



LETTER NO. L-54-04

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Log No. 7562

VIA E-MAIL

cameron.lusztig@bctransco.com

November 5, 2004

Mr. Cameron Lusztig
Director, Regulatory Affairs
British Columbia Transmission Corporation
Suite 1100 Four Bentall Centre
1055 Bentall Street
Vancouver, B.C. V7X 1V5

Dear Mr. Lusztig:

Re: British Columbia Transmission Corporation ("BCTC")
Application for Certificate of Public Convenience and Necessity ("CPCN")
for the System Control Modernization Project ("SCMP")

On October 15, 2004 BCTC applied for a CPCN for the SCMP (the "CPCN Application"). Further to the review process proposed in Section 1.9 of the CPCN Application, enclosed is Commission Information Request No. 1. BCTC is to respond to this Information Request by Friday, November 19, 2004, and to copy the response to all parties that have been copied on this letter.

After receiving the response to the Information Request, the Commission may grant or deny the CPCN, or may establish a regulatory process for further review of the CPCN Application. By copy of this letter, the Commission invites parties with an interest in the matter to provide any comments on the substance of CPCN Application, and any comments on whether the Commission should establish a further process to deal with the application and the nature of such a process. Such comments should be provided in writing to the Commission, with a copy to BCTC, by Friday, November 26, 2004. BCTC will respond to any comments by Friday, December 3, 2004.

Yours truly,

Original signed by:

Robert J. Pellatt

JBW/rt

Enclosure

Cc: Registered Intervenors:
BCTC Capital Plan
BC Hydro Revenue Requirements

**British Columbia Transmission Corporation (“BCTC”)
Certificate of Public Convenience and Necessity (“CPCN”) Application
System Control Modernization Project (“SCMP”)**

1.0 Reference: BCTC CPCN Application dated October 15, 2004, Section 3.0

- 1.1 Section 3.0 of the CPCN Application identifies several deficiencies of the existing BCTC control system. Section 5.1 states “...the SCMP will deliver system controls and facilities that are equal to or better than historical performance for overall reliability and security.” Please explain what levels of reliability and security this statement is referring to and what goals or targets will be used to benchmark the success or failure of the new proposed SCMP.
- 1.2 Are there reasons to expect that the existing system cannot be sustained at its current level of reliability and security for some years into the future, recognizing that significant expenditures may be necessary to do so. If BCTC identifies any such reasons, please explain each of them.
- 1.3 Please explain why the SCMP should not be expected to improve reliability and security. Please quantify the increases in reliability and security measures that other electrical utilities have realized from similar upgrades, and estimate the amount of improvement that could be provided by SCMP.
- 1.4 Is BCTC able to value the additional reliability benefits from the SCMP project as proposed? If so what are those benefits? How have they been factored into the present value analysis of the various options?
- 1.5 Is SCMP expected to improve the efficiency of operation of the transmission system, thereby deferring the need for system reinforcements, or the amount of ancillary services that BCTC must obtain? If such improvements are expected, please quantify them in dollar terms over the 20 year study period.
- 1.6 Page 4-3 of the CPCN Application refers to implementing new functionality for customers such as dynamic scheduling with the California markets. Please explain what this functionality is and if it is presently implemented. If it is not part of the present capabilities, will it be implemented as part of the SCMP? What are the benefits and costs of this feature?
- 1.7 In general, please provide an estimate of the economic benefits of SCMP with respect to new functionality for customers over the 20 year study period.
- 1.8 Section 3.2.1 refers to more stringent new seismic standards that are expected in 2005. Please identify the code that is expected to set these new standards and outline the requirements of these standards. Will the new standards apply to new construction only, or will existing structures need to be retrofitted to comply with them? Has BCTC evaluated the risks of non-compliance? If so, please explain.
- 1.9 The CPCN Application at page 1-3 states that the System Control Centre at Burnaby Mountain is currently leased until 2016, with no right of renewal, and that Simon Fraser University (“SFU”) has indicated that it does not want to renew the lease. Please outline the discussions that BCTC has had with SFU regarding an extension, and provide a copy of any correspondence from SFU setting out its position.
- 1.10 BCTC states at pages 1-3 and 3-5 that BCTC is experiencing database errors causing customer

outages. Please explain how this occurs. What types and number of outages have occurred over that last several years? Have these outage caused extra costs for BCTC or its customers? If so, how have these costs been accounted for in the present value analysis of the various options?

- 1.11 By consolidating the ACCs, a certain amount of local knowledge will be lost. What provisions, if any, have been made in training and implementation plans to accommodate the changes? (Page 1-5)
- 1.12 Page 3-2: Does having two RTUs lead to data consistency problems? What RTU upgrades are included in the project?
- 1.13 Page 3-3: Why is the Peace/Columbia generation telecom radial? Does that not imply a fairly significant risk?
- 1.14 What accommodations, if any, does the plan contain for possible participation in a northwest RTO?
- 1.15 Page 3-5: What does an “inability to respond quickly to changes in market structure” mean?
- 1.16 Page 3-5: What are the large gaps in EMS capability?
- 1.17 Page 3-5: What does “enhance the skill set of its operating staff” mean in this context?

2.0 Reference: BCTC CPCN Application, Section 1, p. 1-4; Section 3, p 3-4; Section 4.0

- 2.1 Table 1 on page 4-17 states that the numbers in it are 20 year present values at 8 percent discount rate. What years were included in the 20 year period? Please confirm that the discount rate is 6 percent real plus 2 percent inflation, or explain why is 8 percent the appropriate discount rate?
- 2.2 Further to the schedule requested in the foregoing question, please provide a schedule that shows the calculation of the annual cost of service of the SCMP incremental facilities, and explain the parameters used in the calculation.
- 2.3 Option 1 is for technology replacement and new buildings delayed from 2008 to 2016. Section 4.9 states that Option 1 is not a viable alternative as it fails to meet any of the six objectives laid out for the SCMP. Other options are similarly evaluated on the basis of the six objectives. Has BCTC quantified the cost of not meeting any of the objectives? If so, please provide that analysis and compare each option on the basis of a present value analysis for objectives met or not met.
- 2.4 Under Option 1, would the reliability and security of the BCTC system through 2016 be any less than it is currently, or would be through 2008 with the SCMP? What specific non-quantifiable considerations outweigh the cost savings that would result from delaying the project to 2016?
- 2.5 Presumably deferring the SCMP project for some years after 2008 would permit BCTC to install more advanced hardware and software at that time. Please discuss the current status of development of Energy Management System (“EMS”) technology, and the expected further developments that are expected over the next several years.
- 2.6 What portion of transmission systems across North America that are at least as large as the B.C. system have a single consolidated control centre with a backup, or are proceeding to install such a system? Please name the systems and describe how they work in comparison to the SCMP proposal.

- 2.7 Further to the foregoing Information Request, please also identify the portion of transmission systems that have a consolidated control centre built to similar seismic standards as the new SCC that do not also have a backup system control centre.
- 2.8 What is the cost of the BCC and second control system that is included in the SCMP cost estimate?
- 2.9 Further to the CPCN Application at Tab 1, page 1-4, lines 13-15 and Tab 3, page 3-4, lines 22-27, please explain why a backup control centre and system is required if the new SCC is built to the seismic standards expected in 2005? What is the expected frequency of seismic and other events that would require the use of the backup control centre and system, assuming the new SCC is built to 2005 code standards?
- 2.10 Further to the information for Option 1 on expanded Table 1, please provide the annual Operating and Maintenance Costs and annual capital expenditure for the existing system for each of the past five years.
- 2.11 If the SCMP goes ahead for 2008, what reductions will BCTC be able to make to annual Operating and Maintenance costs and annual capital expenditures on the existing system from now until 2008?
- 2.12 Page 4-1: What does “increasing complexity of the power system” refer to in this context?
- 2.13 Page 4-3: What functionality will remain inaccessible due to the risk associated with EMS modifications?
- 2.14 Page 4-5 (and others): What “uniformity of culture” is desired, and what problems is the lack of uniformity causing now?
- 2.15 Page 4-8: What are the “unique” communication and operating processes unique to each centre that are not duplicated?
- 2.16 Section 4.6.4: Has the option of operating both control centres routinely (for example, one during nights or weekends) been considered as a way of maintaining the operational readiness of the backup control centre and to reduce cutover time during an emergency? If not, what activities will take place to ensure that readiness?

3.0 Reference: BCTC CPCN Application, Section 4.8

- 3.1 Further to Section 4.8, please provide a more detailed cost estimate for each of the major components of the SCMP in as-spent dollars, showing contingency, overhead and interest during construction.
- 3.2 Is the estimate of \$133 million a P50 estimate (50 percent probability that the actual cost will not exceed the estimate) or a P90 estimate (90 percent probability that the actual cost will not exceed the estimate)? Please provide both the P50 and the P90 estimates for the project.
- 3.3 Please explain why the amount of contingency in the cost estimate is appropriate.
- 3.4 Please provide a schedule and graph showing actual monthly expenditures on the SCMP to date and forecast monthly expenditures for the life of the project, and the cumulative expenditures.

Please correlate this information with the current balance in the SCMP deferral account that was approved by Commission Order No. G-1-04, and with the cap of \$2 million for the account.

- 3.5 Assuming a CPCN for the SCMP is approved, what limit on actual cost, or incentives to control costs, should the Commission include in the approval.
- 3.6 Assuming a CPCN for the SCMP is approved, what level of progress reporting (in terms of frequency and content) with respect to schedule, cost and other matters does BCTC believe would be appropriate for the project?
- 3.7 Does BCTC have any objections to the Commission, as a condition of the CPCN approval, requiring an independent project management specialist to provide the Commission with periodic reports and evaluation of the project management system and progress of the implementation of the project?
- 3.8 Does BCTC have any suggestions on how such a specialist would most effectively review and report on BCTC's project management and progress of the project?
- 3.9 If BCTC can provide a draft Terms of Reference for such an external reviewer or auditor, please do so.
- 3.10 Section 6.4.2 of the CPCN Application notes that limited funds in the project relate to relocation of the BC Hydro Corporate Telephone switch and minor modifications to the existing power system at SCC/MCC. What does "MCC" refer to? Please quantify each of these expenditures, and explain why they should be the responsibility of BCTC rather than BC Hydro.

4.0 Reference: CPCN Application, Section 5.0

- 4.1 Section 5.3.1 sets out the overall goals and objectives for the EMS. With respect to the more generic goals and objectives, like system availability, please discuss the criteria for SCMP in comparison to those set for similar systems by other large electrical utilities in North America, and by organizations like NERC, WECC and NWPP.
- 4.2 Section 5.3.1 notes that the EMS security features must comply with the standards of NERC, WECC and NWPP. Will the EMS comply with the standards and directives of NERC, WECC and NWPP in all respects? If not, please explain.
- 4.3 Page 3-1 of the CPCN Application notes that the Area Control Centres ("ACC") perform control actions for lower voltage equipment in their area, including distribution equipment within substations. Page 5-3 states that the EMS will provide for control of the BC Hydro distribution system equivalent to or better than the current facilities. Please confirm that each of the two new control centres and their ESCs will be capable of performing all of the control functions of the distribution system that are now performed by the ACC's.
- 4.4 What portion of the cost of the SCMP relates to performing this distribution system control function? How are these costs recovered from BC Hydro? Please discuss whether the corresponding portion of the SCMP should be charged directly to BC Hydro?
- 4.5 Section 5.5 of the CPCN Application states that the second standby connection of the new Backup Control Centre ("BCC") to the Carson Ring is a leased connection between the BCC and the System Control Centre ("SCC"). Please explain how this connection of the BCC to the Carson Ring via the SCC will function in the event that the SCC is out of service.

- 4.6 Please describe at least three situations over the past couple of years when the existing control system caused significant problems. In each instance, what was the incremental cost to BCTC or BC Hydro to correct (or live with) the problem and/or what additional cost or inconvenience was caused to customers?
- 4.7 Section 1.7 of the CPCN Application states that by F2024 the assets constructed or acquired under the SCMP are anticipated to reach the end of their useful lives. Please identify any components of the SCMP to which the statement does not apply. In particular, please explain what BCTC expects will be the useful life of the SCC and BCC buildings.
- 4.8 The October 15, 2004 cover letter for the CPCN Application states that KEMA Consulting has prepared “a technical report containing extensive detail on the proposed technology for SCMP.” Section 5.3 of the CPCN Application states that the SCMP includes the design of the new EMS. Please describe in some detail the current state of development of the EMS, particularly with regard to the selection of technology and the design of the BCTC application for the technology.
- 4.9 Please clarify if the KEMA Consulting report is specific to the design of the BCTC EMS, or is a broader assessment of EMS technology.
- 4.10 Please clarify if the EMS will be a “package” system from a supplier, or a system that will be assembled specifically for the BCTC system, and explain why the proposed approach is best.

5.0 Reference: BCTC CPCN Application, Section 6.0

- 5.1 Section 6.3.4 identifies a number of existing computer systems that the EMS must interface with, and states that BCTC will be responsible for developing the interfaces. Please outline the level of analysis that has been done to assess the amount of work and the cost to develop these interfaces. Why was BCTC selected to undertake this work?
- 5.2 Please describe the transmission scheduling system and its role. Why is this role not included within the scope of the proposed EMS?

6.0 Reference: BCTC CPCN Application, Section 6.0

- 6.1 Section 6.3.8 (Installation and Commissioning) outlines the “cutover” to the new EMS system. Notwithstanding that considerable analysis likely would have been done to develop the proposed sequence, the proposal to transfer operations to the new SCC and then commission and test the BCC could raise questions about the risk to maintaining reliable electrical service while the cutover proceeds. Please discuss the pros and cons of instead commissioning the new BCC (so that the existing system provides backup) and then proceeding to commission the SCC.
- 6.2 Further to the description of Option 4a on page 4-9, please provide an assessment of cost of proceeding with the BCC in 2008 and a new SCC one or two years later, while performing minimal upgrading to the existing System Control Centre. Please provide a summary of annual Operating and Maintenance costs and annual Capital Expenditures, in the form of the schedule of annual Operating and Maintenance costs and Capital expenditure that was requested earlier.
- 6.3 Section 6.5: How can it be determined what savings in staffing costs will be when final staffing levels are not known?

7.0 Reference: BCTC CPCN Application, Section 7

- 7.1 Section 7.3.3 of the CPCN Application states that most procurement will be by public tendering for fixed priced contracts. To what extent does BCTC expect that fixed price bids will be used for construction/installation? Please provide a summary of areas where fixed price bids are not expected to be used, and explain why fixed bid tendering practices are not considered desirable for these areas. Has BCTC performed any analysis to determine if fixed price bids will provide the most economic solution? If so, please provide. If BCTC believes such information is commercially sensitive, please provide on a confidential basis.
- 7.2 What incentives for on-time completion and penalties for delayed completion does BCTC expect to include in its fixed price bids?
- 7.3 What incentives for on-time completion dates and below budget costs (and penalties for poorer performance) does BCTC expect to include in its other contracts with supplier and builders/installers?
- 7.4 Further to the statement at the top of page 7-3 of the CPCN Application about a contract for the EMS, please discuss the pros and cons of a fixed bid contract for this major part of the SCMP.
- 7.5 Further to the statement on page 7-3 of the CPCN Application about “full change management controls,” please provide an outline of these controls, including the level of BCTC authorization that will be required for material changes.
- 7.6 Page 7-4 of the CPCN Application states that KEMA Consulting will provide engineering services for the EMS Definition Phase. Please provide a copy of the Scope of Work in the KEMA Consulting contract, an organizational outline of the project team and the CV’s for the KEMA Consulting team leader and three most senior area leaders on the team.
- 7.7 Further to page 7-6 of the CPCN Application, when will the Project Plan that addresses the project scope definition, budget and schedule be finalized? Please explain why it is appropriate to proceed with review of the CPCN Application at this time, rather than when the Project Plan scope definition, budget and schedule are available.
- 7.8 Page 7-5 of the application describes the various use of experienced engineering resources and notes that BC Hydro will be providing an number of services with respect to Telecommunications design and Project Management and Contract administration. How will these services be contracted? How will the BC Hydro project management services interact with the BCTC project management team and other contractors?
- 7.9 What role will Aon Risk Control Engineering play?
- 7.10 Has BCTC prepared any project management policies and procedures manuals for this project? If so please provide.
- 7.11 Page 7-4 of the CPCN Application states that BC Hydro Engineering will provide Project Management and Contract Administration Services. Please provide a comprehensive outline and organization chart of the project management structure for the SCMP, identifying positions staffed by BC Hydro, BCTC, KEMA Consulting and other personnel.
- 7.12 Further to the foregoing question and the discussion on page 7-6, please identify the BCTC “Owner’s Representatives” on the project team, and how the team will report to and receive authorizations from the BCTC executive.
- 7.13 Further to the foregoing question, please explain the roles of the BCTC Project Steering

Committee and BCTC Advisory Committee, and identify the positions that will be represented on each of them.

- 7.14 The Project Schedule in Section 6.1 anticipates that a CPCN for the project will be granted in fall 2004. Please identify the critical decision points for the project over fall 2004 and early 2005, and discuss when BCTC needs a response to its CPCN Application.
- 7.15 Further to the reference to Project Definition Phase on page 6-1 of the CPCN Application, please correlate the activities in this phase with the schedule shown in section 6.1.
- 7.16 Please provide a copy of the most recent monthly report to BCTC executive on the project. Would such reports be suitable to include in reports to the Commission?
- 7.17 Further to the description of BCTC's description of its Enterprise Risk Management Framework in the response dated August 13, 2004 to BCUC IR 4.6 regarding the BCTC Capital Plan, please provide a copy of the most current risk rating report for the SCMP.
- 7.18 Section 7.3.2: Has an evaluation been completed of the option of delaying construction until just after the Olympic construction frenzy?

8.0 Reference: BCTC CPCN Application, Section 8.0

- 8.1 The CPCN Application at Section 8.3 states that the two communities where the new control centres will be built will be informed and will have an opportunity to provide feedback. Recognizing that the two locations may not yet be selected, please outline in general the processes that BCTC will use to interact with the two affected communities and their municipal officials, and also with the public in the immediate area of each new control centre.
- 8.2 Please describe the general shape of each control centre. Will there be antennas, etc. visible on the outside of the building?
- 8.3 Please describe the expected setting for each control centre, in terms of proximity to transportation and communications corridors, and also in terms of neighbors' proximity to them.
- 8.4 What impacts are each of the two control centres expected to have on its immediate neighbors, both during construction and afterwards?
- 8.5 Does BCTC have any concerns for security of its facilities through a public review process? Please discuss how the Commission could mitigate any such concerns.