Ms. Erica Hamilton  
Commission Secretary  
British Columbia Utilities Commission  
900 Howe Street, Sixth Floor  
Box 250  
Vancouver, BC V6Z 2N3  

Dear Ms. Hamilton:

Re:  British Columbia Transmission Corporation  
Application for a Certificate of Public Necessity and Convenience (CPCN)  
For the Central Vancouver Island Transmission Project (CVI Project)  
Project No. 3698511  
Information Requests No. 2

BCTC hereby files complete responses to BCUC IR No. 2, BCOAPO IR No. 2, and Jeanette Pongratz-Doyle IR No. 2, with the exception of the response to BCUC IR 2.107.3 which will be filed separately on a confidential basis. BC Hydro will file a confidential response directly to the Commission relating to BCUC IR 2.102.2.

Sincerely,

Original signed by

Janet L. Fraser  
Director, Regulatory Affairs

copy: Registered Intervenors
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.1 Please confirm that the estimate has no cost allowance for grounding the gas pipeline or potential bridge load upgrades.

RESPONSE:

BCTC confirms there is no specific cost allowance in the estimate for grounding the gas pipeline or potential bridge load upgrades.
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.2 Making assumptions for soil resistivity, transfer potentials, and fault levels, please supply a estimate of the allowance for grounding the gas pipeline assuming that a transfer potential exist.

RESPONSE:

At this stage in the design BCTC does not expect any costs for additional grounding of the pipeline. The substation will be at least 10 meters from the gas pipeline as required by the Canadian Standards Association (CSA).
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.3 What is the estimated weight of a 400MVA transformer?

RESPONSE:

The estimated installed weight of a 400MVA transformer is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core and Coils</td>
<td>125,000 kg</td>
</tr>
<tr>
<td>Tank and fittings</td>
<td>40,000 kg</td>
</tr>
<tr>
<td>Oil (in the tank)</td>
<td>85,000 kg</td>
</tr>
<tr>
<td>Oil (radiators)</td>
<td>5,000 kg</td>
</tr>
<tr>
<td>Radiators (including framework)</td>
<td>20,000 kg</td>
</tr>
<tr>
<td>Total (installed)</td>
<td>275,000 kg ± 10%</td>
</tr>
</tbody>
</table>

Weight of heaviest item for transportation
(Core, Coils and Tank without fittings) 160,000 kg ± 10%

The radiators, framework and oil will be shipped separately.

These are all approximate weights and are subject to change depending on the manufacturer.
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.4 Please provide a listing in table format of the bridges involved and their load ratings.

RESPONSE:

The transportation plan has not been created, therefore information on potentially impacted bridges is unknown at this time. BCTC does not plan to create a route and mode of transportation study for these transformers; this is the responsibility of the supplier of the transformers and is a part of the supply contract.

The manufacturer (either directly or via a sub-contractor) will create a detailed transportation plan for the shipment of the transformers from their manufacturing facility to the project site after the award of a contract for the transformers. The transportation plan will identify the most suitable route and mode of transportation, and will highlight any load limitation and restrictions (e.g. bridge load ratings) from the manufacturing facility to the project site.

A purchase order for the transformers has not been awarded at this time.
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.5 Making assumptions for the weight of the 400 MVA transformers, please supply an estimate of the cost allowance for potential bridge load upgrades using the previous assumptions of loads and load ratings.

RESPONSE:

Please refer to BCTC’s response to BCUC IR 2.76.4. BCTC has not estimated any cost allowance for potential bridge load upgrades. Without a detailed transportation plan, the route and mode of transportation is unknown and will be finalized by the supplier of the transformers.

It is standard BCTC procedure for the supplier to create the transportation plan for shipment of the transformers from manufacturing facility to project site. The supplier will make every effort to avoid any bridge load upgrade.
2.76.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.37.1
Other Utilities: Natural Gas Pipeline and Bridges

2.76.6 Are there any other costs that have been identified but not provided in the estimate?

RESPONSE:

No, all costs identified by the estimators are included in the estimate.
2.77.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.50.4
Monte Carlo Analysis

2.77.1 What is the current project financial status of VITR?

RESPONSE:

The Vancouver Island Transmission Reinforcement Project (VITR) is still on schedule for the original target in-service date of 31 October 2008. The financial forecast is still consistent with the quarterly report previously filed with the BCUC for the period ending 31 March 2008 (attached). BCTC will be filing a quarterly report for the period ending 30 June 2008 shortly.

BCTC currently forecasts that the final capital cost for VITR will exceed the P90 estimate approved by the BCUC in 2006 by approximately 15%. This compares to information being reported by industry groups and other Canadian and US utilities that costs have increased by 40% or more in the last four years.

As indicated in previous quarterly reports to the BCUC and in some detail as part of BCTC’s F2009/2010 Revenue Requirement Application, the overall costs of the VITR Project will exceed the cost estimates approved by the BCUC. The primary cause of the cost increase has been strong market forces driving up the costs of electrical equipment, construction materials and construction services especially in the electric utility industry. Secondary causes of cost increases include additional environmental requirements incorporated in approvals and permits granted after the CPCN was granted and the costs related to legal appeals and public opposition to construction in Tsawwassen and other locations along the existing right-of-way.

BCTC strongly believes that the cost performance on the VITR Project is very good considering the market forces and implementation challenges that have been faced in completing this important Project. These conditions are largely outside the control of BCTC and BCTC has taken prudent steps to mitigate the cost increase.
Ms. Erica Hamilton  
Commission Secretary  
British Columbia Utilities Commission  
900 Howe Street, Sixth Floor  
Box 250  
Vancouver, BC V6Z 2N3  

Dear Ms. Hamilton: 

Re: British Columbia Transmission Corporation (BCTC)  
Vancouver Island Transmission Reinforcement (VITR)  
Quarterly Report for F2008 Fourth Quarter  

BCTC files its VITR Quarterly Report for the fourth quarter of F2008 pursuant to Commission Order C-4-06.  

Sincerely,  

original signed by  

Janet L. Fraser  
Director, Regulatory Affairs
1.0 PROGRESS DURING QUARTER

1.1 Approvals

a) Canadian Environmental Assessment Review and other permits:
   i. On February 13, 2008 BC Ministry of Environment issued a Park Use Permit allowing the construction crew walking access to the tower structures on Grey Peninsula through Montague Harbour Marine Provincial Park. The permit was valid until March 31, 2008. An amendment to the permit was issued on March 31, 2008 changing the expiration date to April 30, 2008.
   ii. An amendment to the subsection 35(2) Fisheries Act Authorization for Harmful Alteration Disruption or Destruction (HADD) of fish habitat was issued by the Department of Fisheries and Oceans (DFO) on February 20, 2008. The amendment extends the submarine cable installation work window for all areas other than Roberts Bank, reduces the area of compensatory eelgrass habitat work required within Whaler Bay and extends the work window for completion of the eelgrass planting.

b) US Permits (reflects final permits received in early April):
   i. BCTC has received the Shoreline Exemption Permit from Whatcom County necessary to complete environmental compensation work in Lighthouse Park at the southwest corner of Point Roberts.
   ii. BCTC has also received US Coast Guard approval to temporarily use the property, where the Lighthouse Park work is planned.

1.2 Procurement

a) Contracts have been awarded for the following project components:
   i. VIT and SAT Electrical Work – F & M Installations;
   ii. Landscaping Design and Restoration in Tsawwassen – Garden Décor and Design Group;
   iv. Overhead Line Construction in Tsawwassen – Pacific Electrical Installations; and
   v. ARN Civil and Electrical work – BC Hydro Construction Services.
1.3 Construction

a) Mitsubishi continued preparation for the submarine cable installation to begin in August. The final seismic design, as well as the final designs for the hydraulic and thermal systems, are nearly complete. Additional factory tests of two design concepts for flexible in-water cable joints were successfully completed. Manufacture of the submarine cable is over 75% complete.

b) Allteck continued the overhead line construction work. Conductor installation on the eastern part of Salt Spring Island was completed.

c) On Parker and Galiano Islands, modifications of the existing towers required for the crossing at Montague Harbour were completed as well as the stringing of one of the two circuits. On Galiano Island, all poles were installed and the remaining old conductors were removed. In Delta the construction of access roads on agricultural lands and the installation of caisson foundations were completed. In addition, the seven poles in close proximity to eagle nests were installed.
d) In February 2008, the government commissioned two independent studies on whether underground pipe-type cables installed via horizontal directional drilling (HDD) would be a viable option for the Tsawwassen segment of the VITR Project. Both independent studies confirmed the results of BCTC’s previous cost estimates. On March 17, 2008, the Province announced that construction of overhead lines for the Tsawwassen segment of the VITR Project will move forward under a compressed timeline, but without affecting the project completion date. The construction planning for work in Tsawwassen is now in progress. Consultation with the 20 property owners directly affected by the construction has begun and pre-construction surveys were completed on 6 properties.

e) IDL Projects has substantially completed site preparation and civil works at SAT and VIT although some work remains. This has not delayed the start of the electrical works and the project completion date.
f) Jim Dent Construction continued site preparation and civil work at Maricaibo, Montague, Taylor Bay and English Bluff Cable Terminal Stations.

g) The Tsawwassen First Nation completed the civil construction of eelgrass beds at Roberts Bank in preparation for planting.
2.0 PLANNED PROGRESS FOR NEXT QUARTER

2.1 Approvals – no additional permits or approvals are required

2.2 Procurement – no additional procurement activity is anticipated

2.3 Construction

a) Completion of conductor installation on Parker Island and Galiano Island;
b) Completion of overhead crossing at Sansum Narrows;
c) Completion of overhead crossing at Montague Harbour;
d) Completion of major civil works at all seven stations including the four cable terminal stations and the VIT, ARN and SAT substations;
e) Completion of final details of cable system hydraulic and thermal design; and
f) Commencement of eelgrass planting at Roberts Bank and habitat compensation works in Whaler Bay.

3.0 FINANCIAL PERFORMANCE

Please see the attached VITR cost update.

The Project has continued to incur unanticipated cost increases similar to that reported in the last quarterly report as a result of environmental commitments and dealing with Tsawwassen’s social and health concerns, plus the project continues to face cost pressures from strong markets. The forecast of total capital costs is now $294 million, 13.7% above the penalty threshold of $259 million set by the Commission. The attached cost table compares the current forecast with the P50 and P90 estimates filed with the Commission in the fall of 2006. The current forecast is $7 million or 2.4% above the prior forecast of $287 million.

The principal factors in the $7 million cost increase since the last report include the following:

a) $2.4 million – compressed construction schedule in Tassawwassen to allow completion of the government review of HDD installation prior to initiating work in Tsawwassen. (BCTC had previously indicated to the Commission that this increase was forthcoming)
b) $1.5 million – additional costs for modifications to cable installation methods to accommodate routing change and environmental restrictions imposed by DFO and the Washington State Department of Fish and Wildlife.
c) $1.4 million – additional costs of eelgrass beds on Roberts Bank due to;
   i. weather delays;
   ii. weather damages to partially completed works, and,
   iii. additional volumes of fill sand required due to actual seafloor conditions plus some to replace sand lost during storm events
d) $2.4 million – cost increases on the last of the construction contracts to be awarded and for final materials and equipment procurement
e) $2.5 million – forecast increases in professional services and related costs for final
design review and approvals plus preparation and execution of plans for the complex
process of commissioning the many technical systems included in the project as well as
the extraordinary level of effort in design coordination, construction planning and
communications activities in preparation for construction in Tsawwassen

The above increases are partially offset by reductions in the remaining contingency allowance
due to decreases in remaining project risks and in IDC due to deferred cash flow and a
reduction in the F2009 IDC rate.

BCTC considers the increase in project costs above the estimates provided in 2006 to be
primarily driven by severely constrained markets for equipment and construction services,
directives from environmental permitting agencies and the need to respond to legal and other
public objections to the Project. All three of these factors are outside of BCTC’s control. BCTC
also believes that it has taken prudent measures to mitigate cost increases where practical.
## 4.0 SCHEDULE

<table>
<thead>
<tr>
<th>Task</th>
<th>Planned Start Date</th>
<th>Planned Finish Date</th>
<th>Percent Complete</th>
<th>On Schedule (Yes/no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Phase</td>
<td>2007-02-19</td>
<td>2008-10-31</td>
<td>60%</td>
<td>Yes</td>
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<tr>
<td>T/L Overhead Construction</td>
<td>2007-02-19</td>
<td>2008-09-30</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>VIT – SAL</td>
<td>2007-02-19</td>
<td>2007-10-15</td>
<td>90%</td>
<td>No</td>
</tr>
<tr>
<td>SAL – GLS</td>
<td>2007-10-01</td>
<td>2008-03-28</td>
<td>80%</td>
<td>No</td>
</tr>
<tr>
<td>ARN – EBT</td>
<td>2007-03-05</td>
<td>2008-09-30</td>
<td>30%</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-configure SAL Sub</td>
<td>2008-07-01</td>
<td>2008-07-30</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-configure GLS Sub</td>
<td>2008-07-01</td>
<td>2008-08-29</td>
<td>40%</td>
<td>Yes</td>
</tr>
<tr>
<td>Brushing/Clearing</td>
<td>2007-02-26</td>
<td>2008-09-30</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>Re-establish RoW Access</td>
<td>2007-02-26</td>
<td>2008-09-30</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>Removal of OH Lines</td>
<td>2007-05-02</td>
<td>2008-07-31</td>
<td>70%</td>
<td>Yes</td>
</tr>
<tr>
<td>Remove &amp; Photogrammetry</td>
<td>2006-05-08</td>
<td>2008-12-05</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>Remove 1L18 Submarine cables (VI230CA)</td>
<td>2007-08-16</td>
<td>2007-10-05</td>
<td>100%</td>
<td>Yes</td>
</tr>
<tr>
<td>Submarine Cables</td>
<td>2007-09-28</td>
<td>2008-09-30</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>EBT Terminal</td>
<td>2008-01-01</td>
<td>2008-05-01</td>
<td>15%</td>
<td>Yes</td>
</tr>
<tr>
<td>TBY Terminal</td>
<td>2007-09-28</td>
<td>2008-05-08</td>
<td>50%</td>
<td>Yes</td>
</tr>
<tr>
<td>MTG Terminal</td>
<td>2007-09-28</td>
<td>2008-04-16</td>
<td>50%</td>
<td>No</td>
</tr>
<tr>
<td>MBO Terminal</td>
<td>2007-09-28</td>
<td>2008-05-01</td>
<td>50%</td>
<td>Yes</td>
</tr>
<tr>
<td>Submarine Cable Manufacture</td>
<td>2007-03-06</td>
<td>2008-06-15</td>
<td>75%</td>
<td>Yes</td>
</tr>
<tr>
<td>Submarine Cable Install</td>
<td>2008-08-16</td>
<td>2008-10-15</td>
<td>0%</td>
<td>Yes</td>
</tr>
<tr>
<td>Cable Termination and Accessories Install</td>
<td>2008-07-15</td>
<td>2008-09-30</td>
<td>0% Corrected from last month</td>
<td>Yes</td>
</tr>
<tr>
<td>Substations</td>
<td>2007-02-01</td>
<td>2008-10-31</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>VIT</td>
<td>2007-11-01</td>
<td>2008-10-03</td>
<td>50%</td>
<td>Yes</td>
</tr>
<tr>
<td>Arnott Line Termination</td>
<td>2008-04-30</td>
<td>2008-09-30</td>
<td>5%</td>
<td>Yes</td>
</tr>
<tr>
<td>Sahtlam Reactor</td>
<td>2008-01-03</td>
<td>2008-10-01</td>
<td>50%</td>
<td>Yes</td>
</tr>
<tr>
<td>Taylor Bay Reactor</td>
<td>2007-09-28</td>
<td>2008-10-01</td>
<td>50%</td>
<td>Yes</td>
</tr>
<tr>
<td>230 kV In-Service Date</td>
<td>2008-10-31</td>
<td>2008-10-31</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
5.0 EXCEPTION ISSUES

a) The installation of conductor between SAL and MBO and between MTG and TBY (Area B) was scheduled to be completed by the end of March 2008, but completion was slightly delayed due to unfavourable weather conditions. The majority of work was completed and the remaining work on Parker Island and Galiano Island is expected to be completed by the end of April 2008. This delay will not effect the project completion date.

b) The long span aerial crossing at Montague Harbour was also scheduled to be completed in March 2008, followed by the Sansum Narrows crossing. Due to unfavourable weather conditions and additional time required to prepare for installation of the 3M conductor, the Montague crossing is now expected to be completed by mid April 2008 and the Sansum Narrows crossing by the end of May 2008. These delays are also not expected to affect the overall schedule for the project.

c) Final seismic, hydraulic and thermal designs related to the submarine cable installation were expected to be complete by the end of March 2008. These designs are currently undergoing final review by BC Hydro Engineering and BCTC and are expected to be finalized shortly. The cable manufacture is not dependent on these designs and therefore the delay will not affect the overall schedule for the project.

d) The habitat compensation work in Whaler Bay (debris removal and eelgrass planting) was suspended due to a physical conflict with a planned small craft harbour expansion. In consultation with DFO, the habitat compensation design has now been modified to increase the area of debris removal and to decrease the area where eelgrass is to be planted. This change was approved by DFO in the February 20, 2008 amendment to the HADD. The work has been rescheduled for late summer 2008.

e) BCTC has been informed that BTW will be a month or two late in delivering the phase-shifting transformer (PST) to VIT. If the PST is not available, the Project can be commissioned and operated without it, but at a somewhat reduced capacity. The original design incorporates bypass switches at VIT to permit this mode of operation.
6.0 RISK MANAGEMENT

The Environmental Assessment processes are complete; BCTC has completed the procurement of materials and construction services, and construction is well underway. These factors have all contributed to substantially reducing any remaining cost risks. Schedule risks have been reduced since the last report; however, any remaining schedule float has effectively been consumed and little schedule flexibility remains. BCTC still believes at this time that an in-service date of October 31, 2008 will be achieved, provided no legal or public obstacles arise related to the construction in Tsawwassen and no major technical difficulties are encountered in submarine cable installation or the commissioning process for the various project components. The following are the principal risks at this point in time:

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Status</th>
<th>Remaining Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regulatory</td>
<td>TRAHVOL has exhausted all legal and regulatory avenues to challenge the CPCN decision, but a class action civil suit from property owners is still being considered. TRAHVOL also continues to investigate any other possible means to stop the lines from being constructed through Tsawwassen.</td>
<td>Moderate</td>
</tr>
<tr>
<td>2 Environmental</td>
<td>EA Certificate issued in February 2007: Final Federal Permit issued in November 2007: Final US Permit issued in October 2007: There is an extensive Table of Commitments that is part of the EAC; BCTC has the responsibility to fulfill those commitments.</td>
<td>Low</td>
</tr>
<tr>
<td>3 Materials</td>
<td>All major components, including the submarine cable, overhead conductors, poles, insulators, phase shifting transformer and shunt reactors have been purchased and are in various stages of manufacture and delivery.</td>
<td>Low</td>
</tr>
<tr>
<td>4 Construction Costs</td>
<td>Contractual commitments have been made on all major project components; however, some exposure remains in relation to potential equitable adjustments and scope changes</td>
<td>Moderate</td>
</tr>
<tr>
<td>5 Schedule</td>
<td>Overhead Line Construction in Tsawwassen is currently critical path activity. BCTC has been working with Tsawwassen residents in relation to construction and restoration plans for their properties.</td>
<td>Moderate</td>
</tr>
<tr>
<td>6 Construction Resources</td>
<td>Contractors and Suppliers in BC continue to have difficulties with labour shortages and cost escalation. BCTC has entered into fixed price contracts for most major materials, equipment and construction services that will mitigate the escalation risk for the most part.</td>
<td>Low</td>
</tr>
<tr>
<td>7 First Nations</td>
<td>Benefit Agreements have been reached with most of the interested and affected FN; BCTC has an on-going consultation responsibility through project execution and on-going system operations. The next progress update workshop for interested and affected First Nations is scheduled in May 2008.</td>
<td>Low</td>
</tr>
<tr>
<td>8 Public and Worker Safety</td>
<td>Contracts have detailed specifications regarding planning and executing field activities in a safe manner. BCTC Construction Management Team continues to provide consistent oversight of contractor operations.</td>
<td>Low</td>
</tr>
</tbody>
</table>
Currently, the VITR Project is on schedule for an in-service date of October 31, 2008. Construction costs for overhead lines and stations work plus the increased costs related to appeals and environmental habitat compensation works have pushed forecast project costs over the budget estimate filed with the Commission. It is now certain that the overall project costs will exceed the previous P90 penalty threshold set by the Commission. The current forecast is 13.7% above the P90 estimate and 18.3% above the P50 estimate.

The principle risks remaining for the project as approved are as follows:

   a) Construction of the overhead segment through Tsawwassen considering any negative effects that may result from legal action or physical obstruction by opponents of the project.

   b) Completion of the station electrical installations and the commissioning of the complex protection, control and communications systems.

   c) Any technical difficulties in the installation and site acceptance testing of the submarine cables.

In addition, the legal and related costs of enforcing access rights and defending against any civil suits may add to the costs increases. If any action by Tsawwassen residents stays construction activity, it could delay project completion beyond the scheduled in-service date and add substantially to the overall costs.
### VITR CASH FLOW SUMMARY
As of 31 March 2008

#### CAPITAL SUMMARY

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
<td>(d)</td>
<td>(e)</td>
<td>(f)</td>
<td>P50 Estimate</td>
</tr>
<tr>
<td>In $ Millions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DEFINITION PHASE - Direct Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Forecast</td>
<td>$8.08</td>
<td>$5.52</td>
<td>$0.19</td>
<td>$0.05</td>
<td>$0.00</td>
<td>$13.85</td>
<td>$13.16</td>
</tr>
<tr>
<td>2 YTD Actual</td>
<td>$8.08</td>
<td>$5.52</td>
<td>$0.19</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$13.80</td>
<td></td>
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<tr>
<td>IMPLEMENTATION PHASE - Direct Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Forecast</td>
<td>$0.24</td>
<td>$9.73</td>
<td>$11.31</td>
<td>$128.01</td>
<td>$0.03</td>
<td>$149.33</td>
<td>$142.38</td>
</tr>
<tr>
<td>4 YTD Actual</td>
<td>$0.24</td>
<td>$9.73</td>
<td>$11.31</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$21.28</td>
<td></td>
</tr>
<tr>
<td>5 Forecast</td>
<td>$0.00</td>
<td>$0.04</td>
<td>$4.40</td>
<td>$6.23</td>
<td>$0.00</td>
<td>$10.67</td>
<td>$7.70</td>
</tr>
<tr>
<td>6 YTD Actual</td>
<td>$0.00</td>
<td>$0.04</td>
<td>$4.40</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$4.44</td>
<td></td>
</tr>
<tr>
<td>7 Forecast</td>
<td>$0.01</td>
<td>$2.33</td>
<td>$48.57</td>
<td>$16.09</td>
<td>$0.17</td>
<td>$67.17</td>
<td>$44.81</td>
</tr>
<tr>
<td>8 YTD Actual</td>
<td>$0.01</td>
<td>$2.33</td>
<td>$48.57</td>
<td>$0.00</td>
<td>$0.00</td>
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BCUC VITR Report Q4 F2008
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**Total Capital Cost**

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<tr>
<th><strong>Total P50 Estimate</strong></th>
<th><strong>Total P90 Estimate</strong></th>
<th><strong>Current Forecast</strong></th>
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<td><strong>$258.98</strong></td>
<td><strong>$294.33</strong></td>
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Negative numbers are in brackets ( )
2.77.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.50.4
Monte Carlo Analysis

2.77.2 What was the final project financial status on the Fox Creek project?

RESPONSE:

The final cost of the Fox Creek Project, as at 30 June 2008, is $27,844,000. The planning estimate included in the F2006 to F2015 Capital Plan, on which the Project was approved (Commission Order G-91-05) was $17,986,000. The final cost represents a variance of $9,858,000 or 55%. The accuracy of the planning level estimate prepared in December 2004 and January 2005 and included in the F2006 to F2015 Capital Plan was ± 50%. An implementation estimate of $26,427,000 was prepared in October 2005 with an accuracy level of ± 10%. The following is excerpted from the Fox Creek Report on Changes to Scope, Schedule and Cost that the Commission directed BCTC to file in its 15 June 2007 Decision on the F2008 to F2017 Capital Plan (Directive 28):

In October 2005, the implementation estimate of $26,427k was completed with an accuracy of ±10%. This level of accuracy is typical for an implementation estimate. BCTC made the decision to continue with the project on 25 October 2005 based on the project cost increase of $8,440k from the planning to implementation estimate. The project cost increases from the planning estimate to implementation estimate were a result of better knowledge of a number of items including substation and transmission requirements based on public consultation on transmission routes, engineering and material, legal, properties, transmission route analysis, aerial survey of transmission routes, number of highway crossings, and bid price for substation contract. The project cost increases of $8,440k included: station implementation of $960k, contractor bid price for the substation of $2,800k, transmission implementation of $4,140k, station and transmission definition of $365k, and IDC and Overhead of $175k.

Although the Fox Creek Project experienced significant cost overruns compared to the initial planning level estimate, BCTC does not expect the same to occur with the Central Vancouver Island Project. The Fox Creek initial planning level estimate was preliminary in nature, with an accuracy level of ± 50%, and significant changes occurred in the transmission route and station planning that led to the implementation estimate.

The Central Vancouver Island Project, by comparison, has undergone more detailed planning that is reflected in the cost estimate provided in the Application for CPCN, which has an accuracy level of +35% to -15%. BCTC has undertaken a public consultation process, and the transmission alignment reflects those discussions. BCTC has acquired licence of occupation over most of the Crown lands along the preferred route alignment. In addition, BCTC and BC Hydro Engineering (the engineering services provider) have considerably more current construction experience compared to when the Fox Creek planning level estimate was developed. Since January 2005, BCTC has planned and is in construction on the Vancouver Island Transmission Reinforcement (VITR) Project. In addition, BCTC has implemented the Mission and Matsqui Area...
Reinforcement Project, and has planned the Interior to Lower Mainland (ILM) Project. As shown in BCTC’s response to BCUC IR 1.50.2.3.2, BCTC had 198 projects enter service in calendar year 2007, comprised of protection and control projects (31), transmission projects (64), and station projects (103), with the majority of those projects costs ending up within ± 20% of the project estimates. All of which provides BCTC and BC Hydro Engineering with more current forecasting and implementation experience that is used to plan a project such as the Central Vancouver Island Project.
2.77.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.50.4
Monte Carlo Analysis

2.77.3 Is it reasonable and prudent for BCTC be reviewer of its own estimates for large projects?

RESPONSE:

For clarity, the estimate for the CVI Project was prepared for BCTC by BC Hydro Engineering Services under a Service Level Agreement. Under that agreement, BC Hydro acts as a consulting engineering provider for the preparation of cost estimates on transmission related projects. BCTC believes that it is reasonable to be the reviewer of estimates for projects prepared by a third party, in this case BC Hydro Engineering.

More generally, BCTC believes it is reasonable for utilities such as BCTC to be the reviewer of estimates for projects, including estimates prepared internally. BCTC is familiar with electric transmission-related projects and is capable of reviewing estimates. Requiring project estimates to be prepared by others, or requiring a third party to review the cost estimates will add costs to projects that will ultimately have to be borne by ratepayers, and may delay some projects. There is also no guarantee that a third party review will improve the accuracy of an estimate. The incurred costs of a project will be the incurred costs, and adding multiple levels of review of estimates will not reduce incurred costs, it will only add costs and potential delay for potentially no benefit.
2.78.0 Reference: Project Cost Estimate
        Exhibit No. B-2, BCUC IR 1.60.1
        Estimates

2.78.1 Please provide the excluded re-termination costs for re-terminating the
        Harewood distribution substation into the proposed Harewood West
        transmission substation for Options C-3 and C-4. Why are these costs
        referred to as excluded costs?

RESPONSE:

In BCTC’s response to BCUC IR 1.60.1, BCTC referred to the costs as being excluded
because they related to costs that should have been removed from the original cost
estimates in Exhibit B-1.

The cost estimate for the retermination of Harewood distribution substation into
Harewood West substation is $2.9 million. This cost had been in earlier costs estimates
for the Harewood West substation, but when it was determined that retermination of the
Harewood distribution substation into the new Harewood West substation was not
required the cost was removed from the cost estimate. The removal of these costs was
reflected in the costs in the Application for the Harewood South route but inadvertently
the removal was not reflected in the costs in the Application for the Harewood Central
and Harewood North routes.

The cost estimates for the Harewood North (C-3) and Harewood Central (C-4) routing
options in the errata filed 15 July 2008 (Exhibit B-1-1) reflect the removal (exclusion) of
the retermination costs.
2.78.0 Reference: Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.60.1
Estimates

2.78.2 Are there any re-termination costs associated with the Harwood South route, C-5? If so, please provide.

RESPONSE:

Please see BCTC’s response to BCUC IR 2.78.1.

The cost estimate for the Harewood South route option (C-5) does not include any retermination costs associated with the Harewood distribution substation.
2.78.0 Reference:  Project Cost Estimate
Exhibit No. B-2, BCUC IR 1.60.1
Estimates

2.78.3 Are there any other excluded costs related to the Project? If so, please list them and provide the amount that has been excluded.

RESPONSE:

As discussed in BCTC’s response to BCUC IR 2.78.1, there were no costs excluded from the Application. Accordingly, there are no other “excluded” costs related to the Project.
2.79.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.61.2
Earned Value Reporting

2.79.1 Will BCTC provide earned value reporting for its engineering and project management?

RESPONSE:

No. As per BCTC’s response to BCUC IR 1.61.2, BCTC does not intend to provide earned value reporting for the Central Vancouver Island Transmission Project, including reporting on its engineering and project management costs and activities.
2.79.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.61.2
Earned Value Reporting

2.79.2 Please provide a comparative analysis between the BCTC method of project management financial reporting and earned value financial reporting to support their statement that earned value “is not the best one in this case”. Also, please discuss the interrelationships between risk, cost and schedule.

RESPONSE:

As discussed in response to BCUC IR 3.196.1 in the ILM proceeding, earned value project reporting is a complex, data intensive methodology. It is a means to indirectly measure progress, forecast future project costs and identify variances for projects with significant cost reimbursable components and for complex projects where it is more difficult to directly measure progress or where costs are not clearly defined at the time of contract award. The method is not a prerequisite to good project management, especially on fixed price contracts or other types of contracts with well defined scope, progress measurement and compensation methods.

Properly implemented, the earned value methodology requires a substantial amount of data in common formats from all major contractors, suppliers and service providers engaged in delivery of the project. It requires contractors to provide accurate cash flow forecasts by task and monthly reporting of internal costs even though these costs are not related to the terms of payment on their contracts.

Implementing this technique for project reporting would require BCTC to incur additional costs to hire additional staff and would create a considerable administrative burden in extracting, compiling and analyzing data. It would also increase the costs of BCTC’s contractors and service providers, likely increasing bid prices. It would require BCTC to modify the terms of its procurement documents and contracts to require contractors to provide the information in a particular format. It would require a substantial amount of work up front to establish data requirements, reporting formats, baseline task descriptions and related internal cost or cash flow forecasts independent of the contract pricing provisions. BCTC would have to perform manual data collection and data conversion or direct data input to a reporting tool.

An “earned value” approach would increase the cost and complexity of implementing the CVI Project and, in BCTC’s opinion, would not provide any additional value. The method would substitute an indirect measure comparing forecasted versus actual internal cash flows for the direct measurement of project results and actual contract pay items.

BCTC intends, as most others in the utility industry do, to use percent complete assessments, milestones reached and completed pay items as direct measurements of progress and schedule performance. BCTC will use pre-bid cost estimates, tender results, fixed price contract commitments, payments to date and executed or pending change orders in measuring cost performance and in projecting BCTC cash flows and
final capital costs. On the CVI Project BCTC intends to follow the same reporting as on the VITR Project.

The interrelationships between risk, cost, and schedule are:

(a) If a (negative) risk item is realized, cost, schedule (or both) can be negatively affected resulting in an increase in costs or an extended schedule or both.

(b) If a positive item (reduction in risk) is realized, cost, schedule (or both) can be positively affected resulting in a reduction in costs or a shortened project schedule or both.

(c) If the schedule is extended, costs will increase assuming all other project inputs remain the same.
2.80.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.61.1
Inflation

2.80.1 What percentage of the total cost does the component of design and management costs represent?

RESPONSE:

As shown on Schedule C-5 in Appendix C of the Application, the component of design and management costs represents approximately 10% of the project costs before contingency, BCTC overheads, and IDC. Including these components, project design and management costs represent 7% of the total estimated project cost.
2.80.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.61.1
Inflation

2.80.2 What is the expected amount of the escalation of the design and management project cost elements over the duration of the CVI project?

RESPONSE:

The design and management cost component escalation is estimated to be $570,000 (see Schedule C-5 in Appendix C, and BCTC’s response to BCUC IR 1.60.1, Schedule C-5), which equates to approximately 3% per annum.
2.80.0 Reference:  Project Cost Estimate
Exhibit B-2, BCUC IR 1.61.1
Inflation

2.80.3 Please discuss the term "market conditions" when used to provide an explanation of project cost variances.

RESPONSE:

Market Condition is a characteristic of the market in which a firm (i.e. BCTC) is entering, whereby the firm may have to pay more or less for a product or service based on number of competitors (i.e. Contractor’s/Supplier’s), level of intensity of competitors, general economic conditions including labour supply and prices of commodities, and the market’s growth rate. The market reference in BCTC’s situation would be the supply and installation of station and transmission facilities.
2.81.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.50.2.3.2
Contingency

2.81.1 Please explain how BCTC proposes to decrease the 20% contingency with time as the project moves from start to completion assuming the contingency remains untouched.

RESPONSE:

The contingency is used to cover the occurrence of costs that are anticipated, but cannot be estimated in advance, such as First Nations benefit agreements, changes in design during implementation, or escalation in cost beyond the targeted escalation. Contingency is also used to cover the occurrence of unanticipated costs that arise during the implementation stage. BCTC does not intend to reduce and/or release any part of the 20% contingency until the end of the Project.
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1
Estimate Accuracy

2.82.1 What was the stated accuracy of the capital cost estimate for VITR?

RESPONSE:

The cost estimates provided in the VITR proceeding were based on a probabilistic distribution determined through a Monte Carlo analysis technique. Estimates were provided for P10, P50 and P90 probabilities. For example, the P90 figure was estimated to be adequate to fully fund the project capital costs with a 90% probability. This recognized that there remained some chance that the costs would exceed the P90 estimate.
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1
Estimate Accuracy

2.82.2 In the ILM Application, BCTC stated that “BCTC has estimated a Project capital cost of $602 million with a range of accuracy of +30% to -10%” yet the CVI project only has an accuracy of -15% to +35%. Please discuss why the Commission should approve a CPCN for a project with this low level of accuracy.

RESPONSE:

As discussed in BCTC’s response to BCUC IR 2.82.6, BCTC believes that a CPCN should be granted on the basis of the demonstrated need and justification for the Project that determines the Project to be in the public interest, and not on the level of accuracy (i.e. Class 3, or Class 4) of its cost estimate. Absent a competing alternative that is very close in cost and rate impact, the precision of the cost estimate is not an important factor in determining whether or not the Commission should grant a CPCN. In the case of the CVI Project, BCTC has demonstrated that it is needed, and that the proposed Project is significantly lower cost compared to the alternatives investigated. Therefore, the level of precision of the estimate included in the Application, being a Class 4 Planning Level estimate, should be sufficient information for the Commission to determine the need for the project, and to determine if the Project is in the public interest.

Both the ILM Project cost estimate and the CVI Project cost estimate are based on a Class 4 Planning Level estimates and are considered sufficiently accurate for project definition and justification of the need for both projects. The difference between a +35% to -15% estimate compared to a +30% to -10% estimate is not material with respect to precision. BCTC believes that the Commission should grant a CPCN for the Project based on the need for the Project as demonstrated in the Application and IR responses, and that the current Class 4 Planning Level estimate is sufficiently accurate cost information on which to make a determination. The CVI Project is relatively straightforward from a design and construction point of view and appears to have little risk of unforeseen conditions that would substantially alter the estimate and/or construction costs. Requiring BCTC to produce a Class 3, EAR level estimate, which would have a greater level of precision (i.e. +10% to -10%), prior to approving the Application and granting a CPCN, will take time more time and could result in higher costs and a delay to the implementation schedule of the Project, and potentially jeopardize the ability of BCTC to meet an in-service date of October 2010.
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1
Estimate Accuracy

2.82.3 Did the BCTC Board of Directors review and approve the estimate submitted in the Application? If not, why not?

RESPONSE:

The BCTC Board of Directors was advised of the total project estimate submitted in the Application, and approved the Project’s definition phase funding in May 2007, at which time they received an estimate of the total cost of the Project. Since initial approval of the definition phase expenditure, the Board has continued to receive quarterly progress reports on the Project and, through this reporting, has been made aware of the total project cost estimate as it has developed over time.

Further Board approval will be sought prior to proceeding with implementation phase expenditures for the Project, and subject to the granting of the Project CPCN.
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1
Estimate Accuracy

2.82.4 Would it be reasonable and prudent to approve this project prior to the project being better defined and approved by the BCTC Board of Directors?

RESPONSE:

As discussed in BCTC’s responses to BCUC IR 2.82.2 and BCUC IR 2.82.6, BCTC believes that a CPCN should be granted on the basis of the demonstrated need and justification for the Project that determines the Project to be in the public interest, and not on the level of accuracy (i.e. Class 3, or Class 4) of its cost estimate. BCTC believes it is reasonable and prudent to approve the CVI Project at the current stage of development. BCTC believes that it has demonstrated that the proposed Project is needed based on the evidence contained in the Application and IR responses, and that the proposed Project is significantly lower cost compared to the alternatives investigated. Therefore, the level of precision of the estimate included in the Application, being a Class 4 Planning Level estimate, should be sufficient information for the Commission to determine the need for the Project and to determine if the Project is in the public interest. As discussed in BCTC’s response to BCUC IR 2.82.2, the CVI Project is relatively straightforward from a design and construction point of view and appears to have little risk of unforeseen conditions that would substantially alter the estimate and/or construction costs.

As discussed in BCTC’s response to BCUC IR 2.82.3, the BCTC Board of Directors has reviewed the project estimate and other matters related to the Project. Please see BCTC’s response to BCUC IR 2.82.3.
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1

Estimate Accuracy

2.82.5 When will the BCTC EAR level (Class 3) estimate be submitted to the BCTC Board of Directors for approval?

RESPONSE:

Please refer to BCTC’s response to BCUC IR 1.63.2.1.

If the CPCN Application is approved by the Commission in sufficient time, the EAR level estimates will be submitted to the BCTC Board of Directors for their approval at the September 2008 Board meeting. As planned, the estimates of funds required to proceed with the detailed engineering and design work, the procurement of transformers, and the acquisition of ROW and fee-simple land for NAR and HWW substation will be submitted to the Board for approval at the September meeting as a Class 3 estimate.

As detailed engineering and design work is done, estimates for material and construction will be refined to Class 3 estimates and submitted to the Board of Directors for their approval during Board meetings in spring/summer 2009. These meetings may also consider recommendation to award construction contracts (Class 2).
2.82.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.1
Estimate Accuracy

2.82.6 If the Commission decides to grant a conditional CPCN pending further consideration and determination of the BCTC EAR level (Class 3) estimate, would BCTC consider this condition to be reasonable and prudent? Please provide discussion.

RESPONSE:

It is BCTC’s opinion that in the determination of whether a CPCN should be granted, the estimate of project cost is not a determining factor, unless two or more competing alternative solutions are very close in cost and the level of accuracy of the estimate could have an impact on the selection of the appropriate project. That however is not the case in the CVI CPCN Application. BCTC asserts that the appropriate reason for granting a CPCN should be based on the demonstrated need and justification that the Project is in the public interest.

Based on the information filed in the Application and the responses to the information requests, BCTC has demonstrated that the Central Vancouver Island transmission system is experiencing capacity constraints on the 138 kV circuits from Dunsmuir to Jingle Pot substations (circuits 1L115/116), and the 230 kV to 138 kV transformers at VIT. If additional capacity is not added in the Central Vancouver Island area in a timely manner, BCTC will be in a position of having to shed customer load during an N-1 contingency situation. BCTC investigated a number of alternate solutions and the 230 kV Injection solution was shown to be the most appropriate solution in terms of rate impact, system reliability, cost, line loss benefit, and strategic fit with the future development of the transmission system. BCTC has undertaken consultation with First Nations and the public, and has undertaken an appropriate assessment of the impacts on the physical, biological and social environments and on the public, including First Nations. BCTC also believes that it has accommodated the public concerns arising from its public consultation to the extent it can; the proposed transmission line route alignment appropriately balances the needs of the public, First Nations, and rate payers; and the project is in the public interest. For these reasons, the project should be approved by the Commission and a CPCN granted.

As to the question of whether or not the CPCN should be conditional on developing a Class 3 EAR level estimate, BCTC submits that making the CPCN conditional on a Class 3 EAR level estimate is not required. The EAR Level estimate will be developed as the project progresses. Therefore, there is no risk to issuing an unconditional CPCN now. BCTC believes the CVI Project is required and is in the public interest. If the Commission agrees, and determines that the Project is required (as would be determined in issuing a conditional CPCN), then the only result of imposing the condition referenced in the information request would be delay of the project with a potential increase in costs.

As discussed above, BCTC has selected what it believes to be the best solution to capacity constraints, has fulfilled the requirements for a CPCN, and there are no other
competing solutions from a cost perspective, therefore, the Class 4 Planning level estimate is sufficient information on which to base the approval of the Application and grant a CPCN. To achieve an EAR level estimate, detailed engineering and design needs to be completed, bid packages for materials and services completed and issued, with terms of reference, and suppliers and vendors bids received. All of these activities will occur, but will occur over time and in stages. Transitioning from the planning level estimate (Class 4) to the EAR level estimate (Class 3) occurs in stages, as design and bid packages are finalised. BCTC is concerned that issuing a conditional CPCN may impede the ability of the Company to order high value long lead time materials, such as transformers, that will require Board of Directors approval. If the CPCN is in a conditional state, the BCTC Board of Directors may not agree to release funds until the condition is removed, thereby impacting the schedule and delaying implementation of the project. If BCTC has to wait until all parts of the estimate qualify as EAR level, prior to the conditional approval being removed, BCTC may not be able to meet the 31 October 2010 in-service date.

The CVI Project is relatively straightforward from a design and construction point of view and appears to have little risk of unforeseen conditions that would substantially alter the construction costs. However, the equipment and construction contracts necessary to implement the project will be competitively tendered in an open and transparent manner. The pricing will be ultimately determined by private sector market participants and not BCTC. There is little opportunity for BCTC to modify the equipment specifications, design or construction requirements that could lower the cost of the project without reducing the capacity or performance of the facilities. BCTC will continue to examine opportunity to reduce costs or mitigate potential cost increases throughout project execution.

BCTC will provide regular cost reporting to the BCUC and would immediately bring to its attention any events or conditions discovered in the course of project implementation that could have a material effect on the cost, schedule or performance of the completed facility. Once a CPCN is granted for the CVI Project, BCTC will have to move expeditiously to complete design, tendering and contracting activities to achieve the proposed in-service date of October 2010. BCTC can provide an updated cost forecast after tenders have been received for major equipment supply and construction contracts.
2.83.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.3

Estimate Accuracy

BCTC states that “The estimate should be within the accuracy bounds of the current level 4 estimate”.

2.83.1 Does BCTC consider it reasonable and prudent to approve this project without conditions, at this time, considering the above statement?

RESPONSE:

Yes, BCTC believes that granting a CPCN without conditions for the CVI Project with the evidence that has been presented in the CPCN Application would be reasonable and prudent. BCTC believes that the Application and the Commission’s review proceeding provides sufficient information to make a determination that the Project is required, is in the public interest, and a CPCN should be granted. Please also refer to BCTC’s response to BCUC IR 2.82.6.
Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.3

Estimate Accuracy

BCTC states that “The estimate should be within the accuracy bounds of the current level 4 estimate”.

2.83.2 What is the amount of additional funding that would be required to produce a Level 3 estimate, (budget funding estimate) prior to CPCN approval?

RESPONSE

BCTC expects that it would take several months to produce a Class 3, EAR level estimate for the entire Project. In order to establish an EAR level estimate, the detailed engineering and design work for the substation and transmission line would have to be complete, geotechnical and field studies completed, bid packages for materials and services sent out and bids received for the estimate to be considered a Class 3, EAR level estimate with an accuracy level of ± 10%. In addition, prior to sending out the bid packages, acquisition of lands and ROW would have to be complete, the timing of which is uncertain at this point. Based on the above, BCTC would be very concerned about the Project schedule and potential in-service delays if it were determined that a Class 3 EAR level estimate had to be completed prior to receiving approval for the Application and a CPCN granted.

At this time, BCTC would forecast that the amount of additional funding that would be required to produce a Level 3 estimate would be between $4.0 and $5.0 million for the selected option and current schedule. If BCTC were required to undertake the development of a Class 3, EAR level estimate, BCTC would be at risk for this additional amount should the application for a CPCN be ultimately denied.
2.83.0 Reference: Project Cost Estimate
Exhibit B-2, BCUC IR 1.63.2.3

Estimate Accuracy

BCTC states that “The estimate should be within the accuracy bounds of the current level 4 estimate”.

2.83.3 What is the current percentage complete of the engineering for all routes?

RESPONSE:

BCTC has completed approximately 7% of the engineering work for each of the Lantzville, Jingle Pot, Harewood North, and Harewood Central routes. BCTC has completed approximately 15% of the engineering work for the Harewood South route.
2.84.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “Therefore, BCTC followed ICNIRP guidelines on EMF exposure from power lines when planning the CVI Project. BCTC also follow the guidelines of IEEE 95.6 on electrical fields”.

2.84.1 Please provide the threshold levels of magnetic and electric fields as well as the duration established by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and IEEE 95.6.

RESPONSE:

The threshold of response to electric and magnetic fields in humans is the basis of the guidelines, or exposure limits, from both ICNIRP and IEEE. These guidelines are, however, not the same as the threshold. The guidelines are below the threshold because guidelines are developed by reducing the estimated threshold level by dose reduction factors, commonly known as ‘safety factors’.

For the ICNIRP and IEEE (also known as ICES) guidelines and the duration established by these organizations, please refer to BCTC’s response to BCUC IR 1.75.1.1. Durations are not limited.

The threshold levels for electric and magnetic fields are based on the relevant scientific research, which is beyond the scope of this response. This research is described in the original reports of the organizations, ICNIRP (1998) and ICES (2002), and is reviewed by Reilly (2005) all of which are referenced in the October 2007 report ‘EMF and Health: Review and Update of Scientific Research’ submitted as Appendix R of the Application.
2.84.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “Therefore, BCTC followed ICNIRP guidelines on EMF exposure from power lines when planning the CVI Project. BCTC also follow the guidelines of IEEE 95.6 on electrical fields”.

2.84.2 Please provide a comparative table of magnetic fields from common appliances and residences, workplaces, etc.

RESPONSE:

The following table lists the magnetic field levels generated by common electrical appliances in residences and workplaces. Appliances in the home may have been redesigned since the data in the table was collected, and therefore readings may vary considerably.

Sources of Magnetic Fields (in milligauss)

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Median measurement (6” from source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Video display terminal (PC with colour monitor)</td>
<td>14 mG</td>
</tr>
<tr>
<td>2 Copy machine</td>
<td>90 mG</td>
</tr>
<tr>
<td>3 Fluorescent lights</td>
<td>40 mG</td>
</tr>
<tr>
<td>4 Fax machine</td>
<td>6 mG</td>
</tr>
<tr>
<td>5 Electric drill</td>
<td>150 mG</td>
</tr>
<tr>
<td>6 Hair dryer</td>
<td>300 mG</td>
</tr>
<tr>
<td>7 Vacuum cleaner</td>
<td>300 mG</td>
</tr>
<tr>
<td>8 Toaster</td>
<td>10 mG</td>
</tr>
<tr>
<td>9 Electric oven</td>
<td>9 mG</td>
</tr>
<tr>
<td>10 Dishwasher</td>
<td>20 mG</td>
</tr>
<tr>
<td>11 Washing machine</td>
<td>20 mG</td>
</tr>
</tbody>
</table>

Source: EMF in Your Environment, US Environmental Protection Agency, 1992
2.84.0  Reference:  Environmental Review Process
Exhibit B-2, BCUC IR 1.74.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “Therefore, BCTC followed ICNIRP guidelines on EMF
exposure from power lines when planning the CVI Project. BCTC also follow the
guidelines of IEEE 95.6 on electrical fields”.

2.84.3  Would BCTC please provide a table ranking environment, pole
structures, pole height, conductor configurations, aesthetics, EMF
levels, property values, etc against costs when choosing the various
route options?

RESPONSE:

Where 1 is best and 10 is worst:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>LTZ Option</th>
<th>JPT Option</th>
<th>HWW North</th>
<th>HWW Central</th>
<th>HWW South</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Environmental</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2 Pole Structure</td>
<td>10</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3 Pole Height</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4 Conductor Configuration</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5 Aesthetics</td>
<td>10</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6 EMF Levels</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7 Property Value</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>8 Line Losses</td>
<td>10</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>9 Total</td>
<td>67</td>
<td>56</td>
<td>43</td>
<td>39</td>
<td>37</td>
</tr>
<tr>
<td>10 Capital Cost ($ million)</td>
<td>$112</td>
<td>$101</td>
<td>$89</td>
<td>$90</td>
<td>$92</td>
</tr>
</tbody>
</table>

Notes

1  Environmental rating are as per Table 5.2 on page 78 in the Application (Exhibit B-1).

2  Pole structure is assumed to be the amount of structure required for the route option,
i.e. the longer the route, the more pole structures are required. Steel pole structures
are assumed for all route options. The Lantzville route is the longest route followed
by Jinglepot option and HWW routes, which are all considered to be approximately
equal.
3 Pole heights will be determined after the completion of detailed design and is subject to terrain and topography. For the purposes of responding to this question only, BCTC is assuming an average height of 36 m for all route options.

4 The transmission line conductor configuration is for twin bundle “CRANE” 875 MCM conductor for all route options. For the Lantzville Route option, the conductor configuration considers the additional 1L115/116 conductor upgrade.

5 Aesthetics is rated as per the work done by Golder during the Environment Overview Assessment.

6 With the exception of the Lantzville route option, the pole height, structure and conductor configuration is considered to be the same for all options for 230 kV transmission. Therefore, it is expected that EMF levels are the same for all options except Lantzville. For the Lantzville option, the EMF levels will be different due to the 1L115/116 conductor upgrade, which is 138 kV.

7 The impact to the property value will be highest for the Lantzville option due to the potential impact on Foothills Development in the area. Also 1L115/116 conductor upgrade work will impact the properties in that corridor. Jinglepot option will impact the houses around the Jinglepot substation, as the substation needs to be expanded to accommodate 230/138 kV transformation. The Harewood North and Harewood Central routes impact the Crown parcels offered to Snuneymuxw First Nation in treaty negotiations. Therefore, it is assumed that the Harewood South route has the lowest impact on property values.

8 Line Losses are considered to be highest for the Lantzville route option as this route is the longest and requires 1L115/116 conductor upgrades. Lines Losses for HWW North, Central and South routes are considered to be equal.

9 Capital Costs are as per Table 5-1 on page 77 of the Application (Exhibit B-1).
2.85.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields (“EMF”)

2.85.1 Please provide the transmission line siting guidelines, acts, best practices, etc for electric and magnetic field (“EMF”) density by transmission line voltage at the edge of the right of way for a proposed transmission line for the states of Massachusetts, Florida, and New York.

RESPONSE:

As stated in BCTC’s response to BCUC IR 1.74.9.1, BCTC does not consider it appropriate to introduce into evidence in this proceeding documents such as guidelines, acts, and best practices of other jurisdictions, that are not in effect in British Columbia, particularly when there is no BCTC employee who has knowledge of the development or status of the requested information.

In the case of EMF, BCTC is guided by the findings of Health Canada and the World Health Organization. These agencies endorse the recommendations of ICNIRP and IEEE for electric and magnetic field exposure limits from power lines (BCUC IR 1.74.12).

In addition, as stated in BCTC’s response to BCUC IR 1.74.9.1, in its July 2006 Decision on BCTC’s Application for a CPCN for the VITR Project, the Commission addressed electromagnetic fields from transmission lines and said that it supports efforts to reduce EMF levels where mitigation costs are not significant or where the benefits clearly exceed the cost of mitigation measures. BCTC agrees with that approach to practices for the construction of electric transmission lines. Transmission line siting guidelines, acts, and practices that are in effect in the states of Massachusetts, Florida and New York do not appear to be relevant to the practices that the Commission has endorsed in the VITR Decision.
2.85.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields ("EMF")

2.85.2 Please summarize any constraints on EMF in Florida’s, The Transmission Line Siting Act ("TLSA").

RESPONSE:

Please see BCTC’s response to BCUC IR 2.85.1. BCTC has not investigated the constraints on EMF in Florida’s Transmission Line Siting Act and therefore is not in a position to summarize that legislation.
2.85.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields (“EMF”)

2.85.3 Using Niagara Power Project FERC No. 2216, ASSESSMENT OF PROJECT EFFECTS ON PUBLIC HEALTH, SAFETY, AND SECURITY found at http://niagara.nypa.gov/ALP%20working%20documents/finalreports/html/IS13.htm, please provide and comment on Table 2.1.5.1-1, State Transmission Line Standards and Guidelines.

RESPONSE:

Please see BCTC’s response to BCUC IR 2.85.1. BCTC has not investigated the Niagara Power Project or reports on it, and therefore is not in a position to provide comments on report relating to that project or tables in such reports.
2.85.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields (“EMF”)

2.85.4 Referencing the Edison Electric Institute, Electric Transmission Line Siting Regulations Directory, prepared by Resource Strategies Inc., Madison, Wisconsin; please provide a table similar to Table 2.1.5.1-1, State Transmission Line Standards and Guidelines of the various states that consider EMF when siting transmission lines and the levels of EMF used.

RESPONSE:

Please see BCTC’s response to BCUC IR 2.85.1.
2.85.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields (“EMF”)

2.85.5 Please provide a copy of Electric and Magnetic Fields Associated with the Use of Electric Power, Questions & Answers, June 2002 prepared by the National Institute of Environmental Health Sciences National Institutes of Health; sponsored by the NIEHS/DOE EMF RAPID Program and that can be found at http://www.niehs.nih.gov/health/scied/documents/emf2002.pdf.

RESPONSE:

Please see BCTC’s response to BCUC IR 2.85.1.
2.86.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.9.1
Electric and Magnetic Fields (“EMF”)


2.86.1 As the document is neither a regulation nor guideline that is in effect in British Columbia but only a Best Management Practice document related to the construction of electric transmission lines that may have common elements of interest beyond the provincial regulations, please submit the document. See footnote 1.

RESPONSE:

As BCTC stated in response to BCUC IR 1.74.9.1, BCTC does not consider it appropriate to introduce into evidence in this proceeding documents relating to practices of other jurisdictions that are not in effect in British Columbia, particularly where there is no BCTC employee who has knowledge of the development nor status of the requested information. The document referenced in this information request is such a document.

Please also see BCTC’s response to BCUC IR 2.85.1.
2.87.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.14.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “If both 230kV circuits are in service, the current into ground is approximately 0.0172 Amps per km. If only one circuit is in service, the current into ground is approximately 0.0203 Amps per km”.

2.87.1 Please explain the method of grounding used for the Project.

RESPONSE:

The currents referred to (0.0172 A/km and 0.0203 A/km) are the leakage currents into the ground caused by the presence of energized high voltage conductors suspended above earth and insulated by air. Air is an imperfect insulator, hence some small leakage currents pass radially from the energized conductors to the ground along the length of the transmission line. The passage of leakage currents from energized conductors through air to the ground has nothing to do with “grounding” where, for safety reasons, non energized metallic components in the power system are deliberately connected to ground in order to prevent unwanted high voltage from appearing.
2.87.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.14.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “If both 230kV circuits are in service, the current into ground is approximately 0.0172 Amps per km. If only one circuit is in service, the current into ground is approximately 0.0203 Amps per km”.

2.87.2 Does the possibility exist of stray leakage current outside the right of way?

RESPONSE:

Leakage current results from the passage of small currents from energized high voltage conductors to the ground through the imperfect insulating medium of air. While most of this effect occurs underneath the conductors where the distance to the ground is the least, a small amount of leakage current to ground can occur outside of the right-of-way.
2.87.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.14.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “If both 230kV circuits are in service, the current into ground is approximately 0.0172 Amps per km. If only one circuit is in service, the current into ground is approximately 0.0203 Amps per km”.

2.87.3 Are there any dairy farms near the transmission line route?

RESPONSE:

No, there are no dairy farms along the Harewood South transmission line route.
2.87.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.14.1
Electric and Magnetic Fields (“EMF”)

BCTC states that “If both 230kV circuits are in service, the current into ground is approximately 0.0172 Amps per km. If only one circuit is in service, the current into ground is approximately 0.0203 Amps per km”.

2.87.4 As page 56 of Appendix R: Exponent Report on EMF and Health: Review and Update of the Scientific Research, did not specifically address the effect of leakage current on farm livestock in particular dairy farm milking parlours. Would BCTC please explain if these identified values of leakage currents will have any impact on dairy farm operations? Please explain.

RESPONSE:

There are no dairy farms adjacent to or anywhere near the proposed line.
2.88.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.15
Electric and Magnetic Fields (“EMF”)

2.88.1 As BCTC response to this question is very technical, would BCTC please provide a comparative table to typical indoor noise, typical outdoor noise and typical equipment noise for the range of dBA in the response?

RESPONSE:

Audible noise (AN) levels from typical indoor and outdoor sources are shown in the table below. For comparative purposes the calculated AN levels at the edge of the right-of-way located 17 m from the transmission line with both lines operating during fair and foul weather are also shown. It should be noted that the nearest residential building is approximately 330 metres from the transmission line.

<table>
<thead>
<tr>
<th>Sound Level, dBA (Note 1)</th>
<th>Noise Source or Effect (Note 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>108 Rock-and-roll band</td>
</tr>
<tr>
<td>2</td>
<td>80 Truck at 30 m</td>
</tr>
<tr>
<td>3</td>
<td>70 Gas lawnmower at 60 m</td>
</tr>
<tr>
<td>4</td>
<td>60 Normal conversation indoors</td>
</tr>
<tr>
<td>5</td>
<td>50 Moderate rainfall on foliage</td>
</tr>
<tr>
<td>6</td>
<td>40 Refrigerator</td>
</tr>
<tr>
<td>7</td>
<td>36 (Note 2) Edge of proposed CVI 230 kV right-of-way during foul</td>
</tr>
<tr>
<td>8</td>
<td>25 Bedroom at night</td>
</tr>
<tr>
<td>9</td>
<td>11 (Note 2) Edge of proposed CVI 230 kV right-of-way during fair</td>
</tr>
<tr>
<td>10</td>
<td>0 Hearing threshold</td>
</tr>
</tbody>
</table>

Notes

1. Adapted from Klondike III/Biglow Canyon Wind Integration Project prepared by T.Dan Bracken, Inc. for Bonneville Power Administration, March 2006 with exception of proposed CVI 230 kV calculated AN levels.

2. Calculated L5 AN level for the CVI transmission line with both lines operating.
2.89.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.16.2
Electric and Magnetic Fields (“EMF”)

2.89.1 In the response to the nearest home, if the significant tree screening was removed, what would the estimated dB levels, both indoor and outdoor, be and would they be significant? Please provide a comparison.

RESPONSE:

The nearest home is approximately 330 metres from the transmission line. Assuming the tree screening between the ROW and the home was removed, the foul weather L5 audible noise level measured 1.5 m above ground outside the house would be 17.4 dBA when only one circuit is in service and 22.1 dBA when both circuits are in service. BCTC does not consider these levels to be significant, and are below the level of ambient noise such as vehicle traffic, rain on foliage, operation of a refrigerator, or normal conversation (see BCTC’s response to BCUC IR 2.88.1). Audible noise measured inside the home will be less, depending upon construction of the structure such as amount of insulation in the walls, use of double-pane versus single-pane windows, etc.
2.90.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.17.1
Electric and Magnetic Fields ("EMF")

2.90.1 Please provide the date of these standards and the last time that they
were reviewed against the industry standards that they are based on.

RESPONSE:

For the following Standards, revision dates and references are given.

Engineering Standard, Transmission Engineering, BC Hydro. 17 March 2000, IEEE and
internal BC Hydro standards.

Memorandum No. 6033-RI, Transmission Engineering, BC Hydro. October 1988,
references shown below.


Catalogue, pp. 29-30.

(1986). "Electromagnetic Interference Measurements at 900 MHz on
230 kV and 500 kV Transmission Lines", IEEE Trans. on Power Delivery,
Vol. PWRD-1, No. 4, pp. 140-149.

Report No. 77-36.

Systems: Description of Phenomena and Practical Guide for
Calculation", a CIGRE Publication, pp. 87-97.

Sections 5.5, 5.3 and 5.7 of Second Edition of Transmission Line
Reference Book 345 kV and Above, EPRI, Palo Alto, California.

Identify and Resolve Radio and Television Interference Problems.

"Radio Interference Regulations - Amendment", Canada Gazette Part 1,
pp. 3361-3374.

Co., New York, N.Y.


2.91.0 Reference: Environmental Review Process
Exhibit B-2, BCUC IR 1.74.17.1
Electric and Magnetic Fields ("EMF")

2.91.1 Please provide a further explanation of Note 1. Is the duration of exposure unlimited or not specified as the effects from long-term exposure is insufficient for setting exposure standards? Please provide discussion.

RESPONSE:

BCTC believes the correct reference in the question is to BCUC IR 1.75.1.1, Note1, which states, "Both organizations judged that evidence for effects from long-term exposure was insufficient for setting exposure standards."

The exposure standards for EMF are based on scientific research that suggested that health effects could occur from short-term exposures at levels above specified intensities. The exposure limits incorporated into the standards are derived by applying safety factors such that the exposure limits are far lower than intensities at which adverse effects are expected to occur. The research does not provide sufficient, reliable evidence to indicate that either short-term or long-term exposures below the recommended limits are likely to cause adverse effects.

The evaluation of evidence by any organization that develops standards, or exposure limits, involves consideration of research involving both short- and long-term exposures, as is the case for the evaluation of EMF described in Appendix R. Because this extensive research has not shown effects on human health from long-term, low-level exposures, duration of exposure is not limited; the range of allowable exposures fall far below the threshold for adverse short-term effects. Thus, based on the research and this standard scientific approach, the exposure standards proposed by these standard-setting organizations are established as ceiling limits, i.e., values not to be exceeded.
2.92.0 Reference: Exhibit B-2-2, BCUC IR 1.38.1, 1.38.3, and Exhibit B-1, Appendix E
Project Cost: CEAA Review Requirement

“Since none of these triggers are applicable to the Central Vancouver Island Project, none of the 230 kV transmission routing options could be subject to a CEAA review (BCUC IR 1.38.1).”

“The CVI Project will not trigger a Screening Level environmental assessment under CEAA, and therefore no impact on project costs (BCUC IR 1.38.3).”

2.92.1 Please confirm that, since none of the triggers is applicable to CVI, there is no provision for the cost of a CEAA review is included in the estimates in Appendix E.

RESPONSE:

BCTC confirms that since none of the triggers are applicable to the CVI Project, there is no provision for the cost of a CEAA review included in the estimates in Appendix E.
2.93.0 Reference: Exhibit B-2-2, BCUC IR 1.44.2
Exhibit B-1, Appendix E
Project Cost: First Nations Archaeological Work

“The archaeological work has not been undertaken. The Application for Permit under the Heritage Conservation Act is under review by the Provincial Archaeology Branch as of 3 June 2008.”

2.93.1 Please provide an update as to the status of the Application for Permit under the Heritage Conservation Act, referred to in response to BCUC IR 1.44.2.

RESPONSE:

The Application for Permit under the Heritage Conservation Act is still under review by the Provincial Archaeology Branch. The Provincial Archaeology Branch has referred the permit application to the Snuneymuxw First Nation.
2.93.0 Reference: Exhibit B-2-2, BCUC IR 1.44.2
Exhibit B-1, Appendix E
Project Cost: First Nations Archaeological Work

“The archaeological work has not been undertaken. The Application for Permit under the Heritage Conservation Act is under review by the Provincial Archaeology Branch as of 3 June 2008.”

2.93.2 What is the expected time required for the archaeological work, from commencement to completion?

RESPONSE:

BCTC expects the archaeological work to take approximately 4 to 6 weeks from start to completion.
2.93.0 Reference: Exhibit B-2-2, BCUC IR 1.44.2
Exhibit B-1, Appendix E
Project Cost: First Nations Archaeological Work

“The archaeological work has not been undertaken. The Application for Permit under the Heritage Conservation Act is under review by the Provincial Archaeology Branch as of 3 June 2008.”

2.93.3 Please explain whether there is a possibility that the outcome of the archaeological work would require the selection of a route other than Harewood South.

RESPONSE:

Please refer to BCTC’s responses to BCUC IR 1.39.3 and BCOAPO IR 1.16.c.

There is a very low possibility that the outcome of the archaeological work would require the selection of a route other than Harewood South. If there is any impact on the Harewood South route from the archaeological work it is expected that it would only be a requirement to relocate one or more poles along the proposed ROW, or to alter the alignment of a short length or lengths of the proposed transmission line to accommodate the findings of the archaeological study.
2.93.0 Reference:  Exhibit B-2-2, BCUC IR 1.44.2  
Exhibit B-1, Appendix E  
Project Cost: First Nations Archaeological Work

“The archaeological work has not been undertaken. The Application for Permit under the Heritage Conservation Act is under review by the Provincial Archaeology Branch as of 3 June 2008.”

2.93.4 Please confirm that any potential project delays and/or costs, associated with the archaeological work, have been incorporated into the estimates in Appendix E.

RESPONSE:

BCTC confirms that any potential project delays and/or costs associated with the archaeological work have been incorporated into the estimates in Appendix E.
2.94.0 Reference: Exhibit B-1, Chapter 7, Public and First Nations Consultation Section 7.2, Public Consultation, p. 113, and Exhibit B-2-2, BCUC IR 1.7.1, and 1.45.1 Demand Forecast: BCTC Planning and Community Plans

“The objectives of the public communications and consultation plan are to: ...establish linkages between transmission system planning and regional and community planning on Vancouver Island (Exhibit B-1, p. 113).”

“In establishing the preferred routing alignment, BCTC undertook a thorough public consultation process that included consultation with the Regional District of Nanaimo (Exhibit B-2-2, BCUC IR 1.45.1).”

2.94.1 Please describe the linkages between BCTC’s transmission system planning and the regional and community planning on Vancouver Island, where the CVI Project is concerned.

RESPONSE:

BCTC’s most recent transmission system planning exercise for Central Vancouver Island was held in February 2007. A brief summary of the exercise is included in the Application, Section 7.2.3.1, p 122. The purpose of this exercise was to review the existing transmission system, current and forecast use, emerging transmission constraints and options for alleviating constraints. A representative from the Regional District of Nanaimo participated in the exercise.

Where the CVI Project is concerned, transmission system planning is linked to the Arrowsmith Benson – Cranberry Bright Official Community Plan Goal 6: Create a Vibrant and Sustainable Economy. A reliable and cost-effective transmission system is the backbone for Central Vancouver Island’s long-term economic prosperity. The CVI Project is critical to maintaining access to reliable, affordable electricity on which residents and businesses on Central Vancouver Island depend.

In addition, BC Hydro uses the local community plans in the development of their annual distribution load forecasts. See BCTC’s response to BCUC IR 2.94.2.
2.94.0 Reference: Exhibit B-1, Chapter 7, Public and First Nations Consultation Section 7.2, Public Consultation, p. 113, and Exhibit B-2-2, BCUC IR 1.7.1, and 1.45.1
Demand Forecast: BCTC Planning and Community Plans

“The objectives of the public communications and consultation plan are to: …establish linkages between transmission system planning and regional and community planning on Vancouver Island (Exhibit B-1, p. 113).”

“In establishing the preferred routing alignment, BCTC undertook a thorough public consultation process that included consultation with the Regional District of Nanaimo (Exhibit B-2-2, BCUC IR 1.45.1).”

2.94.2 Please explain whether and how BCTC and/or BC Hydro incorporated information from Vancouver Island community plans into the demand estimates for the CVI Project.

RESPONSE:

BC Hydro used information from the Vancouver Island community plans as one of the inputs for developing the distribution substation load forecast. The community plans indicate the location, magnitude, and temporal characteristics of future load demand.

BCTC used the distribution substation load forecast provided by BC Hydro in the CVI planning studies. BCTC extended the load forecast from 2017 to 2031 by assuming a load growth rate of 1.5% per year as explained in Section 3.4 of the Application.
2.95.0 Reference: Exhibit B-2-2, BCUC IR 1.6.1 and BCOAPO IR 1.6.c
Demand Forecast: Inclusion of Recent Information

“BC Hydro provides the peak substation load forecasts and it has not been updated since July 2007. The next update is expected in July 2008 (BCUC IR 1.6.1).”

“There is virtually no difference between the overall load growth forecast (both BC Hydro Distribution substation and industrial) for Central and South Vancouver Island regions in the BCH August 2007 Update and the load forecast used in the CVI Area Study (2006 load forecast). It should be noted that the response to BCUC IR 1.7.1 is based on BC Hydro distribution substation load forecasts only (BCOAPO IR 1.6.c).”

2.95.1 Does the BC Hydro forecast on which the CVI demand forecast is based incorporate adjustments for the impacts of rate, and non-rate, DSM measures as per BC Hydro submissions (Residential Inclining Block Rate Application; F2009/F2010 Revenue Requirements Application) currently before the Commission? If so, please describe what adjustments were made.

RESPONSE:

No. The CVI demand forecasts are based on the 2006 load forecast. Recently proposed DSM initiatives and proposed rates such as the Residential Including Block were not included.
2.95.0 Reference: Exhibit B-2-2, BCUC IR 1.6.1 and BCOAPO IR 1.6.c

Demand Forecast: Inclusion of Recent Information

“BC Hydro provides the peak substation load forecasts and it has not been updated since July 2007. The next update is expected in July 2008 (BCUC IR 1.6.1).”

“There is virtually no difference between the overall load growth forecast (both BC Hydro Distribution substation and industrial) for Central and South Vancouver Island regions in the BCH August 2007 Update and the load forecast used in the CVI Area Study (2006 load forecast). It should be noted that the response to BCUC IR 1.7.1 is based on BC Hydro distribution substation load forecasts only (BCOAPO IR 1.6.c).”

2.95.2.1 If not, please describe how those demand adjustments would generally affect demand associated with the CVI project

RESPONSE:

Table 1 below shows the distribution substation load forecast used in the planning studies.

Table 1. 2006 Distribution Substation Load Forecast for Central and South Vancouver Island

<table>
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<tbody>
<tr>
<td>MVA</td>
<td>1595.8</td>
<td>1634.2</td>
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<td>1752.9</td>
<td>1771.8</td>
<td>1787.6</td>
<td>1803.9</td>
<td>1820.5</td>
</tr>
</tbody>
</table>

Table 2 shows the 2007 distribution substation load forecast. As stated in Section 3.4 of the Application and in BCTC’s response to BCUC IR 1.7.1, the total load in year 2016/17 in the 2007 distribution substation load forecast is 1.1% higher than the total load in 2016/17 of the 2006 load forecast.

Table 2. 2007 Distribution Substation Load Forecast for Central and South Vancouver Island

<table>
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<tr>
<td>MVA</td>
<td>1649.0</td>
<td>1679.9</td>
<td>1710.3</td>
<td>1733.2</td>
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<td>1806.6</td>
<td>1824.4</td>
<td>1842.4</td>
<td>1860.4</td>
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Table 3 shows the 2007 distribution substation load forecast with demand side management (DSM) and rate impacts. With DSM and rate impacts, the total load in year 2017/18 is 15% lower than the total load in 2017/18 of the load forecast without DSM and rate impacts.
Table 3. 2007 Distribution Substation Load Forecast for Central and South Vancouver Island with DSM and Rate Impacts

<table>
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<td>MVA</td>
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<td>1637.6</td>
<td>1630.4</td>
<td>1616.1</td>
<td>1599.5</td>
<td>1585.7</td>
</tr>
</tbody>
</table>

Although DSM and rate impacts reduce the load forecast, the CVI project is still required because elements in the transmission system, such as 1L115/116 and the VIT 230/138 kV transformers, still overload during N-1 conditions. The CVI Project is needed in 2010 and in the long term even with DSM and rate impacts considered.
2.95.0 Reference: Exhibit B-2-2, BCUC IR 1.6.1 and BCOAPO IR 1.6.c
Demand Forecast: Inclusion of Recent Information

“BC Hydro provides the peak substation load forecasts and it has not been updated since July 2007. The next update is expected in July 2008 (BCUC IR 1.6.1).”

“There is virtually no difference between the overall load growth forecast (both BC Hydro Distribution substation and industrial) for Central and South Vancouver Island regions in the BCH August 2007 Update and the load forecast used in the CVI Area Study (2006 load forecast). It should be noted that the response to BCUC IR 1.7.1 is based on BC Hydro distribution substation load forecasts only (BCOAPO IR 1.6.c).”

2.95.2.2 If not, please describe how the growth rates, described in Section 3.4 of the CVI Application and in response to BCUC IR 1.7.1, would be affected.

RESPONSE:

Please see BCTC’s response to BCUC IR 2.95.2.1. As can be seen in the table below, when taking the impact of rate and DSM measures into account, the growth rate of the BC Hydro 2007 Distribution Load Forecast decreases from a positive average growth rate of 1.3% to a negative average growth rate of -0.4% over the period from F2008 to F2018. Assuming that the forecast impact of rate and planned DSM measures will be realized, the lower forecast does not mitigate or defer the need for the Central Vancouver Island Project, which is needed by October 2010, and in the long-term, even with DSM and rate impacts considered.

Table 1 - Comparison of Load Forecasts with and without Rate and DSM Impacts

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</thead>
<tbody>
<tr>
<td>1</td>
<td>No Rate or DSM Impacts</td>
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<td>1,679.9</td>
<td>1,710.3</td>
<td>1,733.2</td>
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<td>2</td>
<td>Growth Rate by Year</td>
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<td>1.9%</td>
<td>1.8%</td>
<td>1.3%</td>
<td>1.1%</td>
<td>1.0%</td>
<td>1.1%</td>
<td>1.0%</td>
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<tr>
<td>3</td>
<td>Overall Growth</td>
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<tr>
<td>4</td>
<td>Average Growth Rate</td>
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<td>1.3%</td>
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<tr>
<td>5</td>
<td>With Rate and DSM Impacts</td>
<td>1,646.9</td>
<td>1,665.9</td>
<td>1,665.8</td>
<td>1,663.6</td>
<td>1,652.0</td>
<td>1,644.1</td>
<td>1,637.6</td>
<td>1,630.4</td>
<td>1,616.1</td>
<td>1,599.5</td>
<td>1,585.7</td>
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<tr>
<td>6</td>
<td>Growth Rate by Year</td>
<td>0.0%</td>
<td>1.2%</td>
<td>0.0%</td>
<td>-0.1%</td>
<td>-0.7%</td>
<td>-0.5%</td>
<td>-0.4%</td>
<td>-0.4%</td>
<td>-0.9%</td>
<td>-1.0%</td>
<td>-0.9%</td>
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<tr>
<td>7</td>
<td>Overall Growth</td>
<td></td>
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<td>-3.7%</td>
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<td>8</td>
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<td></td>
<td></td>
<td></td>
<td>-0.4%</td>
</tr>
</tbody>
</table>
2.96.0 Reference: Exhibit B-2-2, BCUC IR 1.7.1
Demand Forecast: Population Growth

2.96.1 Please describe the relationship that BCTC assumes between the load forecast for CVI and the population forecast for Central Vancouver Island.

RESPONSE:

BCTC used the load forecast provided by BC Hydro in the planning studies and did not make any assumptions on the population forecast for Central Vancouver Island.
2.96.0 Reference: Exhibit B-2-2, BCUC IR 1.7.1
Demand Forecast: Population Growth

2.96.2 What rate of population growth is BCTC assuming for the Central Vancouver Island region for the years 2008 to 2016?

RESPONSE:

BCTC used the load forecast provided by BC Hydro to complete the planning studies and did not make any assumptions on the rate of population growth.
2.96.0  Reference:  Exhibit B-2-2, BCUC IR 1.7.1
Demand Forecast: Population Growth

2.96.3  What rate of population growth is BCTC assuming for the Central Vancouver Island region for the years 2016 to 2032?

RESPONSE:

BCTC used the load forecast provided by BC Hydro and extended it from 2016/17 to 2031/2032 by using a load growth rate of 1.5% per year, but did not make any assumptions on the rate of population growth.
2.97.0 Reference: Exhibit B-2-2, BCOAPO IR 1.4.a, and Exhibit B-1, Appendix E
Project Cost: Land Acquisition

“BCTC believes it is prudent to secure the NAR station site and the required ROW to connect the 230 kV transmission line to NAR now, rather than wait until the project is needed. Due to continued population growth within the Central and South Vancouver Island areas, there is a risk that in 25 years, population encroachment in the Nanaimo area could preclude the ability to site a 500 to 230 kV transmission substation, unless the land were secured now. BCTC strongly recommends purchasing the land for the Nanaimo River Substation at this stage.”

2.97.1 Please describe how the acquisition of land for the Nanaimo River Substation presents BCTC with opportunities for cost savings between the time of purchase and the time it is expected to be needed for use as a substation.

RESPONSE:

There are potential cost savings associated with acquiring the property at this time as compared to waiting until the land is needed, in that it avoids the risk of a significant appreciation in the value of the property as Nanaimo area development expands westward and encroaches on the area in which the proposed substation site is located. As the area develops and property values rise, there is also a risk that expropriation may be required to acquire the site, which could also substantially increase the cost of acquisition. In the worst-case scenario, development on the site or in the surrounding area may preclude the acquisition of the site for substation purposes, in which case a new site would be required that would necessitate additional transmission system development to integrate it into the system, which would further increase the costs associated with the development of a Nanaimo area 500/230 kV substation.
2.97.0 Reference: Exhibit B-2-2, BCOAPO IR 1.4.a, and Exhibit B-1, Appendix E
Project Cost: Land Acquisition

“BCTC believes it is prudent to secure the NAR station site and the required ROW to connect the 230 kV transmission line to NAR now, rather than wait until the project is needed. Due to continued population growth within the Central and South Vancouver Island areas, there is a risk that in 25 years, population encroachment in the Nanaimo area could preclude the ability to site a 500 to 230 kV transmission substation, unless the land were secured now. BCTC strongly recommends purchasing the land for the Nanaimo River Substation at this stage.”

2.97.2 Please explain whether the acquisition of land for the Nanaimo River Substation presents BCTC with opportunities to earn income between the time of purchase and the time it is expected to be needed for use as a substation.

RESPONSE:

For clarity, BCTC does not earn income on any assets purchased or constructed for BC Hydro Transmission. Only BC Hydro has an opportunity to earn income on such assets.

BC Hydro has considered the possibility of leasing the land required for the Nanaimo River Substation. However, at this time, BC Hydro believes there is limited opportunity to earn lease income given the location of the property.
2.97.0 Reference: Exhibit B-2-2, BCOAPO IR 1.4.a, and Exhibit B-1, Appendix E

Project Cost: Land Acquisition

“BCTC believes it is prudent to secure the NAR station site and the required ROW to connect the 230 kV transmission line to NAR now, rather than wait until the project is needed. Due to continued population growth within the Central and South Vancouver Island areas, there is a risk that in 25 years, population encroachment in the Nanaimo area could preclude the ability to site a 500 to 230 kV transmission substation, unless the land were secured now. BCTC strongly recommends purchasing the land for the Nanaimo River Substation at this stage.”

2.97.3 Who currently owns each of the properties contemplated as potential sites for the Nanaimo River Substation?

RESPONSE:

Please refer to CPCN Application, Appendix M – Property Identification Document, page 10. There is only one suitable site for the Nanaimo River Substation (NAR), which is owned by TimberWest Forest Corporation. In addition to NAR, the Blackjack Lake area could accommodate a 500 to 230 kV substation if it was determined that the appropriate solution was to construct and operate the Lantzville Route option. The Blackjack Lake Substation (BJK) site is also owned by TimberWest Forest Corporation. Due to the increased transmission line length, BJK was not considered a suitable substation site for other routing options.

The property at the “tap point” and the proposed right-of-way between the “tap point” and NAR substation is also owned by TimberWest Forest Corporation.
2.97.0 Reference: Exhibit B-2-2, BCOAPO IR 1.4.a, and Exhibit B-1, Appendix E
Project Cost: Land Acquisition

“BCTC believes it is prudent to secure the NAR station site and the required ROW to connect the 230 kV transmission line to NAR now, rather than wait until the project is needed. Due to continued population growth within the Central and South Vancouver Island areas, there is a risk that in 25 years, population encroachment in the Nanaimo area could preclude the ability to site a 500 to 230 kV transmission substation, unless the land were secured now. BCTC strongly recommends purchasing the land for the Nanaimo River Substation at this stage.”

2.97.4 Please confirm that the expected cost of land acquisition for the Nanaimo River Substation is included in the row “Properties, LS & Legal” in Appendix “E” of the Application.

RESPONSE:

BCTC confirms that the expected cost of land acquisition for the Nanaimo River Substation is included in the row “Properties, LS & Legal” in Appendix “E” of the Application.
2.98.0 Reference: Exhibit B-2-2, BCUC IR 1.3.1
Project Design: Transmission Tower selection

2.98.1 Please provide a comparison of the edge-of-ROW EMF levels for the steel lattice tower design as compared to the compact design. Please provide this information also as a diagram illustrating the comparison.

RESPONSE:

BCTC has not yet completed a detailed design for the Central Vancouver Island Project. Once the detailed engineering and design is completed, the conductor configuration for the steel poles will be optimized for EMF levels. At present the EMF levels included in the Application at page 93 are similar to steel lattice tower design, but will be lower after detailed design work is completed and the steel pole conductor configuration optimized. Detailed engineering and design will not occur until the Project is approved, and the CPCN granted.
2.99.0 Reference: Exhibit B-2-2, BCUC IR 1.3.3
Project Design: Transmission Tower selection

2.99.1 BCTC stated that a strategy of using two different support structures will complicate the construction and installation process and that using both steel lattice towers and steel poles will negatively impact project management, design and construction management work. Is the practice of using two structure types for a single transmission circuit an unfamiliar application to BCTC?

RESPONSE:

The practice of using two structure types for a single transmission circuit is a familiar application for BCTC for transmission projects that warrant multiple structure types due to engineering constraints, terrain, or specific stakeholder requirements. However, in the case of the CVI Project, BCTC is recommending that it use all steel pole construction, due to potential for future development in the area where the transmission line is proposed to be located (see BCTC’s response to BCUC IR 1.3.3). As discussed in BCTC’s response to BCUC IR 1.3.1, steel pole structures are generally considered to be more aesthetically pleasing than steel lattice towers. As well, overall ground footprint is smaller with steel pole construction. Also using two different designs requires two separate structure material supply contracts which elevates implementation and schedule risk for the project (BCTC’s response to BCUC IR 1.3.2).
2.99.0 Reference: Exhibit B-2-2, BCUC IR 1.3.3
Project Design: Transmission Tower selection

2.99.2 Will BCTC perform the line construction internally, or will an external contractor perform this work?

RESPONSE:

BCTC will contract the line construction work to an external General Line Contractor, either through a Request for Proposal or Public Tender process.

The detailed design work will be carried out by BC Hydro Engineering Services and all major material (i.e. transmission poles, conductor, etc.) will be purchased through public tender, directly by BCTC.
2.99.0 Reference: Exhibit B-2-2, BCUC IR 1.3.3

Project Design: Transmission Tower selection

2.99.3 Has BCTC canvassed line construction contractors for their ability to manage and construct a line installation utilizing more than one structure type?

RESPONSE:

No, BCTC has not canvassed line construction contractors for their ability to manage and construct a line installation utilizing more than one structure type. However, as stated in BCTC’s response to BCUC IR 1.3.3, BCTC does not recommend the use of a combination of structure types in the construction of the CVI Project due to potential for higher costs, more complicated installation, and negative aesthetic implications with using multiple structure types.
2.100.0 Reference: Exhibit B-2-2, BCUC IR 1.18.1
Project Design: Violation of Long-term Planning Criteria

2.100.1 Please provide the analysis showing the extent circuit overloads under N-1 outage conditions for the addition of a third 138 kV circuit between DMR and JPT, and the year in which these overloads are expected to occur.

RESPONSE:

The overloads that develop on circuits 1L115/116 DMR-JPT under N-1 conditions for the third DMR-JPT 138 kV transmission line option would begin in F2011. The critical outage condition would be the loss of the third DMR-JPT 138 kV transmission line referenced in the question, which would result in overloads of approximately 108% on the line sections between DMR and PVL under F2011 winter peak load conditions.
2.101.0 Reference: Exhibit B-2-2, BCUC IR 1.23.1
Project Cost: Calculation of Line Losses

2.101.1 Please provide a comparison of the overall LM/VI transmission level losses for the 500 kV Conversion Alternative and the 230 kV Injection Option for F2011, F2017 and F2032.

RESPONSE:

The total Lower Mainland/Vancouver Island losses for the 500 kV conversion option and the 230 kV injection option in F2011, F2017 and F2032 are shown in the following table.

Lower Mainland/Vancouver Island System Losses (MW)

<table>
<thead>
<tr>
<th></th>
<th>F2011</th>
<th>F2017</th>
<th>F2032</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 kV conversion option</td>
<td>319.6</td>
<td>354.2</td>
<td>407.0</td>
</tr>
<tr>
<td>230 kV injection option</td>
<td>327.8</td>
<td>369.6</td>
<td>405.1</td>
</tr>
</tbody>
</table>

Note: The losses for both options include the losses in the Lower Mainland region, the Vancouver Island region, and the Lower Mainland – Vancouver Island system interconnecting the 2 regions (i.e., the ING-ARN-VIT 230 kv system and the MDN-CKY-MSA-DMR 500 kv system).
2.102.0 Reference: Exhibit B-2-2, BCUC IR 1.43.1
First Nations: Traditional Use Studies

2.102.1 Please supply a copy of the draft Traditional Use Study report that was to have been completed on 15 July 2008.

RESPONSE:

Neither the Snuneymuxw nor the Nanoose First Nations have submitted a Traditional Use Study report as of 11 July 2008. Please see BCTC’s response to BCUC IR 2.102.2. Each capacity funding agreement stipulated that a draft report would be completed by no later than 15 July 2008 and final report no later than 30 September 2008. Both First Nations have advised that they will not meet the 15 July 2008 date for the draft report but will meet the final report date of 30 September 2008.

On 9 July 2008 the Nanoose First Nation advised it was initiating field reconnaissance for the study.
2.102.0 Reference: Exhibit B-2-2, BCUC IR 1.43.1
First Nations: Traditional Use Studies

2.102.2 What amount of capacity funding was provided for the preparation of the Traditional Use Study report, and if the report is not prepared, can that be funding be reallocated to another service provider to complete the report?

RESPONSE:

A response to this IR is being filed directly by BC Hydro on a confidential basis, under separate cover, and following the Confidential Filing Practice Directive of the Commission.
2.103.0 Reference: Exhibit B-2-2, BCUC IR 1.44.2
First Nations: Archaeological Work - Selection of Consultant and Progress to Date

2.103.1 Please provide a scope and schedule for the archaeological work.

RESPONSE:

Enclosed are the Terms of Reference defining the scope of work and schedule for the archaeological impact assessment work.

As per BCTC’s response to BCUC IR 2.93.1, the Provincial Archaeology Branch has not yet issued the Permit under the Heritage Conservation Act to undertake the archaeological assessment work. The permit is expected by mid-August 2008.
# APPENDIX A
## TERMS OF REFERENCE

### CONTENTS

<table>
<thead>
<tr>
<th>Clause</th>
<th>Subject</th>
<th>Page</th>
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<td>TR1</td>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>TR2</td>
<td>Central Vancouver Island Transmission Project Description</td>
<td>1</td>
</tr>
<tr>
<td>TR3</td>
<td>Description of Services and Requirements</td>
<td>2</td>
</tr>
</tbody>
</table>
TERMS OF REFERENCE

TR1 INTRODUCTION

British Columbia Transmission Corporation (“BCTC”) is a provincial Crown corporation responsible for planning, managing, operating and maintaining most of the provincial power transmission system and its interconnection with the larger North American grid. Transmission lines and associated facilities in B.C. are owned by BC Hydro and Power Authority (BC Hydro).

The Central Vancouver Island (“CVI”) area (the “Project Area”) has experienced significant load growth over the last several years. As a result of this load growth, the CVI regional transmission system that supplies this area is now operating close to rated capacity under normal system operating conditions. In order to avoid overloads in the regional 138kV transmission system between Dunsmuir Substation (“DMS”) and Vancouver Island Terminal (“VIT”), the 230kV transmission lines between DMS and Sathlam Substations will be tapped and connected to the 138kV system via a double circuit 230KV transmission line and a new substation to be located south of City of Nanaimo.

BCTC is seeking the services of a firm to complete an Archeology Impact Assessment (an “AIA”) for the Project. BCTC is interested in firms that have experience working with First Nations in the Project Area.

Capitalized terms not otherwise defined in these Terms of Reference have the definitions set out in the Instructions to Proponents.

TR2 PROJECT - DESCRIPTION

2.1 Project Outline -The proposed double circuit 230kV transmission line, approximately 12 km in length, would be on a new transmission right-of-way. The new right-of-way would be approximately 34m wide to accommodate the new double circuit transmission line. This new right-of-way would be on Crown and private land.

The route alignment for the proposed double circuit 230kV transmission line is shown in Appendix C.

In most forested areas, to accommodate the new transmission line, it would be necessary to undertake clearing both within and beyond the existing right-of-way boundary.

In addition to the new transmission line, the Project would include:

- a new 230/138 kV substation at Harewood West, to be located south of City of Nanaimo;
- property for a future 500/230kV substation near Blackjack Lake; and
- additional right-of-way from current tap location to future substation near Blackjack Lake.

Access requirements for construction and operation/maintenance of the new transmission facilities along the transmission line route will be identified and mapped by the Consultant’s Project team. Access will involve the use of existing and/or potential new roads, tracks and helicopter landing sites.

2.2 Construction Footprint - The limits of construction for the Project include the area within the proposed right-of-way, adjacent areas required for clearing for initial line stability, as well as any existing access roads, helicopter landing pads and laydown areas or new accesses that are planned to be constructed.

In addition to the linear corridor components of the Project, the constructed footprint would include the area for the new Harewood West Substation, the future 500/230kv Substation and additional right-of-way required between the tap point and the future 500/230kV substation.

2.3 BC Utilities Commission ("BCUC") Certification - BCTC will be making an application to the BCUC for a Certificate of Public Convenience and Necessity (CPCN) for the Project in February 2008.

2.4 Environmental Assessment Process - For this project BCTC will not be submitting an Application for an Environmental Assessment Certificate under the B.C. Environmental Assessment Act or Screening Level Environmental Assessment report under the Canadian Environmental Assessment Act.

2.5 First Nations Engagement - BC Hydro Aboriginal Relations is responsible for First Nations engagement and consultation for the Project. The Consultant will coordinate activities with the BC Hydro Aboriginal Relations team.

TR3 DESCRIPTION OF SERVICES AND REQUIREMENTS

3.1 Scope of Services – BCTC is seeking the services of a firm to complete an AIA for the Project. BCTC is interested in firms that have experience working with First Nations in the Project Area and have undertaken AIAs of a similar size and scope. One First Nation and one Tribal Council with a membership of five First Nations have been identified as having an interest in the Project Area and two First Nations assert a primary interest in the Project Area (see Appendix B).

The AIA is to be completed under one permit issued by the Archeology branch of the Ministry of Tourism, Sports and the Arts (the “Archeology Branch”).

Some First Nations may choose to undertake the AIA work relevant to their area themselves or engage the services of another company or they may wish to participate in and witness the Services to be undertaken by the Consultant. The Consultant should be able to outline standard practices to which such work should adhere and be able to incorporate the findings into one AIA report to be submitted to the Archeology Branch. The consultant should identify any existing relationships or experiences with the specific First Nations that claim territory or Aboriginal rights, including Douglas treaty rights, within the Project Area.
Proponents are expected to make efforts to hire qualified First Nation persons to participate in the Services where possible. For further information, refer to the Instructions to Proponents.

BC Hydro’s Aboriginal relations consultation representative on the Project must be consulted in regard to proposed and continuing communications with First Nation governance related to the Project and the Services.

3.2 Deliverables - The Consultant shall deliver a high quality AIA report that meets the requirements of the Archaeology Branch. The AIA report should be ready for submission by the summer of 2008, as more fully set out in section 3.3 below.

Deliverables to be provided by the Consultant shall include the following:

3.2.1 develop a plan for the completion of the Services, including a timeline, for BCTC review and approval;

3.2.2 develop an outline indicating timeline and methodology for engaging First Nations stakeholders;

3.2.3 identify significant archaeological sites, First Nations traditional uses, Culturally Modified Trees (CMT), spiritual practices and culturally significant sites;

3.2.4 identify all known cultural heritage assets that may be affected by the Project;

3.2.5 identify the potential for currently unrecorded archaeological sites to be located within the Project Area;

3.2.6 assess the potential impact of the Project on the local historic landscape and built heritage resource;

3.2.7 assess the cumulative impacts of the Project on known and currently unrecorded archaeological sites;

3.2.8 describe (where possible) proposed mitigation measures; and

3.2.9 make recommendations on the scope of further assessment that may be needed to determine more fully the potential for archaeological impacts within the Project Area.

3.3 Reporting Timeline - The Consultant shall submit the AIA report in accordance with the following:

3.3.1 monthly progress reports - on a set date each month to be mutually agreed to by both parties upon award of the Contract, in coordination with invoicing;

3.3.2 first draft AIA report – June 16, 2008; and

3.3.3 final AIA report – June 30, 2008.
Appendix A Terms of Reference

Section 3.1 Scope of Services

1. Remove the last line from first paragraph:
   “One First Nation and one Tribal Council with a membership of five First Nations have been identified as having an interest in the Project Area and two First Nations assert a primary interest in the Project Area (see Appendix B).”

Replace with:

   “Snuneymuxw (Nanaimo) First Nations and Snaw-Naw-As (Nanoose) First Nations assert a primary interest in the Project area (see Appendix C).”

2. Remove the first sentence of the third paragraph:
   “Some First Nations may choose to undertake the AIA work relevant to their area themselves or engage the services of another company or they may wish to participate in and witness the Services to be undertaken by the Consultant.”

Replace with:

   “First Nations may wish to participate in and witness the Services to be undertaken by the Consultant. Such requests are to be reasonably accommodated.”

3. Section 3.2 Deliverables

3.2.3 Remove – “identify significant archaeological sites, First Nations traditional uses, Culturally Modified Trees (CMT), spiritual practices and culturally significant sites;”

3.2.3 Replace with – “Identify significant archaeological sites and Culturally Modified Trees (CMT).”
4. **Section 3.3 Reporting Timeline**

3.3.2 Remove – “first draft AIA report – June 16, 2008

3.3.2 Replace with - first draft AIA report - June 30, 2008; and

3.3.3 Remove – “final AIA report – June 30, 2008

3.3.3 Replace with - final AIA report July 15, 2008.

ALL OTHER TERMS AND CONDITIONS TO REMAIN THE SAME AS THE ORIGINAL PROPOSAL DOCUMENTS.

**NOTICE TO BIDDERS**

Please acknowledge, by e-mail (gordon.stables@bctc.com), receipt of this Addendum No. 1

**Ph:** 604-699-7577  
**Fax:** 604-699-7580  
**Gordon Stables**  
**Procurement & Contracts**
2.104.0 Reference: Exhibit B-2-2, BCUC IR 1.54.2
Project Design: Diversity Factors

2.104.1 Have the substation peak loading values been adjusted for distribution feeder source changes?

RESPONSE:

Yes, the substation load forecast information provided by BC Hydro indicates when and how much load will be transferred from one substation to another using distribution feeders. BCTC plans the substation and transmission system according to the given substation load forecast information.
2.104.0 Reference: Exhibit B-2-2, BCUC IR 1.54.2
Project Design: Diversity Factors

2.104.2 Does BCTC have any visibility of when the sources for distribution feeders are changed from one substation to another, where such opportunities exist?

RESPONSE:

Yes, BCTC has the visibility of when the sources for distribution feeders are changed from one substation to another through the distribution substation load forecast provided by BC Hydro.
2.105.0 Reference: Exhibit B-2-2, BCUC IR 1.59.1
Route Options: Harewood Route Options Comparisons

2.105.1 Please review and explain why the retermination of the Harewood distribution substation into the new proposed Harewood West Transmission substation is no longer required.

RESPONSE:

Earlier in the planning stage, the proposed location for the Harewood West substation was adjacent to the junction of the VIT-JPT 138 kV ROW and the 138 kV ROW upon which the 1L112 and 1L138 taps to the Harewood Distribution substation (HWD) are located. At that time, 1L112 JPT-HWD was planned to be reterminated at the proposed Harewood West substation to improve the efficiency of the system (i.e., to minimize system losses) and to minimize transmission and ROW maintenance requirements.

However, the proposed Harewood West substation site is now located 1.5 km further south from the junction of the existing ROW’s described above. Therefore, in order to reterminate 1L112 and the 1L138 tap into the new Harewood West substation, it would be necessary to acquire additional ROW over Harewood Plains to construct two 138 kV transmission lines over the 1.5 km distance from the JPT – HWD junction, south to the Harewood West substation. By not reterminating 1L112 and the 1L138 tap to HWD at Harewood West, the need for this ROW and additional line construction is avoided. Avoiding the retermination of HWD into the proposed Harewood West substation also eliminates the impact of a transmission line ROW on the Harewood Plains, which is an area of high development potential.
2.106.0 Reference: Exhibit B-2-2, BCUC IR 1.61.2
Project Cost: Progress Reports – Earned Value Reporting

2.106.1 Please describe the project commitment measurement technique that BCTC considers is the best one in this case, and describe if the technique can forecast, at any given time, the cost of completing the unfinished work.

RESPONSE:

BCTC performs virtually all of its work on major capital projects through contracts with private sector suppliers and construction contractors. These contacts are typically fixed lump sum contracts or fixed construction unit price contracts. These are not cost reimbursable or “cost plus” contracts. BCTC prepares project cost budgets and monitors all bidding and award of contracts and purchase orders to measure against the project budget.

It is not materially important to BCTC how much it costs a contractor or supplier to fulfill its contractual obligations. BCTC is concerned about how much BCTC is obligated to pay as determined by contractual terms of payment. In the absence of any significant changes to the design, specifications or field conditions, BCTC will not be obligated to pay any more for the equipment or service than the amount specified in the contract, and as such, BCTC knows the overall cost of the project and is able to forecast the cost to complete the project, based on contract payments or obligations made to date.

BCTC carefully monitors project implementation activities to assess the risk of supplier or contractor requests for change orders or additional compensation of any kind. All of BCTC’s contracts have robust provisions for handling such requests and the means to resolve any disputes that may arise.

The CVI Project is quite straightforward. It is unlikely that conditions will arise that would warrant compensation to contractors and suppliers above pricing and terms that will be clearly identified in the contracts; however, BCTC will carefully monitor contractor performance and the potential for unanticipated changes. BCTC will be able to take steps to avoid or mitigate changes that could otherwise result in requests for changes in contract price.
2.107.0 Reference: Exhibit B-2-2, BCOAPO IR 1.1.a and BCOAPO IR 1.2.c

Project Justification

2.107.1 Please provide the tables in these responses with substation load diversity taken into account.

RESPONSE:

Reference: Exhibit B-2-2, BCOAPO IR 1.1.a

Similar to BCTC’s response to BCOAPO IR 1.1.a, the forecast loadings in each year from 2006/2007 to 2016/2017 for the four transformers at VIT when considering load diversity are shown in Table 1 below. All of the forecast values shown in the Table 1 are in MVA. The values in the brackets indicate the percentage of transformer loading relative to its rating.

Table 1. Forecast VIT Transformer Loadings Considering Load Diversity Factors (MVA)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Year</th>
<th>Transformer</th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
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<td>214 (100%)</td>
<td>234 (109%)</td>
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<td>221 (103%)</td>
<td>223 (104%)</td>
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<tr>
<td></td>
<td></td>
<td>T6</td>
<td>205 (96%)</td>
<td>212 (100%)</td>
<td>231 (108%)</td>
<td>214 (100%)</td>
<td>218 (102%)</td>
<td>220 (103%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T9</td>
<td>206 (97%)</td>
<td>215 (101%)</td>
<td>234 (109%)</td>
<td>216 (101%)</td>
<td>221 (103%)</td>
<td>222 (104%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T10</td>
<td>207 (97%)</td>
<td>216 (101%)</td>
<td>235 (110%)</td>
<td>217 (101%)</td>
<td>222 (104%)</td>
<td>223 (104%)</td>
</tr>
<tr>
<td>Assuming RAS</td>
<td></td>
<td>T5</td>
<td>158 (74%)</td>
<td>162 (76%)</td>
<td>180 (85%)</td>
<td>164 (77%)</td>
<td>168 (79%)</td>
<td>169 (79%)</td>
</tr>
<tr>
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<td></td>
<td>T6</td>
<td>156 (73%)</td>
<td>160 (75%)</td>
<td>178 (84%)</td>
<td>162 (76%)</td>
<td>166 (78%)</td>
<td>167 (78%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T9</td>
<td>157 (74%)</td>
<td>162 (76%)</td>
<td>185 (87%)</td>
<td>166 (78%)</td>
<td>171 (80%)</td>
<td>170 (80%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T10</td>
<td>158 (74%)</td>
<td>162 (76%)</td>
<td>186 (87%)</td>
<td>167 (78%)</td>
<td>172 (81%)</td>
<td>171 (80%)</td>
</tr>
<tr>
<td>Assuming no RAS</td>
<td></td>
<td>T5</td>
<td>158 (74%)</td>
<td>162 (76%)</td>
<td>180 (85%)</td>
<td>164 (77%)</td>
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<td>169 (79%)</td>
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<tr>
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<td></td>
<td>T6</td>
<td>156 (73%)</td>
<td>160 (75%)</td>
<td>178 (84%)</td>
<td>162 (76%)</td>
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<td>158 (74%)</td>
<td>162 (76%)</td>
<td>186 (87%)</td>
<td>167 (78%)</td>
<td>172 (81%)</td>
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<table>
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<tr>
<th>Scenario</th>
<th>Year</th>
<th>Transformer</th>
<th>2012/13</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
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<td>224 (105%)</td>
<td>228 (107%)</td>
<td>231 (108%)</td>
<td>234 (109%)</td>
<td>236 (110%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T6</td>
<td>222 (104%)</td>
<td>225 (105%)</td>
<td>228 (107%)</td>
<td>231 (108%)</td>
<td>233 (109%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T9</td>
<td>224 (105%)</td>
<td>227 (106%)</td>
<td>230 (108%)</td>
<td>233 (109%)</td>
<td>235 (110%)</td>
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<td>T10</td>
<td>225 (105%)</td>
<td>228 (107%)</td>
<td>231 (108%)</td>
<td>234 (109%)</td>
<td>237 (111%)</td>
</tr>
<tr>
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<td></td>
<td>T5</td>
<td>170 (80%)</td>
<td>173 (81%)</td>
<td>174 (82%)</td>
<td>176 (83%)</td>
<td>177 (83%)</td>
</tr>
<tr>
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<td></td>
<td>T6</td>
<td>168 (79%)</td>
<td>171 (80%)</td>
<td>172 (81%)</td>
<td>173 (81%)</td>
<td>175 (82%)</td>
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<tr>
<td></td>
<td></td>
<td>T9</td>
<td>169 (79%)</td>
<td>173 (81%)</td>
<td>173 (81%)</td>
<td>174 (82%)</td>
<td>175 (82%)</td>
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<td>174 (82%)</td>
<td>174 (82%)</td>
<td>175 (82%)</td>
<td>176 (83%)</td>
</tr>
</tbody>
</table>
Note 1. The RAS did not actually operate in 2006/07 and 2007/08 because there was no actual overload in these years.

Note 2. 2009/10 onward, VIT transformer loadings are reduced due to the Retetermination of Sidney 60 kV Supply to Keating Reconfiguration Project is in service in F2010: SNY load on the 138 kV system is moved to 230 kV system.

Note 3. When the RAS is not in operation, the operator will open 1L115/1L116 at the Jingle Pot end via supervisory control after receipt of an 1L115/1L116 overload alarm. The value shown in the table indicates the temporary loading on the transformer (i.e., prior to operator action) during the overloads on 1L115/1L116. This operator action is similar to the action of RAS but may take a few minutes to act after receiving the alarm. This action is necessary to protect a permanent damage on the 1L115 and 1L116 conductors when they get overloaded. After opening 1L115/1L116 at Jingle Pot end, the loading on VIT transformers will be the same as those values shown for assuming the RAS in operation.

Reference: Exhibit B-2-2, BCOAPO IR 1.2.c

Similar to the response to BCOAPO IR 1.2.c, the forecast loadings in each year from 2006/2007 to 2016/2017 for the 1L115 and 1L116 when considering load diversity are shown in Table 2 below. All of the forecast values shown in the Table 2 are in MVA. The values in the brackets indicate the percentage of the circuit loading relative to its rating.

Table 2. Forecast 1L115 and 1L116 Loadings Considering Load Diversity Factors (MVA)

<table>
<thead>
<tr>
<th></th>
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<td>1L115</td>
<td>94 (48%)</td>
<td>101 (52%)</td>
<td>103 (53%)</td>
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<td>106 (54%)</td>
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<td></td>
<td>1L116</td>
<td>96 (49%)</td>
<td>103 (53%)</td>
<td>105 (54%)</td>
<td>107 (55%)</td>
<td>108 (55%)</td>
<td>108 (55%)</td>
</tr>
<tr>
<td>Assuming RAS</td>
<td>1L115</td>
<td>198 (101%)</td>
<td>209 (107%)</td>
<td>220 (113%)</td>
<td>220 (113%)</td>
<td>223 (114%)</td>
<td>225 (115%)</td>
</tr>
<tr>
<td>operation</td>
<td>1L116</td>
<td>199 (101%)</td>
<td>211 (108%)</td>
<td>222 (114%)</td>
<td>222 (114%)</td>
<td>225 (115%)</td>
<td>227 (116%)</td>
</tr>
<tr>
<td>Assuming no RAS</td>
<td>1L115</td>
<td>107 (55%)</td>
<td>108 (55%)</td>
<td>108 (55%)</td>
<td>109 (56%)</td>
<td>110 (56%)</td>
<td>110 (56%)</td>
</tr>
<tr>
<td>operation</td>
<td>1L116</td>
<td>109 (56%)</td>
<td>110 (56%)</td>
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<td>236 (121%)</td>
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<td></td>
<td>1L116</td>
<td>229 (117%)</td>
<td>233 (119%)</td>
<td>236 (121%)</td>
<td>238 (122%)</td>
<td>240 (123%)</td>
<td>240 (123%)</td>
</tr>
</tbody>
</table>
Note 4. The actual maximum loadings on 1L115 in 2006/07 and 2007/08 were at 191 (98%) MVA and 193 (99%) MVA, respectively. Therefore, the RAS did not operate because there was no actual overload in these years.

Note 5. In 2008/09, the VITR Project is assumed to be in service and the HVDC supply system will be retired.

Note 6. If the RAS is not in operation, the system operator will open the lines via supervisory control at Jingle Pot end to protect a permanent damage on the 1L115 and 1L116 conductors when they get overloaded. The VIT transformers will subsequently be overloaded after opening the 1L115/1L116 at Jingle Pot end.
2.107.0 Reference: Exhibit B-2-2, BCOAPO IR 1.1.a and BCOAPO IR 1.2.c
Project Justification

2.107.2 Is the RAS equipped to measure actual loading levels before take action?

RESPONSE:

Yes, the RAS is equipped to measure actual loading levels before taking action. The RAS consists of one thermal relay for each circuit which measures the line current and ambient temperature at Dunsmuir substation. The relay uses this information to calculate the conductor temperature and determines if the circuit is overloaded.
2.107.0 Reference: Exhibit B-2-2, BCOAPO IR 1.1.a and BCOAPO IR 1.2.c
Project Justification

2.107.3 Please provide the RAS operating order.

RESPONSE:

This response has been filed with the Commission on a confidential basis.
2.17 Reference: Exhibit B-2 BCUC IR 1.3.1

2.17.a Does the choice of steel pole structures (v. steel lattice towers) have any impact on annual maintenance costs? If so, please describe.

RESPONSE:

No, the choice of steel pole structures has no impact on annual maintenance costs.
2.18 Reference: Exhibit B-2 BCUC IR 1.5.1

2.18.a Based on the comments at the bottom of the first page of this IR response, please include a column in Table 1 to indicate the capacity surplus/overload on 1L115 and 1L116.

RESPONSE:

Table 1 in Exhibit B-2, BCTC’s response to BCUC IR 1.5.1, is extended as shown in column 5 of Table 1A below to specifically indicate the capacity surplus/overload on 1L115 and 1L116. The capacity deficits on 1L115 and 1L116 shown in Table 1A will vary depending on the power flow scenario.

Table 1A. Capacity Surplus and Deficiency During System Normal (N-0)

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak 138 kV Load</th>
<th>Maximum Rated Capacity</th>
<th>Capacity Surplus or Deficit</th>
<th>Capacity Surplus or Deficit on 1L115 and 1L116</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2009</td>
<td>1378 MVA</td>
<td>1408 MVA</td>
<td>30 MVA</td>
<td>-77 MVA</td>
</tr>
<tr>
<td>F2013</td>
<td>1358 MVA</td>
<td>1408 MVA</td>
<td>50 MVA</td>
<td>-90 MVA</td>
</tr>
<tr>
<td>F2017</td>
<td>1410 MVA</td>
<td>1408 MVA</td>
<td>-2 MVA</td>
<td>-114 MVA</td>
</tr>
<tr>
<td>F2021</td>
<td>1475 MVA</td>
<td>1408 MVA</td>
<td>-67 MVA</td>
<td>-142 MVA</td>
</tr>
<tr>
<td>F2025</td>
<td>1543 MVA</td>
<td>1408 MVA</td>
<td>-135 MVA</td>
<td>-164 MVA</td>
</tr>
<tr>
<td>F2029</td>
<td>1615 MVA</td>
<td>1408 MVA</td>
<td>-207 MVA</td>
<td>-188 MVA</td>
</tr>
</tbody>
</table>
2.19  Reference: Exhibit B-2 BCUC IR 1.23.4

2.19.a Please confirm that the $87.50 / MWh average ABP was calculated based on delivery to the Lower Mainland as opposed to the generation plant gate and provide the appropriate BC Hydro reference.

RESPONSE:

BCTC confirms the $87.50/MWh average ABP is based on delivery to the Lower Mainland.

The computation of the Adjusted Bid Price (ABP) is described in Section 4.1 of a BC Hydro Report on the F2006 CFT Process, dated 31 August 2006. As stated on page 21 of that report:

“...the second step in computing the ABP for each tender is to adjust the levelized bid price to account for differences in product characteristics resulting from the bidder’s chosen tender options, interconnection requirements and project location relative to the Lower Mainland.”
2.20  Reference:  Exhibit B-2 BCUC IR 1.30.1

2.20.a  Please confirm that there is no material difference in the OM&A costs and Line Loss benefits as between the five different route options considered such that it would impact the relative cost comparison of the route options.

RESPONSE:

The table below compares the peak MW losses of the preferred route and the peak MW losses for the longest route (Jingle Pot route).

Table 1. Peak Losses Comparison

<table>
<thead>
<tr>
<th>Year</th>
<th>Peak Losses for Preferred Route (12.2 km)</th>
<th>Peak Losses for Jingle Pot Route (15 km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>84.6 MW</td>
<td>84.7 MW</td>
</tr>
<tr>
<td>2016</td>
<td>97.7 MW</td>
<td>97.9 MW</td>
</tr>
<tr>
<td>2031</td>
<td>111.3 MW</td>
<td>111.6 MW</td>
</tr>
</tbody>
</table>

The difference in the peak losses ranges from 0.1% to 0.3% and is not considered a material difference.

Since four of the five route options (including the preferred route) are approximately the same length (12 km), the OMA costs of these routes will be similar and will not impact the relative cost comparison of the route options. The Jingle Pot route is approximately 15 km in length, and OMA costs related to that route will be higher as a result, but BCTC does not believe it will be a material difference that would change its relative ranking to the other routes.
2.21 Reference: Exhibit B-2 BCUC IR 1.37.1

2.21.a Does the current material cost estimate for the transformer include any allowance for bridge upgrades?

RESPONSE:

The current material cost estimate for the transformers does not include a specific allowance for bridge upgrades, as these costs are the responsibility of the supplier (see BCTC’s response to BCUC IR 2.76.4).
2.21 Reference: Exhibit B-2 BCUC IR 1.37.1

2.21.b Does the project cost estimate include an allowance for the costs of performing the measurements and studies referenced in the second paragraph of the response?

RESPONSE:

The project cost estimate does include an allowance for the costs of performing the measurements and studies referenced in the second paragraph of the response.
2.22 Reference: Exhibit B-2 BCUC IR 1.60.1

2.22.a With respect to the Lantzville and Jingle Pot Route options, why are the costs reported for the individual line items different in the response versus Appendix C of the Original Application? The fact that this response separates out “escalation” does not appear to explain the differences as some of the line items in the response are higher (e.g., Lantzville Environmental costs)

RESPONSE:

The costs as presented in Appendix C and in BCTC’s response to BCUC IR 1.60.1 are both correct. The costs reported on the individual line items in BCUC IR 1.60.1 are all lower than the costs reported in Appendix C of the Application for the Lantzville and Jingle Pot routes, due to escalation not being included in the individual line items.

The total environmental cost for the Lantzville route option with escalation is $966,000 as shown in Appendix C (table C-1). The Lantzville environmental costs without escalation applied are $890,000 as shown in BCTC's response to BCUC IR 1.60.1. The escalation component is approximately $76,000.
2.23 Reference: Exhibit B-2 BCOAPO IR’s 1.12.b and 1.12.c

2.23.a These responses only discusses the Golder Report. Did BCTC (or BCH) undertake any assessment of potential First Nation issues in development of route options prior to engaging in consultation with First Nations representatives?

RESPONSE:

BC Hydro assessed traditional territory and treaty negotiation maps to determine which First Nations may be impacted by the CVI Project (Lantzville, Jinglepot and Harewood routes) and the possible nature of the impacts. BC Hydro assessed that all or part of these routes are on lands which are subject to treaty negotiation, and contain possible Douglas Treaty rights and archaeological and cultural interests. Those issues were subsequently raised by First Nations and are being addressed during BC Hydro’s consultation process described in the Application, Section 7, pages 98-112.
2.24 Reference: Exhibit B-4 BCTC IR Response to Exhibit C-2-2, Item 3

2.24.a What was the content of the ‘preliminary input’ by the Snuneymuxw and Snaw-Naw-As (Nanoose) First Nations referred to in the BCTC response.

RESPONSE:

Golder facilitated site visits with fisheries and environment staff members of the Snaw Naw As (Nanoose) and Snuneymuxw First Nations on 30 August 2007 and 6 September 2007, respectively. The purpose of these site visits was to provide First Nations with an overview of transmission routing options being considered, to present the observations and findings of field surveys undertaken, and to discuss their interests and concerns with the project.

The Snaw-Naw-As First Nation expressed concerns regarding potential effects on fisheries and wildlife resources, particularly along the LTZ, JTP, and Harewood North transmission routing options. Limited concerns were expressed with respect to the Harewood Central and Harewood South transmission routing options, although issues raised included potential effects on high elevation vegetation, and distribution and habitat use of larger wildlife species. The Snuneymuxw First Nation expressed concerns about the Harewood Central and Harewood South transmission routing options related to areas required for clearing to establish a new ROW. The Snuneymuxw First Nation indicated a preference for an option which would result in the least amount of loss of mature forests and resulting effects on wildlife and fisheries habitats.
2.1 Reference: Exhibit B-1, Table 6-1, page 93

2.1.1 The graph is shown representing a 230 kV High Voltage Transmission Power Line.

Since it is indicated throughout these books that the line will be operated as a 500 kV High Voltage Power Line (in contradiction of your Project Update May 2008) all concerns health and otherwise must be calculated at 500 kV.

Provide tables like 6.1 at 500 kV level.

The Table states measurements at 1 metre above ground. Provide variances for 2-3 metres above ground, i.e. second story bedrooms.

RESPONSE:

The Application does not indicate that the proposed Harewood South transmission line will be operated at 500 kV voltage.

The 500 kV references in the Application refer to the two existing Dunsmuir (near Qualicum Beach) to Sahtlam (west of Duncan) transmission lines that are presently constructed as 500 kV lines but are operated at 230 kV (Circuits 2L123 and 2L128. See the map in Appendix I and Appendix G of the Application). The double circuit transmission lines to the new Harewood West Substation proposed in the Application will initially tap off these two circuits and will be designed and constructed as a double circuit 230 kV line, and will always operate at 230 kV. At some time in the future, when the Dunsmuir to Sahtlam 500 kV transmission lines are converted to 500 kV operation from 230 kV, a new substation (Nanaimo River Substation) will be constructed near the proposed tap point to convert the power from 500 kV to 230 kV, which is required because the proposed transmission line (the Harewood South route alignment) cannot operate at 500 kV. When the Dunsmuir to Sahtlam transmission lines are converted to 500 kV operation (which requires the Nanaimo River Substation to be built) power would continue to be transmitted to Harewood West Substation at 230 kV via the double circuit transmission line proposed in this Application.

Because the proposed transmission line will be constructed and operated at 230 kV, the following table provides the magnetic field levels at 230 kV, calculated at 2.5 m above ground.
### Magnetic Field (mG) Calculated at 2.5 m Above Ground

<table>
<thead>
<tr>
<th>Distance from (m) from Centre Line</th>
<th>Magnetic Field (mG) With Both Circuits in Service</th>
<th>Magnetic Field (mG) With One Circuit in Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 -100</td>
<td>0.24</td>
<td>2.85</td>
</tr>
<tr>
<td>2 -75</td>
<td>0.57</td>
<td>5.12</td>
</tr>
<tr>
<td>3 -50</td>
<td>1.77</td>
<td>11.49</td>
</tr>
<tr>
<td>4 -25</td>
<td>10.07</td>
<td>40.45</td>
</tr>
<tr>
<td>5 -17 (ROW Edge)</td>
<td>21.33</td>
<td>69.96</td>
</tr>
<tr>
<td>6 0 (Centre Line)</td>
<td>71.46</td>
<td>122.62</td>
</tr>
<tr>
<td>7 + 17 (ROW Edge)</td>
<td>21.33</td>
<td>38.7</td>
</tr>
<tr>
<td>8 +25</td>
<td>10.07</td>
<td>24.25</td>
</tr>
<tr>
<td>9 +50</td>
<td>1.77</td>
<td>8.37</td>
</tr>
<tr>
<td>10 +75</td>
<td>0.57</td>
<td>4.1</td>
</tr>
<tr>
<td>11 +100</td>
<td>0.24</td>
<td>2.41</td>
</tr>
<tr>
<td>12 Maximum within ROW</td>
<td>71.46</td>
<td>136.86</td>
</tr>
</tbody>
</table>
2.2 Reference: BCTC’s response to BCUC IR 1.16.7

“The extended transmission line option will also likely have a much greater impact on the environment, First Nations, and other land owners. Given that BCTC forecasts that the conversion to 500 kV along the existing 230kV ROW may occur, especially in and around the Duncan/Sahtlam area, which could make such a project not feasible.”

2.2.1 Looking to the future you have indicated these lines will be upgraded when required to 500kV. You state here population encroachment could make such a project not feasible.

How do you justify placement of a 230kV/500kV line beside existing homes?

RESPONSE:

The new proposed Harewood South 230kV transmission lines will not be upgraded to 500 kV. Please see response to Jeanette Pongratz-Doyle IR 2.1.1.

The population encroachment referred to in BCTC’s response to BCUC IR 1.16.7 refers to possible population encroachment at the west end of the proposed Harewood South transmission line along the existing 500 kV ROW, which are lands currently owned by TimberWest Corporation. The response does not refer to the Harewood South transmission line in the South Forks area.

The land near the point where the existing Dunsmuir to Sahtlam circuits cross Nanaimo River Road are considered high value for development and such development could start to encroach on potential land required for a future Nanaimo River substation if the necessary land is not secured now. BCTC does not expect to construct a Nanaimo River substation until sometime after the end of the 25 year planning period.
2.3 Reference: BCTC’s response to BCUC IR 1.25.1

“(b) raise potential environmental, heritage and cultural site concerns.”

2.3.1 Does 125 years on the same land with taxes paid not also indicate a heritage and culture to be respected?

RESPONSE:

BCTC respects the rights of all persons who own or have an interest in property. BCTC’s response to BCUC IR 1.25.1 outlined the concerns raised by First Nations in consultation with them relating to the proposed transmission line crossing blocks of Crown lands previously offered to the Snuneymuxw First Nation as part of a treaty negotiation.
2.4 Reference: BCTC’s response to BCUC IR 1.28.1

“BCTC scored Harewood South Route 1 point below Harewood Central Route.”

2.4.1 With there only being one point difference between HWW Central and HWW South, why can you not accommodate a very small difference in the routes and move 1 km. away from the community?

RESPONSE:

As shown in Table 5-2, page 78 of the Application (Exhibit B-1), the overall difference between the Harewood Central route and Harewood South route is 7 points. The point difference between the ranking of the two routes considers not only the Environmental Impacts, but also Capital Costs, First Nation, Community, Implementation, Schedule, and Regulatory impacts, which when considered in total, make the Harewood Central route less attractive than the Harewood South route for implementing the 230 kV Injection solution by October 2010. Through the public and First Nations consultation processes, BCTC has made efforts to accommodate the interests of the community of South Forks, and has proposed a route alignment that balances the interests of the community of South Forks, First Nations, capital costs and schedule.

As discussed in the response to Jeanette Pongratz-Doyle IR 2.9.1, BCTC originally investigated three routing alignments: the Lantzville Route, the Jingle Pot Route, and the Harewood West Route (now Harewood North). Through public and First Nation consultation, BCTC determined that both the Jingle Pot Route and the Harewood North Route transected Crown lands that were offered to the Snuneymuxw First Nations as part of treaty negotiations that resulted in an Agreement in Principle being presented by the federal and provincial governments to Snuneymuxw First Nation in 2003. The governments have not withdrawn their offer of these lands as part of an overall treaty settlement. Therefore, in July 2007, BCTC started to investigate two additional possible transmission routes, one that would still cross the offered Crown lands, but at the narrowest part (the Harewood Central Route). The other route that BCTC began investigating was a route that bypassed the Crown lands being offered to the Snuneymuxw First Nation completely (the Harewood South Route).

Further investigation into the Harewood Central Route determined that it was very uncertain if BCTC could acquire the necessary ROW to cross Crown Block 202 to meet an October 2010 in-service date, and the Harewood Central Route was given a higher numeric score (lower scores being better) for First Nation impacts, Schedule risks and Implementation risks compared to the Harewood South Route. As a result, BCTC made the decision to not pursue the Harewood Central Route as its preferred route, and instead concentrated on the Harewood South Route.

In investigating the Harewood South Route further a number of alignment changes were made to the initial route alignment as a result of public consultation with the community of South Forks. The first was to move the line as far north as possible, given the constraint of the DND Block A lands, to accommodate the residents request that BCTC be further away from their properties. The second adjustment to the route alignment
resulted from the public interest, to have the line moved from the private farm property at 2100 Nanaimo River Road. BCTC accommodated this interest and moved the transmission line from the private residential farm property and onto a corner of the Block 271 lands that are part of proposed Treaty settlement land package offered to the Snuneymuxw First Nation. This move was supported by the Snuneymuxw First Nation and this revised Harewood South Route is the route upon which the agreement with the Snuneymuxw First Nation is based.

Based on these actions BCTC believes that the preferred route alignment, the Harewood South Route as proposed in the Application (which avoids crossing property on which any private residences are located), balances appropriately the interest of the First Nations, the community of South Forks Road, and the rate-payers of the province, and is in the public interest.
2.5 Reference: Exhibit B-1, Chapter 5.0, Preferred Project Description and impacts, Section 5.3.1, Route Selection Criteria, Table5-2, p.78

2.5.1 On referred table 5-2 explain how community impact criteria are reached?

RESPONSE:

Community Impact is based on the direct impact to the residences of a community that may result from a transmission line or substation siting in or near the community, such as right-of-way on residential or commercial properties, parks or schools, visual and noise impacts of the transmission line or substation that are influenced by the aesthetics and construction of the transmission structures, and impacts on community recreational areas.

The Lantzville route has the potential for the largest community impact as it would bisect the Foothills development, which is a new residential development including park lands. The Lantzville route also has a high residential impact with the rebuilding of circuits 1L115/116 along the existing ROW from the Lantzville substation to the Jingle Pot substation, a distance of approximately 7.5 km of mainly residential properties.

The Jingle Pot route requires the expansion of the existing substation in order to accommodate the 230 kV transformers and switchyard equipment. Expansion of the existing Jingle Pot substation could only occur if BCTC were to acquire surrounding residential/farm property to site the larger substation, which would have a high impact on the local community.

The Harewood North and Central routes were expected to have the least community impacts, as these routes are mainly within private forest lands, or Crown lands, and are not located near any community.

The Harewood South route is rated higher than Harewood North and Central routes as there is a potential of impacting one private land owner if the ILMB does not approve the BCTC/BC Hydro application for a Licence of Occupation through Crown lands Block 271. If the ILMB does approve the application to cross Block 271, the rating for the Harewood South route will improve to be the same as the Harewood North and Central routes.

BCTC believes that the transmission route alignment as proposed would have no significant impact on the local community due to existing tree screening and distance to the nearest property.
2.6 Reference: BCTC’s response to BCUC IR 1.3.1

“The proposed transmission lines do not currently pass close to any residential areas”

2.6.1 If 300 metres or 500 metres is not considered close to a Residential area - exactly what distance do you consider “close”?

RESPONSE:

For public safety and the safe operation of the transmission system, BCTC maintains a ROW along its transmission lines to ensure that structures built at or near the ROW are safe at all times. Being adjacent to the transmission line ROW and beyond is considered safe for the public and for the operation of the transmission system.

For the proposed Harewood South Route alignment, there are no residential structures on or adjacent to the proposed right-of-way.
2.7 Reference: BCTC’s response to BCUC IR 1.33.1

2.7.1 Why is so much weight and concern put on being unobtrusive to future development as opposed to current residences – actual people?

RESPONSE:

BCTC is not placing more weight or less weight on future development compared to existing development referred to in BCTC’s response to BCUC IR 1.33.1. Existing and future development will benefit equally from support structures that are less intrusive on the landscape, such as steel pole construction, compared to steel lattice towers, or wood H-frame towers. As stated in BCTC’s response to Jeanette Pongratz-Doyle IR 2.5.1, BCTC believes that the transmission route alignment as proposed would have no significant impact on the local community due to screening by existing trees and distance to the nearest property.
2.8 Reference: BCTC’s response to BCUC IR 1.40.3

2.8.1 Why is there so much concern for the visual impact of the line and placement of poles near the Trans Canada Trail as opposed to so little concern for the overall impact in the residents along the Harewood South Route.

RESPONSE:

BCTC’s response to BCUC IR 1.40.3 was to correct a typographical error only and was not meant to convey that one area of the proposed transmission line is garnering more concern than another. BCTC constructs its transmission lines to comply with all design, safety and environmental standards set out by governing bodies, whether the transmission facilities are in areas of public use, residential areas, or in the wilderness.

Concern for visual impacts along the Trans Canada Trail system arises because the area around the proposed Harewood West substation site, and the approaches to the Harewood West substation site have been clear cut, and any transmission facilities installed will be highly visible from the Trans Canada Trail. Therefore, placement of steel pole structures and heights of conductor to minimize visual impact are considered. The preferred routing alignment over Crown lands near the South Forks area will enable BCTC to maintain considerable tree screening, protecting the residents along South Forks Road from visual and audible impacts of the transmission line.
2.9 Reference: BCTC’s response to BCUC IR 1.45.1

2.9.1 We are now confronted with a very short time line until construction is due to commence.

Why in your list of considerations were the people of our Community not included? We are a huge part of this environment and have been anywhere from one year to 125 years and absolutely deserve to be considered in a very weighted way in the granting of this CPCN.

With all people being equal... Why were residents denied community input in the planning stages of the preferred routing alignment while other interest groups were involved in the planning from the start?

RESPONSE:

BCTC’s initial investigation focused on three routing options that were presented at the first Community Open House held on 9 May 2007, in Nanaimo: the Lantzville Route, the Jingle Pot Route, and the Harewood West Route. Each of these routes is described in detail in the Application. Feedback from the open house indicated that the Harewood West Route, now known as the Harewood North Route, received the most support. Each of the Jingle Pot and Lantzville Routes resulted in significant public impacts as they approached the 138 kV transmission system, whereas with the new Harewood West substation being located in clear cut forest lands, public impacts were low or non-existent. The Lantzville Route bisected a new housing development area known as the Foothills development, with 900 acres of housing and a further 900 acres of parklands. The Jingle Pot Route would require the expansion of the existing Jingle Pot substation, including the purchase of new station lands from existing farms and residents in the area. The first open house was advertised in local newspapers prior to the event informing all persons in the Nanaimo, Lantzville and Parksville area about the project. In addition, direct mail was used to notify land owners along the proposed route alignments.

BCTC continued its investigations into all three potential route alignments, but started to focus its planning efforts on the Harewood West route due to the support shown for the Harewood West Route at the public open house. Consultation included discussions with First Nations, in which BCTC learned that the Jingle Pot Route and the Harewood West Route, crossed through a significant amount of Crown land that had been offered to the Snuneymuxw First Nation as part of ongoing treaty negotiations. BCTC also continued discussions with the private forest companies, and in particular, with Island Timberlands that had indicated that it did not support the location of the Harewood West substation, which was located on what they consider to be high value development potential lands. BCTC investigated a number of other potential substation sites that were located to the north and south, along the 138 kV corridor, but none of the sites investigated were appropriate or available (see Appendix M of the Application). Because the Harewood West Route (now Harewood North) is over 2 km away from the residences along South Forks Road, BCTC did not consult directly with the residents of that area about the Harewood West Route.
During the First Nations consultation process, both First Nations (Snuneymuxw and Nanoose) raised environmental concerns and traditional land use concerns on all three of the routing options then being investigated, preferring instead a route that would traverse areas that had already been disturbed or recently logged, rather than through areas of well established forest lands. As a result of the uncertainty around the ability to access the Crown lands being offered Snuneymuxw First Nation, and the environmental concerns being raised by both First Nations, BCTC decided to investigate two additional routes: the Harewood Central Route, and the Harewood South Route. The Harewood Central Route still transected the Crown lands being offered to the Snuneymuxw First Nation, but at its narrowest part. The Harewood South Route was designed to by-pass the treaty negotiation lands completely, in favour of an alignment that would travel over private forest company lands, Crown lands not under offer to the First Nations, and other private lands if necessary.

As discussed on pages 78 to 80 of the Application, the BCTC route selection process was dependent on the scoring of several important attributes for each of the routes investigated. These included Capital Cost, Environmental Impact, Community Impact, First Nation Impact, Implementation Risk, Schedule Risk, and Regulatory Risk. Prior to making a determination as to which route alignment would be the preferred route, BCTC undertook project costing for each of the routes, an environmental overview assessment on each of the proposed routes, Public and First Nation evaluation as to impact for each of the routes, and then made a determination as to the Schedule, Implementation and Regulatory Risks of each of the routes. Further investigation into the Harewood Central Route determined that it was very uncertain if BCTC could acquire the necessary ROW to cross Crown block 202 to meet an October 2010 in-service date, and the Harewood Central Route was given a higher numeric score (lower scores being better) for First Nation impacts, Schedule risks and Implementation risks compared to the Harewood South Route. As a result, BCTC made the decision to not pursue the Harewood Central Route as its preferred route, and instead concentrated on the Harewood South Route.

Prior to making a final determination on the alignment for the Harewood South route, BCTC initiated consultation in October 2007 regarding transmission line and ROW placement with the most directly affected private land owner at 2100 Nanaimo River Road (Mr. Dan Gogo), once it was determined that the transmission line and ROW would pass over his property. BCTC then initiated consultation with the owner of 2625 South Forks Road (Mr. Mike Gogo – the owner of the property next to Mr. Dan Gogo) in November, once BCTC learned that it could not gain access to the DND Block A lands, for the necessary ROW. Consultation with the Gogos continued in November and December, during which time Mr. Mike Gogo assisted lands personnel with locating property boundaries for his farm, and Crown lands over which BCTC could align the transmission line.

Based on the investigations and consultation described above, BCTC determined the Harewood South route as the preferred route in December 2007, and BCTC sent out a Project Update and notice of community open house on 22 January 2008 (Appendix Q-6) to stakeholders in the Project at the end of December. The update and notice of
A Community Open House was held in South Nanaimo on 22 January 2008 to gather public input and feedback on the preferred route. Participants at the open house primarily expressed concern for the residents at 2100 Nanaimo River Road with regard to the proposed crossing of that property by the transmission line. This issue was also the subject of the subsequent petition signed by 112 individuals objecting to the transmission lines crossing the farm property at 2100 Nanaimo River Road. BCTC took this concern seriously, and negotiations with the Snuneymuxw First Nations resulted in BCTC concluding a benefits agreement with the First Nation that among other things, included an agreement for the line to cross Crown block 271, part of the Crown lands offered to the First Nation as part of the treaty negotiations, rather than the private farm residence. Participants at the Open House, including local residents along South Forks Road, also requested that BCTC move the line further away from existing property lines. BCTC committed to investigate moving the Harewood South transmission line to the north and away from the property lines at 2100 Nanaimo River Road, and 2625 South Forks Road, which were the only properties near which the proposed transmission line passed. After investigation, BCTC was able to realign the transmission line approximately 180 metres further north, and away from existing property lines to the preferred route alignment as shown in the Application. This places the transmission line approximately 220 metres from existing residential property boundaries for those residences on South Forks Road.

BCTC believes that it has undertaken sufficient consultation throughout the development of the Central Vancouver Island project. The first open house in May 2007 helped determine that the Lantzville, Jingle Pot and Harewood North routes involved too much public and First Nation impacts, and led to the development of the Harewood Central and South routes. Once BCTC dismissed the Central route due to uncertainty about gaining access to the provincial Crown lands, the Harewood South route became the main focus. When it was realized that the transmission alignment had to cross a private farm property, BCTC initiated consultation and discussions with the land owner directly affected, to establish the specific alignment of the Harewood South Route that was presented at the second open house, in South Nanaimo. As a result of the information and feedback from the January open house, BCTC has taken steps to accommodate the expressed concerns of the local residents and BCTC believes that the preferred route alignment (the Harewood South Route with the line crossing Block 271 (as set out in the Application), which avoids crossing property on which any private residences is located), balances appropriately the interest of the community of South Forks Road, the First Nations and the rate-payers of the province, and is in the public interest.
2.10 Reference: BCTC’s response to BCUC IR 1.46.1

“BCTC believes that it has responded to the concern raised in the petition and that it has done what it can to mitigate the route alignment over the private from property.”

2.10.1 The only insight we were given at the Information Meeting was that the lines would be going on Dan and Shirley Gogo’s property.

Due to lack of maps with road names and lot lines on them we had no way of knowing what other properties would be affected and most certainly the wording would have been different had we been informed properly. Which by the way seems to have been a planned move.

Why were maps like ILMB’s with lot lines and road names included not used at the Information Meeting?

RESPONSE:

The display material at the 22 January 2008 Community Open House is included as Appendix Q-7 in the Application, and showed the transmission line routes and substation sites that were considered, explained why these routes and sites were rejected, and identified a preferred routing option. Two maps were available for viewing at the 22 January 2008 open house as follows:

(a) One map was an aerial photo showing property lines. The proposed transmission line route was shown on the map along with descriptions of land parcels and road boundaries. Road names were not shown.

(b) The second map was an illustrated plan view of the proposed transmission line route that included the following roads:

i. Nanaimo Lakes Road
ii. Nanaimo River Road
iii. South Forks Road
iv. Extension Road
v. Bramley Road
vi. White Rapids Road

BCTC staff were also on hand to answer any questions about any of the material available for viewing.
2.11 Reference: BCTC’s response to BCUC IR 1.46.1

“the petition should still receive little, if any, weight in the determination of whether or not the project is in the public interest.”

2.11.1 You state our petition of 112 signatures should receive little if any weight in the determination of whether or not the project is in the Public Interest.

Explain to us why the visual impact of the Trans Canada Trail should hold so much more weight than our petition and the people in our community?

RESPONSE:

As stated in BCTC’s response to Jeanette Pongratz-Doyle IR 2.8.1, BCTC does not place more weight on the visual impacts of the Trans Canada Trail than on the concerns of the residents of South Forks. The petition provided by the residents of the South Forks Road area was designed to express local public opposition to the transmission facilities and ROW crossing the private residential property at 2100 Nanaimo River Road (Mr. Dan Gogo’s property). As stated in BCTC’s response to BCUC IR 1.46.1, BCTC has done what it can to mitigate the route alignment crossing over the private residential farm property at 2100 Nanaimo River Road, and therefore believes that the purpose of the petition has been met, and that the petition should receive little if any weight in the decision to grant a CPCN. However, if the ILMB for any reason denies the application for Licence of Occupation over Crown Block 271, also as stated in the response to BCUC IR 1.46.1, the petition should still receive little if any weight in the determination of whether or not the project is in the public interest for the reasons stated in the referenced response.

BCTC takes the concerns of the residents around South Forks seriously, and has acted to accommodate their requests. As a result of public consultation, BCTC has negotiated an agreement with the Snuneymuxw First Nation to cross Crown parcel Block 271, and has applied to the ILMB for a Licence of Occupation over a portion of the Crown land. BCTC has adjusted the proposed transmission route alignment to be as far from the residential properties on Nanaimo River Road and South Forks Road as is practical, moving the alignment approximately 180 metres further north away from the property lines than what was originally designed such that the centre line of the transmission line is now approximately 240 metres away from private residential property boundaries, and approximately 330 metres from the closest residential building. Screening by the existing trees will provide a substantial buffer between the ROW and the residential properties, blocking visual or audible evidence of the transmission lines’ existence.
2.12 Reference: Exhibit B-1, Table 7-6 on page 126, line 2, Alternative transmission line route further to the South.

2.12.1 This alternate route further to the south was considered infeasible by BCTC due to the number of residents who would be impacted.

If it is infeasible due to the residents there why are South Forks Community not given that same consideration?

RESPONSE:

The residents of South Forks Road were given the same consideration. Based on the input received at the 22 January 2008 open-house, BCTC moved the proposed transmission line further away from existing private property, thereby increasing the distance from the nearest residential structure to approximately 330 metres. Also, an agreement with Snuneymuxw First Nation was successfully negotiated to avoid a direct impact to the one private land owner at 2100 Nanaimo River Road by moving that section of the alignment over to Crown parcel Block 271. The alternate route further to the south that was investigated at the request of a private forest company would have resulted in a transmission line passing through existing residential properties in an area of higher density than that in the South Forks Road area.

BCTC believes that with approximately 330 metres distance to the nearest residential structure, and alignment through Crown parcel Block 271, there is no significant impact to the South Forks Road community.
2.13 Reference: Exhibit B-1, Table 7-6 on page 126, line 6

“BCTC has re aligned the transmission line so that it is an additional 200 m north of these properties and will not impact the tree buffer that separates these private property boundaries from the right of way.”

2.13.1 Why were the public given the impression that the HV Power Line was moved away from our community by a further 200m giving the impression that it was not close to any of our houses when the actual turning point of the line in the bush by the first house being 300m away from the line apparently never changed?

RESPONSE:

The reference in the question is to the Table of Mitigation Proposals Explored at page 126 of the Application, and specifically to the request to move the transmission line away from residences on South Forks Road. The proposed route alignment for which BCTC is seeking a CPCN is now located approximately 180 m further north, and therefore away from, neighbouring properties along South Forks Road compared to the initial proposal shown at the January Open House that placed the transmission line adjacent to the property boundaries on South Forks Road. Therefore, the point at which the proposed transmission line turns north around DND parcel Block A has also moved approximately 180 m further away from the first house referred to in the question. As a result, the house in question is now approximately 330 m from the proposed transmission line.
2.14 Reference: BCTC’s response to BCUC IR 1.47.2

“The owner of the closest property expressed satisfaction with this mitigation proposal at the Open house.”

2.14.1 When you believed these owners were satisfied had you indicated the line would be a mere 300 metres from their home?

RESPONSE:

As a result of feedback from local residents at the January Open House, BCTC committed to looking into moving the transmission line further to the north, maintaining more of the existing tree screening as a buffer between the property owners on South Forks Road and the transmission line. As stated in BCTC’s response to BCUC IR 1.47.2, the owner of the nearest residence expressed satisfaction with the proposal at the Open House that BCTC would look into moving the line to the north. BCTC was not able to commit to how far the lines might be moved without conducting further investigation into the property boundaries for the DND lands. After investigation, BCTC was able to realign the transmission line an additional 180 metres farther away from private property boundaries on South Fords Road, increasing the distance to the nearest residence to 330 metres from 130 metres as originally proposed.

The primary concern of the local residents who attended the Open House was the proposed crossing of the property at 2100 Nanaimo River Road by the transmission line. BCTC took the expressions of concern seriously and was able to negotiate access across Crown parcel Block 271 with the affected First Nation, which should allow relocation of the transmission line from 2100 Nanaimo River Road to the adjacent Crown parcel. As stated in BCTC’s response to BCUC IR 1.47.2, the owner of 2100 Nanaimo River Road has expressed satisfaction with the proposed rerouting of the transmission line from that property.
2.15 Reference: BCTC’s response to BCUC IR 1.47.2

“The Property owners of this residence verbally expressed their satisfaction with the proposed rerouting of the transmission line from their property.”

2.15.1 When Dan and Shirley Gogo expressed satisfaction with the changes of alignment were they advised at that time that it would still be within 500m of their home and if so were they given any time to let it sink in just how close it still was?

Our community will not be satisfied until the line is at least 1 km. from residential property lines.

RESPONSE:

Mr. Dan Gogo was informed via telephone call on 7 May 2008 that BCTC has reached an agreement with Snuneymuxw First Nations to cross a portion of Crown lands Block 271. During this telephone call, Mr. Dan Gogo was also informed that the preferred alignment of the proposed transmission line will now be on the other side of Bolder Creek via Block 271, bypassing his property.

Mr. Gogo verbally expressed his satisfaction to the above.
2.16 Reference:  BCTC’s response to BCUC IR 1.47.2

2.16.1 Area C and all interested parties were notified by your Project Update May 2008 that the proposed Transmission line will be further away from properties along South Forks Road but there is no indication for the Public pegs or signs where exactly the line will be placed.

Before more public support becomes diluted to misinformation in your Project Update May 2008 when will you be marking the true route so all the public can see.

RESPONSE:

The route (and the centre line) will be marked and pegged during detailed survey work which will be initiated after the CPCN is granted and all right-of-ways have been secured.

BCTC believes that interested persons are well aware of the proposed route alignment.
2.17 Reference: BCTC’s response to BCUC IR 1.47.2

“To date, BC Transmission Corporation has not received any additional feedback from the owners of residences on South Forks Road.”

2.17.1 After the Project Update was put out we were then served by Registered Mail the Order for the Procedural Hearing which gave us three days to register to be Interveners for the process.

Does this not prove that we are not satisfied with your responses and as a community will continue to contest the placement of this High Voltage Power Line anywhere within 1 km. of our homes? If not, what kind of proof do you require?

Consider it evidence.

RESPONSE:

As directed by Commission Order G-82-08, BCTC sent a copy of the Order and its appendices, via registered mail, to the land owners that were potentially affected by the proposed transmission line and substation. Order G-82-08 established the preliminary regulatory agenda and timetable, and the notice of Application and Procedural Conference.
2.18 Reference: BCTC’s response to BCUC IR 1.69.1

“We note that populations of rare plants once identified, can often be avoided by appropriate location of transmission towers (poles) and careful selection of construction access points.”

2.18.1 For any sensitive area, if placement of poles/towers can be done in HWW South why can the same application not be used in HWW Central?

RESPONSE:

The same application for the placement of poles in sensitive areas can be undertaken for the Harewood Central route as for the Harewood South route. As discussed in BCTC’s response to Jeanette Pongratz-Doyle IR 2.4.1, BCTC considers the Harewood South route a superior route compared to the Harewood Central route in terms of being able to meet an in-service date of October 2010.
2.19 Reference: BCTC’s response to BCUC IR 1.74.5

2.19.1 Are the referred limits taken at the height of the pole? If so, what would be the difference in the EMF rating at the lowest sag of the Line between the poles?

RESPONSE:

No, the referred limits are not taken at the height of the conductor on the pole. All limits apply to the undisturbed electric and magnetic fields at ground level, assuming average conductor sag. The limit for electric fields is 10 kV/m, the limit for magnetic fields is 833 mG.
2.20 Reference: BCTC’s response to BCUC IR 1.74.8

2.20.1 Referencing encompassing occupied area’s within 300’ of the proposed transmission line. How did the reference to 300 feet become the benchmark when other documents refer to 300 meters?

RESPONSE:

The question in BCUC IR 1.74.8 referenced 300 feet, not 300 metres. The question asked:

Would BCTC provide the locations of, and anticipated EMF Levels encompassing, residential areas, private or public schools, licensed daycare facilities, licensed youth camps, public playgrounds or recreational areas that are within 300 feet of the proposed transmission line, if any?

The reference to 300 feet in the question is not a benchmark. Likewise, measurements of 300 metres within other IR responses refer to the approximate minimum distance from the proposed transmission line ROW to the nearest residential building, which is also not a benchmark. The only benchmark as it relates to EMF evidence within the Application material, or the evidence provided in responses to IRs filed in the CVI Project proceeding, are the ICNIRP guideline for magnetic fields that limit exposure to 833 mG, and the IEEE guideline for electric fields that limit exposure to 10 kV/m within the ROW (see BCTC’s response to BCUC IR 1.75.1.1).