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October 15, 2010

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Ms. Erica Hamilton, Commission Secretary

Dear Ms. Hamilton:

**RE: Terasen Gas Inc. ("TGI" or the "Company")
Application ("Application") for a Certificate of Public Convenience and
Necessity ("CPCN") for the Kootenay River Crossing (Shoreacres) Upgrade
Project
Final Written Submissions**

On July 15, 2010, Terasen Gas filed the Application as referenced above.

In accordance with Commission Order No. G-133-10 setting out the Regulatory Timetable for the review of the Application, TGI respectfully submits its Final Written Submissions.

If there are any questions regarding the attached, please contact the undersigned.

Yours very truly,

TERASEN GAS INC.

Original signed:

Diane Roy

Attachment

BRITISH COLUMBIA UTILITIES COMMISSION

**IN THE MATTER OF the *Utilities Commission Act*,
R.S.B.C. 1996, Chapter 473 (the “Act”)**

and

**AN APPLICATION BY TERASEN GAS INC.
FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AND APPROVAL
FOR THE KOOTENAY RIVER CROSSING (SHOREACRES) UPGRADE PROJECT**

**FINAL SUBMISSIONS OF
TERASEN GAS INC.**

OCTOBER 15, 2010

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SUBMISSIONS OF TERASEN GAS INC.

A. INTRODUCTION

1. Terasen Gas Inc. ("TGI" or the "Company") is applying to the British Columbia Utilities Commission (the "Commission") for a Certificate of Public Convenience and Necessity ("CPCN") pursuant to sections 45 and 46 of the *Utilities Commission Act* (the "UCA") to upgrade the Kootenay River Crossing (the "Project"). In particular, TGI seeks Commission approval for replacement of the current aerial crossing with a new pipeline alignment to be installed by using the Horizontal Directional Drill ("HDD") construction method.

2. The Project is non-discretionary in the sense that the existing crossing must be replaced to address pipeline integrity and to minimize the possibility of service interruption to TGI customers. The existing crossing is challenged by slope instability and deteriorating crossing condition.¹ TGI selected the preferred project alternative applying a two-stage analysis that first screened out non-feasible alternatives and then assessed feasible alternatives against financial and non-financial criteria. The HDD Large Angle Alignment, which TGI proposes, was the least cost alternative, as well as being more beneficial in light of natural hazard vulnerability, environmental, safety and operational impacts. The Project has received support from the City of Castlegar² and no opposition to the Project from First Nations or other stakeholders. TGI submits that the replacement of the existing aerial crossing with a HDD crossing is in the public interest and necessity, and the Project should be approved as sought.

3. The remainder of this submission generally follows the framework of the Application, first addressing the justification of the Project, followed by a discussion of the alternatives evaluated. The submission will then address issues relating to project design, construction, and costs. Finally, TGI will discuss its efforts to engage the identified First Nations in the Project.

B. PROJECT JUSTIFICATION

4. The Kootenay River Crossing was constructed in 1957 and serves a growing customer base in the City of Nelson and surrounding environs, with approximately 5200 customers now

¹ Exhibit B-3, CEC IR 1.4.1.

² Exhibit E-1.

that include hospitals, schools, and daycare and senior centers.³ A failure of the crossing will leave customers without gas supply for a potentially prolonged period of time and would be a detriment to the fish habitat and, potentially, to the navigability of the Kootenay River.⁴ The importance of this crossing to ensuring safe and reliable service to a growing customer base gives rise to the imperative to replace the crossing and makes this project non-discretionary.

5. TGI submits that the Project is justified because it addresses two significant challenges to the integrity of the existing crossing:

- 1) Instability of the steep slope at the eastern end of the crossing where the main support cable anchor block, the two wind cable anchor blocks and approximately 300m of pipeline are buried. The slope has been concluded to be “marginally stable” resulting in an on-going risk of crossing failure;
- 2) Deterioration of the crossing due to the fact that the Kootenay River crossing is over 50 years old with corrosion in various components and that, unless a major refurbishment is undertaken, is nearing the end of its useful structural life.

6. Section 3 of the Application and supporting appendices describe in detail these two grounds that the Company must address to ensure the integrity of the pipeline.⁵ TGI believes that the safety and reliability of the aerial crossing cannot be considered in isolation of the slope instability.⁶ Neither the Commission nor the intervenors raised specific issues with regard to the evidence supporting those two grounds.

7. TGI’s evidence is that the Project will be required irrespective of the condition of the distribution system that delivers natural gas to the customers downstream of the aerial crossing and the Savona-Nelson Main Line (“SNML”) of which the Kootenay River Crossing is part. Specific decisions to repair, refurbish, or replace distribution mains or certain segments of a transmission pipeline is based on site and condition specific factors assessed and determined through TGI’s ongoing integrity management program and maintenance activities.⁷ Currently, the Nelson distribution system is not subject to substantive replacement due to

³ Exhibit B-1, at 18; Exhibit B-3, CEC IR 1.1.2, 1.1.6.

⁴ Exhibit B-1, at 18; Exhibit B-3, CEC IR 1.8.1.

⁵ Exhibit B-1, at 13-18.

⁶ Exhibit B-3, CEC IR 1.3.1.

⁷ Exhibit B-3, CEC IR 1.1.4, 1.2.1.

corrosion issues from cast iron or bare steel mains, and the expected remaining life for the SNML is indefinite.⁸

8. The Project will also continue to be required even in the event that alternative energy resources are developed in the Nelson community, as gas service will still continue to be required for the foreseeable future.⁹

C. PROJECT ALTERNATIVES

9. TGI conducted a two-stage evaluation of potential alternatives that provide solutions to slope instability and the deteriorating condition of the crossing. Constructing a pipeline using the HDD construction methodology and a new alignment – the HDD Large Angle option – emerged as the preferred option based on technical, financial, and other considerations. Section 4 of the Application and supporting appendices provide technical and financial evidence in support of TGI's selection of the Large Angle HDD alternative as the preferred option. The evidence demonstrates that the selected option not only is the most cost effective among technically feasible options but also is favorable in light of non-financial factors such as environment, aesthetics and operational impact. The evidence is summarized below.

(a) Initial Evaluation and Screening of Alternatives

10. TGI considered various options, including reinforcement of the unstable eastern slope, construction of a new aerial crossing, replacement with a new Transmission Pressure or Intermediate Pressure pipeline, and various HDD alignments.¹⁰ Alternatives using the existing alignment were eliminated because they do not address, or could not effectively mitigate, the slope instability concerns. The safety and reliability of the aerial crossing must be considered in tandem with the slope instability concern.¹¹ Some alternatives, such as constructing a toe buttress to stabilize the east terminus slope, were eliminated because they are not technically feasible or are technically difficult. Similarly, four out of five HDD alternatives considered were eliminated due to unacceptable high risk of drilling fluid fracture to the surface with minimal options for mitigation using standard techniques.¹² Moreover, building a new aerial crossing

⁸ Exhibit B-3, CEC IR 1.1.4, 1.2.1.

⁹ Exhibit B-3, CEC IR 1.1.5, 1.1.6, 1.1.7.

¹⁰ Exhibit B-1, at 21-27.

¹¹ Exhibit B-3, CEC IR 1.3.1.

¹² Exhibit B-1, at 24; Exhibit B-3, CEC IR 5.1.

was rejected on the basis of cost and community impact. Aerial crossings are becoming much less common in situations where HDD provides a viable alternative.¹³

(b) Selection of the Large Angle HDD Option as the Preferred Alternative

11. Before identifying the Large Angle HDD option as the preferred solution, TGI studied three leading alternatives that are technically feasible:

- 1) HDD Crossing: constructing a new crossing approximately 880 m in length, by means of HDD, entering near the existing western terminus of the existing aerial crossing and exiting 625 m north of the existing east terminus.
- 2) Transmission Pressure (“TP”) Re-route: installing approximately 9 km of NPS 6 pipeline, using standard trench and cover and transportation corridor crossing methods.
- 3) Intermediate Pressure (“IP”) Re-route: similar to the TP re-route, but including a TP/IP station, 9 km of NPS 8 pipeline and with the transmission line downstream of the tie-in point reduced to IP.

12. TGI submits that both financial and non-financial evidence shows that the Large Angle HDD option is superior to constructing and re-routing a TP or IP pipeline.

13. In light of the financial criteria, such as capital cost, net present value, and rate payer impact, the HDD option is the most cost effective. For example, the capital cost for the HDD alternative is about \$3 million or 40% less than the TP or IP options.¹⁴ In terms of incremental cost of service, cash flow, and rate impact over the next 25 and 60 years, the HDD option remains the lowest.¹⁵ Even when taking into consideration the possibility that the HDD drilling fails on the first attempt, the evidence still shows that cost estimates only overlap if a comparison is made between the P90 (worse case outcome) for the HDD option versus the P10 (best case outcome) for the next lowest non-HDD option.¹⁶

14. The Large Angle HDD option is also preferable in terms of safety, environment, land issues, aesthetics, operational impact, and the vulnerability of construction to natural

¹³ Exhibit B-3, at 22.

¹⁴ Exhibit B-1, at 27-28.

¹⁵ Exhibit B-1, at 31, Table 4-3; Exhibit B-1, Appendix H.

¹⁶ Exhibit B-1, at 28; Exhibit B-1, Appendix G.

hazards.¹⁷ For instance, the HDD option has relatively low environmental impact with no in-stream work required, has very little exposure to natural hazards, and is likely to obtain necessary approvals for the right of way (“ROW”) required as the ROW would be minimally disturbed by construction and operation.¹⁸ In contrast, for both the TP and IP pipeline options, the proposed pipeline corridor must cross or come close to a number of sites that have been identified as contaminated. Offsite disposal for excavated materials and non standard construction practices to ensure the health and safety of the construction crew may be required. Not only does construction of the TP or IP pipelines require a number of highway, road and railway crossings, some portion of the route will have to be constructed in close proximity to the Kootenay River, thus adding additional permit requirements.¹⁹

15. Thus, TGI’s selection of the Large Angle HDD option is appropriate as it has the lowest capital cost and the highest overall ranking based on non-financial factors among the feasible alternatives to resolve the integrity concerns over the Kootenay River Crossing that TGI has identified.

D. PROJECT DESIGN, CONSTRUCTION, AND COST

(a) Proposed Project

16. In section 5 of the Application, TGI set out the technical requirements for each major component of the Project, outlined the anticipated construction and operation schedule to meet the July 2011 in-service date, and identified potential risks to the construction and completion of the Project. TGI submits that the Application shows that TGI has the ability and resources to successfully manage and complete the Project.

17. The probability of the HDD failing is low. HDD drilling technology has become increasingly more prevalent and sophisticated since the 1980s and has become a common industry accepted method for river and infrastructure crossings, Terasen Gas utilities are experienced in engineering and constructing crossings with HDD, having completed 27 projects since 1991.²⁰ Moreover, in this Project, TGI has engaged a HDD construction specialist to determine the viability of the proposed HDD alignment of the crossing based on

¹⁷ A detailed analysis and comparison was provided at pages 32 to 35 of Exhibit B-1.

¹⁸ Exhibit B-1, at 32.

¹⁹ Exhibit B-3, CEC IR 1.5.3.

²⁰ Exhibit B-3, CEC IR 1.9.3

available pre-construction information, such as geotechnical data, access, construction methodologies, hydrological evaluations, and survey data.²¹

(b) Project Cost

18. The capital cost for the Project is estimated to be \$8.3 million in as-spent dollars. In section 6 of the Application, Appendix H to the Application, and responses to Information Requests,²² TGI explains and clarifies the assumptions, data, and benchmarks used for the calculation of the project cost, and identifies the items included and excluded from the calculation.²³

19. The estimate has an expected accuracy range of +20% to -15%, and meets the Class 3 degree of accuracy as defined in AACE International Recommended Practice.²⁴ This calculation results in the capital cost being \$0.3 million higher than the amount based on an AACE Class 5 level calculation. As TGI explained, the difference is attributable to an estimated increase to the risk transfer premium between a guaranteed completion contract and a shared risk type of HDD construction contract.²⁵

(c) Cost Treatment

20. The Project is planned to be in service on July 1, 2011. TGI believes that it is appropriate to recover the costs associated with this Project commencing when the asset is available for use in July 2011.²⁶ Because the rates for 2011 have been set, TGI seeks deferral treatment for the 2011 capital costs associated with the Project and entry of those costs into rate base on January 1, 2012.²⁷ The deferral treatment was part of the settlement agreement reached in TGI's 2010-2011 Revenue Requirements Application proceeding.²⁸

(d) Rate Impact

²¹ Exhibit B-3, CEC IR 1.5.1.

²² See, e.g., Exhibit B-2, BCUC IR 1.8.1 (explaining interest rate calculation); Exhibit B-3, CEC IR 1.6.2 (explaining corporation income tax rate).

²³ Exhibit B-3, CEC IR 1.8.1.

²⁴ Exhibit B-1, at 45.

²⁵ Exhibit B-3, CEC IR 1.9.1; see also Exhibit B-3, CEC IR 1.9.2 for an explanation of a guaranteed completion contract and a shared risk contract.

²⁶ Exhibit B-2, BCUC IR 1.7.2.

²⁷ Exhibit B-1, at 48.

²⁸ Commission Order G-141-09, Clause 18.

21. TGI submits that the rate impact is minimal. For 2012, the rate impact will be \$0.0093 per GJ. Over the next 25 years and 60 years, the levelized rate impact will be \$0.0048 per GJ and \$0.0044 per GJ respectively.²⁹ TGI has included both 25 and 60 year levelized rate impacts to provide a rate impact view over the common 25 year project evaluation period as well as over the full 60 year depreciated life of the pipeline asset. The results show that in all cases the rate impact on customers resulting from this integrity project is small.³⁰

E. OVERVIEW OF ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENTS

22. The environmental and socio-economic impact of the Project is limited. As explained in the Application, the Project will have:

- 1) Minimal land disturbance;
- 2) Fewer potential environmental risks such as contaminated sites than the TP and IP alternatives;
- 3) Minimal new ROW required;
- 4) No impact on the fish or fish habitat resources of the Kootenay and Slokan Rivers;
- 5) No noise concerns at the drill exit location, though there may be some noise concerns during construction at the entry site;
- 6) Some benefits to local businesses resulting from expenditures by the small work force; and
- 7) A positive impact to local residents and nearby trail users because of the removal of the existing aerial structures.

23. During all phases of the Project, TGI will comply with all local guidelines, will obtain required permits, and will endeavor to develop appropriate mitigation strategies to offset any potential negative impacts.³¹ TGI received no information requests with regard to the environmental or socio-economic impact of the Project.

²⁹ Exhibit B-1, at 48.

³⁰ Exhibit B-3, CEC IR 1.6.3.

³¹ Exhibit B-1, at 39, 51.

F. PUBLIC CONSULTATION

24. TGI submits that its communication plan and public consultation activities carried out to date have been appropriate and have met the expectations of identified stakeholders given this relatively small and localized Project. To date, no significant objections to the Project have been received. In fact, the City of Castlegar has expressed its support for the Project. In particular, the Mayor of Castlegar stated,

[T]his upgrade is necessary to replace the existing aerial crossing that Terasen Gas considers no longer reliable due to potential consequences from riverbank slope instability and the deteriorating condition of the aerial crossing structure and pipe. Terasen recently undertook a similar upgrade in Castlegar and the project went very well. In addition we look forward to better aesthetics with the removal of the overhead structure.³²

G. FIRST NATIONS CONSULTATION

25. Although the Oil and Gas Commission (the “OGC”) is the Crown entity responsible for conducting consultation with the First Nations in this Project, TGI has started preliminary discussions with the identified First Nation groups under the OGC prescribed consultation process.³³ TGI will continue its engagement with the identified First Nations to facilitate the OGC consultation process.

(a) Identification of Potentially Impacted First Nations

26. To date, a total of seven First Nations organizations or individual bands have been identified to have potential claims in the area of the Project and have been accordingly informed of the Project. They are Ktunaxa Nation Council (“KNC”), Okanagan Nation Alliance (“ONA”), Sinixt Nation Society, Lower Similmakeen Indian Band, Penticton Indian Band, Osoyoos Indian Band, and Shuswap Indian Band. TGI contacted the Lakes Division of the Secwepemc Nation, and a representative of the Lakes Division informed TGI that it did not need to be consulted on the Project.³⁴

27. The identification of these potentially interested First Nations is a joint effort of TGI and the OGC. TGI originally identified the KNC, the ONA and the Sinixt Nation Society as the

³² Exhibit E-1.

³³ Exhibit B-1, at 56-57; Exhibit B-2, BCUC IR 1.4.2. See also Exhibit B-2, BCUC IR 1.6.1 (the Project falls under the OGC’s First Nations Consultation and Aboriginal Community Notification process).

³⁴ Exhibit B-2, BCUC IR 1.5.2.

organizations representing the First Nations with potentially asserted claims in the area of the Project. Since the submission of the CPCN application, the OGC has identified three individual bands within the ONA and the Shuswap Indian Band for consultation.³⁵

28. Although TGI has written confirmation from the ONA that it represents seven First Nation communities (Lower Similkameen Indian Band, Penticton Indian Band, Osoyoos Indian Band, West Bank Indian Band, Okanagan Indian Band, Upper Similkameen Indian Band, and Upper Nicola Indian Band), TGI has separately informed the Lower Similkameen Indian Band, Penticton Indian Band, and Osoyoos Indian Band pursuant to the OGC's instruction.³⁶ No individual member bands of the KNC were individually identified for need of consultation because the OGC has a Consultation Agreement with the KNC.³⁷

(b) Summary of TGI's Engagement Activities

29. As detailed in section 9.3 of the Application and supplemented by responses to the Commission's Information Requests, the evidence demonstrates that TGI has been diligently engaging the identified First Nations in the Project. For instance, all identified First Nations have received an information package on the Project, which included an overview of the Project, a description of the need for and the construction proposed for the Project, and a map of the area of the Project.³⁸ TGI has had telephone conversations, email exchanges, and face-to-face meetings with representatives from certain identified First Nations, seeking their input on the Project.³⁹ Moreover, TGI has committed to the ONA for initial capacity funding, and is in the process of negotiating capacity funding with the Sinixt.⁴⁰

30. TGI has been in regular contact with the OGC regarding its application for this Project and has informed the OGC of the information that TGI has provided to the ONA, KNC, and Sinixt, for instance, by copying the OGC on correspondence that it has sent to the First Nations explaining the Project and seeking their input.⁴¹

(c) Input from the First Nations and TGI's Responses

³⁵ Exhibit B-2, BCUC IR 1.1.2.

³⁶ Exhibit B-2, BCUC IR 1.1.2, 1.1.2.1.

³⁷ Exhibit B-2, BCUC IR 1.1.2.

³⁸ Exhibit B-1, at 57-60; Exhibit B-2, BCUC IR 1.1.2.

³⁹ Exhibit B-1, at 57-60.

⁴⁰ Exhibit B-2, BCUC IR 1.2.1, 1.2.1.1.

⁴¹ Exhibit B-2, BCUC IR 1.4.1.

31. To date, TGI has not received any opposition to the Project from the First Nations identified and contacted.⁴² The First Nations have expressed an interest in business and construction opportunities arising from the Project and in participation in the archaeological assessment process and fieldwork.⁴³ The evidence shows that TGI is responsive to First Nations inquiries. For instance, KNC's Nupqu Development Corporation is already registered in the TGI procurement process.⁴⁴ In consideration of the ONA's policy of not recognizing archaeological work within its territory absent its members' participation, TGI will ensure that personnel from the ONA be involved in the archaeological fieldwork.⁴⁵

32. TGI has received a request from the Sinixt that TGI use an archaeologist who is unaffiliated with any First Nation. In light of this request, TGI has identified an archaeologist who has also been approved by the Sinixt. The ONA has also approved this new archaeologist and TGI received no objection from the KNC after informing them of the new archaeologist. The new archaeologist has now been contracted by TGI.⁴⁶

33. TGI's attentiveness to First Nations' interests and potential concerns will continue in the construction phase of the Project.⁴⁷

(d) Sufficiency of the Consultation Process

34. The likelihood of any impact of the Project to the aboriginal interests and rights is very low.⁴⁸ TGI has considered the potential physical impacts of the Project and whether it is likely to affect an aboriginal right that may be exercised in the area. In particular, TGI considered whether the Project could impact an aboriginal right to harvest, hunt or fish. Because the Kootenay River Crossing will be at a substantial depth below the riverbed, TGI believes that it is not likely to affect the ability to fish in the area. In addition, the Project will disturb less than 1 acre of land on each side of the river and the construction will only take approximately 4

⁴² Exhibit B-1, at pages 57-60; Exhibit B-2, BCUC IR 1.4.3, 1.4.4; see also Exhibit B-2, BCUC IR 1.4.4.1 (TGI has knowledge of the OGC receiving any opposition to the Project).

⁴³ Exhibit B-1,

⁴⁴ Exhibit B-1, at 58.

⁴⁵ Exhibit B-1, at 59.

⁴⁶ Exhibit B-2, BCUC IR 1.4.3.

⁴⁷ Exhibit B-2, BCUC IR 1.4.2.1.

⁴⁸ Exhibit B-2, BCUC IR 1.4.2.1.

months. Therefore, any impact on hunting or harvesting during that time will be minimal, if any.⁴⁹

35. Given the limited scope of the Project, the low impact on any aboriginal rights that may be exercised in the area, and TGI's responsiveness to interests and concerns raised by the identified First Nations, TGI believes that the level of consultation that has already occurred is appropriate. As stated in the Application, TGI's communications with the First Nations will continue as the Project progresses to facilitate the OGC process.⁵⁰

H. CONCLUSION

36. The evidence indicates that the Project is required to address the integrity of the Kootenay River aerial crossing, which is challenged by the unstable slope at the east terminus and by the continuing deteriorating condition of the crossing. TGI's selected project alternative is the most cost-effective among the feasible alternatives, and is also preferred in terms of non-financial factors. TGI respectfully submits that the Application should be granted as sought.

All of which is respectfully submitted.

TERASEN GAS INC.

Original signed:

Diane Roy

Dated: October 15, 2010

⁴⁹ Exhibit B-2, BCUC IR 1.4.2; see also Exhibit B-2, BCUC IR 1.3.1.

⁵⁰ Exhibit B-1, at 57, 60.