relative to the design temperature calculated for their associated regional index weather station. For peak demand forecasting of the ITS, FEI assumes all four regions are at their design temperature coincidentally. Consequently, all customers across the ITS would be consuming their design day peak demand coincidentally.

3.11 What is the system design temperature for the Capacity Shortfall Region?

Response:

The Capacity Shortfall Region is in the North and Central Okanagan. As mentioned in Section 3.3.1.1 of the Updated Application, the system design temperature for that region, indexed to the Kelowna International Airport, is a mean daily temperature of minus 25.9 °C and is equivalent to a 43.9 Design Degree.

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4 In the 2017 LTGRP, FEI acknowledges “policy-driven risks of downward pressure on
5 natural gas demand” in the 20-year visions. [p.ES-11]

6 3.12 Does the Forecast Peak Demand take into consideration policy-driven risks of
7 downward pressure on natural gas demand in the ITS and the Capacity Shortfall
8 Region? If so, to what extent? If not, why not?
9

10 **Response:**

11 FEI’s peak demand forecast does not directly consider the potential impact of policy changes
12 over the next 20 years. Further, the impact of policy changes on peak demand may differ from
13 the impact of policy changes on annual demand.

14 FEI’s peak demand forecasting serves two primary purposes:

- 15 1. To provide a reasonably high future demand projected onto the existing transmission
16 systems to determine where and when future constraints to the system may be reached
17 in response to that demand. FEI purposely tests the system to the end of the forecast
18 period in order to identify capacity constraints, determine high-level scopes and timing of
19 possible solutions, and to begin the initial process of project planning to mitigate any
20 capacity shortfalls.
- 21 2. To validate the timing and scope of identified projects in the short to medium-term. FEI
22 can then ensure that the solutions are not implemented in advance of their need and are
23 sufficient in scope to address the future peak demand on the system for a reasonable
24 period into the future.
25

26 Imposing a scenario where peak demand is driven lower as a result of uncertain policy or other
27 pressures could ultimately result in a lower state of readiness and responsiveness to
28 maintaining a robust and reliable transmission system.

29 FEI believes that the current peak demand forecasting methodology using typical account and
30 customer growth rate forecasts is appropriate and prudent for system planning. This approach
31 identifies potential constraints and solutions in advance of their need, and ensures only projects
32 with a valid current need are implemented.
33

34
35 In the 2017 LTGRP, FEI states:

36 “For each regional system, higher or lower than expected load growth could shift
37 the timing of system expansion requirements either ahead or further out in time.
38 The potential for additional new, large industrial demand could create a step
39 change in load delivery requirements and a corresponding advancement of

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1 system expansion requirements. Because the location, size and nature of such
2 potential new loads are often speculative, a myriad of potential impacts could
3 occur, making it difficult to model these loads.” [FEI 2017 Long-Term Gas
4 Resource Plan, Exhibit B-1 in BCUC proceeding, page ES-8, pdf p.20]

5 3.13 Please show uncertainty bands on the forecast ITS peak demand curve in
6 Figures 3-6 and 3-7.
7

8 **Response:**

9 FEI does not calculate uncertainty bands for its annual determination of peak demand and is not
10 able to characterize the formal statistical uncertainty in the peak demand forecast presented in
11 Figures 3-6 and 3-7.
12
13

14
15 3.14 Is minimum pressure in the affected pipeline segments a more direct measure of
16 the ‘headroom’ between peak demand and system capacity?
17

18 **Response:**

19 FEI is assuming “minimum pressure” refers to using minimum inlet pressure as a design
20 parameter and trigger for capacity upgrades. In that context, minimum pressure could be
21 considered as a minimum acceptable “headroom” or buffer to allow proper system design and
22 operation of the transmission or distribution system. It is used as one parameter to identify the
23 point in time where solutions to improve system pressures should occur to maintain system
24 reliability and avoid customer impacts.
25

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1 **4.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, Figure 3-8: ITS Peak Demand vs. Capacity After**
3 **Completion of OCU Project**

4 FEI states on page 19:

5 “For reference, Figure 3-8 below illustrates both the current capacity and the
6 capacity of the ITS following completion of the OCU Project. The figure shows
7 that, with the OCU Project, there will be sufficient capacity to support peak
8 demand until the winter of 2029/2030.”

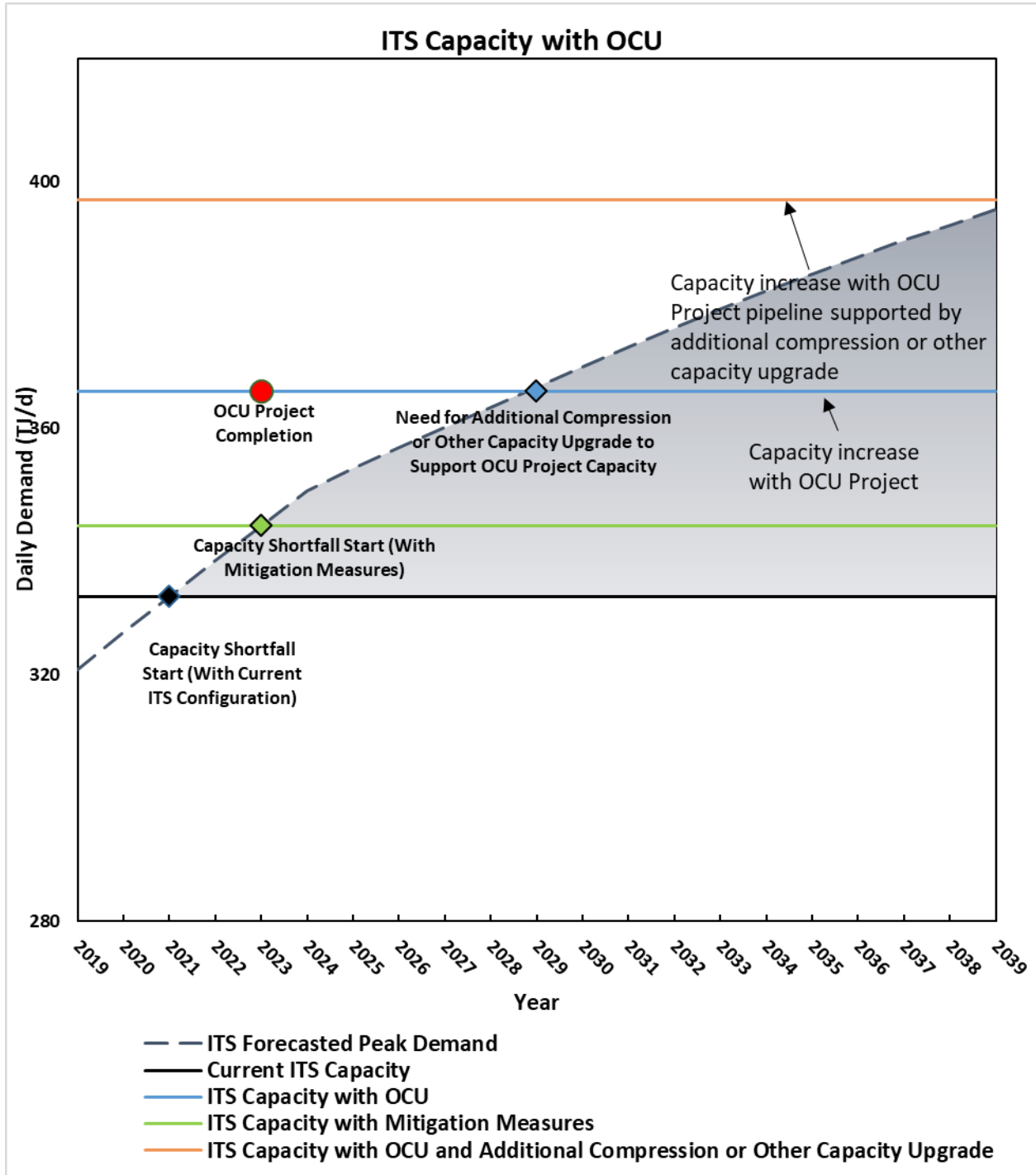
9 4.1 Please provide a version of Figure 3-8 that shows “ITS Capacity with OCU”
10 starting in the appropriate year.

11
12 **Response:**

13 FEI has provided an annotated version of the graph below. As shown in the graph, the existing
14 ITS capacity intersects forecast peak demand in 2021 (indicating that a shortfall may occur, as
15 capacity no longer exceeds peak demand). With short-term mitigation measures in place, ITS
16 capacity intersects forecast peak demand in 2023 (indicating that a shortfall may occur, as
17 capacity with mitigation measures would no longer be sufficient to support peak demand). The
18 red point on the graph indicates the planned completion date of the OCU project in 2023. With
19 the OCU Project in place, the ITS capacity is expected to intersect the forecast peak demand in
20 2029 (indicating that a shortfall may occur, potentially requiring added compression to support
21 increasing peak demand). After 2029, additional compression or other gas supply would be
22 needed to provide support for the ITS capacity to meet the 20-year peak demand forecast
23 (please also refer to the response to BCUC IR1 14.3). Note that any compression upgrade
24 alone would not address the capacity constraints on the existing ITS unless the pipeline
25 upgrade is completed first, as compression cannot overcome the significant bottleneck in the
26 VER PEN 323 pipeline between Penticton and Kelowna.

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1 **Annotated Figure 3-8: ITS Peak Demand vs. Capacity After Completion 1 of OCU Project**



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4.2 Please provide a version of Figure 3-8 that shows Peak Demand vs. Capacity After Completion of OCU Project for the Capacity Shortfall Region.

Response:

As discussed in the response to BCUC IR1 13.2, Figure 3-8 is a simple way of representing capacity, but this method cannot fully convey the complex interactions within the hydraulic model that determines which constraint limits the capacity. Complexity such as the short-term mitigation measures FEI will employ in advance of this Project, the changing distribution of load, or the ability in some locations to accept lower than minimum inlet pressure at some gate stations, is not able to be fully communicated in this simple representation. The capacity lines on the figure simply intersect the demand curve in the year the capacity constraint is reached. In the response to BCSEA IR1 2.4, FEI stated that the peak demand within the Capacity Shortfall Region is approximately 40 percent of the peak demand on the ITS. As a result, the modified figure requested is identical to the figure presented in the response to BCSEA IR1 4.1, with the exception that the peak demand on the Y-axis would be about 40 percent of the peak demand in the original plot.

Peak demand versus capacity after completion of the OCU Project is shown in both the original Figure 3-8 and in the annotated graph provided in the response to BCSEA IR1 4.1. The blue line on the graph indicates capacity after completion of the OCU Project, while the dashed line indicates forecasted peak demand.

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5.0 Topic: Project Need

Reference: Exhibit B-1-2, pp.20-24

FEI states on p.20:

“The peak day demand forecast methodology that FEI used to assess the need for the OCU Project is consistent with the methodology FEI has used in previous CPCN applications and long-term resource plans filed with the BCUC.”

5.1 Please identify the previous CPCN applications FEI has in mind when it says the peak day demand forecast methodology that FEI used to assess the need for the OCU Project is consistent with the methodology FEI has used in previous CPCN applications.

Response:

The peak day demand forecasting methodology used by FEI in the OCU Project Application is consistent with the methodology used in the following previous CPCN applications filed by its corporate predecessor (BC Gas Utility Ltd. or BC Gas) listed below.

1. Southern Interior System Reinforcement Project CPCN – As mentioned in Section 3.2 of the Updated Application, in Order C-4-94 the BCUC approved a CPCN for BC Gas to upgrade its existing Savona, Kingsvale, and Trail compressor stations and build two new compressor stations at Midway and Kitchener, along with an NPS 16 loop between Oliver and Penticton (South Okanagan Natural Gas pipeline) to increase the capacity of the Interior Transmission System to meet the forecast increase in peak demand.
2. Southern Crossing Pipeline (SCP) Project CPCN – In Order C-11-99 the BCUC approved a CPCN for the SCP Project, which was required to meet the incremental peak day demand and seasonal gas requirements for customers over the subsequent 30 year period. The concern about how best to provide for this expected load growth was first raised in the BC Gas 1995 Integrated Resource Plan (IRP) submission to the BCUC. Subsequently, the IRP Update in May 1997 recommended the SCP as the best option for meeting the future incremental needs of customers.

In both these CPCN applications, the growth of natural gas demand established the need for the project, which was to have adequate capacity to meet the forecast increase in peak demand, which closely resembles the need for the OCU Project.

FEI also notes that it has consistently applied its peak demand forecasting methodology to other recent CPCN applications. For example, although the Lower Mainland Intermediate Pressure System Upgrades, Inland Gas Upgrades, and Pattullo Gas Line Replacement Projects all had drivers that were not directly related to capacity, the same peak demand forecast methodology was used in these applications to determine the sizing of system capacity components.

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5.2 Please list previous CPCN applications by FEI (or its corporate predecessors) in which the need for the project was to have adequate capacity to meet a forecast increase in peak demand.

Response:

Please refer to the response to BCSEA IR1 5.1.

5.3 Please explain how “need” was established in the previous CPCN application that in FEI’s view most closely resembles the Application in terms of the need for the project.

Response:

Please refer to the response to BCSEA IR1 5.1.

FEI states on p.22:

“FEI accounts for variations across the region served by the ITS by calculating average UPCs at a more local level. For the portion of the ITS most impacted by the capacity constraint addressed by the OCU Project, FEI calculates UPCpeak values in ten local regions, each comprising one or more municipal districts between Kamloops and Penticton. The peak demand in these locales, especially in the region circled in Figure 3-5: Capacity Shortfall Region above, is most influential on the timing of the capacity constraint.”

5.4 Further to BCSEA IR 3.3, if FEI has UPCpeak values in municipal districts between Kamloops and Penticton please provide historical and forecast annual peak demand for those districts, or, more specifically, for the Capacity Shortfall Region.

Response:

The following table provides the historical and forecasted peak demand for the Capacity Shortfall Region. FEI has also provided the percentage of load in this region compared to the overall ITS load to illustrate how the Capacity Shortfall Region is growing in load relative to the ITS overall.

1

ITS and Capacity Shortfall Region Peak Demand

Year	ITS Demand (TJ/day)	Capacity Shortfall Region (TJ/day)	%
2013	272	113	42%
2014	287	122	42%
2015	303	127	42%
2016	307	130	42%
2017	303	129	42%
2018	311	130	42%
2019	321	137	43%
2020	327	141	43%
2021	333	145	44%
2022	338	149	44%
2023	344	153	44%
2024	350	157	45%
2025	353	159	45%
2026	357	161	45%
2027	360	163	45%
2028	363	166	46%
2029	367	168	46%
2030	370	170	46%
2031	373	172	46%
2032	376	174	46%
2033	379	177	47%
2034	382	178	47%
2035	385	180	47%
2036	388	182	47%
2037	390	184	47%
2038	393	186	47%
2039	395	187	47%

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5.5 Please explain why UPCpeak values in municipal districts between Kamloops and Penticton that are not within the Capacity Shortfall Region are relevant to the timing of the capacity constraint in the Capacity Shortfall Region.

Response:

10

11

FEI considered the peak demand in all areas of the ITS when developing solutions to address capacity constraints. Growth in peak demand in areas outside of the Capacity Shortfall Region

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also contributes to the constraint. Please also refer to the response to BCUC IR1 2.3 for a more detailed explanation.

FEI states on page 23:

“FEI applies the relevant LHA [local health authority] growth rates to the customer counts in each municipality to develop a 20 year customer forecast for each municipality. These forecasts are aggregated to the FEI regional level (Lower Mainland, Inland, Columbia, Vancouver Island, Whistler, Revelstoke, or Fort Nelson).”

5.6 Please explain why FEI aggregates customer forecasts from the municipal level up to the Inland regional level when it is the Capacity Shortfall Region that is apparently pertinent to the proposed OLI PEN 406 Extension.

Response:

The municipal forecasts must be aggregated to the regional level (Inland and Columbia Regions) so they can be reconciled with the regional forecasts. At that point the municipal forecasts can be regrouped and re-aggregated to account only for those municipalities in the Capacity Shortfall Region or those impacted by the OLI PEN 406 Extension. This step is necessary to ensure consistency with the regional forecasts.

Please also refer to the response to BCSEA IR1 5.5.

After providing Kelowna as a high-level example of the municipal-level determination of forecast of customer additions, FEI says on page 24:

“The forecasted account additions each year are combined with the UPCpeak values to determine the incremental increase in peak demand in each community across the ITS.”

5.7 Please explain the relevance of the incremental increase in peak demand in each community across the ITS. Isn't it the incremental increase in peak demand within the Capacity Shortfall Region that matters in terms of the proposed OLI PEN 406 Extension?

Response:

Please refer to the response to BCUC IR1 2.3.

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1

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4 FEI states on page 24:

5 “As shown in Figure 3-7, the available capacity of the ITS in the central
6 Okanagan will exceed the demand in the winter of 2021/2022 if FEI does not
7 take any mitigation measures.”

8 5.8 Is there a typo in the quoted sentence? Is the intention to say ‘the peak demand
9 will exceed the available capacity of the ITS in the central Okanagan in the winter
10 of 2021/2022 if FEI does not take any mitigation measures”?

11

12 **Response:**

13 Yes, the quoted sentence contains an editing error. The sentence should read: “As shown in
14 Figure 3-7, the peak demand on the ITS in the central Okanagan will exceed available capacity
15 in the winter of 2021/2022 if FEI does not take any mitigation measures.”

16

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6.0 Topic: Project Need

Reference: Exhibit B-1-2, p.24

FEI states on page 24:

“The gas supplies from the north and south converge at the lowest pressure point within this portion of the ITS, typically near the Polson Gate Station on the south side of Vernon.”

6.1 Does FEI expect that implementation of the proposed Project will shift the location of the lowest pressure point within this portion of the ITS? If so, will it be shifted northward? To where?

Response:

Upon completion of the OCU Project, the point where the gas supplies converge from the north and south will remain in the Vernon area at Polson Gate, however a larger portion of the peak demand in the Vernon region will be supported from gas supplied from TC Energy. As system load grows through the forecast period, a larger portion of the Vernon system will be supplied from TC Energy and the convergence of flows should move slightly north to Vernon Gate Station, the next station north of Polson Gate Station.

6.2 What are the implications of a shift in the location of the lowest pressure point within this portion of the ITS for the input of natural gas from the Westcoast-Enbridge T-South pipeline and the TCE Foothills pipeline? Will there be a significant change in the ratio of ITS supply from the north and from the east? Are there any implications for ITS system resiliency?

Response:

Please refer to the response to BCUC IR1 12.1 for a discussion of the impact on gas supply and supply resiliency benefits from the OCU Project. The ITS system resiliency will also be improved though increased pipeline capacity to supply gas into the Okanagan; this will enable enhanced operation both during, and while recovering from, unexpected gas supply disruptions. Please also refer to the response to RCIG IR1 16.5.

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1 6.3 Please show the Polson Gate Station and Kelowna #1 Gate Station on a map.

2

3 **Response:**

4 Please refer to Figures 3-9 and 3-10 on page 27 of the Updated Application, which shows the
5 locations of the Kelowna #1 Gate Station and Polson Gate Station, respectively.

6

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1 **7.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, pp.25-26**

3 FEI states on pages 25-26:

4 “The compression available at Kitchener to move gas from the TC Energy supply
5 at Yahk through the proposed OCU gas line into the Okanagan is sufficient
6 without need for upgrade for the early part of the forecast, up to the winter of
7 2029-30.

8 Based on the current forecast, by the summer of 2029 FEI will need to upgrade
9 the compression capability on the SCP to improve capacity into the Central and
10 North Okanagan. FEI is currently considering several possible options to
11 increase compression capability on the SCP to meet a variety of possible future
12 needs. As the compression requirement to address future capacity needs in the
13 Okanagan is several years beyond the immediate need for the OCU Project, and
14 the optimal location and extent of required additional compression cannot yet be
15 determined, FEI did not include a compressor upgrade in the OCU Project.
16 Compressor requirements to satisfy the longer term capacity needs would be
17 included, as needed, as part of any expansion project contemplated on the SCP.”

18 7.1 Please compare Alternatives 1, 2 and 3 in terms of a need for additional
19 compression on the SCP by the winter of 2029-30.

20
21 **Response:**

22 Alternatives 1, 2, and 3 each provide a nearly identical capacity improvement to the ITS without
23 compression; therefore the need and timing of the additional compression on the SCP would be
24 the same for each alternative.

25
26

27

28 7.2 What capacity-focused demand-side management measures is FEI exploring
29 with a view to deferring a need for enhanced compression on the Southern
30 Crossing Pipeline to address future capacity needs in the Okanagan?

31

32 **Response:**

33 FEI offers significant financial support through its Demand Side Management (DSM) programs
34 to help customers reduce their energy usage and hence their bills. While these measures are
35 well-proven to reduce annual energy consumption, their link to reducing peak demand is much
36 less clear. For example, DSM measures may include the installation of energy efficient devices
37 such as on-demand hot water heating and automatic thermostats. These technological
38 advances do reduce overall energy consumption, reduce emissions, and reduce customer bills.
39 However, FEI cannot reliably determine the impact that DSM measures may have on peak

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1 demand. DSM such as on-demand hot water heating may in fact increase peak demand; while
2 overall energy expenditure is lower, the amount of gas used during the heating period,
3 particularly during extreme cold weather, may in fact be significantly higher. The same is true for
4 automated thermostats; these may reduce consumption during the night, but the morning peak
5 may in fact increase as homes are heated for the day from a lower nighttime temperature.

6 Currently, there is too much uncertainty regarding the impact that these potential changes to
7 gas demand through DSM may have on the peak demand for FEI to reliably incorporate them
8 into its peak demand forecasting. As FEI gathers more data over the following years, it may
9 become apparent that the future compression upgrade could be deferred based on a lowering of
10 the peak demand due to DSM. Deferring the compression upgrade rather than including it as
11 part of the OCU Project, as FEI has done, will provide FEI with additional years of load data
12 which will assist in identifying the timing of the need for compression. However, at this point in
13 time, the potential for future DSM cannot be quantified in FEI's forecast.

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1 **8.0 Topic: Project Need**

2 **Reference: Exhibit B-1-2, p.26**

3 On page 26 (pdf 38), FEI states:

4 “As temperatures drop and heating load increases, curtailment of interruptible
5 and non-interruptible¹³ commercial and residential customers becomes
6 increasingly likely if customer demand exceeds the design capacity limits of the
7 system.”

8 In footnote 13 on page 26, FEI states:

9 “¹³ Certain large industrial and commercial gas customers have elected for
10 “interruptible” service, which means that they can be curtailed and need to stop
11 consuming gas and switch to alternative fuels under peak weather conditions.
12 This curtailment is necessary to free up capacity on the FEI system when the
13 demand from firm core residential and commercial customers ramps up under
14 peak weather conditions. These interruptible customers receive lower rates in
15 exchange for this potential inconvenience and disruption. As previously noted,
16 interruptible demand is not considered when determining forecasted peak
17 demand.”

18 8.1 Has FEI explored purchased curtailment or other capacity-focused demand-side
19 management to defer a capacity shortfall in the subject area? If so, how much
20 cost-effective capacity-focused DSM is available? If not, why not?

21

22 **Response:**

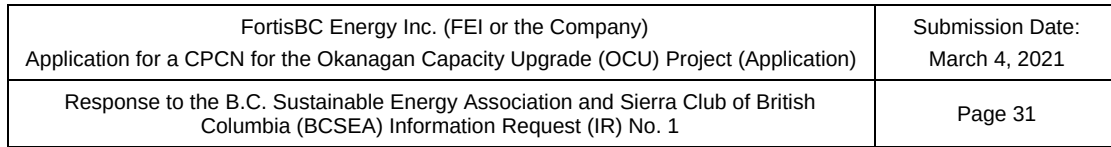
23 FEI has not explored targeted DSM above the currently available interruptible rate schedules to
24 address a capacity shortfall. The only measure that FEI is aware of that can provide a confirmed
25 peak reduction is curtailment of service. FEI provides the option of interruptible service to its
26 customers, but allows the customer to select the rate option most appropriate for their individual
27 needs. The purpose of this type of curtailment is to reduce capacity requirements of the system
28 by allowing FEI to curtail service during extreme cold weather. FEI reviewed all firm and
29 interruptible Rate Schedule tariff offerings in the 2016 Rate Design Application considering rate
30 design principles. FEI was not able to increase the discount available for interruptible service in
31 order to incent more customers to choose interruptible service. Industrial curtailment is already
32 taken into account in identifying capacity requirements of the gas delivery system.

33 FEI also has industrial DSM programs available to customers who choose to participate, but in
34 order to do so, customers must provide some funding towards efficiency upgrades. As such,
35 there is significant uncertainty regarding a lasting decrease in demand which could mitigate a
36 capacity shortfall within a given timeframe.

37 FEI does not consider DSM measures directed at peak to be “firm” with respect to the reduction
38 of peak demand forecasts and for the deferral of infrastructure projects whose need is imminent
39 to meet peak demand. To the extent that existing DSM measures and efficiencies influence

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- 1 current consumption, the measures are intrinsically represented in the UPC_{peak} values
- 2 generated annually and used to construct load forecasts for infrastructure planning.
- 3 Please also refer to the response to BCUC IR1 2.6.1 for further discussion on addressing the
- 4 capacity shortfall by targeting the Capacity Shortfall Region specifically.
- 5



2 **Reference:** FEI's 2022 LTGRP Estimated Expenditures shown in Table 7-10 (pdf
3 p.77) of FEI's Exhibit B-2 in the FEI Annual Review for 2020 and 2021
4 Delivery Rates proceeding

In FEI's 2022 LTGRP Estimated Expenditures shown in Table 7-10 (pdf p.77) of FEI's Exhibit B-2 in the FEI Annual Review for 2020 and 2021 Delivery Rates proceeding, FEI included a Estimated Expenditure of \$115,000 for "Impact of New End-Use Trends on Time-of-Day Use and Linking the Annual and Peak Demand Forecasts."

9 9.1 Does this mean that FEI believes it needs to do incremental work on the link
10 between Annual and Peak Demand Forecasts? Does this apply to the ITS peak
11 demand forecast?

13 **Response:**

14 In the 2022 LTGRP, FEI will continue to explore developing the end-use method for both peak
15 and annual demand forecasting and the identified expenditure is for consultants that will be
16 engaged in that work. As indicated in the 2017 LTGRP, FEI considers application of end-use
17 trends on peak demand theoretical, not based on FEI metered data, and therefore has not
18 applied any such end-use method to ITS peak demand forecast supporting the OCU Project.
19 Please refer to the response to BCUC IR1 4.1.2 for additional discussion on the end-use
20 forecasts used in the 2017 LTGRP.

21

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10.0 Topic: Short Term Mitigation Measures

Reference: Exhibit B-1-2, p.33

On page 33 of the Updated Application, FEI introduces certain potential short-term mitigation measures:

“Each proposed Project alternative relies on the implementation of short-term mitigation measures to meet forecasted capacity shortfalls in the winters of 2021/2022 and 2022/2023.”

In Table 4-1, FEI provides “Capacity Shortfall Mitigation Measures Cost Estimates” with a Total Estimated Station Upgrade Cost of \$1,518,000.

10.1 Are these potential short-term mitigation measures part of the proposed OLI PEN 406 Extension for which FEI seeks a CPCN?

Response:

These mitigation measures are being implemented separately from the OCU Project as their need is imminent as explained in Section 4.2 of the Updated Application. Therefore, the cost for these short-term mitigation measures is not incorporated into the cost estimate of the proposed OLI PEN 406 Extension.

Figure 4-1 shows ITS Capacity with Mitigation Measures.

10.2 Please provide a version of Figure 4-1 that shows ITS Capacity with Mitigation Measures for the appropriate years.

Response:

Figure 4-1 currently shows the capacity impact of the proposed mitigation measures. These will be implemented in time to address the potential shortfall in the winter of 2021-2022. Years are shown on the x-axis of the graph. Please also refer to the response to BCSEA IR1 4.1, which provides clarity on the timing of various measures including these mitigation measures. Please also refer to the response to BCUC IR1 10.2, which provides a breakdown of the estimated contribution of each of the mitigation measures.

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11.0 Topic: Description of Alternatives and Options

Reference: Exhibit B-1-2, Table 3-1: ITS Pipeline Construction

FEI states on page 25:

“The ITS serving the Thompson Okanagan region has several regions where pressure is controlled below the original MOP to ensure pipeline safety factors associated with CSA Z662 class locations requirements. These pressure-controlled regions are identified in Table 3-1 above, with the segments most relevant to the OCU Project listed in rows 2 to 5. These portions of the pipeline can provide a local constraint on capacity. The most significant constraint on maintaining minimum pressure into the north and central Okanagan is the pressure limitation to 5171 kPag (750 psig) between Ellis Creek Control Station in Penticton and the SN9-3 Control Station south of Kelowna. The OCU Project will address this constraint by providing the ability to supply gas into the NPS 12 Savona to Penticton mainline at the maximum 5171 kPa at a point more than 28 kilometres closer to the major load centres on the ITS in the Central Okanagan.”

11.1 Can the segments in rows 2 to 5 of Table 3-1 be considered the “bottleneck” that the proposed OLI PEN 406 Extension is intended to alleviate?

Response:

Row 4 in Table 3-1 represents the “bottleneck” described in the preamble. This bottleneck is the VER PEN 323 pipeline from Ellis Creek to Kelowna, which operates at a pressure of 750 psig. On a peak day, FEI has the ability to supply gas to Ellis Creek at a pressure well above 750 psig through the existing OLI PEN 406 pipeline. At Ellis Creek the pressure is regulated to 750 psig and delivered into the VER PEN 323 pipeline. The high flow through the VER PEN 323 pipeline under peak demand leads to a significant pressure drop before gas reaches Kelowna. A control valve station just south of Kelowna, identified as SN 9-3, is designed to further reduce pressure to 675 psig. However, during periods of peak flow, the pressure drop through the VER PEN 323 pipeline is such that the control valves are wide open; inlet pressure to these valves is already below their 675 psig setpoint. For this reason, increasing compression upstream of the VER PEN 323 pipeline does not improve pressure in the capacity shortfall region until this “bottleneck” is removed.

11.2 Please confirm, or otherwise explain, that in the statement quoted above the “OCU Project” means the proposed OLI PEN 406 Extension, and does not include Alternatives 1 or 2.

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1 **Response:**

2 Confirmed. The reference to the “OCU Project” cited in the preamble above was meant to refer
3 to the preferred Alternative 3 with the proposed OLI PEN 406 extension as set out in the
4 Updated Application.

5

6

7

8 11.3 Please confirm, or otherwise explain, that the point at which the OCU Project will
9 provide the ability to supply gas into the NPS 12 Savona to Penticton mainline is
10 the proposed Chute Lake Control Station.

11

12 **Response:**

13 Confirmed.

14

15

16

17 11.4 Please explain how the “SN9-3 Control Station south of Kelowna” relates to the
18 proposed Chute Lake Control Station. Please show them on a map. Why does
19 the proposed OLI PEN 406 Extension not tie in to the NPS 12 Savona to
20 Penticton mainline at the SN9-3 Control Station?

21

22 **Response:**

23 The proposed OLI PEN 406 extension ties into the NPS 12 Savona to Penticton mainline a
24 significant distance (over 7 kilometres) south of the SN9-3 Control Station. Extending the
25 pipeline all the way to SN9-3 is not required to meet capacity requirements and as such FEI did
26 not consider it cost-effective to construct a longer pipeline solely to reach the SN9-3 Control
27 Station. The figure below indicates the location of the proposed Chute Lake Control Station
28 (labelled OCU – North Tie-In) and the SN9-3 Control Station (labelled SN9-3).

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1

2

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12.0 Topic: Feasibility Analysis

Reference: Exhibit B-1-2, Table 4-2: Preliminary Cost Estimates of All Alternatives

FEI provides the following Table summarizing preliminary cost estimates for the five alternatives that were considered:

Table 4-2: Preliminary Cost Estimates of All Alternatives

Alternative	Description	Total Pipe Installed (km)	Capital Cost Estimate Range (2019\$ millions)
1	ITS Upgrades to VER PEN 323	15	40 – 100
2	Modified ITS Upgrades to VER PEN 323	19	50 – 130
3	OLI PEN 406 Extension	30	100 – 250
4	508 mm Loop from Savona	54	200 – 500
5	LNG Facility Near Vernon	n/a	250 - 600

Regarding the Feasible Alternatives Evaluation, and the Financial criterion in particular, FEI states on page 47:

“The sole criterion within this category measures the financial impact of the project on FEI’s customers. FEI considered the long term rate impact to FEI’s non-bypass customers in order to financially compare all three feasible alternatives. This was completed by evaluating the present value of the incremental revenue requirement as well as the levelized delivery rate impact over the 70 year analysis period for each alternative based on the estimated capital cost and operating cost.” [underline added]

12.1 Please confirm, or otherwise explain, that the preliminary capital cost estimate range for Alternatives 1, 2, and 3 shown in Table 4-2 were not used in the Feasible Alternatives Evaluation.

Response:

Confirmed. As explained in Section 4.4 of the Updated Application, FEI used high-level capital cost estimates to screen the identified alternatives and determine the feasible alternatives for the Project. Detailed Class 4 cost estimates were developed to further evaluate the remaining three (i.e., Alternatives 1, 2 and 3) feasible alternatives.

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1 **13.0 Topic: Feasible Alternatives Evaluation Criteria**

2 **Reference: Exhibit B-1-2, pp. 59-60; Table 4-4**

3 FEI summarizes the evaluation criteria and weighting in Table 4-4:

Table 4-4: Evaluation Criteria Weighting

Evaluation Criteria - Category	Weight (Overall)	Evaluation Criteria - Specific	Weight (Within Category)
Asset Management Capability	40%	System Capacity Increase	50%
		Operational Flexibility	50%
Project Execution and Lifecycle Operation	30%	Environmental, Public, and Indigenous Impacts	45%
		Schedule Risk	55%
Financial	30%	Rate Impact	100%

4

5 13.1 Please explain the genesis of this weighted scoring methodology. Has FEI used

6 it before? Were the criteria and weights the same?

7

8 **Response:**

9 Consistent with past practice, FEI has used weighted scoring methodology to evaluate feasible

10 alternatives for multiple previous projects. The methodology was developed to its current form

11 primarily during the development of the Lower Mainland Intermediate Pressure System Upgrade

12 Projects. However, criteria and weightings are selected based on the individual needs of a

13 specific project. Please refer to the responses to BCUC IR1 22.5 and 22.6 for further information

14 on how FEI determined the evaluation criteria and associated weightings for the OCU Project.

15

16

17

18 13.2 Please confirm, or otherwise explain, that “environmental, public and indigenous

19 impacts” comprised only 13.5% of the total weighting (45% x 30% = 13.5%).

20

21 **Response:**

22 FEI confirms that “environmental, public and Indigenous impacts” comprised 13.5 percent of the

23 total weighting. Please refer to Section 4.5.2 of the Updated Application for an explanation how

24 the weightings were determined.

25

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1 **14.0 Topic: Feasible Alternatives Evaluation**

2 **Reference: Exhibit B-1-2, Table 4-7: PV of Incremental Annual Revenue**
3 **Requirement and Rate Impact; Table 4-8: Capital, O&M, Property**
4 **Taxes (\$000s).**

5 In the Financial Comparison analysis FEI provides the following Table:

Table 4-7: PV of Incremental Annual Revenue Requirement and Rate Impact

	Alternative 1	Alternative 2	Alternative 3
PV of Annual Revenue Requirement \$000s	\$199,969	\$213,780	\$203,973
Levelized Rate Impact \$/GJ	\$0.057	\$0.061	\$0.059
Financial / Rate Impact	4	2	3

6
7 Table 4-8 summarizes the incremental capital costs, annual operating and maintenance
8 and property tax costs for the three alternatives:

Table 4-8: Capital, O&M, Property Taxes (\$000s)

Particulars	Alternative 1	Alternative 2	Alternative 3
Capital Cost (2019\$) (excl. AFUDC)	\$195,113	\$206,623	\$188,149
Capital Cost As Spent (incl. AFUDC)	\$220,215	\$232,927	\$212,906
In-Line Inspection Capital (2019\$)	N/A	N/A	\$828
Retirement / Removal Costs As Spent	\$1,569	\$692	Nil
Incremental Annual O&M (2019\$) ²²	Nil	\$9	\$24
Incremental O&M - Integrity Digs (2019\$) ²³	N/A	N/A	\$140
Incremental Annual Property Taxes (2019\$)	\$6	\$78	\$337

9
10 FEI states on page 57:

11 “The financial evaluation of the three feasible alternatives indicated minimal
12 differences in rate impacts between all three alternatives. Alternative 2 (Modified
13 ITS Upgrades to VER PEN 323) has the highest incremental cost for ratepayers
14 as a result of its higher cost, and resulting higher levelized rate impact. However,
15 there is only a difference of \$0.002 / GJ in the rate impact between Alternative 1
16 and Alternative 3.”

17 14.1 Please comment on the apparent magnification of relatively small differences in
18 PV into very large differences in evaluation points for Financial/Rate Impact
19 between the three Alternatives.

20
21 **Response:**

22 FEI did not arrive at identical scores for Alternatives 1, 2 and 3 due to their differences in PV of
23 Annual Revenue Requirement. Had these three feasible alternatives been scored equally from

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1 this perspective, Alternative 3 would still have received the highest overall scoring and been
2 selected as the preferred alternative. Thus, regardless of any perceived magnification of
3 differences in PV, there is no impact on the selected alternative.

4
5
6
7 14.2 Does the (feasible alternatives evaluation) methodology itself require slight
8 differences in PV to be reflected in points in whole numbers (4, 2, and 3 for
9 Alternatives 1, 2 and 3, respectively)? Or does the methodology contemplate
10 that the assignment of points is within the judgment of the entity applying the
11 methodology?
12

13 **Response:**

14 As discussed in the response to BCUC IR1 22.5, the evaluation scores for alternatives are
15 determined based on the experience and professional judgment of FEI subject matter experts
16 from multiple business areas. This method has been applied consistently in numerous CPCN
17 applications previously approved by the BCUC.

18
19
20
21 14.3 To better understand the feasible alternatives evaluation methodology and the
22 application of it, in choosing to allocate the Financial/Rate Impact points in whole
23 numbers (4,2,3) did FEI take into account that an equal allocation (3,3,3) would
24 not alter the ranking of the alternatives?
25

26 **Response:**

27 Please refer to the response to BCSEA IR1 14.1.
28

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1 **15.0 Topic: Project Description**

2 **Reference: Exhibit B-1-2, pp.58-59**

3 FEI lists the main Project components on pages 58-59.

4 15.1 Please provide, or identify the location of, a map showing the main Project
5 components.

6
7 **Response:**

8 Following is a summary of the main Project components described in Section 5.2 of the
9 Updated Application:

- 10 • A new 406 mm pipeline extension starting at kilometre point (kP) 30.8;
- 11 • A new 406 mm block valve station at kP 36.1; and
- 12 • A new Chute Lake Pressure Control Station at kP 60.8.

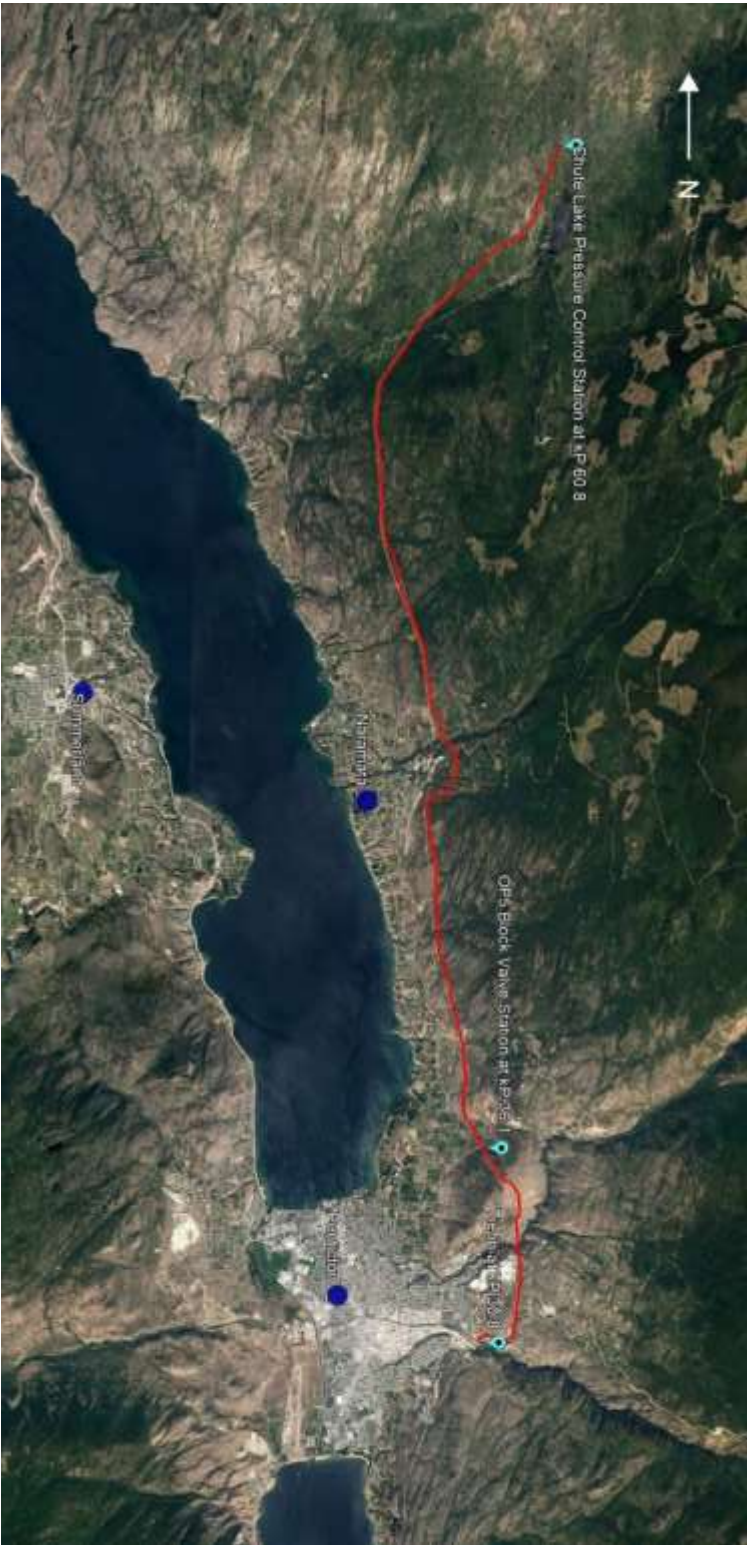
13
14 The figure below shows the location of these main Project components (from right to left in the
15 figure).

16

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1

Map of OCU Project Main Components



2
3

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1 **16.0 Topic: Project Description**

2 **Reference: Exhibit B-1-2, p.59**

3 In Section 5.3 of the Update Application FEI describes the route selection process for
4 the OCU Project.

5 16.1 Please confirm, or otherwise explain, that the “OCU Project” for the route
6 selection process means the proposed OLI PEN 406 Extension.

7
8 **Response:**

9 Confirmed. The objectives and route selection process described in Section 5.3 of the Updated
10 Application represents the examination of options for the preferred Alternative 3 (the proposed
11 OLI PEN 406 Extension).

12
13

14
15 16.1.1 Is it correct that the objectives of the route selection process involve
16 examination of options within the proposed OLI PEN 406 Extension
17 (Alternative 3) and not examination of, say, Alternative 1 or Alternative
18 2?

19
20 **Response:**

21 Please refer to the response to BCSEA IR1 16.1.

22
23

24
25 16.2 Please provide a version of “Figure 5-1: Step One – Identified Corridor” with
26 labels indicating pipeline segments and stations.

27
28 **Response:**

29 The figure below shows a map identifying the corridor, pipeline segments, the location of the
30 FBC 73 Line (in purple), VER PEN 323 (in yellow), the proposed OLI PEN 406 Extension (in
31 red), the Chute Lake Pressure Control Station, the Ellis Creek Pressure Control Station, and the
32 OP5 Block Valve Station. As described in more detail in Section 5.3.1 of the Updated
33 Application, the identified corridor accounts for natural terrain features as well as current and
34 planned infrastructure creating the varied widths.

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1 **Identified Corridor with Pipeline Segments and Stations**



2

3

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16.3 Have the Pipeline Route Evaluation Criteria Definitions in Table 5-1 been used in any previous FEI applications to the BCUC? If so, please specify.

Response:

The Pipeline Route Evaluation Criteria Definitions in Table 5-1 are consistent with those of two recent FEI CPCN applications to the BCUC: the Pattullo Gas Line Replacement (PGR) Project (Table 5-1 in Exhibit B-1-1 of that application), and the Lower Mainland Intermediate Pressure System Upgrade (LMIPSU) Projects (Table 3-8 in Exhibit B-1 of that application). FEI has made minor adjustments to several technical criteria for the OCU Project due to the unique project requirements and site-specific conditions.

16.4 Have the Pipeline Route Evaluation Weighting factors in Table 5-2 been used in any previous FEI applications to the BCUC? If so, please specify.

Response:

The Pipeline Route Evaluation Weighting factors in Table 5-2 are similar to previous FEI applications to the BCUC. Weightings vary between projects based on unique project requirements and site-specific conditions. For example, the PGR Project will be constructed in an urban environment within city road allowances, as compared to the OCU Project's construction in more rural and rugged terrain within rights-of-way. The table below compares the weightings among the OCU Project, the PGR Project and the LMIPSU Project (Fraser Gate IP).

Weighting Comparisons for Recent FEI Pipeline Project CPCN Applications

Criteria	OCU Weighting	PGR Weighting	LMIPSU Weighting
Community and Stakeholder Criteria Weighting			
Health and Safety	15%	10%	15%
Traffic Impacts	0%	12.5%	0%
Land Ownership and Use	5%	0%	5%
Socio-Economic	15%	7.5%	15%
Sub-total:	<u>35%</u>	<u>30%</u>	<u>35%</u>
Environmental Criteria Weighting			
Ecology	5%	5%	5%
Cultural heritage	5%	5%	5%
Human Environment	15%	12.5%	15%
Sub-total:	<u>25%</u>	<u>22.5%</u>	<u>25%</u>

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Criteria	OCU Weighting	PGR Weighting	LMIPSU Weighting
Technical Considerations Weighting			
Engineering	5%	0%	5%
Construction	10%	15%	10%
Operation	10%	10%	5%
System Interface	5%	0%	5%
Adjacent infrastructure	5%	10%	5%
Natural Hazards	5%	0%	10%
Project Execution Certainty	0%	12.5%	0%
Sub-total:	<u>40%</u>	<u>47.5%</u>	<u>40%</u>
Total	100%	100%	100%

16.5 Have the Route Evaluation Scoring descriptions in Table 5-3 been used in any previous FEI applications to the BCUC? If so, please specify.

Response:

The Route Evaluation Scoring descriptions in Table 5-3 are consistent with those of two recent FEI CPCN applications to the BCUC: the PGR Project (Table 5-3 in Exhibit B-1-1 of that application), and the LMIPSU Projects (Table 3-10 in Exhibit B-1 of that application).

16.6 Please provide a version of “Figure 5-2: Step Two – Feasible Route Sectionalization” showing Option 1 and Option 2 as described in “Table 5-4: OCU Project Selected Pipeline Route Details.”

Response:

The two options described in Table 5-4 are currently shown in Figure 5-2 in the Updated Application. Option 1 is the purple line, identified as FBC 73 Line and Option 2 is the yellow line, identified as FEI VER PEN 323. The two options are also presented in Figure 5-1 in the Updated Application with the same identification.

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1 16.7 Please explain why the Pipeline Route Evaluation Weighting in Table 5-2 has
2 100 maximum weighting points and the Segment Evaluation Scores in Table 5-5
3 have a maximum of 500 points (per footnote 26 on page 65).
4

5 **Response:**

6 The Pipeline Route Evaluation Weighting in Table 5-2 has included a percentage scale for each
7 criterion with a total of 100 percent. The Route Evaluation Scoring in Table 5-3 has a numerical
8 scale of 1 to 5. A maximum of a 500 point score in the Segment Evaluation Scores in Table 5-5
9 is calculated by multiplying the total weighting (100 percent) by the maximum scoring (5).

10

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17.0 Topic: Project Description

Reference: Exhibit B-1-2, p.71

On page 71 of the Updated Application, FEI refers to its Integrity Management Program (IMP):

“Consistent with the existing pipeline, the integrity of the new OLI PEN 406 pipeline extension will be managed within FEI’s Integrity Management Program (IMP). The IMP is a corporate-level management system for identifying and mitigating hazards to system assets that have the potential to result in a failure with significant consequences.”

On page 46 of its filing for the Annual Review for 2020 and 2021 Delivery Rates, FEI refers to its Transmission Integrity Management Capabilities project:

“FEI is currently planning the Transmission Integrity Management Capabilities (TIMC) project to mitigate the risk of rupture failure due to Stress Corrosion Cracking (SCC) and other crack-like imperfections.”

17.1 Please explain the relationship between FEI’s Integrity Management Program and its Transmission Integrity Management Capabilities project in relation to integrity monitoring of the proposed OLI PEN 406 Extension.

Response:

FEI’s Integrity Management Program specifies the activities necessary to monitor and manage the condition of transmission pipelines over their lifecycle to mitigate the potential for failures. As such, it is the basis for the integrity monitoring of the proposed OLI PEN 406 Extension.

FEI recently submitted its Coastal Transmission System (CTS) Transmission Integrity Management Capabilities (TIMC) Project to address the risk to the CTS pipelines posed by cracking threats. In that application, FEI also noted that it is in the process of developing an application to address cracking for the Interior Transmission System (ITS TIMC). Pipelines that are installed more recently, including the OLI PEN 406 Pipeline and Extension, have low susceptibility to cracking and are not prioritized for incremental mitigation, although they are capable of running crack detection electro-magnetic acoustic transducer (EMAT) tools if determined to be necessary in future. As such, the above-referenced TIMC projects are unrelated to the proposed OLI PEN 406 Extension.

During development of this IR response, FEI identified an editing error in Section 4.6.3.1 of the Updated Application. On page 55, lines 7 to 10, FEI inadvertently stated that the incremental integrity capital (included in Table 4-8) was “related to running crack detection tools for in line inspection”. Rather, these costs are “related to running tools for in line inspection”.

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1 **18.0 Topic: Project Description**

2 **Reference: Exhibit B-1-2, pp.75, 104, 106**

3 FEI states that the designated environmental monitor will have “stop work authority” in
4 the event that works underway have the potential to impact the natural environment
5 [p.104].

6 FEI also states that the designated archaeological monitor will have “stop work authority”
7 in the event that works underway have the potential to result in unauthorized impacts to
8 archaeological, historic heritage or cultural resources [p.106]

9 18.1 Will the safety inspection and monitoring firm have stop-work authority? If not,
10 why not?

11
12 **Response:**

13 The safety inspection and monitoring firm will have “stop work authority”.

14
15

16
17 18.2 Who will be responsible for addressing noise complaints during construction?
18 Will it be FEI, the contractor, or both?

19
20 **Response:**

21 Although the contractor is responsible for addressing noise control, FEI will coordinate and
22 manage all noise complaints raised during the construction of the Project. FEI will then work
23 with the appropriate party to mitigate the concerns to the extent possible.

24

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1 **19.0 Topic: Environmental and Archaeology**

2 **Reference: Exhibit B-1-2, Chapter 7, Environment and Archaeology; Appendix F,**
3 **Environmental Overview Assessment Reports; Appendix G,**
4 **Archaeological Overview Assessment Reports**

5 19.1 For both environmental review and archaeology review, please explain what
6 aspects of the examination addressed all three feasible Alternatives, and what
7 aspects of the examination addressed the proposed OLI PEN 406 Extension in
8 particular.

9
10 **Response:**

11 During the process to evaluate and select the preferred alternative, FEI's consultants prepared
12 high-level, desktop environmental and archaeological studies for all three feasible alternatives.
13 The more detailed Environmental Overview Assessment (EOA) and Archaeological Overview
14 Assessment (AOA) appended to the Updated Application were completed for the proposed OLI
15 PEN 406 Extension after it was selected as the preferred solution for the Project.

16
17

18
19 19.1.1 Please confirm, or otherwise explain, that the Environmental Overview
20 Assessment (Appendix F) addresses only the proposed OLI PEN 406
21 Extension and not Alternative 1 and 2.

22
23 **Response:**

24 The Environmental Overview Assessment included in Appendix F of the Updated Application
25 only addresses the preferred OLI PEN 406 Extension alternative.

26
27

28
29 19.2 What steps will FEI take to prevent damage to the three community watersheds
30 intersected by the proposed OLI PEN 406 Extension during and after
31 construction?

32
33 **Response:**

34 FEI, in collaboration with its environmental consultant, the Penticton Indian Band, and the
35 Westbank First Nation, are currently developing the Environmental Management Plan (EMP) for
36 the Project. The EMP will prescribe the requirements needed to mitigate environmental impacts
37 within the Project area, including the three community watersheds. In addition, construction

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1 contractor(s) will be required to adhere to the EMP and develop their own site specific
2 Environmental Protection Plans (EPPs) which are more detailed and specific to the project
3 locations and activities. Examples of such mitigation measures can be found in Table 6.1 of the
4 Environmental Overview Assessment report (Appendix F to the Updated Application).

5 In addition, FEI's external trenchless crossing expert is evaluating the feasibility of using
6 trenchless construction methods for all watercourse crossings to minimize the environmental
7 impacts. When the feasibility assessment is complete, the information will be shared with the
8 detailed design consultant and construction methodologies will be finalized for each crossing.

9 Environmental monitoring will occur throughout the duration of the construction activities. Post
10 construction, disturbed areas will be restored and monitored to ensure successful vegetation
11 establishment and to prevent long-term impacts to community watersheds.

12

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1 **20.0 Topic: Vineyards**

2 **Reference: Application, Exhibit B-1-2, pp.64, 54**

3 FEI refers to 3,040 m in Segment 4, "Vineyard Segments," for the Option 1 route of
4 Alternative 3 [p.64]. FEI also states:

5 "Some inconvenience to the public is expected, as portions of the route pass
6 through or adjacent to vineyards and other developed areas."

7 20.1 Please explain how the proposed Project would impact vineyards. Are the
8 vineyards subject to rights of way for FBC 73L? Would construction of the Project
9 require FEI to acquire additional rights of way? Is the plan that vineyards on the
10 Project right of way would be replanted after construction? How long would it
11 take for the impacted vineyard areas to be back in the condition they were in
12 before the construction?

13
14 **Response:**

15 For clarity, FEI has divided this question into five parts and a response is provided below for
16 each part;

17 1. Please explain how the proposed Project would impact vineyards?

18 Since filing the Updated Application, FEI worked with property owners to understand
19 their concerns and to minimize, where possible, the impact to their land which resulted in
20 routing changes. The Project construction activities now affect approximately 0.5 acres
21 of a single vineyard. This remaining impact was unavoidable due to routing challenges
22 around the Campbell Mountain Landfill area.

23 2. Are the vineyards subject to rights of way for FBC 73L?

24 Yes, there is a Statutory Right-of-Way (SRW) issued to FBC for the 73L facilities. FEI's
25 gas line (and the corresponding SRW) will cross over the 73L SRW which will result in a
26 small area being shared by both SRWs.

27 3. Would construction of the Project require FEI to acquire additional rights of way?

28 Yes, FEI requires additional rights of way for the Project. Please also see the response
29 to BCSEA IR1 22.1

30 4. Is the plan that vineyards on the Project right of way would be replanted after
31 construction?

32 FEI has consulted with the landowners regarding this topic and will continue to work with
33 them to identify an appropriate restoration strategy that is consistent with FEI's
34 vegetation management practices.

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- 1
 - 2
 - 3
 - 4
 - 5
5. How long would it take for the impacted vineyard areas to be back in the condition they were in before the construction?
- Through discussions with vineyard owners, FEI understands that it typically takes five years for vines to return to a commercially productive status.

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1 **21.0 Topic: Power Supply to Chute Lake Control Station**

2 **Reference: Application, Exhibit B-1-2, p.74**

3 FEI states on p.74:

4 “Power to the Chute Lake Control Station will be supplied by Thermo-Electric
5 Generator (TEG) units. The use of existing FBC power lines was considered and
6 determined to not be practical or cost-effective. The TEG units will use gas as the
7 supply energy source and feed a DC/AC inverter, providing 120VAC for main
8 power distribution through the distribution panel. There will be redundant TEG
9 units installed for reliability and maintenance.

10 21.1 Please explain why the use of existing FBC power lines to supply the proposed
11 Chute Lake Control Station would not be practical or cost-effective.

12
13 **Response:**

14 The existing three-phase distribution line on Chute Lake Road was considered for a power
15 supply to the proposed Chute Lake Control Station and determined to not be practical or cost-
16 effective, as compared to using a TEG unit. The approximate cost to supply 120 volt power from
17 the existing distribution line would be approximately four times higher than the selected TEG
18 unit. Additionally, reliability concerns associated with trees or snow impacting the overhead
19 distribution source during winter conditions would require the installation of an uninterruptible
20 power supply and/or back-up TEG unit at the Chute Lake Control Station in any event.

21

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1 **22.0 Topic: Rights of Way**

2 **Reference: Application, Exhibit B-1-2, pp.81, 82, 114**

3 Regarding the proposed Project, FEI says “The work will take place in a mostly rural
4 landscape with low population density alongside existing ROWs.” [p.81] FEI says it “has
5 proposed a route that runs alongside FEI’s existing VER PEN 323 right-of way and
6 FBC’s existing 73 Line right-of way where possible, to minimize the creation of additional
7 right-of-way lands.” [p.82] FEI says it “began negotiations to acquire the necessary land
8 rights in August and September 2020.” [p.114]

9 22.1 Please clarify whether FBC’s existing rights-of-way for the FBC 73L transmission
10 line allow FEI to construct and operate the proposed Project within the bounds of
11 the ROWs. Are modifications to the existing ROWs anticipated?

12

13 **Response:**

14 FBC’s existing rights of way for the 73L transmission line do not provide FEI with sufficient land
15 rights and operating space to construct and operate the OCU Project. Where possible, FEI
16 would construct the Project adjacent to existing rights of way, to allow use of these areas for
17 temporary construction work space and access. FEI will continue to negotiate with landowners
18 to acquire the necessary agreements for Project rights of way and workspace in areas of
19 overlap with the FBC 73L right-of-way and areas outside of FEI’s existing VER PEN 323 right-
20 of-way.

21

22

23

24 22.2 Please provide an estimate of the aggregate length of ROWs that FEI expects to
25 require in order to proceed with the proposed Project.

26

27 **Response:**

28 FEI requires rights of way over the entire length of the Project, approximately 31 kilometres.

29

¹ 2017 Long Term Gas Resource Plan, Section 5.2, pages 136-137, Section 5.4, pages 140-142 and Appendix A. The extension of the Southern Crossing Pipeline is referred to in the LTGRP as the Kingsvale to Oliver Reinforcement Project or KORP.

FortisBC Energy Inc. (FEI or the Company) Application for a CPCN for the Okanagan Capacity Upgrade (OCU) Project (Application)	Submission Date: March 4, 2021
Response to the B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA) Information Request (IR) No. 1	Page 56

1 **24.0 Topic: Conditions of CPCN**

2 **Reference: Exhibit B-1-2, p.13; Decision and Order C-11-99, Southern Crossing**
3 **Pipeline**

4 FEI states on p.13:

5 “3. The most recent major upgrade to the ITS was completed in 2000, when the
6 NPS 24 SCP6 was constructed from Oliver to the TC Energy pipeline,
7 diversifying the area’s supply and increasing the quantity of gas flowing into the
8 ITS at Oliver from Alberta, which increased gas flow capacity into the Okanagan
9 region.”

10 Footnote 6 on p.13 states:

11 “Refer to BCUC Order C-11-99 and decision associated with the Application for a
12 Certificate of Public Convenience and Necessary for the Southern Crossing
13 Pipeline Project.”

14 In its reasons for issuing Order C-11-19 for the Southern Crossing Pipeline, the BCUC
15 Panel notes that:

16 “In its June 15, 1999 letter, BC Gas states that it is willing to accept a CPCN that
17 includes as a condition the mechanism described in the Decision [Decision and
18 Order G-51-99] to limit ratepayer exposure to capital cost overruns. The rate
19 base addition for the SCP project will be a maximum of \$414 million (as adjusted
20 in the manner described in the Decision if a November 2001 in-service date were
21 to be adopted).”

22 24.1 Regarding the Application, is FEI willing to accept a CPCN condition that limits
23 ratepayer exposure to capital cost overruns? If so, please state the commitment.
24 If not, why not?

25
26 **Response:**

27 FEI believes that imposing a condition that limits ratepayer exposure to capital cost overruns is
28 neither appropriate nor necessary for the OCU Project.

29 FEI’s expectation and goal is to complete the Project within the internal control budget, with
30 access to contingency and management reserve to manage identified risks. FEI will manage
31 the Project with the express aim to avoid any capital cost overruns in excess of the contingency
32 and management reserve. Any proposal to make additional expenditures would be heavily
33 scrutinized by FEI’s project team and management. FEI would only spend in excess of the
34 contingency and management reserve if it was necessary and cost-effective based on the
35 particular facts at that time.

FortisBC Energy Inc. (FEI or the Company) Application for a CPCN for the Okanagan Capacity Upgrade (OCU) Project (Application)	Submission Date: March 4, 2021
Response to the B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA) Information Request (IR) No. 1	Page 57

1 The total cost estimate accuracy range for the Project is based on a probabilistic Monte Carlo
2 simulation and properly accounts for systemic and project specific risks as set out in the
3 Updated Application. As discussed in response to BCUC IR1 32.1, FEI expects that the
4 Project's final actual cost will fall within the estimated accuracy range with an 80 percent
5 confidence interval (P10 to P90) from -5% (\$257.7 million) to +35% (\$366.3 million). By setting
6 the Project contingency at a cost value to achieve a P50 confidence level, FEI has accounted
7 for the expected impact of known risks and events likely to be encountered, while recognizing
8 that the contingency is expected to be spent.

9 Further, FEI continues to refine the Project budget and actively manage Project expenditures as
10 more information becomes available. This refinement process incorporates cost control
11 mechanisms, including internal approvals, which are intended to ensure the Project is
12 completed without the need for additional expenditures, despite project risks and schedule
13 constraint.

FortisBC Energy Inc. (FEI or the Company) Application for a CPCN for the Okanagan Capacity Upgrade (OCU) Project (Application)	Submission Date: March 4, 2021
Response to the B.C. Sustainable Energy Association and Sierra Club of British Columbia (BCSEA) Information Request (IR) No. 1	Page 58

1 **25.0 Topic: BCUC Decision and Order C-4-94**

2 **Reference: Exhibit B-1-2, footnote 5 on p.13**

3 FEI states in footnote 5 on p.13:

4 “Refer to BCUC Order C-4-94 and decision associated with the Application for a
5 Certificate of Public Convenience and Necessary for the Southern Interior
6 System Reinforcement.” [underline added]

7 BCSEA is unable to locate BCUC Order C-4-94 and decision on the BCUC website.

8 25.1 Please provide a copy of BCUC Order C-4-94 and decision.

9

10 **Response:**

11 Please refer to Attachment 25.1 for a copy of BCUC Order C-4-94 and decision.

12

Attachment 3.9

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)



SIXTH FLOOR, 900 HOWE STREET, BOX 250
VANCOUVER, B.C. V6Z 2N3
CANADA

BRITISH COLUMBIA
UTILITIES COMMISSION

ORDER
NUMBER C-4-94

TELEPHONE: (604) 660-4700
BC TOLL FREE: 1-800-663-1385
FACSIMILE: (604) 660-1102

AN ORDER IN THE MATTER OF the Utilities Commission
Act, S.B.C. 1980, c. 60, as amended

and

An Application by BC Gas Utility Ltd.

BEFORE: M.K. Jaccard, Chairperson; and)
K.L. Hall, Commissioner) June 16, 1994
F.C. Leighton, Commissioner)

O R D E R

WHEREAS

- A. On August 23, 1993, pursuant to Section 18 of the Utilities Commission Act ("the Act"), BC Gas Utility Ltd. ("BC Gas") submitted an Energy Project Certificate Application ("the EPCA") to the Minister of Energy, Mines and Petroleum Resources ("the Minister") to construct and operate a 29.8 km, 406.4 mm (16-inch) natural gas transmission pipeline from its existing Oliver Y Station, north of Oliver, B.C., to a new station at the east end of Penticton, B.C. together with new compressor station facilities located near Midway, B.C. and Kitchener, B.C.; and
- B. Provincial Government agencies having an interest subsequently reviewed the EPCA and reports received in support of the EPCA. The Minister's staff conveyed the "Summary of Agency Comments" in a letter dated December 16, 1993 and subsequent correspondence dated January 10, 1994, February 9, 1994, March 4, 1994 and March 8, 1994 to BC Gas; and
- C. As there were no substantial environmental or land use concerns raised in the review of the EPCA, on April 8, 1994, pursuant to Section 19(1)(b) of the Act, the Minister referred the EPCA, "Summary of Agency Comments" and subsequent correspondence to the Commission to be dealt with as an application for a Certificate of Public Convenience and Necessity ("CPCN") under Part 3 of the Act; and
- D. Commission staff conducted a review of the need and justification for the project which included an Information Request to BC Gas dated November 10, 1993 and a review of responses filed December 9, 1993, January 14, 1994, and February 8, 1994; and
- E. The Commission received copies of written comments from certain landowners, agencies, and members of the public in Okanagan Falls and Penticton, B.C. expressing concerns about the proposed pipeline routing in the vicinity of these communities with respect to pipeline safety and various localized land use issues; and
- F. After review of all of the relevant information, the Commission issued Order No. G-28-94 dated April 13, 1994 which determined that, while the project was both necessary for the secure supply of natural gas to customers in the region and was economically justified, certain localized pipeline routing issues required further review; and
- G. Pursuant to Section 93(2) of the Act, Order No. G-28-94 appointed Commissioner Kenneth L. Hall to conduct an Inquiry into and report on the best routing for the proposed pipeline in the vicinity of the communities of Penticton, B.C. and Okanagan Falls, B.C. The Inquiry was also to consider such other matters as Commissioner Hall determined relevant; and

- H. A Notice of Inquiry was published in the Penticton Herald and the South Okanagan Review. The newspaper advertisements were supplemented by posting the Notice on community bulletin boards and by the use of spot radio advertisements or community service announcements so as to provide for adequate public information in the affected areas. A copy of the Notice was also mailed to all landowners whose property was directly affected by either the BC Gas proposed pipeline route or the first alternative route in areas where concerns had been raised. An updated copy of the Application was made available for review in the Penticton district office of BC Gas; and
- I. In an application dated April 14, 1994 and filed as Volumes 5 and 6 of the EPCA, BC Gas proposed revised routes in the vicinity of Okanagan Falls and Penticton; and
- J. Public hearings for the Inquiry commenced with an evening session in Okanagan Falls on April 28, 1994 and concluded with an evening session in Penticton on April 29, 1994; and
- K. After reviewing the evidence from the public sessions, the Inquiry Officer issued a request for additional information about the various route alternatives to BC Gas on May 3, 1994 ("the I.R."); and
- L. BC Gas filed its principal response to the I.R. on May 27, 1994, and a residual response was filed on June 7, 1994; and
- M. The Inquiry Officer submitted recommendations in a final Inquiry Report to the Commission dated June 10, 1994; and
- N. The Commission has reviewed the Inquiry Report and determined that the adoption of its recommendations is in the public interest.

NOW THEREFORE the Commission orders as follows:

1. Pursuant to Section 51(6) of the Act a CPCN is granted to BC Gas to construct and operate a 29.8 km, 406.4 mm (16-inch) natural gas transmission pipeline from its existing Oliver Y Station, north of Oliver, B.C., to a new station at the east end of Penticton, B.C. together with new compressor station facilities located near Midway, B.C. and Kitchener, B.C.; and
2. Local routing for the pipeline will be as described in the Inquiry Report which is attached as Appendix A to this order.
3. BC Gas is advised that the Commission will expect that future CPCN applications will address the planning concerns raised in Section 5.0 of Appendix A to this order.
4. BC Gas is to submit monthly project progress reports for cost, schedule, and right-of-way restoration status to the Commission in accordance with a format to be established by Commission staff.

DATED at the City of Vancouver, in the Province of British Columbia, this 17th day of June, 1994.

BY ORDER


Dr. Mark K. Jaccard
Chairperson

1.0 BACKGROUND

1.1 The EPCA Process

On August 23, 1993, pursuant to Section 18 of the Utilities Commission Act ("the Act"), BC Gas Utility Ltd. ("BC Gas") submitted an Energy Project Certificate Application ("the EPCA") to the Minister of Energy, Mines and Petroleum Resources ("the Minister") to construct and operate a 29.8 km, 406.4 mm (16-inch) natural gas transmission pipeline from its existing Oliver Y Station, north of Oliver, B.C., to a new station at the east end of Penticton, B.C. together with new compressor station facilities located near Midway, B.C. and Kitchener, B.C. Figure 1 shows routing details for the pipeline.

Provincial Government agencies having an interest subsequently reviewed the EPCA and reports received in support of the EPCA. The Minister's staff conveyed the "Summary of Agency Comments" in a letter dated December 16, 1993 and subsequent correspondence dated January 10, February 9, March 4, and March 8, 1994 to BC Gas.

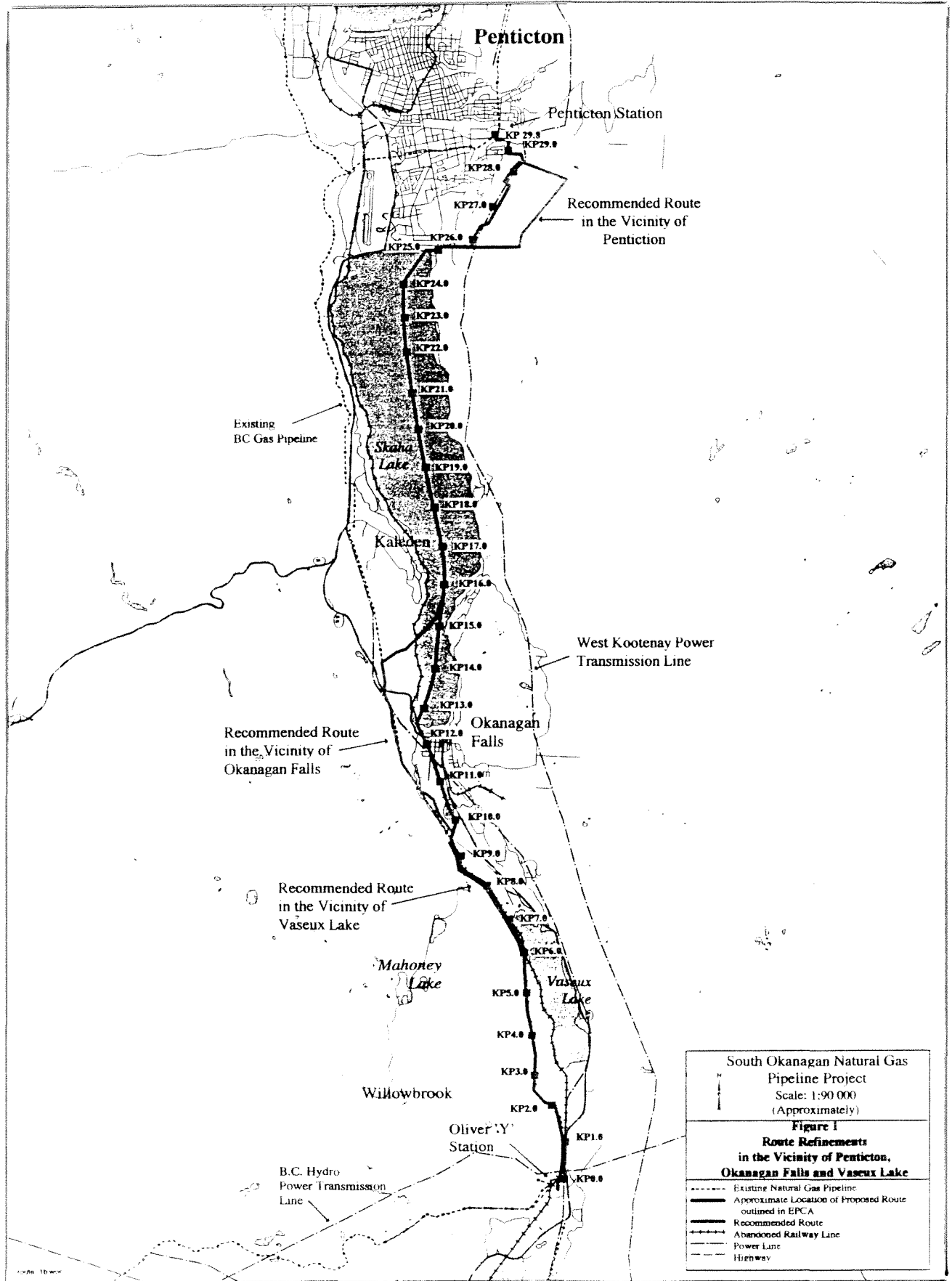
As there were no substantial environmental or land use concerns raised in the review of the EPCA, on April 8, 1994, pursuant to Section 19(1)(b) of the Act, the Minister referred the EPCA, "Summary of Agency Comments" and subsequent correspondence to the Commission to be dealt with as an application for a Certificate of Public Convenience and Necessity ("CPCN") under Part 3 of the Act.

1.2 Scope of Inquiry Issues

Commission staff conducted a review of the need and justification for the project which included an Information Request to BC Gas dated November 10, 1993 and a review of responses filed December 9, 1993, January 14, 1994, and February 8, 1994.

The Commission received copies of written comments from certain landowners, agencies, and members of the public in Okanagan Falls and Penticton, B.C. expressing concerns about the proposed pipeline routing in the vicinity of these communities with respect to pipeline safety and various localized land use issues.

After review of all of the relevant information, the Commission issued Order No. G-28-94 dated April 13, 1994 which determined that, while the project was both necessary for the secure supply of natural gas to customers in the region and economically justified, certain localized pipeline routing issues required further review.



Pursuant to Section 93(2) of the Act, Order No. G-28-94 appointed Commissioner Kenneth L. Hall to conduct an Inquiry into and report on the best routing for the proposed pipeline in the vicinity of the communities of Penticton, B.C. and Okanagan Falls, B.C. The Inquiry was also to consider such other matters as Commissioner Hall determined relevant. Mr. William J. Grant, Executive Director, and Mr. Paul H. Gronert, Manager Petroleum Engineering were directed to assist Commissioner Hall with the Inquiry.

1.3 Inquiry Evidence

1.3.1 Public Meetings

The Commission decided that separate local public meetings should be held in both Okanagan Falls and Penticton in order to obtain evidence directly from affected parties, and these were scheduled for April 28 and 29, 1994 respectively.

A Notice of Inquiry was published in the Penticton Herald and the South Okanagan Review. The newspaper advertisements were supplemented by posting the Notice on community bulletin boards and by the use of spot radio advertisements or community service announcements so as to provide for adequate public information in the affected areas.

A copy of the Notice was also mailed to all landowners whose property was directly affected by either the BC Gas proposed pipeline route or the first alternative route in areas where concerns had been raised. Finally, an updated copy of the Application was made available for review in the Penticton district office of BC Gas.

1.3.2 Field Investigations

Prior to each of the public meetings, field investigations of the route options as proposed by BC Gas were made by the Inquiry Officer accompanied by the Engineering Manager from Commission staff, and two senior members of the engineering staff from BC Gas.

In the vicinity of Okanagan Falls, the investigations were made on April 28, 1994 by foot and using a 4-wheel drive vehicle to facilitate access to the proposed routes.

In the vicinity of Penticton, investigations were made on April 29, 1994. In this case, foot and vehicle investigations of the route options proposed by BC Gas were supplemented, where necessary with

helicopter reconnaissance. Use of the helicopter also enabled a number of alternative routes to be reviewed from the air, including most of the alternative routes subsequently suggested at the public meeting.

Following the public meeting in Penticton, further investigations of alternative routes suggested at the Penticton public meeting were made by the Inquiry Officer accompanied by two members of Commission staff. These investigations were made April 30, 1994 on foot and by vehicle.

1.3.3 Information Requests to BC Gas

After reviewing the evidence from the public meetings, a request for additional information about the various route alternatives was sent to BC Gas on May 3, 1994 ("the I.R."). For the route in the vicinity of Okanagan Falls, the revised route proposed by BC Gas was generally received favorably by those parties attending the public meeting, and the I.R. focused on the concerns of a few affected property owners. In contrast, serious objections to the route proposed by BC Gas in the vicinity of Penticton were raised on a variety of fronts. As a result the I.R. addressed a number of alternative routes as well as certain specific concerns with the proposed route. BC Gas filed the principal response to the I.R. on May 27, 1994, and a residual response was filed on June 7, 1994.

2.0 LOCAL ROUTING - OKANAGAN FALLS

2.1 Initial BC Gas Route Using KVR

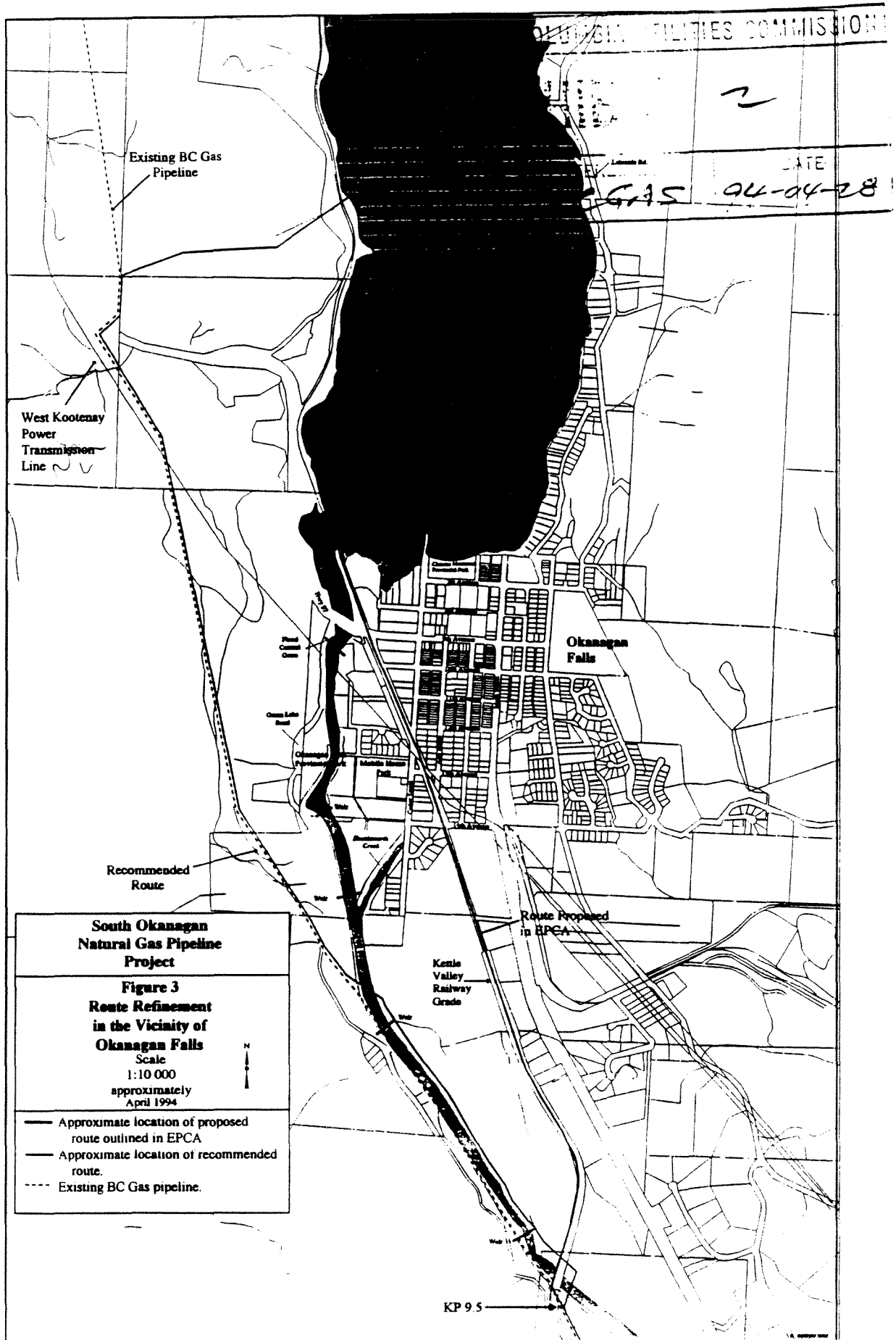
The route initially proposed by BC Gas in its Energy Project Certificate Application followed the abandoned Kettle Valley Railway right-of-way ("KVR") from the point where it crossed the Okanagan River south of Okanagan Falls northward to the south end of Skaha Lake. While this route has the lowest cost and is preferred on environmental grounds, it is subject to major opposition from local residents, including a petition from the Chamber of Commerce containing some 350 signatures, and a separate petition from affected property owners containing 13 signatures. The petitions raised the issues of safety, the detrimental effect on property values, and restrictions on future town site development.

This route was also the subject of an exchange of correspondence involving the KVR Planning Committee ("the KVRPC"), a group of representatives of various Provincial Government agencies who are charged with ensuring the highest and best use of the KVR in future. The KVRPC took the position prior to the Inquiry that the KVR should be reserved for some future transportation use other than a natural gas pipeline, but that BC Gas could use it subject to a ten year tenure limit. The committee was not prepared to state what transportation uses were being planned or what the specific plans for future highways might be. The Ministry of Transportation and Highways ("MTH") had indicated during the EPCA review that there were plans to use the KVR for a highway in the vicinity of Vaseux Lake, but MTH had made no mention of plans to use the KVR in the vicinity of Okanagan Falls.

In order to clarify the future plans for the KVR, representatives from both the KVRPC and MTH, as well as a representative from B.C. Lands were requested to attend the public meeting in Okanagan Falls.

2.2 Revised BC Gas Route

In an application dated April 14, 1994 and filed as Volumes 5 and 6 of the EPCA, BC Gas proposed a revised route in the vicinity of Okanagan Falls which, by avoiding the use of the KVR and avoiding the town site, addressed the concerns which had been raised in the petitions, as well as the problem of the ten year tenure limit imposed by the KVRPC. Both the EPCA route and the revised route in the vicinity of Okanagan Falls are shown on Figure 3. Because of the late date of announcing the revised route, there had been insufficient time to fully determine the land use concerns and the Commission expected that this issue would be addressed by the Inquiry. While the revised route raised some additional environmental concerns, the EPCA review process had determined that these could be mitigated. The principal concern from the Commission's perspective was the additional cost of approximately \$2.2 million.



2.3 Public Meeting Evidence

2.3.1 KVR

In response to the Commission's request, Mr. T. McDonald, Chair of the KVRPC, and Mr. R. Brodie, Senior Land Officer for B.C. Lands, attended the public meeting in Okanagan Falls. Mr. G. Irvine, Senior Planning Engineer for MTH was unable to attend, but provided the Inquiry with a letter dated April 27, 1994 which clearly identified the potential to use the KVR in the Vicinity of Okanagan Falls as a "mini-bypass option".

At the public meeting, Mr. McDonald reiterated the committee's position that the KVR should be kept available for use as a future transportation corridor. He indicated the preferred uses as rail, light transit, or highway. He also stated that MTH had been "adamant" about imposing the ten year tenure limit if BC Gas were permitted to use the KVR.

2.3.2 Robinson Farm

The revised route proposed by BC Gas crosses the farm property owned by the Robinson family using new right-of-way adjacent to the Okanagan River Channel dike. The Robinsons advised the Inquiry that in their view this was not acceptable as it would result in the pipeline passing close by their new house, which they believed was a safety concern, and would restrict their activities on the right-of-way, an area where they presently had livestock pens located. They indicated that installing the line in the dike, which was within an existing Water Management right-of-way across their property, would address their concerns. Despite BC Gas evidence that Water Management would not permit a pipeline to be located within a water retaining structure, BC Gas was required by the I.R. to further investigate the dike option with Water Management.

2.3.3 Sumac Farms

The owners of Sumac Farms chose not to attend the public meeting but did set out their position opposing the proposed pipeline route across their property in a letter dated April 28, 1994. The letter urged the Commission not to consider this route "until the such time as the position of the Provincial Government in respect to the Kettle Valley Railway is known and properly justified". The letter stated that the owners expected to be compensated on the basis of their lands being valued as "development lands" and that they had plans for a golf course approved for their lands. The I.R. sought further clarification of the relative locations of the pipeline and the proposed golf course.

2.3.4 Metcalf Property

Mr. Metcalf expressed concerns that his property near the pictograph bypass at Vaseux Lake would be significantly impacted by the proposed route refinement in that area. He suggested that based on preliminary staking, there was a potential to destabilize the foundation on his house, and to damage his septic field. BC Gas provided reassurances that this would not be the case. In the I.R., BC Gas was asked to comment on the potential to mitigate these concerns.

2.3.5 Mineral Claims

The matter of mineral claims on the pipeline right-of-way was raised in a letter to the Commission dated April 28, 1994 from Mr. B. Sherman who was unable to address the Inquiry in person. The letter advised the Inquiry that both of the routes proposed by BC Gas in the vicinity of Okanagan Falls would cross Mr. Sherman's mineral claims. He had apparently been unable to obtain confirmation from BC Gas that it recognized his claims.

The issue of mineral claims was also raised by INCO Exploration and Technical Services Inc. ("INCO") in a letter to the Inquiry Officer dated April 27, 1994. INCO advised that a portion of the revised route where it crosses Sumac Farms and enters Skaha Lake crosses "the Vault 4 Mineral Claim".

The I.R. required BC Gas to identify what allowance had been provided in the cost estimate for mineral claims. The CPCN ultimately awarded to BC Gas for this project will require the utility to comply with all statutory requirements in securing the right-of-way and constructing the pipeline. Such a requirement is implicit in any CPCN.

2.3.6 Seismic Concerns

General concerns were raised at the public meeting in Okanagan Falls about the susceptibility of the pipeline to damage during an earthquake and it was suggested that the proposed routes are traversed by faults. This concern was also raised in a letter dated March 2, 1994 to MEMPR from Mr. G. Whatley, a resident of Okanagan Falls, who specifically refers to a fault crossing the pipeline route in Skaha Lake.

BC Gas advised the Inquiry that it had retained Golder Associates Ltd., a recognized expert on seismic matters, to evaluate the seismic risk for the proposed pipeline route. Golder reported that the entire area traversed by the pipeline is classified under the building code as Zone 1, which is the lowest risk category in terms of the expected energy of earthquakes. Their expert advice was that the expected seismic activity and known faults in this area should in no way affect the pipeline.

2.4 Field Observations

The field review of the route refinements proposed by BC Gas in the vicinity of Vaseux Lake and Okanagan Falls revealed that some difficult construction would be experienced but that most, if not all, of the potential land use concerns could be mitigated.

The pipeline route across the Robinson Farm would be disruptive during construction, but should have little long term impact on the use of this land, even if it were to be developed for non-agricultural uses. However, it would be preferable to locate the pipeline in the dike within the existing Water Management right-of-way and it is not clear what sound technical reasons exist for not permitting this. If this could be done, there is also a potential to reduce costs by constructing in the westerly dike, thereby eliminating two expensive directionally drilled crossings of the Okanagan River Channel. BC Gas was requested to investigate this matter further as noted previously.

The route across Sumac Farms does not present any significant construction difficulties with the possible exception of the rather steep uphill portion at the south boundary. Elsewhere, it would appear that so long as BC Gas is careful to choose pipe elevations which are compatible with the planned golf course, the main issue will be one of compensation.

In the vicinity of the Metcalf property, it appeared reasonable for BC Gas to use a further route refinement which would involve staying on the KVR slightly farther past the pictographs than proposed by its revised route. While it is recognized that this change has the potential to result in some increased costs in future should it become necessary to relocate the pipeline off the KVR, this potential is somewhat offset by reduced construction difficulty now.

2.5 BC Gas Information Responses

Further discussions between BC Gas and the Water Management Branch have confirmed that the pipeline will be allowed in the dike. As a result, BC Gas proposed a route on the west side of the river channel, thereby avoiding the crossing of the Robinson property. While BC Gas estimated that this route would save about \$300,000 for the two crossings of the Okanagan River Channel, this saving would be offset by the increased difficulties of installing the pipeline in the dike, so that BC Gas estimated no cost difference for this route refinement.

With respect to the crossing of Sumac Farms, BC Gas stated that the proposal for development of a golf course which is now before the Provincial Agricultural Land Commission, coincides with the existing

BC Gas right-of-way. It is the position of BC Gas that installing the new pipeline within the existing right-of-way should not increase the impact on the planned development. Where new right-of way is required on the Sumac Farm properties, BC Gas stated that compensation would be determined by an independent appraisal including a valuation for any lands where approval and development is imminent.

After further review of the impacts of the recommended routing across the Metcalf property, BC Gas proposed to continue following the KVR for an additional 450 m beyond the proposal filed prior to the Inquiry. In the company's view, this would effectively address the property owner's concerns, as well as avoiding bird nesting habitat for a number of species including one on the endangered list.

With regard to mineral claims, BC Gas advised that Mr. Sherman's claim is within existing right-of-way which predates the claim, and thus the claim is subject to the right-of-way. The INCO claim involves land which is either cultivated farm land, private land occupied by buildings, or subject to an existing right-of way. For these reasons, BC Gas anticipated that no compensation would be required, although it will continue to keep claim holders advised.

BC Gas filed a letter dated January 14, 1994 from its seismic consultant Golder Associates Ltd. The letter expanded on the information provided at the public meeting by BC Gas. With regard to faults, the letter stated: "Although there is evidence of fault movement in the last 10,000 years in southwestern B.C., these faults are located no closer than 240 km to the project area. Certainly, no active faults have been recognized to date in the Okanagan Valley." Regarding other risks, the letter stated: "... earthquake events of sufficient proximity to the site and sufficiently high magnitude to induce liquefaction within the project area are considered very unlikely to occur. ... Our studies showed that no part of the pipeline route is considered to be exposed to high slope instability risks." BC Gas also pointed out that the operating stress levels in the pipe would be less than 50 percent of its specified minimum yield strength, so that the pipeline would have a significant strength margin with which to withstand the (unlikely) occurrence of a seismic event.

3.0 LOCAL ROUTING - PENTICTON

3.1 Initial BC Gas Route Adjacent to WKP

One feature of the route in the vicinity of Penticton initially proposed by BC Gas in the EPCA was that it would parallel the West Kootenay Power Ltd. ("WKP") transmission line near the northeast corner of Skaha Lake to form a utility corridor. However, both the landowner Mr. H. Wiltse, and the City of Penticton ("the City") opposed such a route on the basis that it would alienate much of the best remaining land within city boundaries which could be used for the development of residential housing.

It was indicated by the landowner in discussions with BC Gas that he had been negotiating with WKP to have its line relocated outside of city boundaries so that the land would be totally unencumbered except for the proposed BC Gas pipeline.

3.2 Revised BC Gas Route

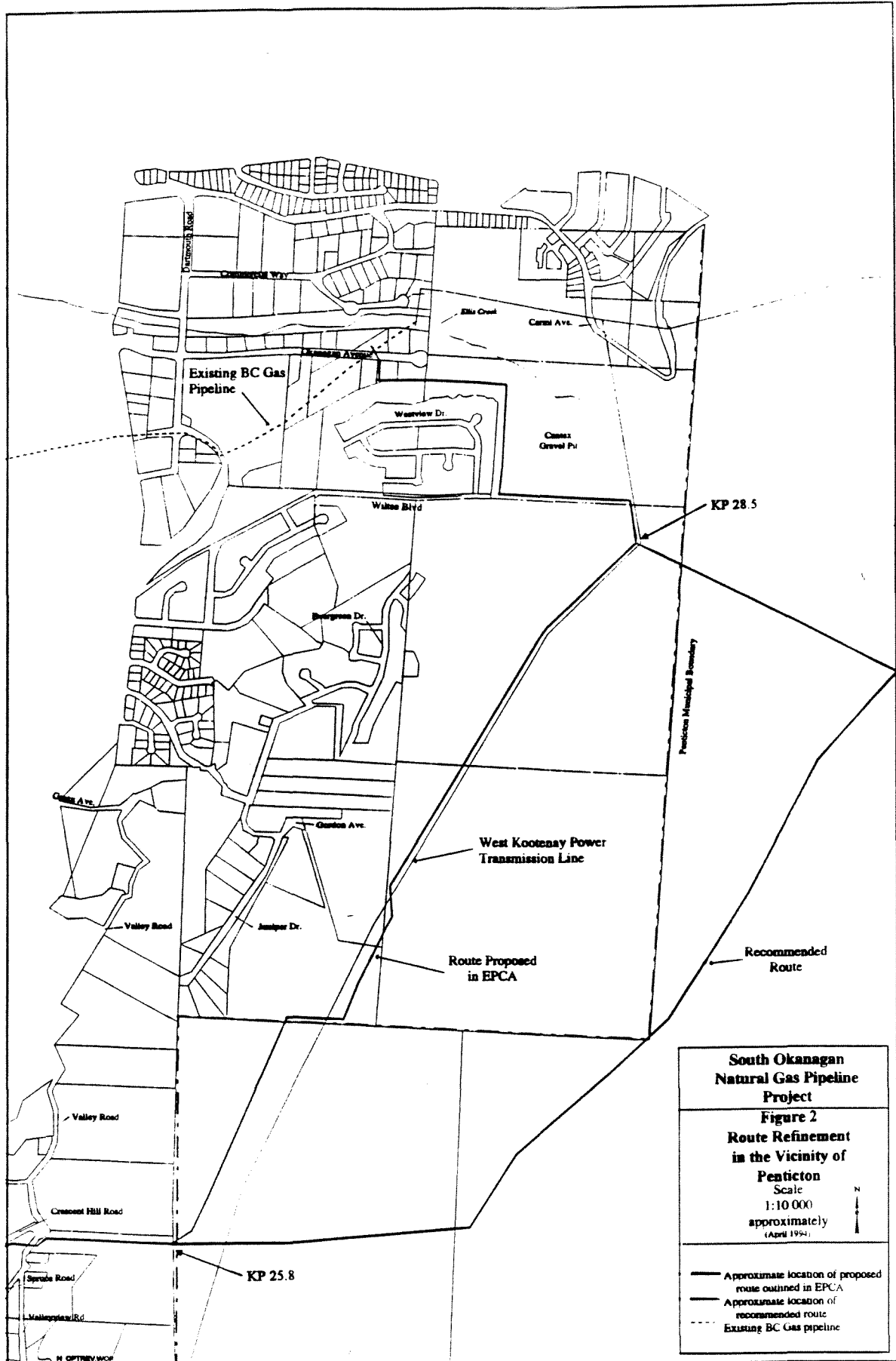
In response to these concerns, BC Gas, in its April 14, 1994 application proposed to relocate the pipeline to a more easterly corridor outside of the city boundaries. The cost of this relocation was estimated by BC Gas to be approximately \$1.1 million due to its extra length and the extra rock expected. No other changes were proposed to the EPCA route. Both the EPCA route and the revised route in the vicinity of Penticton are shown on Figure 2.

3.3 Public Meeting Evidence

3.3.1 Skaha Park

In a letter filed prior to the Inquiry, the City had briefly mentioned some concerns with the proposed route through Skaha Park. At the public meeting these concerns were given considerable emphasis by both the Mayor and the City Administrator. The concern was primarily one of whether the presence of the pipeline might act as a deterrent to the public use of the Park due to a perception that the pipeline was not safe. Also mentioned were the possible conflicts with existing and future city utilities, and constraints to future commercial development in the Park.

It was the City's position that if the route across the Park were to be approved, BC Gas should be required to cover both compensation and "the cost of preparing a Skaha Park Development Plan to minimize the adverse effects of locating a gas line in a public park".



The City suggested that a preferable route would be one using the Channel Parkway / Ellis Creek corridor, and indicated that any traffic disruption associated with construction along this or similar routes would be preferable to the result of a pipeline in the park. This route also avoids the Wiltse property and thus addresses the City's concerns about development interference. The City did not comment as to the approvals required for its proposed alternative route.

3.3.2 Wiltse Property

At the public meeting, both the City and the landowner presented the view that the revised BC Gas route was the better alternative in this area, although both favoured other route alternatives which completely avoided the area. Mr. H. Wiltse advocated using what he referred to as "the 201 route" which is referred to by BC Gas in the EPCA as the "Okanagan Highland corridor". This corridor is located to the east of, and parallel to, the Okanagan Valley and thus completely avoids the built up areas of the valley except where it connects to the existing system at both ends. While he preferred the 201 route, he also mentioned the option of leaving Skaha Lake at Gillies Creek, or using the Channel Parkway / Ellis Creek corridor as proposed by the City. Each of the alternatives mentioned by Mr. Wiltse avoided lands which he presently owns.

Mr. H. Wiltse advised the Inquiry that his negotiations with WKP had been ongoing for some time, and considering that WKP intended to re conductor within a year or two, the incremental cost would only need to cover new poles and new right-of-way. He advised that WKP had suggested a relocation cost of \$600 thousand to move off his lands which are currently within city boundaries to a location similar to the BC Gas revised route. It was implied by Mr. Wiltse that he did not see such a cost as a major deterrent to his development plans and that he intended to proceed on that basis.

3.3.3 Cantex Pit

The route recommended by BC Gas follows the southern boundary of the Cantex gravel operation on its final approach to a tie-in to the existing system in Penticton. Mr. N. Davies representing Cantex advised the Inquiry that this route was completely unacceptable as it would impose limits on all aspects of his operations including: the ability to complete mining the pit, the stockpiling of material, the production of asphalt and gravel, and the movement of heavy equipment. The route would also limit his future plans to subdivide the property for both residential and industrial uses once mining was complete. Besides these monetary issues, Mr. Davies raised the issue of ongoing safety for his employees in having to work around a live gas pipeline.

Mr. Davies suggested a number of alternative routes which avoided his property entirely. These include the Channel Parkway / Ellis Creek corridor and a number of variations discussed later in this report.

3.3.4 Westview Drive Properties

Westview Drive borders the Cantex Pit and much of the right-of-way proposed by BC Gas inside the pit boundary also parallels the rear property line of the Westview Drive properties. Several of the Westview Drive property owners attended the public meeting and opposed the route proposed by BC Gas. An opposing petition signed by 12 property owners was filed. The concerns were about safety, and appeared to have been heightened by the noise and vibration experienced in their homes from the gravel operations, leading to an assumption that a pipeline within the pit would be at high risk of damage. The reassurances provided by BC Gas at the public meeting had little, if any, success in addressing the concerns expressed, as emotions were high by this stage of the project planning process.

3.3.5 Indian Lands

The route recommended by BC Gas does not cross Indian Reservation lands, so no approvals in this regard have been required. However a number of the alternative routes in the vicinity of Penticton proposed by parties opposing the BC Gas proposal do require approval to cross lands owned by the Penticton Indian Band.

During the field investigations prior to the Inquiry, BC Gas advised that the position of the Penticton Indian Band was that no new rights-of-way will be agreed to until the outstanding disagreements with respect to existing rights-of-way have been settled to the satisfaction of the Band. This position was reiterated at the public meeting by Mr. Pierre Kruger, who stated that he was an elected council member of the Penticton Indian Band. Correspondence between BC Gas and the Band filed in the EPCA indicate that the Band expects such negotiations would involve consultation within the Band and could not be concluded in a short time.

While the route proposed by BC Gas does not cross any Indian Reservation lands, the issue of Indian land claims in general has not been addressed by BC Gas. In this regard, Mr. Kruger claimed Indian ownership of Skaha Lake and the surrounding valley lands. He advised the Inquiry that he, and most of the Indian people he had spoken to, considered that none of the routes through the valley were acceptable. He suggested that the pipeline should be installed on the 201 route, if it is built.

3.3.6 Alternative Routes

a) Channel Parkway / Ellis Creek corridor

This route was suggested by a number of parties including the City of Penticton, Mr. H. Wiltse, and Cantex. BC Gas had considered this route but rejected it because of a combination of environmental concerns, difficulties with construction, the inability to obtain a standard width right-of-way and expected difficulties in obtaining timely approvals. Use of the Channel Parkway would require approval of both the Ministry of Transportation and Highways and the Penticton Indian Band, and it appears that such approvals if attainable, would not be attainable in time to have the pipeline in service for next winter as required.

b) Channel Parkway / Industrial Avenue

This variation of the previous route was suggested by Cantex and addresses the environmental concerns associated with Ellis Creek. It was not specifically considered by BC Gas.

c) Channel Parkway / Warren Avenue

This is another variation suggested by Cantex and addresses both the environmental concerns associated with Ellis Creek, and to some extent, the difficulties with securing a standard width right-of-way. The Cantex proposal involves removing the existing 10-inch line on Warren Avenue, and installing the new 16-inch line in its place on the existing right of way. BC Gas advised that this existing right-of-way does not meet present standards in terms of width and that the route is congested with commercial and residential development. The City of Penticton was not prepared to endorse this route.

d) "The 201 Route"

This route was suggested as an alternative by most, if not all, of the opponents of the route proposed by BC Gas. It is generally advocated on the basis that for the near future at least, it has the least effect on valley residents since it essentially bypasses the valley. This route was considered by BC Gas and while it was found attractive in many ways, it was ultimately rejected on the basis of high cost. Based on the preliminary estimates in the EPCA, the incremental cost for this route was expected to be in the range of \$10 million. The I.R. required BC Gas to update this incremental cost, recognizing the cost increases in the recommended route since the EPCA, and the potential that in view of concerns raised at the Inquiry, compensation costs may be understated.

3.4 Field Observations

3.4.1 The BC Gas Revised Route

Commencing at Skaha Lake, the exit point was chosen in order to give the neighbouring marina a wide berth. While this may save some disruption during construction, it results in the traverse of Skaha Park being longer than necessary and makes an already difficult directional drill just east of the Park more difficult. Since the pipeline traverses a corner of the Park where there is limited potential for future development, safety should not be a concern.

The revisions to bypass the proposed Wiltse development will encounter substantial extra rock, but BC Gas appears to have considered this appropriately in its revised cost estimate.

A route through the Cantex Pit appears reasonable if the pit operator cooperates in establishing and maintaining the appropriate final grade. Recognizing that the pipeline will impose both immediate operating constraints and future development constraints, the principal issue with this route is one of compensation. The I.R. attempted to establish whether appropriate compensation to Cantex had been included in the BC Gas cost estimate for this route.

The route does not directly affect the Westview Property owners adjacent to the pit, although their safety concerns are understandable, particularly in view of their experiences with the pit operation. Again, assuming that Cantex is properly compensated and their operations are carried on accordingly, safety concerns can all be addressed.

3.4.2 Channel Parkway Route Alternatives

While from a construction point of view, none of these routes appear to have any insurmountable difficulties, they all have a greater degree of difficulty overall than the BC Gas revised route, and would result in considerably more disruption to property owners and the community, particularly in the case of the Ellis Creek and Warren Avenue variations. However, considering their overall feasibility, the I.R. required BC Gas to provide further information about each of these routes.

3.5 BC Gas Information Responses

3.5.1 Channel Parkway Route Alternatives

BC Gas expressed concerns about each of the alternative routes which use the Channel Parkway corridor, based on two factors: the lack of available right-of-way, and the difficulty in concluding land negotiations with the Penticton Indian Band. It also noted that if the corridor were to be used, the pipeline should not be installed within the highways road allowance since both MTH and BC Gas consider a high pressure pipeline to be incompatible with a highway.

The company stated that it requires a 15 m wide right-of-way:

- to provide sufficient space for pipeline construction;
- to ensure future access for patrols, surveys, and pipeline maintenance;
- to provide space for possible future pipeline additions;
- to limit activities in the proximity of the pipeline facilities;
- to prevent the encroachment of various kinds of developments in the proximity of the pipeline facilities; and
- to provide clear identification of the right-of-way for aerial and ground patrol as well as for third parties.

The company indicated that its concerns about land negotiations with the Penticton Indian Band were based firstly on their recent experience. BC Gas stated that a meeting with the Band was held in the Spring of 1993 after a number of unsuccessful attempts beginning in the Fall of 1992. At this meeting the Band expressed concerns with all of the routes under consideration and explained that it considered that the entire Okanagan Valley was Indian owned land. This position is consistent with Mr. Kruger's Inquiry evidence. Secondly, BC Gas understands that the Penticton Indian Band is not participating in land claims negotiations through the B.C. Treaty Commission. The B.C. Treaty Commission has been established to provide a forum for negotiating outstanding treaty matters, especially land claims. The Commission is made up of representatives from both the Federal and Provincial Governments and from First Nations Peoples.

In addition to these two factors, BC Gas filed cost estimates which show that each of these routes would be more costly to construct than the recommended route by at least \$1.2 million. Since this difference relies on preliminary estimates for the alternative routes, it may well be understated; in this regard BC Gas stated that while the recommended route estimate is within plus 10 percent, the alternative estimates are

within plus 35 percent. Considering this variability, a route using the Channel dike and Ellis Creek bed for example, could cost up to \$6 million more than the recommended route.

3.5.2 Other Alternative Routes

With regard to "the 201 Route", BC Gas stated that it would be at least 10 km longer than the recommended route with an additional cost of at least \$11 million, again based on preliminary estimates subject to upward adjustments of 35 percent. Aside from cost, BC Gas advised that the route crosses numerous streams and creeks including two within domestic water supply areas, crosses the Vaseux Bighorn Wildlife Area, presents difficult access for maintenance in winter and spring, and would have considerable visual impact from the new right-of-way across timbered areas.

The Gillies Creek exit from Skaha Lake is considered by BC Gas to simply trade one set of issues for another. It affects considerably more property owners than does the recommended route, conflicts with residential water intake lines, and the gullies leading away from the creek pose very difficult and expensive construction problems.

3.5.3 Further Route Refinements

After further discussions with the City of Penticton, BC Gas recommended a refinement for the route through Skaha Park which addressed most of the concerns raised by the City at the Inquiry. In a letter to the Inquiry Officer dated May 31, 1994, the City confirmed that the discussions had been productive in resolving municipal concerns. The revised route exits from Skaha Lake in the southeast corner of the Park, on the north side of the Marina, thereby minimizing impact on the beach area. While shorter overall, land costs for the new route were estimated by BC Gas at an additional \$300,000 since the right-of way would be in park land rather than the road allowance used by the previous route. Other compensation matters have yet to be resolved but are being actively negotiated.

Subsequent to the Inquiry and having now negotiated the permission of the operator for site access, BC Gas conducted a site investigation of the Cantex Pit to determine if a better route through the Pit could be identified. As a result BC Gas has identified a route through the Pit which addresses the concerns of the Westview Drive property owners, as well as a significant portion of the Cantex concerns about future development restrictions. Final resolution of the Pit routing to minimize the impact on Pit operations remains to be worked out between Cantex and BC Gas. The utility reviewed the compensation estimate for Cantex and confirmed that the current project cost forecast is considered adequate in this regard.

4.0 RECOMMENDATIONS

4.1 Local Routing - Okanagan Falls

Since the prime concerns of the Commission in reviewing a utility project of this kind are security of deliveries and cost to the ratepayers, it is unfortunate that BC Gas has been precluded from using the KVR route through Okanagan Falls which would have reduced the project cost by an estimated \$2.2 million. However, it is reasonable to conclude that a ten year limit on tenure precludes the use of the KVR for other than short stretches such as near the pictographs in the vicinity of Vaseux Lake, where future relocation is either unlikely or economic in reducing costs now.

After a review of all the Inquiry evidence, it is recommended that approval be given to the revised BC Gas route as filed in Volume 5 of the EPCA and as refined in the information response dated May 27, 1994. The refinements involve staying on the KVR for an additional 450 m in the vicinity of the Metcalf property near Vaseux Lake, and bypassing the Robinson property completely by use of a route along the westerly dike of the Okanagan River Channel. The costs are not expected to change from those forecast in Volume 5 of the EPCA. These route refinements address the majority of the concerns raised at the Inquiry. An exception is the concern of Sumac Farms related to potential development conflicts on the existing right-of-way. It is expected that this concern can and will be accommodated by a combination of design and construction measures, together with appropriate compensation.

4.2 Local Routing - Penticton

It can be concluded that there are serious objections to all of the alternative routes in the vicinity of Penticton which were proposed at the Inquiry. The most significant objection is the additional cost of each alternative which is estimated to be in the range of \$1 million to \$11 million. Moreover, the alternatives towards the lower end of that range all require the approval of the Penticton Indian Band, which cannot likely be obtained in time to construct the project for gas deliveries next winter.

After a review of all the Inquiry evidence, it is recommended that approval be given to the revised BC Gas route as filed in Volume 5 of the EPCA and as refined in the information responses dated May 27, 1994 and June 7, 1994. The refinements involve a shortened traverse of Skaha Park and a new route through the Cantex Pit. These route refinements address the majority of the concerns raised at the Inquiry, with the exception of the determination of appropriate compensation for the landowners affected by the new right-of-way

5.0 OTHER MATTERS

The terms of reference for this Inquiry provided the scope to consider other matters which were determined to be relevant. While the filed evidence does not fully address the utility's perspective on the following matters, a number of inferences can be drawn from the evidence that was filed, and the following comments are provided in that context.

5.1 Route Planning

The Commission relies on the utility to examine detailed routing or siting options thoroughly prior to applying for a CPCN (or an EPC), thereby avoiding the need for further public review at the final approval stage. In the case of this project, it would appear that most of the detailed route refinements which were presented in the information response following the Inquiry, could have been developed through the planning process. This is particularly true in the Okanagan Falls area with regard to the use of the KVR and the Okanagan River Channel dike. With more thorough planning, it is likely that most of the concerns from the residents and affected property owners in the Okanagan Falls area would not have been raised, and the Inquiry into the local routing in the vicinity of Okanagan Falls would not have been required.

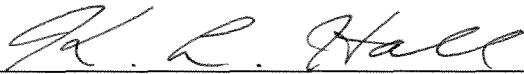
In its Order awarding the CPCN for this project, the Commission may wish to make it clear that in future, the shareholders will be at risk for the costs of needless public review as well as increased project costs resulting from lack of thorough project planning by the utility.

5.2 Indian Lands

While the general comments about the need for thorough planning certainly apply to the route near Penticton as well, in this case the deficiency pertains primarily to the negotiations for the use of Indian lands. While it is recognized that such negotiations can be time consuming, in this case the project planning lead time spanned several years. Since a number of routing options crossed lands owned by the Penticton Indian Band, including an apparent low cost option using the existing right-of-way, BC Gas should have made every effort to negotiate with the Band. However, based on a review of the correspondence filed with the EPCA, the testimony of Mr. Kruger at the Inquiry, and the results achieved, the BC Gas efforts are questionable. Had BC Gas been successful in its negotiations, virtually all of the other concerns about the local routing in Penticton which were raised through the Inquiry process would not have arisen. While the potential for other concerns with a route using Indian lands cannot be ruled out, it is likely that if an Inquiry had been required, its scope would have been reduced. Since at least one such route would have required far less new right-of-way, it is also possible that overall project costs would have been less.

Further to a general direction on future project planning expectations, the Commission may also wish to make it clear in the CPCN Order that a particular expectation will be that BC Gas provides sufficient lead time and effort in any future negotiations for the use of Indian lands.

DATED at the City of Vancouver, in the Province of British Columbia this 10th day of June, 1994.



K.L. Hall, P.Eng.
Commissioner and Inquiry Officer